MINNESOTA
PUBLIC UTILITIES COMMISSION

Lyon County Generating Station Project Environmental Assessment

The Human and Environmental Impacts of the Lyon County Generating Station Project

January 2026

Docket Number: E002/CN-25-145, G002/GS-25-154, E002/TL-25-161, and G002/GP-25-163

Abstract

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Northern States Power Company, a Minnesota corporation, doing business as Xcel Energy (applicant) proposes to construct the Lyon County Generating Station Project in Lyon County, Minnesota (project). The project includes the construction of two 210 megawatt (MW) combustion turbines (CT), a natural gas pipeline, and two high voltage transmission lines from the CT to the Garvin Substation. The substation has been permitted separately as part of the Minnesota Energy Connection Project.

The project requires a certificate of need, a site permit, a transmission line route permit, and a pipeline routing permit from the Minnesota Public Utilities Commission (Commission). The applicant submitted an application for these approvals to the Commission on May 9, 2025. Commission Energy infrastructure Permitting (EIP) staff has prepared this environmental assessment (EA) for the project.

This EA addresses the issues and mitigation measures identified in the Commission's scoping decision of October 30, 2025. It evaluates the project's potential for human and environmental impacts and possible measures to mitigate these impacts.

Public hearings for the project will be held in the project area and are anticipated to occur the week of January 26, 2025. Notice of the hearings will be issued separately. An administrative law judge (ALJ) from the Minnesota Office of Administrative Hearings will preside over the hearings. Upon completion of the hearings, the ALJ will submit a report to the Commission including recommendations to the Commission regarding the applicant's proposed project. Commission decisions on the project are expected in the second quarter of 2026.

Additional materials related to this project and its permitting proceedings are available on the Commission's website: https://puc.eip.mn.gov/ and on the state of Minnesota's eDockets system: https://www.edockets.state.mn.us (enter the year "25" and the number "145").

Persons interested in receiving future project notices and updates can place their names on the project mailing list by emailing docketing.puc@state.mn.us or calling 651-201-2246 and providing the docket number (25-145), their name, email address, and mailing address. Please indicate how you would like to receive notices—by email or U.S. mail.

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

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Environmental Assessment
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Acronyms

ALJ	administrative law judge
ASME	American Society of Mechanical Engineers
CFR	Code of Federal Regulations
CN	Certificate of Need
CO	carbon monoxide
Commission	Minnesota Public Utilities Commission
CT	combustion turbine
DNR	Minnesota Department of Natural Resource
DOC EERA	Department of Commerce Energy Environmental Review and Analysis
DOE	Department of Energy
EA	environmental assessment
EIP	Energy Infrastructure Permitting
EPA	U.S. Environmental Protection Agency
F	Fahrenheit
FAA	Federal Aviation Administration
GIS	geographic information system
kV	kilovolt
kW	kilowatt
LEGP	large electric generating plant
LIUNA	Laborer's International Union of North America
MEPA	Minnesota Environmental Policy Act
MMBtu/hr	British thermal units per hour
MNDOT	Minnesota Department of Transportation
MEC	Minnesota Energy Connection project
NERC	North American Electric Reliability Corporation
NESC	National Electric Safety Code
Northern Border	Northern Border Pipeline Company
Nox	nitrogen oxide
PHMSA	pipeline and Hazardous Materials Safety Administration
ROW	right-of-way
SPCC	Federal Aviation Administration
USFWS	U.S. Fish and Wildlife Service
VOCs	volatile organic compounds

Summary

This EA has been prepared for the Lyon County Generating Station Project (project). The project includes construction and operation of two 210 MW combustion turbines and associated facilities, two 345 kilovolt transmission lines with a combined total length of approximately 4,300 feet, and a natural gas pipeline that is approximately 1,400 feet long (Map S.1). The Garvin Substation is adjacent to the project and part of the Minnesota Energy Connection project (MEC). The EA evaluates the potential human and environmental impacts of the project and possible mitigation measures.

The EA is not a decision-making document but rather a guide for decision-makers. The EA is intended to facilitate informed decisions by state agencies, particularly with respect to the goals of the Minnesota Environmental Policy Act (MEPA) – "to create and maintain conditions under which human beings and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of the state's people" (Minn. Stat. § 116D.02).

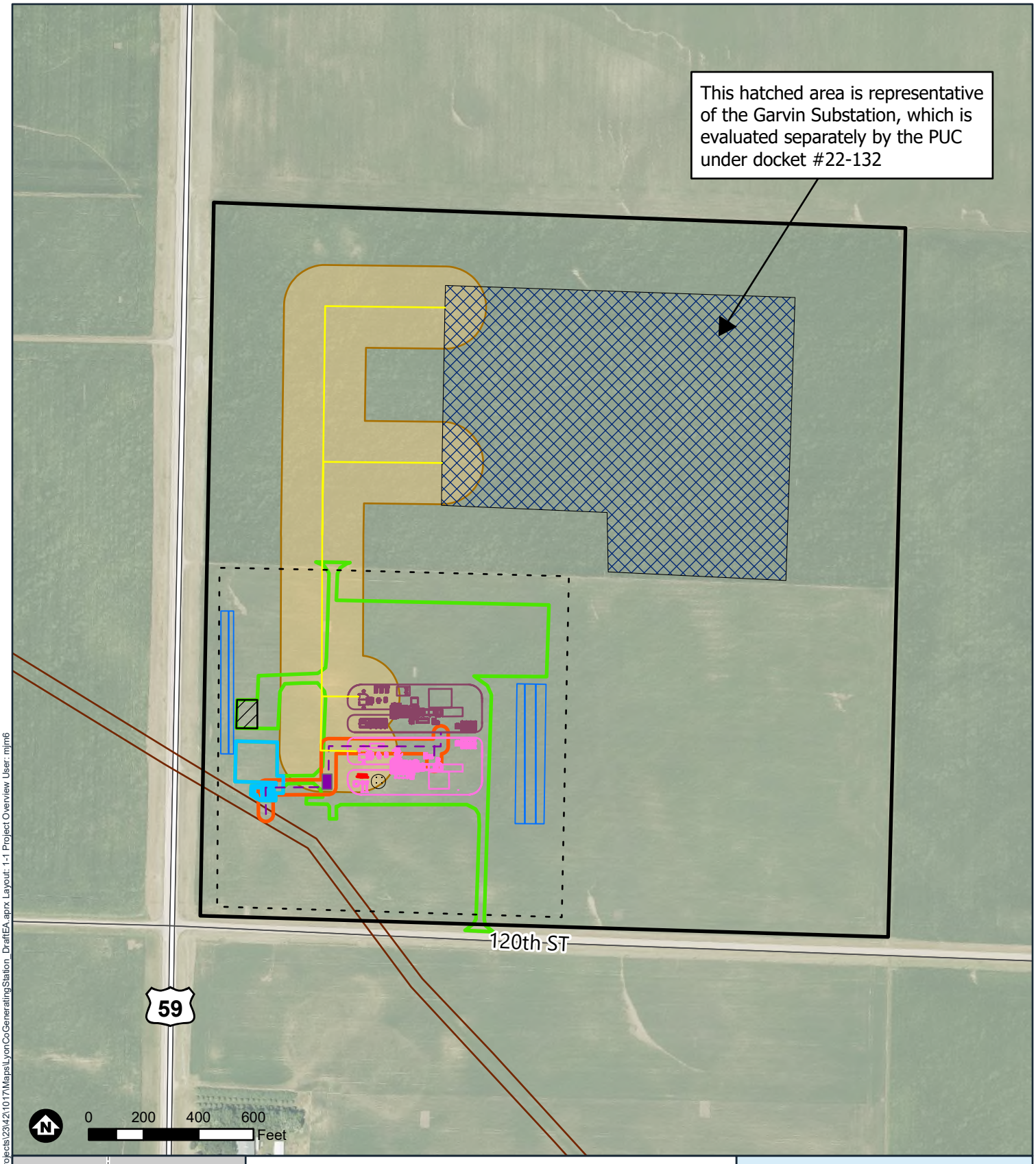
The Perceived Problem: Concerns with the Need to Deliver Reliable Service and Meet Anticipated Energy Demands

The project will provide firm, dispatchable generation to deliver reliable service and meet anticipated energy demands. The North American Electric Reliability Corporation (NERC) recommended in its 2023 Long Term Reliability Assessment report that entities "add new resources with needed reliability attributes and make existing resources more dependable" (North American Electric Reliability Corporation 2023). NERC further suggest that "natural-gas-fired generators are essential for meeting demand; they are dispatchable at any hour and provide a consistent rated output under a wide range of conditions" (North American Electric Reliability Corporation 2023). The reliability report also recommends better coordination of the gas and electric infrastructure, as well as better extreme weather preparedness to maintain adequate resource availability during prolonged extreme weather events.

A Possible Solution: The Lyon County Generation Project

The project meets the need for firm dispatchable resources and is a key part of the strategy to maintain system reliability and resource adequacy, given the applicant's plans to retire its last coal-fired generating unit in 2030. The project is needed to support the continued transition away from carbon-emitting resources.

The project would also provide transmission system support for the MEC and renewable resources that are planned to be interconnected with the MEC. The project would offset the need for two additional standalone synchronous condenser units at the Garvin Substation.



- Project Boundary
- Combustion Turbine 1
- Combustion Turbine 2
- Fuel Yard / Fuel Pump
- Gas Pipeline
- Transmission Line
- Transmission Line ROW
- Site Access
- Garvin Substation
- Service Fire Water Tank
- Stormwater Pond
- Existing Northern Border Pipeline
- Administrative Building
- Fire Pump
- Preliminary Fence
- Water Bath Heater
- Gas Pipeline ROW
- US Highway
- Road

Sources: XCEL, Barr, Esri

Lyon Co. Generating Station Project

Project Overview

MAP S.1

BARR

The State of Minnesota's Role

The project requires four approvals from the Commission: a certificate of need (CN); a site permit; a transmission line route permit; and a pipeline routing permit. The applicant applied to the Commission for these approvals on May 9, 2025. With this application, the Commission must determine if the project is needed, and if so, how best to mitigate potential impacts.

To help the Commission with its decision-making and to ensure a fair and thorough airing of the issues, the state of Minnesota has set out a process for the Commission to follow in making its decisions. This process requires (1) the development of an EA and (2) public hearings before an administrative law judge (Minn. Stats. Ch. 216B and Ch. 216E). The goal of the EA is to describe the potential human and environmental impacts of the project ("the facts"); the goal of the hearings is to advocate, question, and debate what the Commission should decide about the project ("what the facts mean"). The entire record developed in this process, which includes the EA, the administrative law judge report, and all public input and testimony, is considered by the Commission when it makes its decisions on the applicants' CN and route permit applications.

Commission Decision Criteria

The Commission makes its decisions on the applicants' CN, site permit, and route permit applications through criteria set out in Minnesota statutes and rules. Per Minn. R. 7849.0120. To grant a CN, the Commission must find that:

A. The probable result of denial would be an adverse effect on the future adequacy, reliability, or efficiency of energy supply to the applicant, to the applicant's customers, or to the people of Minnesota and neighboring states.
B. A more reasonable and prudent alternative to the proposed facility has not been demonstrated by a preponderance of the evidence on the record.
C. The proposed facility, or a suitable modification of the facility, will provide benefits to society in a manner compatible with protecting the natural and socioeconomic environments, including human health.
D. The record does not demonstrate that the design, construction, or operation of the proposed facility, or a suitable modification of the facility, will fail to comply with relevant policies, rules, and regulations of other state and federal agencies and local governments.

For a site permit and a transmission line route permit, the Commission is charged with selecting sites and transmission line routes that minimize adverse human and environmental impacts while ensuring electric system reliability and integrity. For a pipeline routing permit, the Commission is charged with selecting routes that minimize adverse human and environmental impacts while ensuring pipeline reliability and integrity.

The MEPA requires that environmental review be conducted for major governmental actions with the potential to create significant environmental impacts (Minn. Stat. 116D.04). To meet this requirement, the Commission has authorized the preparation of an EA. Energy Infrastructure Permitting (EIP) staff are responsible for preparing the EA on behalf of the Commission.

This EA is intended to facilitate informed decision-making by the Commission and other entities with regulatory authority over the project. It also assists citizens in providing guidance to decision-makers

regarding the project. This EA analyzes the potential human and environmental impacts of the project and possible mitigation measures.

Public Participation

The first step in preparing an EA is scoping. The purpose of scoping is to provide citizens, local governments, tribal governments, and agencies an opportunity to focus the EA on those issues and mitigation measures that are relevant to the proposed project. The scoping comment period was open from August 1, 2025, through August 27, 2025.

The Commission held two public information and scoping meetings in mid-August 2025. These events where intended to provide information about the permitting process and the project, answer questions, and gather input on topics to study in the EA.

No siting or routing alternatives were suggested during the scoping process. During the comment period, the Minnesota Department of Natural Resources (DNR), the Minnesota Department of Transportation (MnDOT), and Lyon County Planning and Zoning submitted comments. The Laborer's International Union of North America (LUINA) Minnesota and North Dakota also submitted a comment.

EIP staff provided a summary of the scoping process and recommendations to the Commission on September 5, 2025. The Commission concurred with EIP's recommendations on October 29, 2025, and authorized EIP to include only the site and routes proposed by the applicant in the EA scoping decision.

Human and Environmental Impacts of the Project

Project construction and operation will impact human and environmental resources within the designated project area. Some impacts will be short-term and similar to those of any large construction project (e.g., noise, dust, soil disturbance). Other impacts will exist for the life of the project and may include aesthetic impacts and impacts on land-based economies. These long-term impacts are generally not well mitigated by construction measures. The potential project impacts are summarized in Table S.1.

Table S.1 Human and Environmental Impacts of the Applicant's Proposed Project

Element		Project Impacts
Human Settlement	Residences within 0-500 feet (count)	0
	Residences within 500-1,000 feet (count)	1
	Residences within 1,000-2,000 feet (count)	1
Environmental Justice	Communities of EJ concern within the project area	0
Land-Based Economies	Agricultural land in the project area (acres)	149.3
Archaeological and Historic Resources	Archaeological sites in the project area (count)	0
	Historic resources in the project area (count)	0
Water Resources	Stream crossings (count)	0
	PWI crossings (count)	0
	Wetlands within the project area (count)	1
Vegetation	Forested landcover in the project area (acres)	0
Wildlife	Wildlife Management Areas in the project area (acres)	0
	Scientific and Natural Areas in the project area (acres)	0
	Potential for Federal- or state-protected species in the project (count)	0
ROW Sharing and Paralleling	Transmission line (feet)	0
	Roadway (feet)	0
	Field, parcel, or section lines (feet)	0
	Total ROW sharing and paralleling (feet)[1]	0
Estimated Cost	Total estimated construction cost (million)	650 - 800

[1] Although the project does not share or parallel existing rights-of-way, it is located entirely on property owned by the applicant and not intended for other uses.

Human Settlements

Potential project impacts on human settlements are assessed through an evaluation of several elements, including aesthetics, displacement, noise, land use and zoning, cultural values, socioeconomics, and environmental justice. Impacts to human settlements resulting from the project are anticipated to be minimal to moderate..

Aesthetics

The project is in an agricultural setting with existing utility infrastructure including the Northern Border Natural Gas Pipeline and Highway 59 ROW. The Garvin Substation and MEC transmission line are planned utility infrastructure within the immediate vicinity.

Aesthetic impacts may occur as a result of proximity to residences. There are two residences within 2,000 feet of the project. The project will result in the introduction of new infrastructure in a relatively rural area. However, aesthetic impacts may be minimized by co-locating the project adjacent to the MEC project.

Displacement

Displacement refers to the removal of a residence or building to facilitate the operation of the generation station, transmission line or pipeline. For safety code and maintenance reasons, utilities generally need to consider the distances from various utility equipment and infrastructure to any residences or other buildings that could be removed or replaced.

There are no residential or non-residential structures within the project area. Therefore, there would be no displacement of residential or non-residential structures as a result of this project.

Noise

Potential impacts from project sound levels were modeled using predictive noise modeling. Modeling indicates the project's operational noise will remain within both daytime and nighttime operating limits for all modeled scenarios and significant noise impacts from the project are not anticipated.

Land Use and Zoning

Impacts from all project components, including the generation station, transmission line, and the pipeline, are anticipated to be negligible. Permanent impacts are limited to the project area, which is owned by the applicant. The project would be consistent with authorized uses within the agricultural district and is compatible with future land use planning goals. The land use near the project area is not expected to change as a result of the project.

Cultural Values

Cultural value impacts are anticipated to be minimal. The project will not adversely impact the work of residents that underlie the area's cultural values, nor is it anticipated to adversely impact geographical features that inform these values. The applicant is committed to continuing to coordinate with Tribal Nations that may have an interest in the project, including the Upper Sioux Community and Lower Sioux Indian Community.

Socioeconomics

No adverse impacts to socioeconomics are anticipated as a result of the project. The project is anticipated to generate minor, short-term positive influx driven by increased construction activity and a small influx of contractor employees. In the long term, the project will likely provide beneficial impacts to the local tax base in the form of revenues from property taxes paid

Environmental Justice

The goal of environmental justice (EJ) is the "just treatment and meaningful involvement of all people, regardless of income, race, color, national origin, Tribal affiliation, or disability, in agency decision-making and other federal activities that affect human health and the environment." The goal of this fair treatment is to review the project to identify potential disproportionately high and adverse effects from the implementation of the project and identify alternatives that may mitigate these impacts.

Based on data obtained from the Minnesota Pollution Control Agency's (MPCA's) Understanding Environmental Justice in Minnesota Mapping Tool, the project area is not within an identified environmental justice area, and there are no environmental justice areas within one mile of the project. It

is not anticipated that the project would adversely or disproportionately impact environmental justice areas.

Public Services and Transportation

Transmission line and power generation projects have the potential to negatively impact public services. These impacts are typically temporary in nature. However, impacts could be more long-term if they change the area so that public service options are foreclosed or limited.

Transportation

The generation station is approximately 0.8 miles south of US 14. The project runs adjacent to US 59 for approximately 0.3 miles. Access to the generation station would be from US 59. The generation station site and associated transmission lines would not cross any roads.

The project could lead to temporary traffic delays, detours, and congestion during construction, although these would be primarily due to the movement of oversized equipment or deliveries to the project. Temporary road or lane closures may occur during the construction process for safety purposes. No impacts on area roads would occur during project operations. Therefore, impacts on local transportation are anticipated to be minimal.

Public Utilities

Electric utility services in and around the project area are provided by Xcel Energy and the Lyon-Lincoln Electric Coop. Natural gas services near the project are provided by Minnesota Energy Resources. The Northern Border Pipeline carries natural gas through the area and would supply the generation station with fuel. The project components, including transmission lines, generation station, and pipeline, will not disturb electric utilities and thus no disruptions to electrical service are anticipated.

Potential project impacts to pipelines can be avoided and mitigated by coordination with the appropriate pipeline companies, which the applicant will undertake as part of the natural gas pipeline connection process.

Emergency Services

The project is not anticipated to impact emergency services. Temporary road closings may occur during construction activities. The temporary road closings are not expected to have significant impacts on public services and access in the area because of the generally rural nature of the area and subsequent low traffic levels on most roads.

Airports

There are no FAA airports, public airports, or private airports located within one mile of the project. As such, impacts to airports are not anticipated. The nearest airport is Tracy Municipal which is approximately 9 miles away from the project area. The applicant will coordinate with the FAA for appropriate notifications associated with project construction as necessary.

Public Health and Safety

The project has the potential to negatively impact public health and safety during the construction and operation. As with any other project involving heavy equipment, pipelines, and transmission lines, there are safety issues to consider during construction. Potential health and safety impacts include injuries due to falls, equipment use, and electrocution. Potential health impacts related to the operation of the project include health impacts from electric and magnetic fields (EMF), stray voltage, induced voltage, and electrocution.

Electric and Magnetic Fields

EMF are invisible areas of energy associated with the use of electrical power. For lower EMF frequencies associated with power lines, electric and magnetic fields are relatively decoupled. Generally, electric fields are dependent on the voltage of a transmission line and magnetic fields are dependent on the current carried by a transmission line. Both magnetic and electric fields decrease rapidly with an increased distance from the source.

No impacts due to EMF are anticipated from the generation station and pipeline. Impacts from the transmission line are anticipated to be minimal. There is currently no federal standard for transmission line electric fields.

Implantable Medical Devices

Implantable medical devices such as cardiac pacemakers, implantable cardioverter defibrillators, neurostimulators, and insulin pumps may be subject to interference from electromagnetic interference (EMI), which could mistakenly trigger a device or inhibit it from responding appropriately. While EMI can result in either inappropriate triggering or inhibition of a device from responding properly, only a small percentage of these occurrences are caused by external EMI.

No impacts to implantable medical devices are anticipated from the generation station or pipeline. Impacts from the transmission line are anticipated to be negligible. EMF exposure produced by transmission lines generally does not affect implantable devices. If a medical device is affected, the device will return to normal operation when the person moves away from the source of the EMF.

Stray Voltage

Electrical systems that deliver power to end-users and their homes, businesses, farms, or other buildings are grounded to the earth for safety and reliability reasons. The grounding of these electrical systems results in a small amount of current flow through the earth. Stray voltage could arise from neutral currents flowing through the earth via conducting objects. Stray voltage could arise from neutral currents flowing through the earth via ground rods, pipes, or other conducting objects, or from faulty wiring or faulty grounding of conducting objects in a facility. Thus, stray voltage could exist at any business, house, or farm that uses electricity, independent of whether there is a transmission line nearby. Therefore, no impacts due to stray voltage are anticipated from the project.

Induced Voltage

It is possible for electric fields from a transmission line to extend to a conductive object that is near a line. This may induce a voltage on the object. The magnitude of the voltage depends on several factors such as the size, shape, and orientation of the object below the transmission line.

Impacts are anticipated to be negligible from the generation station and the pipeline. Minimal impacts due to induced voltage are anticipated from the transmission line. Shocks from induced voltage from transmission lines are considered more of a nuisance than a danger.

Climate Change

During project construction and operation, small amounts of greenhouse gases (GHG) will be generated. GHG emissions from project construction will be largely from the combustion of fossil fuels such as gasoline and diesel for vehicles and construction equipment. Primary sources of GHG emissions during operation include the CTs, emergency diesel generator, emergency diesel fire pump, heaters, tanks, circuit breakers, and piping fugitives. Additionally, GHG emissions will be generated from temporary and permanent changes in land carbon sinks. GHG emissions will be localized to the project area and are not anticipated to result in long-term impacts.

Table S.2 provides a preliminary estimate of the CO_2, CH_4, and N_2O construction emissions. GHG emissions resulting from project construction are estimated to be 14,289 metric tons of CO_2e.

Table S.2 Greenhouse Gas Emissions from Project Construction

Emission Source	CO2 (metric tons)	CH4 (metric tons)	N2O (metric tons)	CO2e (metric tons)
Construction Equipment	14,242	0.58	0.12	14,289
TOTAL	**14,242**	**0.58**	**0.12**	**14,289**

Table S.3 provides a preliminary estimate of CO_2, CH_4, N_2O, and SF_6 emissions during project operations. Annual GHG emissions resulting from operation are estimated to be 773,421 metric tons CO_2e for the generation station, 685 metric tons CO_2e for the transmission lines, and 976 metric tons CO_2e for the pipeline. The anticipated operational GHG emissions from the project are 775,082 metric tons/year, which is approximately 0.6% of the total CO_2e emissions that were emitted in Minnesota in 2022, and approximately 3.0% of the total CO_2e emissions that were emitted by electricity generation in Minnesota in 2022 (reference (1)).

Table S.3 Greenhouse Gas Emissions from Project Operation

Emission Source	CO_2 (metric tons/yr)	CH_4 (metric tons/yr)	N_2O (metric tons/yr)	SF_6 (metric tons/yr)	CO_2e (metric tons/yr)
Generation Station Operation	772,686	13.47	1.35	-	773,421
Transmission Lines Operation	-	-	-	0.03	685
Pipeline Operation	-	34.84	-	-	976
TOTAL	**772,686**	**48.32**	**1.35**	**0.03**	**775,082**

Table S.4 provides a preliminary estimate of the land use change emissions. GHG emissions resulting from land use change during construction and operation are estimated to be 2,071 metric tons CO_2e. CO_2 and CH_4 emissions were calculated using factors for diesel and gasoline combustion from 40 CFR Part 98, Tables C-1 and C-2.

Table S.4 Greenhouse Gas Emissions from Project Land Use Change

Emission Source	CO_2 (metric tons)	CO_2e (metric tons)
Construction Land Use Change	188	188
Operation Land Use Change	1,883	1,883
TOTAL	**2,071**	**2,071**

The project would result in GHG emissions that would contribute to climate change impacts such as changes in temperature, precipitation, and extreme weather events. Energy projects are generally considered critical facilities and require extra attention when considering climate change risks.

Air Quality

Air emissions will occur during both the construction and operational phases of the project. Air emissions during construction will primarily consist of emissions from construction equipment and will include pollutants such as CO_2, nitrogen oxides (NO_X), $PM_{2.5}$, and PM_{10}. Dust generated from earth disturbing activities also gives rise to particulate matter. Emissions from construction vehicles could be minimized by using modern equipment with lower emissions ratings.

During the operation of the transmission lines and natural gas pipeline, air emissions will be minimal. Small amounts of NO_X will be produced from the operation of the transmission lines through ionization of air molecules during corona discharge. These emissions are expected to be minimal. A small amount of O_3 will be created due to corona from the operation of transmission lines. The emission of O_3 during operations is not anticipated to have a significant impact on the environment. Emissions from maintenance activities associated with mobile source combustion are likely to be temporary and minimal.

Operation of the generation station includes two 210 MW combustion turbines and associated ancillary equipment, including one emergency diesel generator, an emergency diesel fire pump, diesel storage tanks, a natural gas-fired water bath heater, and natural gas piping components. The applicant submitted a Title V air permit application to the MPCA as a requirement to construct and operate the generation station.

The generation station does not meet the definition of a major emission facility with respect to the EPA Prevention of Significant Deterioration (PSD) and will not require PSD review. The generation station will be a minor source of hazardous air pollutants (HAPs) as it will emit less than 10 tons of any single HAP and less than 25 tons of combined HAPs from all emission sources.

To understand the impact of emissions on human health from the generation station, an air emissions risk assessment (AERA) was conducted. Per MPCA guidance, any proposed electric production facility greater than or equal to 25 MW must complete an AERA. An AERA evaluates air impacts to human health under three main pathways and four exposure levels. The pathways include inhalation, indirect (i.e., farmer, urban gardener, and resident), and multi-pathways (i.e., farmer, urban gardener, and resident). The exposure levels include acute (i.e., hourly, daily), subchronic (i.e., monthly), chronic non-cancer (i.e., annual), and chronic cancer (i.e., annual). The MPCA risk assessment screening spreadsheet (RASS) is a tool used to determine the air impacts to human health on the nearby communities. The RASS results from the generation station show that the facility will not negatively impact human health.

Land-Based Economies

Potential impacts to land-based economies are assessed through several elements, including agriculture, forestry, mining, and recreation and tourism resources.

Agriculture

Agriculture is the sole existing land use in the project area. The project will permanently convert 149.3 acres of cultivated cropland to industrial use. This conversion will have a minimal impact on the availability of agricultural land in Lyon County, as agricultural production will continue in the surrounding areas during both the construction and operational phases of the project. The project would avoid impacts to County Ditch 29 and County Ditch 24 and would not negatively impact changes in water runoff during construction or operations of the project.

Forestry

No forested lands or commercial forestry operations exist within the project area; therefore, no direct impacts to forests are anticipated as a result of the project.

Mining

There are no known mining operations documented in the project area; therefore, no direct impacts to mining are anticipated as a result of the project.

Tourism

There are no known tourism-based businesses or attractions documented in the vicinity of the project area; therefore, no impacts to recreation or tourism are anticipated as a result of the project.

Recreation

Snowmobiling is the nearest recreational activity to the project area, with segments of the Lyon County Snowmobile Trail paralleling US Highway 59 where it passes the project area immediately to the west. Project impacts on recreation are not anticipated. Potential impacts during construction are limited by the fact that construction is not planned to take place during the snowmobiling season, and the trail will not be changed, obstructed, or rerouted. The nearest WMAs are located more than one mile from the project area; therefore, no notable impacts to recreation are anticipated as a result of the project.

Archaeological and Historic Resources

Archaeological resources have not been identified within the project area and there are no National Register of Historic Places – eligible or unevaluated resources within the project area or within one mile of the project; therefore, impacts to archaeological and historic resources are not anticipated as a result of the project. The Minnesota State Historic Preservation Office concurred on April 23, 2025 and the Office of State Archaeologists concurred on May 6, 2025 that no archaeological resources or historic properties would be impacted by the project.

Natural Environment

Transmission lines and generation stations have the potential to impact the natural environment through temporary, construction-related impacts and long-term impacts on water resources, vegetation, and wildlife as discussed in the following sections.

Geology

Construction methods used for the project will not alter the geology of the region; therefore, impacts to geologic resources are not anticipated. The bedrock is not conducive to forming karst features, so encountering any unmapped karst features is unlikely. Changes in slope are not anticipated during the project, and as a result, there would be limited risk of landslides.

Soils

Project impacts on soils are anticipated to be minimal and temporary. Soil impacts are dependent, to some extent, on the surface conditions at the time of construction. Construction activities that occur on wet soils tend to have longer lasting impacts regardless of the soil type. During dry conditions, soil disturbances will be temporary, minimal, and generally less invasive than typical agricultural practices such as plowing and tilling.

Groundwater

The project does not have any source for process wastewater; therefore, the project is not anticipated to have a significant impact on groundwater resources within the project area.

Surface Water

There are no floodplains or watercourses located within the project area. One wetland was delineated in the eastern edge of the project area. The project has been sited to avoid this delineated wetland; therefore, no impacts to wetlands are anticipated. In addition, the project will not directly impact other surface waters. Indirect impacts to wetlands and surface water may occur due to soil erosion and sediment deposition during construction. This potential will be mitigated through use of best management practices as dictated by permit conditions.

Vegetation

Construction of the project would result in short-term and long-term impacts on existing agricultural vegetation. Short-term impacts on existing vegetation would include localized clearing and ground disturbance associated with project and construction activities. Long-term impacts on vegetation would occur in areas where agricultural landcover would be permanently converted including to developed landcover consisting of project infrastructure. Long-term impacts include ground clearing up to 150 square feet for transmission line structure foundations, approximately 14 acres for the generation station, and approximately 1.8 acres for stormwater ponds.

Construction and maintenance activities have the potential to result in the introduction or spread of noxious weeds and other non-native species. Noxious weeds, which are regulated under Minnesota Statute 18, can be introduced to new areas through propagating material like roots or seeds transported by contaminated construction equipment. Activities that could potentially lead to the introduction of noxious weeds and other non-native species include ground disturbance that leaves soils exposed for

extended periods, introduction of topsoil contaminated with weed seeds, vehicles importing weed seems and conversion of landscape types.

Wildlife and their Habitats

The transmission lines could have potential impacts on avian species as a result of electrocution and/or collision with transmission line infrastructure. Construction of the generation station would result in the loss of 14 acres of agricultural habitat, with an additional 150 square feet of agricultural habitat converted through construction of the transmission lines. Approximately 1.8 acres of agricultural habitat would be converted to stormwater ponds, which could serve as habitat for aquatic species or waterfowl. Construction activities that generate noise, dust, or disturbance of habitat could result in short-term, indirect impacts on wildlife.

Rare and Unique Natural Resources

Based on data reviewed from the Minnesota Department of Natural Resources Natural Heritage Inventory System (NHIS) database; no state endangered, threatened, or special concern species have been documented within one mile of the project area. Given the agricultural landscape and lack of state-listed species documented within one mile of the project, impacts to state-listed species are not anticipated.

The United States Fish and Wildlife Service's Information for Planning and Consultation (IPaC) tool was queried for a list of federally threatened and endangered, proposed species, candidate species and designated critical habitat that may be present within or near the project area. The IPaC query identified the proposed threatened monarch butterfly and the proposed endangered Suckley's cuckoo bumblebee as potentially being present in the project area. The IPaC query did not identify any designated critical habitat within or near the project area. Given that the entire project area is agricultural, desirable habitat in the project area is not present for monarch butterflies and Suckley's cuckoo bumble bees; therefore, a no effect determination was concluded for both of these species.

Summary of Project-Specific Siting and Routing Factors

The discussion here uses text and a color graphic to summarize the project's consistency with the State's siting and routing factors, as described in Table S.5. The summary of project-specific siting and routing factors for the generation station and transmission line are summarized in Table S.6, and the pipeline's project specific routing factors are summarized in Table S.7. The color graphic and related notes for a specific siting and routing factor or element are not meant to suggest that accommodations and/or changes need to be made to the site/route but are provided as a comparison to be evaluated together with all other siting/routing factors. For example, if the generation station is "red" for a particular factor or element, this is not meant to indicate a fatal flaw within the proposed site.

For factors that express the state of Minnesota's interest in the efficient use of resources (e.g., the use and paralleling of existing rights-of-way), the graphic represents the consistency of the route with these interests. For the remaining routing factors, the graphic represents the magnitude of the anticipated impacts.

Table S.5 Summary of Siting and Routing Factor Consistency for the Project

Anticipated Impacts or Consistency with Routing Factor	Symbol
Minimal: Impacts are anticipated to be minimal with mitigation – OR – the project is very consistent with this routing factor.	
Moderate: Impacts are anticipated to be minimal to moderate with mitigation; special permit conditions may be required for mitigation	
Significant: Impacts are anticipated to be moderate to significant and likely unable to be mitigated – OR –the project is not consistent with the routing factor or consistent only in part. Indicates that the route is impactful with respect to the routing factor.	

Table S.6 Summary of Siting and Routing Factors for the Generation Station and Transmission Line

Routing Factor/Resource	Generation Station Construction	Generation Station Operation	Transmission Line Construction	Transmission Line Operation	Summary
A. Human Settlement – Displacement, Noise, Aesthetics, Cultural Values, Recreation, and Public Services					There are two residents within 2,000 feet of the project area. The project will result in a viewshed change for the area.
B. Public Health and Safety					No impacts to public health and safety are anticipated as a result of the project.
C. Land-based Economies – Agriculture, Forestry, Tourism, and Mining					Permanent impacts to agriculture as a result of the project may include loss of farmland due to construction of the generation station and structure placement in agricultural fields and restriction of farming equipment. Impacts to agricultural operations have been mitigated by proposing a project adjacent to the MEC.
D. Archaeological and Historic Resources					No impacts to archaeological and historic resources are anticipated as a result of the project.
E. Natural Environment – Air and Water Quality Resources and Flora and Fauna					The project will generate air emissions during construction and project operations. CIA modeling results are compliant with the MAAQS and NAAQS.
F. Rare and Unique Natural Resources					The project is not anticipated to adversely affect any rare or unique natural resources.

Routing Factor/Resource	Generation Station Construction	Generation Station Operation	Transmission Line Construction	Transmission Line Operation	Summary
G. Application of Design Options that Maximize Energy Efficiencies, Mitigate Adverse Environmental Effects, and could Accommodate Expansion of Transmission or Generating Capacity					The project has been designed to maximize energy efficiencies and mitigate adverse environmental effects.
H. Use or Paralleling of Existing Rights-of-Way, Survey Lines, Natural Division Lines, and Agricultural Field Boundaries					The project is sited entirely within an existing agricultural field on property owned by the applicant and adjacent to the existing MEC project. Though use of existing ROW will not occur, the project location minimizes new transmission ROW.
I. Use of existing large electric power-generating plant sites					The project will not utilize any existing large electric power generating plant sites. However, it will be located adjacent to the MEC Garvin Substation.
J. Use of Existing Transportation, Pipeline, and Electrical Transmission Systems or Rights-of-Way					The project is located on land owned by the applicant and sited adjacent to the MEC project. Though use of existing ROW will not occur, the project location minimizes new transmission ROW.
K. Electrical System Reliability					The project supports electrical system reliability.
L. Costs of Construction, Operating, and Maintaining the Facility which are Dependent on Design and Route					The project has been designed to minimize construction and operating costs to the extent possible.

Routing Factor/Resource	Generation Station Construction	Generation Station Operation	Transmission Line Construction	Transmission Line Operation	Summary
M. Adverse Human and Natural Environmental Effects which Cannot be Avoided	●	●	●	●	Unavoidable adverse human and environmental effects have been minimized to the extent possible.
N. Irreversible and Irretrievable Commitments of Resources	●	●	●	●	Irreversible and irretrievable commitments of resources have been minimized to the extent possible.

Table S.7 Summary of Routing Factors for the Natural Gas Pipeline

Routing Factor/Resource	Pipeline Route	Summary
A. human settlement, existence and density of populated areas, existing and planned future land use, and management plans;		The project is located in a rural setting and is not designated for future residential or commercial development. There are two residences located within 2,000 feet of the project area.
B. the natural environment, public and designated lands, including but not limited to natural areas, wildlife habitat, water, and recreational lands;		The pipeline is located in an agricultural field with no native vegetation, surface water resources, or public lands.
C. lands of historical, archaeological, and cultural significance;		No impacts to archaeological and historic resources are anticipated as a result of the project.
D. economies within the route, including agricultural, commercial or industrial, forestry, recreational, and mining operations;		Permanent impacts to agriculture as a result of the project would include loss of farmland due to the construction of the pipeline through an agricultural field. Impacts to agricultural operations have been mitigated by proposing a project adjacent to the MEC project and the existing Northern Border pipeline, which reduces the extent of impacts to agricultural property.
E. pipeline cost and accessibility;		The costs of the pipeline have been minimized to the extent practical by locating the project adjacent to the MEC Garvin Substation and Northern Border Natural Gas Pipeline, which limits the need for additional pipeline..
F. use of existing rights-of-way and right-of-way sharing or paralleling;		The pipeline is sited adjacent to the MEC on land owned by the applicant.
G. natural resources and features;		The pipeline is located in an agricultural field with no native vegetation, surface water resources, or public lands.
H. the extent to which human or environmental effects are subject to mitigation by regulatory control and by application of the permit conditions contained in part 7852.3400 for pipeline right-of-way preparation, construction, cleanup, and restoration practices;		The environmental impacts identified in this EA would be minimized through the conditions identified in the draft pipeline route permit.
I. cumulative potential effects of related or anticipated future pipeline construction; and		There are no anticipated cumulative potential effects related to future pipeline construction.

	Routing Factor/Resource	Pipeline Route	Summary
J.	the relevant applicable policies, rules, and regulations of other state and federal agencies, and local government land use laws, including ordinances adopted under Minnesota Statutes, section 299J.05, relating to the location, design, construction, or operation of the proposed pipeline and associated facilities.		The project would adhere to all policies, rules, and regulations of state, federal or local governments.

1 Introduction

This environmental assessment (EA) has been prepared for Xcel Energy's proposed Lyon County Generating Station (project). The project consists of two 210-megawatt (MW) combustion turbines and associated facilities, including on-site operation facilities, a water bath heater, an emergency diesel fire pump, emergency diesel generators, and two short transmission line connections (Map 1-1). Together, these components will use natural gas to generate electricity. Additionally, a natural gas pipeline would be installed to connect each combustion turbine (CT) and its associated facilities. The project will be located on two parcels of land owned by Xcel Energy (applicant) in Lyon County, Minnesota, and adjacent to the proposed Garvin Substation.

This EA is not a decision-making document, but rather a guide for decision-makers. The EA is intended to facilitate informed decisions by state agencies, particularly with respect to the goals of the Minnesota Power Plant Siting Act – "to locate large electric power generating plants and high voltage transmission lines in an orderly manner compatible with environmental preservation and the efficient use of resources." (Minn. Stat. § 216E.02).[1]

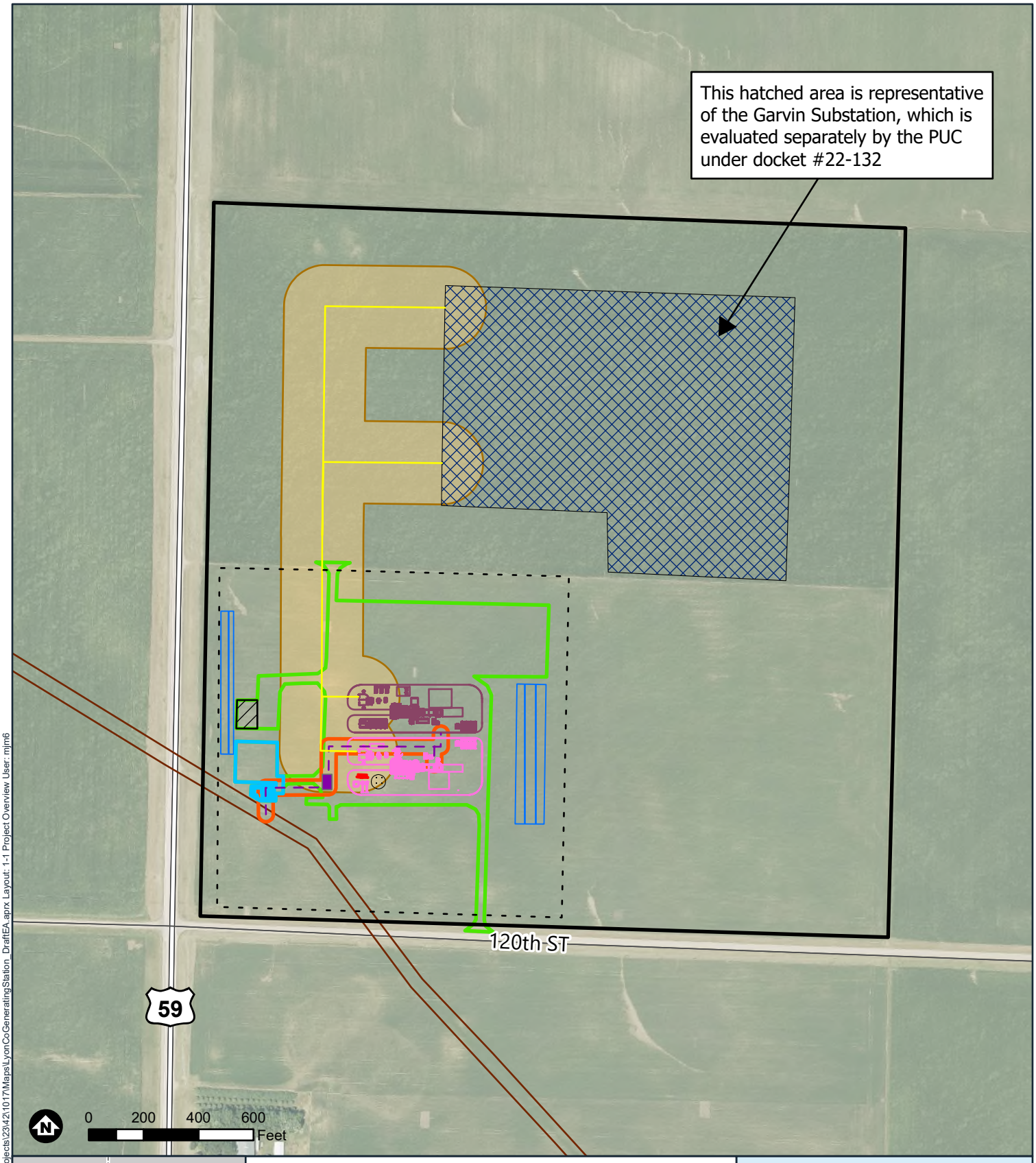
1.1 Overview of Project

The project includes construction and operation of the following components:

1) The generation station includes two 210 MW CTs and associated facilities, including on-site operation facilities, water bath heater, emergency diesel fire pump, and an emergency diesel generator.
2) The transmission lines include two 345 kilovolt (kV) transmission lines with a combined total length of approximately 4,300 feet. The transmission lines would be built to connect the generation station to the proposed Garvin Substation, which is a component of the Minnesota Energy Connection project (MEC).
3) The pipeline includes an approximately 1,400-foot-long natural gas pipeline that would tie-in to an existing Northern Border Pipeline Company (Northern Border) pipeline that routes through the southwest corner of the project area. The pipeline would consist of approximately 700 feet of 12-inch diameter pipe with the remaining length consisting of two "branches" of eight-inch diameter pipe, each connecting to a generator and associated facilities. The applicant would build and own approximately 1,400 feet of the pipeline. Northern Border will tie in to the main pipeline and build their own metering station.

The Garvin Substation is adjacent to the project and part of the MEC project. The MEC project was permitted by the Minnesota Public Utilities Commission (Commission) on June 11, 2025.

[1] Project applications submitted to the Commission prior to July 1, 2025, are reviewed under Minn. Stat. § 216E and Minn. R. 7850. Project applications submitted to the Commission after July 1, 2025, are reviewed under the Energy Infrastructure Permitting Act (Minn. Stat. § 216I).



- Project Boundary
- Combustion Turbine 1
- Combustion Turbine 2
- Fuel Yard / Fuel Pump
- Gas Pipeline
- Transmission Line
- Transmission Line ROW
- Site Access
- Garvin Substation
- Service Fire Water Tank
- Stormwater Pond
- Existing Northern Border Pipeline
- Administrative Building
- Fire Pump
- Preliminary Fence
- Water Bath Heater
- Gas Pipeline ROW
- US Highway
- Road

Sources: XCEL, Barr, Esri

Lyon Co. Generating Station Project

Project Overview

MAP 1-1

BARR

The project also includes the following associated facilities:

- On-site operation facilities (administration/control room building and a emergency diesel fire pump building).
- Two field-erected tanks for the storage of demineralized water and service/fire water.
- One 1,500-kilowatt (kW) emergency diesel generator to provide emergency power, with an associated diesel belly tank.
- One 350-horsepower emergency diesel fire pump to protect against fire should a fire arise, with an associated diesel belly tank.
- One 9.9 million British thermal units per hour (MMBtu/hr) water bath heater to heat the natural gas prior to combustion in the two 210 MW CTs.

1.2 Purpose and Need

The project will provide firm, dispatchable generation to deliver reliable service and meet anticipated energy demands. The North American Electric Reliability Corporation (NERC) recommended in its 2023 Long Term Reliability Assessment report that entities "[a]dd new resources with needed reliability attributes and make existing resources more dependable" (reference(2)). NERC further suggests that "[n]atural-gas-fired generators are essential for meeting demand; they are dispatchable at any hour and provide a consistent rated output under a wide range of conditions" (reference (2)). The reliability report also recommends better coordination of the gas and electric infrastructure, as well as better extreme weather preparedness to maintain adequate resource availability during prolonged extreme weather events.

The project meets the need for firm dispatchable resources and is a key part of the strategy to maintain system reliability and resource adequacy, given the applicant's plans to retire its last coal-fired generating unit in 2030. The project is also needed to support the continued transition away from carbon-emitting resources.

Finally, the project would also provide transmission system support for the MEC and the renewable resources that are planned to be interconnected with the MEC. The project would offset the need for two additional standalone synchronous condenser units at the Garvin Substation (reference (3)).

1.3 State of Minnesota's Role

The project requires four approvals from the Commission: a certificate of need (CN); a site permit; a transmission line route permit; and a pipeline routing permit. The applicant applied to the Commission for these approvals on May 9, 2025. With this application, the Commission must determine if the project is needed, and if so, how best to mitigate its potential impacts.

To help the Commission with its decision-making and to allow for a fair and thorough airing of the issues, the state of Minnesota has set out a process for the Commission to follow in making its decisions. This process requires: (1) the development of an EA; and, (2) public hearings before an administrative law judge (ALJ). The goal of the EA is to describe the potential human and environmental impacts of the project ("the facts"); the goal of the hearings is to advocate, question, and debate what the Commission should decide about the project ("what the facts mean"). The entire record developed during this process, which includes the EA and the administrative law judge report, and all public input and testimony, is considered by the Commission when it makes its decisions on the applicant's application.

1.4 Organization of Environmental Assessment

This EA is based on the applicant's combined CN, site, and route permit application; public comments received during the EA scoping comment period; and input from the Commission. This EA addresses the matters identified in the project scoping decision (Appendix A) and is organized as follows:

	Summary	Provides a summary of the project, along with its potential impacts, and possible mitigation measures
Chapter 1	Introduction	Provides an overview of the project, the stated project need, the state of Minnesota's role, and discusses the organization of the document.
Chapter 2	Regulatory Framework	Describes the regulatory framework associated with the project, including the state of Minnesota's permitting processes, the environmental review process, and the permits and approvals that would be required for the project.
Chapter 3	Project Description	Describes the engineering, design, construction, restoration, operation and maintenance, cost, and schedule of the project. This chapter also discusses alternatives to the project.
Chapter 4	Affected Environment, Impacts, and Mitigation Measures	Discusses the resources in the project area and the potential human and environmental impacts of the project. Identifies measures that could be implemented to avoid or mitigate impacts. Also included is a discussion of the project's potential cumulative effects.
Chapter 5	Application of Routing and Siting Factors to the Project	Discusses the merits of the applicant's proposed route relative to the siting and routing factors of Minnesota Rule 7850.4100.
Chapter 6	References	Provides references for resources used in development of the EA.

1.5 Sources of Information

The primary EA information source is the applicant's combined CN, site, and route permit application and other publicly available data sources. Additional sources of information are indicated in Chapter 6. Data provided by the applicant and from state agencies during the preparation of the EA is also included.

A number of spatial data sources, which describe the resources in the project area, were used in preparing this EA (Appendix B). Spatial data from these sources can be imported into geographic information system (GIS) software, where the data can be analyzed and potential impacts of the project and routing alternatives quantified (e.g., acres of forested wetlands within the anticipated project right-of-way ROW]).

2 Regulatory Framework

This chapter describes the regulatory framework for the project. The project requires four approvals from the Commission: a CN; a site permit; a transmission line route permit; and a pipeline routing permit. Commission Energy Infrastructure Permitting (EIP) staff are responsible for the environmental review of the project. The project will also require approvals from other entities with permitting authority over related actions.

On July 1, 2025, Department of Commerce Energy Environmental Review and Analysis (DOC EERA) staff moved to the Minnesota Public Utilities Commission Energy Infrastructure Permitting (PUC EIP) unit as directed by state law (Laws of Minn. 2024, ch.126, art. 7) and in response to permitting reform under Minnesota Statute 216I (2024).

The review of this application began under and will continue under Minnesota Statute 216E (2023). DOC EERA staff initiated environmental review of this proposal prior to July 1, 2025, and will continue to exclusively perform environmental review duties for this application under 216E (2023) as EIP staff. Likewise, analyst staff at the PUC will continue to exclusively perform analyst duties on this application as PUC staff.

2.1 Certificate of Need

A CN is required for a "large energy facility," defined in Minn. Stat § 216B.2421 as: "any electric power generating plant or combination of plants at a single site with a combined capacity of 50,000 kilowatts or more and transmission lines directly associated with the plant that are necessary to interconnect the plant to the transmission system." The project, with a generating capacity of 420 MW, meets the definition of a large energy facility and requires a CN.

2.1.1 Certificate of Need Criteria

The Commission must determine whether the project is needed or if another project would be more appropriate for the state of Minnesota. Minn. R. 7849 provides the criteria that the Commission must use in determining whether to grant a CN:

- The probable result of denial would be an adverse effect on the future adequacy, reliability, or efficiency of energy supply to the applicant, to the applicants' customers, or to the people of Minnesota and neighboring states.
- A more reasonable and prudent alternative to the proposed facility has not been demonstrated by a preponderance of the evidence on the record.
- The proposed facility, or a suitable modification of the facility, will provide benefits to society in a manner compatible with protecting the natural and socioeconomic environments, including human health.
- The record does not demonstrate that the design, construction, or operation of the proposed facility, or a suitable modification of the facility, will fail to comply with relevant policies, rules, and regulations of other state and federal agencies and local governments.

If the Commission determines that the applicant has met these criteria, a CN is granted. The Commission could place conditions on the granting of a CN; likewise, it has discretion to approve the project as proposed or with modifications. If the Commission denies the CN, this indicates that the Commission believes a more reasonable and prudent alternative is available.

Within 12 months of the submission of a CN application, the Commission must approve or deny a CN for the project (Minn. Stat. § 216B.243). The Commission may extend this time if it has good cause and must issue an order explaining the good cause justification for an extension.

2.2 Site Permit

Construction of a large electric power generating plant in Minnesota requires a site permit from the Commission (Minn. Stat. § 216E.03). The project's combustion turbines, with a combined generating capacity of 420 MW, meet the definition of a large electric power generating plant and thus require a site permit. Because the combustion turbines are fueled solely by natural gas, they are eligible for the alternative review process under Minn. Stat. § 216E.04.

2.3 Transmission Line Route Permit

Construction of a high-voltage transmission line in Minnesota requires a route permit from the Commission (Minn. Stat. § 216E.03). The project's two 345 kV transmission lines meet the definition of a high-voltage transmission line. The transmission lines are eligible for the alternative review process under Minn. Stat. § 216E.04 because they are less than 30 miles in length.

2.4 Site and Route Permit Criteria

The Commission is charged with selecting sites and routes that minimize adverse human and environmental impacts while ensuring electric power system reliability and integrity. Permits issued by the Commission include a permitted site or route as well as conditions specifying construction, restoration, and operation standards.

Minn. Stat. § 216E.03 identifies considerations that the Commission must take into account when designating site and routes, including minimizing environmental impacts and minimizing human settlement and other land-use conflicts. Specifically, the Commission considers the following 14 factors when making a site or route permit decision (Minn. R. 7850.4100):

A. Effects on human settlement, including, but not limited to, displacement, noise, aesthetics, cultural values, recreation, and public services.
B. Effects on public health and safety.
C. Effects on land-based economies, including, but not limited to, agriculture, forestry, tourism, and mining.
D. Effects on archaeological and historic resources.
E. Effects on the natural environment, including effects on air and water quality resources and flora and fauna.
F. Effects on rare and unique natural resources.
G. Application of design options that maximize energy efficiencies, mitigate adverse environmental effects, and could accommodate expansion of transmission or generating capacity.
H. Use or paralleling of existing ROW, survey lines, natural division lines, and agricultural field boundaries.
I. Use of existing large electric power-generating plant sites.
J. Use of existing transportation, pipeline, and electrical transmission systems or ROW.
K. Electrical systems reliability.

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

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

N. Irreversible and irretrievable commitments of resources.

The Commission must make specific findings that it has considered locating a route for a new transmission line along an existing transmission line ROW or parallel to existing highway ROW and, to the extent these are not used for the route, the Commission must state the reasons why (Minn. Stat. § 216E.03, Subd. 7). The Commission is charged with making a final decision on a permit within six months after finding the permit application complete. The Commission may extend this time limit for up to three months for just cause or upon agreement of the applicant.

2.5 Pipeline Routing Permit

Construction of a natural gas pipeline in Minnesota that operates at a pressure of more than 275 pounds per square inch (psi) requires a routing permit from the Commission (Minn. Stat. § 216G.02). The project's pipeline will operate at a pressure of 550 psi and thus requires a pipeline routing permit. The applicant is applying for a pipeline routing permit using the partial exemption process for the pipelines described in Minn. R. 7852.0600 - .0700.

2.5.1 Pipeline Permit Criteria

The Commission is charged with selecting routes that minimize adverse human and environmental impacts while ensuring pipeline reliability and integrity. Permits issued by the Commission include a permitted route and anticipated alignment, as well as conditions specifying construction, restoration, and operation standards. The Commission considers the following 10 factors when making a route permit decision (Minn. R. 7852.1900):

A. human settlement, existence and density of populated areas, existing and planned future land use, and management plans;

B. the natural environment, public and designated lands, including but not limited to natural areas, wildlife habitat, water, and recreational lands;

C. lands of historical, archaeological, and cultural significance;

D. economies within the route, including agricultural, commercial or industrial, forestry, recreational, and mining operations;

E. pipeline cost and accessibility;

F. use of existing rights-of-way and right-of-way sharing or paralleling;

G. natural resources and features;

H. the extent to which human or environmental effects are subject to mitigation by regulatory control and by application of the permit conditions contained in part 7852.3400 for pipeline right-of-way preparation, construction, cleanup, and restoration practices;

I. cumulative potential effects of related or anticipated future pipeline construction; and

J. the relevant applicable policies, rules, and regulations of other state and federal agencies, and local government land use laws including ordinances adopted under Minnesota Statutes, section 299J.05, relating to the location, design, construction, or operation of the proposed pipeline and associated facilities.

2.6 Environmental Review

The Commission accepted the combined application for a certificate of need, site permit, transmission line route permit, and pipeline routing permit as complete on July 14, 2025. The Commission approved joint environmental review and hearing processes, including preparation of an EA.

The Minnesota Power Plant Siting Act (Minn. Stat. § 216E.04), an alternative permitting process for certain qualifying energy projects, incorporates environmental review requirements to identify human and environmental impacts and mitigation measures, consistent with the Minnesota Environmental Policy Act (MEPA) (Minn. Stat. § 116D.04, subd. 2a). Commission EIP staff are responsible for conducting the project's environmental review process.

An EA describes and analyzes the potential human and environmental impacts of a project and mitigation measures that reduce impacts. An EA is intended to facilitate informed decision-making by the Commission and other entities with regulatory authority over a project. It also assists citizens in providing guidance to decision-makers regarding the project.

2.7 Scoping

The first step in preparing an EA is scoping. The purpose of scoping is to provide citizens, local governments, tribal governments, and agencies an opportunity to focus the EA on those issues and mitigation measures that are relevant to the proposed project. The scoping comment period was open from August 1, 2025, through August 27, 2025.

Commission staff held two public information and scoping meetings to provide information about the permitting process and the project, answer questions, and gather input on topics to study in the EA. The first meeting was held in person on August 11, 2025, at the Red Baron Arena and Expo in Marshall, Minnesota. Approximately nine members of the public attended this meeting. The second meeting was held virtually on August 12, 2025. One member of the public attended the virtual meeting.

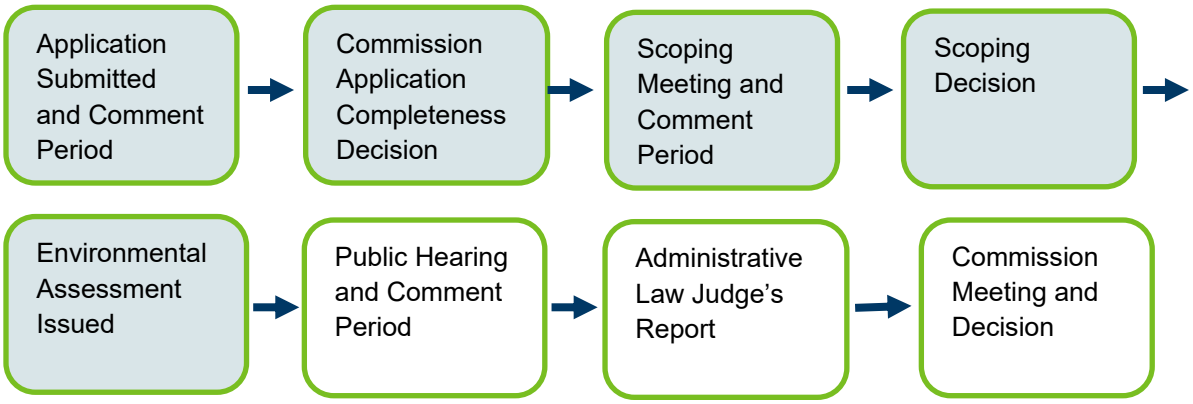
A written comment period ending on August 27, 2025, provided the public with an opportunity to submit comments on potential impacts and mitigation measures for consideration in the scope of the EA. During the written comment period, the Minnesota Department of Natural Resources (DNR), the Minnesota Department of Transportation (MnDOT), and Lyon County Planning and Zoning, submitted comments. In addition, the Laborer's International Union of North America (LIUNA) Minnesota and North Dakota also submitted a comment. No siting or routing alternatives were suggested during scoping.

EIP staff provided a summary of the scoping process and recommendations to the Commission on September 5, 2025. The Commission concurred with EIP's recommendations on October 29, 2025, and authorized EIP to include only the site and routes proposed by the applicant in the scoping decision for the EA. The Commission issued the scoping decision for the EA on October 30, 2025, (Appendix A), identifying the potential impacts to be evaluated in this EA.

Figure 2-1 outlines the environmental review and permitting process for the project.[2]

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

Figure 2-1 Permitting Process Summary



2.8 Public Hearing

Upon completion of the EA, a public hearing will be held in the project area. At the public hearing, citizens will have the opportunity to submit comments, present evidence, and ask questions. Citizens can advocate for conditions to be included in the project's permits. Members of the public can also comment on the EA regarding any information that might be inaccurate or missing in the document. EIP staff will respond to comments on the EA received during the hearing comment period, but staff are not required to revise or supplement the EA document.

After the public hearing, the ALJ will submit a report to the Commission with findings of facts, conclusions of law, and recommendations regarding the project. Upon completion of the environmental review and hearing process, the record will be presented to the Commission for final permitting decisions.

2.9 Commission Decision

After considering the entire record, including the EA, input received during the public hearings, and the ALJ's findings and recommendations, the Commission will determine whether to grant a CN, a site permit, a transmission line route permit, and a pipeline routing permit. The site and route permits will include conditions specifying construction and operating standards in addition to mitigation plans and project-specific mitigation measures. Commission decisions are anticipated in the second quarter of 2026.

2.10 Other Permits and Approvals

The site and route permits from the Commission are the only state permits required for siting and routing the project. The site and route permits supersede local planning and zoning and bind state agencies (Minn. Stat. § 216E.10); therefore, state agencies are required to engage in the Commission's permitting process to aid in the Commission's decision-making and to indicate sites or routes that are not permittable.

However, several federal, state, and local permits may still be required for construction and operation of the project. All permits after the issuance of site and route permits and necessary for the project must be obtained by the applicant. The information in this EA may be used by the subsequent permitting agencies as part of their environmental resource impact evaluation. Table 2-1 lists permits and approvals that could be required for the project, depending on the final design.

Table 2-1 Potential Permits and Approvals Required for the Project

Unit of Government	Type of Application	Purpose
U.S. Fish and Wildlife Service (USFWS)	Bald and Golden Eagle Protection Act Consultation	Review to prevent take of bald or golden eagles.
U.S. Fish and Wildlife Service (USFWS)	Migratory Bird Treaty Act Consultation	Review to prevent take of protected migratory bird species.
U.S. Fish and Wildlife Service (USFWS)	Section 7 Endangered Species Act Consultation	Establishes conservation measures for endangered species.
Federal Aviation Administration (FAA)	Notice of Proposed Construction or Alteration	Potentially required to accommodate construction and operation of exhaust stack or other structures and temporary cranes.
U.S. Environmental Protection Agency (EPA)	Federal Aviation Administration (SPCC) Plan	An SPCC Plan will be required for Project facilities with above ground oil storage exceeding 1,320 gallons.
U.S. Environmental Protection Agency (EPA)	Acid Rain Permit (Title IV Permit)	Acid Rain Program regulations provide that and new, affected utility unit that serves generators with total nameplate capacity greater than 25 Mwe is required to obtain an acid rain permit.
Department of Energy (DOE)	Exemption to allow burning of natural gas for power production (DOE, 10 Code of Federal Regulations 503).	Required prior to operation.
Native American Tribes	Coordination in support of Section 106 of the National Historic Preservation Act to determine impacts on traditional cultural properties and/or other resources of tribal significance	Coordination to prevent impacts to traditional cultural properties and/or other resources of tribal significance.
Minnesota Public Utilities Commission	Certificate of Need, Site Permit, Route Permits, and Pipeline Partial Exemption	Certificate of Need, Site Permit, Route Permits, and Pipeline Partial Exemption are required for construction and operation of a large electric generating facility, high voltage transmission lines, and pipeline.
Minnesota Department of Natural Resources (DNR)	State Threatened and Endangered Species Consultation	Consultation to avoid, minimize, and mitigate impacts to state-listed species
Minnesota Department of Natural Resources (DNR)	Water Appropriation Permit	If well use exceeds the 10,000-gallon per day or 1,000,000 gallons per year thresholds.
Minnesota Pollution Control Agency (MPCA)	Authorization to Discharge Stormwater Associated with Construction Activity Under the NPDES/State Disposal System (SDS) Program, MNR100001	An NPDES permit will be required for construction activity that disturbs one or more acres of land.
Minnesota Pollution Control Agency (MPCA)	NPDES/SDS Industrial Stormwater General Permit and SWPPP	Required for narrative activities including nuclear, natural gas fired, and any other fuel source used for steam electric generation; or having a primary SIC code.

Unit of Government	Type of Application	Purpose
Minnesota Pollution Control Agency (MPCA)	Individual Clean Air Act Title V Permit	The facility air management is designed to maintain emissions below the PSD major source pollutant thresholds of 250 tpy. The Project will likely exceed Title V thresholds (100 tpy), thus the Project will require a Title V permit to maintain emission limits below these thresholds.
Minnesota Pollution Control Agency (MPCA)	Wastewater Pond General Permit	Required for construction of a wastewater pond.
Minnesota Pollution Control Agency (MPCA)	Very Small Quantity Generator License	Generation of 220 pounds or 22 gallons or less of hazardous waste per month.
Minnesota Pollution Control Agency (MPCA)	Aboveground Storage Tank Notification	Underground storage tanks with a fuel capacity of 110 gallons or Aboveground storage tanks larger than 500 gallons of fuel capacity are required to be registered with MPCA.
Minnesota Department of Health	Preliminary Well Construction Assessment and Approval and Well Notification	Required for on-site water well.
Minnesota Department of Labor and Industry	Request for Electrical Inspection	Required to ensure proposed Project is in compliance with state electrical codes.
Minnesota Department of Labor and Industry	Request for Plumbing Inspection	Required to ensure proposed Project is in compliance with state plumbing codes.
Minnesota State Historic Preservation Office (SHPO)	National Historic Preservation Act Section 106 consultation; Minnesota Field Archaeology Act; Minnesota Historic Sites Act	Ensures adequate consideration of impacts on significant cultural resources.
Minnesota Department of Agriculture (MDA)	Agricultural Impact Mitigation Plan	Establishes measures for protection of agricultural resources.
Minnesota Department of Transportation (MNDOT)	Utility Permit	Authorizes accommodation of utilities along highway rights-of-way.
Minnesota Department of Transportation (MNDOT)	Driveway Access	Construction of access roads or driveways within trunk highway right-of-way.
Minnesota Department of Transportation (MNDOT)	Oversize/Overweight Permit	Authorizes the use of roads for oversize or overweight vehicles.
Minnesota Department of Transportation (MNDOT)	Drainage Permit	Directing stormwater to MNDOT right-of-way.
Minnesota Department of Transportation (MNDOT)	Tall Towers Permit	Required for tall, non-transmitting structures located outside the zoned territory of a public use airport with airport zoning in place.
Lyon County	Utility Permit	All new utility lines and pipelines in a county right-of-way would require prior permit approval.
Lyon County	Driveway Permit	Construction of a new driveway or entrance requires a permit.

Unit of Government	Type of Application	Purpose
Lyon County	Permit to Tile into Road Ditch	Required for construction of drain tile that will result in additional drainage to county regulated ditches.
Lyon County	Septic Permit (Subsurface Sewage Treatment System) Permit	Sanitary wastewater will be discharged to an onsite septic system, triggering a need for a septic permit through Lyon County. If exceeding 10,000 gallons per day, permits will need to be acquired at the State level.

3 Project Description

The applicant is proposing to construct the generation station, the transmission lines, and the pipeline all within the project area. This chapter describes the generation station, the transmission lines, and the pipeline structures as well as components that could be used for the project and the project's associated facilities. Additionally, this chapter discusses how the project will be constructed, its anticipated costs, and schedule. This chapter also discussed alternatives to the project.

3.1 Project Engineering and Design

3.1.1 Generation Station

The generation station consists of two 210 MW CTs and associated facilities. It would also include on-site operation facilities, water bath heater, emergency diesel fire pump, and an emergency diesel generator. (Map 1-1).

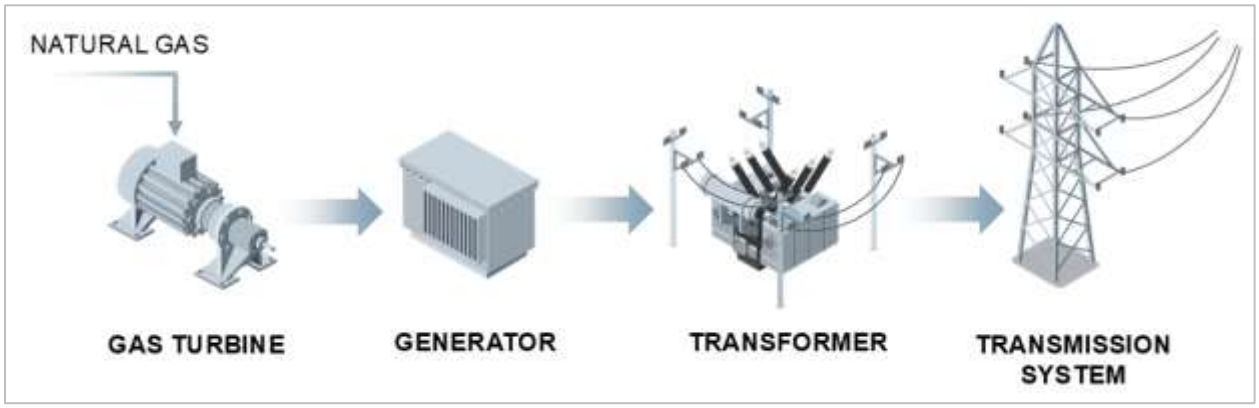
3.1.1.1 Operating Cycle and Plant Components

The generation station includes natural gas-fired CTs, which would be capable of co-combusting hydrogen. The applicant would be contracting with Northern Border to perform the tie-in to its main, 42-inch diameter natural gas pipeline located on the southwest corner of the project area and to construct a metering station to supply gas for the site. From the metering point, the applicant would continue the pipeline interconnection to the CTs. The anticipated natural gas interconnection pipeline is anticipated to be a 12-inch diameter pipe with a typical pressure of 550 pounds per square inch gauge (psig). Because of the proximity to the existing pipeline tie-in and the capacity of this pipeline, no on-site fuel storage would be required.

A simple cycle CT is an electric generating technology in which electricity is produced from the controlled combustion of natural gas, which drives a turbine and attached electrical generator. The technology is generally similar to that of a jet engine. A schematic of a single CT is shown in Figure 3-1. The generation station consists of the following equipment in series:

- Gas Turbine – part of the CT where the combusted natural gases expand to rotate a turbine-generator shaft.
- Generator - converts mechanical energy to electrical energy. As the turbine shaft spins within a magnetic field, it induces an electric current.
- Transformer - Electricity from the generator is transformed from 18 kV to the transmission voltage of 345 kV.

Figure 3-1 One-Unit, Simple-Cycle Combustion Turbine Facility Schematic



3.1.1.2 Exhaust Stacks

In a simple cycle CT facility, the exhaust stacks manage the high-temperature gases produced during the combustion process. Each exhaust stack is estimated to be 87 feet from the base site elevation and would stand at the end of the respective CT. These stacks are designed to expel exhaust gases, which can reach temperatures up to 600°C (1,112°F) or higher. The stacks are typically constructed from high-grade, heat-resistant materials to withstand these extreme conditions and are engineered to minimize backpressure on the CT, yielding optimal performance. Additionally, the exhaust stacks may incorporate noise attenuation features to reduce the acoustic impact of the high-velocity exhaust gases. The exhaust stack designs would also consider environmental regulations, including emissions control and the dispersion of pollutants, for compliance with state and federal ambient air quality standards and inhalation health risk benchmarks.

3.1.1.3 Electrical Interconnection

The generation station would be connected to the electrical grid via the Garvin Substation. Operating as a peaking plant, the generation station would be dispatched after all incrementally lower cost and “must run” options. The generation station is expected to be dispatched primarily during higher system load periods in the summer and during peak demand periods in the winter months.

The generation station would also serve to support changing and intermittent system load requirements due to variable non-dispatchable generation such as wind power. The generation station is anticipated to be able to start generating electricity within 12 minutes and has ability to increase power output at approximately 16 MW per minute at any conditions with a maximum increase of 32 MW per minute when the unit is stable. The generation station would be operated and maintained by approximately five staff.

Energy generated by the project would be transmitted to step-up transformers to increase the voltage from the turbine generators (18 kV) to the transmission voltage level of 345-kV. Safety measures, such as circuit breakers and relays, would safeguard both the equipment and connections to the electrical grid. Additional detail can be found in Section 3.1.2.

3.1.1.4 Facility Buildings and Structures

The generation station would include the following facilities:

- Two CTs
- On-site operation facilities (Control room, offices, warehouse)
- Two 1,500 kW emergency diesel generator to provide emergency power
- One 350 hp emergency diesel fire pump
- One 9.9 MMBtu/hr, natural gas-fired water bath heater to heat the natural gas prior to combustion

3.1.1.5 Fuel Supply

The generation station would be fueled entirely by the natural gas pipeline, with one emergency diesel generator serving as backup.

3.1.1.6 Water Supply/Wastewater Management

Water would be needed for the project for several processes including:

- Domestic use
- Fire protection
- Equipment closed-cooling system make-up water

Water for the site is expected to be sourced from an on-site well(s), with the underlying groundwater resources anticipated to provide a reliable and sufficient water supply for plant operations. The CTs would perform washdowns approximately two times per year using around 21 gallons per day, averaged over the whole year. Equipment cooling would use a closed-cycle system that would remove heat to air-cooled heat exchangers (radiators) located outside of the building. Water would be used to initially fill the system and to replace any water lost during maintenance.

3.1.1.7 Air Emission Control

Air emission control equipment would be included to achieve and maintain compliance with permitted air emission levels. The project would control nitrogen oxide (NOx) emissions through use of dry low-NOx burners in the CTs. Appropriate combustion practices would be used to control emissions of fine particulates, carbon monoxide (CO), and volatile organic compounds (VOCs). The CTs would be permitted for an approximately 35 percent annual capacity factor. Meaning that the CTs would operate at 35 percent of their maximum capacity and would only operate when the grid requires additional power, not continuously.

3.1.2 Transmission Lines

The transmission lines would be double circuit 345 kV, originating out of the generation station and terminating at the proposed Garvin Substation (Map 1-1).

3.1.2.1 Structures and Conductors

Monopole steel structures are anticipated to be used for the double circuit configuration. Multiple pole designs may be used for angles and dead-end structures. All structures are proposed to be weatherized

steel and would range in height from 90 to 160 feet tall. The typical spans between structures are anticipated to be approximately 1,000 feet. The structures would be installed on drilled pier concrete foundations, with specialty foundations being required for specific geotechnical or soil conditions. Foundation depth would be based on site-specific conditions and detailed engineering design. Depth could vary from 30 to 40 feet for drilled pier concrete foundations or up to 60 to 70 feet for specialty foundations.

A double circuit transmission line carries six phases, or conductors, and two separate shield wires. Each 345 kV line would utilize bundled, or twisted pair, two 636 kilo circular mils (kcmil) Aluminum Conductor Steel Reinforced or similar performance conductor. These double bundled conductors would have a capacity equal to or greater than 3,000 amps. This type of conductor is the preferred conductor in areas prone to galloping due to icing with wind. Galloping is where conductors oscillate in large vertical motion due to wind or ice loading. This can result in outages or damage to insulators leading to mechanical failures.

The transmission lines would be designed to meet or surpass relevant local and state codes, including the National Electric Safety Code (NESC) and Xcel Energy standards. Applicable standards would be met for construction and installation, and applicable safety procedures would be followed during design, construction, and after installation. Figure 3-2 provides a photo of a typical 345 kV structure that is anticipated to be used for the project.

Figure 3-2 Representative Monopole Structure

3.1.2.2 Route Width

The transmission line must be constructed within the route designated by the Commission unless, after permit issuance, permission to proceed outside of the route is sought by the applicant and approved by

the Commission. The applicant is requesting the 155-acre project area as the route (Map 1-1). The transmission lines would be located entirely within the project area.

3.1.2.3 Right-of-Way

The ROW is the specific area required for the safe construction and operation of the transmission line, where such safety is defined by the NESC and the NERC reliability standards. The ROW must be within the designated route and is the area for which the applicant obtains rights from private landowners to construct, operate, and maintain the line.

The applicant has requested a 150 foot ROW for the transmission lines. For this project, the transmission lines' rights-of-way would be located entirely within Xcel's property as shown on Map 1-1.

3.1.3 Pipeline

The pipeline would interconnect from an existing natural gas pipeline (also known as the Northern Border Pipeline) owned by TC Energy. The pipeline would be approximately a 1,400-foot natural gas pipeline, consisting of approximately 1,000 feet of up to 12-inch diameter pipe and two "branches" of up to 400 feet of 8-inch diameter pipe, each connecting to a CT, and associated facilities (Map 1-1). The pipeline is anticipated to operate at approximately 450-550 psig and would include a 150-foot by 150-foot fenced area with a fuel metering station.

3.1.3.1 Right-of-Way

The applicant has requested a 100-foot ROW for the pipeline. For this project, the entire pipeline would be located within the project area on Xcel-owned property. The amount of additional temporary workspace has not yet been determined but is expected to remain within the project area.

3.1.3.2 Land Requirements

The pipeline would be installed using an open cut trenching method. Typical trench dimensions are anticipated to have a depth of 6 feet, a bottom width of 4 feet, and top width of 7 feet. Total excavated material is estimated to be approximately 1,200 cubic yards.

The pipeline would be buried to a depth that is compliant with U.S. Department of Transportation pipeline standards (49 Code of Federal Regulations (CFR) Part 192.327) and Minn. Stat. § 216G.07, subd. 1, which requires buried depth of at least 4.5 feet within actively cultivated agricultural lands. Typical depth of cover above the pipeline is anticipated to be 5 feet or more.

3.1.3.3 Design and Operational Specifications

Pipeline design is ongoing, and final specifications may differ depending on final design and site-specific conditions. The applicant's portion of the pipeline would be designed to American Society of Mechanical Engineers (ASME) Standard B31.1 while Northern Borders's portion of the pipeline would be designed to ASME Standard B31.8; the pipeline is intended to be designed with factors that exceed anticipated maximum operational factors.

3.1.3.4 Associated Facilities

The pipeline would feature a 150-foot by 150-foot fenced-in area that would include a small building to house a filter and a metering station. The pipeline would consist primarily of in-line components including

isolation valves, pressure reducing valves to bring down the pressure in the existing Northern Border pipeline from approximately 1,400 psig to a range of 550 to 400 psig, and a natural gas fired water bath heater used to raise the temperature of the natural gas for use in the CTs to approximately 60 degrees Fahrenheit (F), pending the gas quality.

3.1.3.5 Product Capacity Information and Description

Processed natural gas from the pipeline would have a design capacity of 150,000 cubic feet per day at minimum flow with a single CT running and 1,075,000 cubic feet per day at maximum flow with two CTs running. Applicable Material Safety Data Sheets are provided in Appendix C.

3.2 Construction

Construction would begin after necessary federal, state, and local approvals are obtained and final plans have been approved by the Commission. The precise timing of construction would consider permit condition requirements, environmental restrictions, available workforce, and materials. Construction would follow the applicant's standard construction and mitigation best practices developed to minimize temporary and permanent impacts to land and to the environment.

3.2.1 Generation Station

Construction of the generation station would progress as follows:

- Surveying and staking the generation station footprint within the project area;
- Clearing and access preparation;
- Grading or filling if necessary;
- Installing underground duct bank and cable;
- Installing underground pipe utilities;
- Installing concrete foundations for permanent plant equipment;
- Installing engineered equipment such as the CTs, pumps, electrical gear, air compressors, and heaters necessary for the operation of the units;
- Installing structural steel to support equipment and interconnecting piping and electrical materials;
- Placing above ground piping for interconnection of equipment; and,
- Placing above ground electrical for interconnection of equipment.

The applicant has committed to hiring local union craft workers for project construction using various construction equipment including excavators, haul trucks, and a mixture of heavy and light cranes.

3.2.2 Transmission Lines

Construction of the transmission lines is anticipated to progress as follows:

- Survey marking and site preparation
    - Surveying and staking Transmission Line alignments
    - Clearing and access preparation
    - Grading or filling if necessary

- Structure Installation
    - Installing concrete foundations
    - Installing poles, insulators, and hardware
- Stringing conductors;
    - Installing aerial markers required by state or federal permits, as applicable
- Restoration.

3.2.2.1 Survey Marking and Site Preparation

Prior to the arrival of construction crews, surveyors will stake the land disturbance limits for the construction corridor. The Gopher State One-Call system will be used to locate and mark all existing underground utilities prior to the start of vegetation clearing to avoid impacts to existing utilities. If crossing an underground utility is required, the applicant will protect existing infrastructure while using heavy equipment during construction, such as construction matting, and will coordinate with the utility owner.

Construction crews will begin preparing the right-of-way by clearing vegetation to comply with NESC standards (i.e., trees and other tall-growing vegetation will be removed), and the construction crew will have safe access to the construction site that is free of debris.

The final survey staking of pole locations will occur after vegetation has been removed and prior to the installation of the structures.

3.2.2.2 Structure Installation

Transmission line structures are generally designed for installation at existing grades. Therefore, structure sites would not be graded or leveled unless it is necessary to provide a reasonably level area for construction access and activities. For example, if vehicles or installation equipment cannot safely access or perform construction operations properly near the structure, minor grading of the immediate terrain may be necessary.

Construction may require the use of many different types of construction equipment, including mowers, cranes, backhoes, digger-derrick line trucks, drill rigs, dump trucks, front-end loaders, bucket trucks, bulldozers, flatbed tractor-trailers, flatbed trucks, pickup trucks, concrete trucks, helicopters, and various trailers or other hauling equipment. Excavation equipment is often set on wheeled or track-driven vehicles. Construction crews will attempt to use equipment when opportunities are available that minimizes impacts to the land. The applicant anticipates using available space within the project area, as shown on the Map 1-1, for temporary staging and laydown yard purposes. Staging involves delivering the equipment and materials necessary to construct the transmission lines. Structures are delivered to staging areas, and materials are stored until they are needed for the project.

The applicant will employ standard construction and mitigation practices as well as industry-specific Best Management Practices (BMPs). BMPs address ROW clearing, erecting transmission line structures, and stringing transmission lines. BMPs for each specific project are based on the proposed schedules for activities, prohibitions, maintenance guidelines, inspection procedures, and other practices. In some circumstances, these activities, such as schedules, are modified to incorporate BMP installation that will assist in minimizing impacts to sensitive environments. Any contractors involved in the construction of the transmission line are required to adhere to these BMPs. Improvements to existing access or construction

of new access may be required to accommodate construction equipment. Field approaches may be constructed or improved. Where applicable permits would be obtained for new access from local road authorities, working with them to ensure proper maintenance of roadways traversed by construction equipment. The applicant would comply with all requirements of its Stormwater Pollution Prevention Plan (SWPPP) and vegetation management practices.

After right-of-way clearing and access preparation has been completed, pole and foundation installation will begin. Project structures are anticipated to require drilled pier concrete foundations, which consist of large diameter concrete cylinders and reinforced steel are typically between 7 to 10 feet in diameter and are typically 20 to 60 feet deep, depending on soil conditions. An angle or dead-end structure may require a foundation up to 12 feet in diameter. The actual diameter and depth of the hole (and foundation) depend on structure design and soil conditions that are determined during the initial survey and soil testing phases. Concrete would likely be trucked to the site from a local concrete batch plant and filled around a steel rebar support cage and anchor bolts. Once the foundation is cured, the pole is bolted to the foundation. Sections of transmission structures will be moved from staging areas and delivered to the foundation and assembled on site. Using a crane, the pole is lifted and placed. Insulators and other hardware are attached.

3.2.2.3 Conductor Stringing

Conductor stringing is the last major component of the transmission lines construction and requires brief access to each structure to secure the conductor wire to the insulator hardware and the shield wire to clamps once final conductor sag, compliant with applicant procedures and minimum code clearances, is established. This access can be conducted by crane or helicopter. The electrical conductors would be strung on support structures using a pulley system or a tensioner mounted on the back of a digger/derrick truck.

3.2.3 Pipeline

Construction of the pipeline is anticipated to progress as follows:

- Survey marking and site preparation
- Soil separation
- Welding and inspection
- Pipeline trenching and lowering
- Trench backfilling
- Hydrostatic testing
- Restoration

3.2.3.1 Survey Marking and Site Preparation

Before construction begins, crews would stake the centerline and exterior boundaries of the pipeline alignment. Exterior boundary stakes would mark the limit of approved disturbance areas and would be maintained throughout the construction period. The applicant and its contractors will contact the Gopher One-Call System to identify and mark the locations of underground utilities. During staking, equipment involved in construction would be moved into the project area using existing roads for access wherever practicable.

Once the pipeline alignment is properly staked, clearing equipment would be brought in to remove the existing vegetation, as applicable. After clearing, temporary erosion control measures would be installed in accordance with the SWPPP.

3.2.3.2 Soil Separation

Topsoil would be stripped and segregated during construction as specified in the project plans, commitments, and/or permits. Topsoil would be separated from the subsoil because it has the highest concentration of organic matter and would be used to enhance the revegetation process during restoration.

3.2.3.3 Welding and Inspection

Due to the short length of the proposed pipeline, it would be fabricated from steel piping and prefabricated fittings, which would be welded together on-site to complete the system. Welds would be inspected per ASME B31.8, and the piping would be coated as required for either aboveground or underground installation.

3.2.3.4 Pipeline Trenching and Lowering

Construction personnel would use backhoes and/or ditching machines to excavate a trench that is approximately six feet deep and 10 feet wide at the top. To the extent practicable, trench walls would be vertical. The pipe would then be lowered into the trench using side-boom tractors.

To the extent that there is water in the trench, trench dewatering may include use of a dewatering mechanism, such as a straw bale dewatering structure with a geotextile filter bag or other suitable measure, to provide additional filtration near sensitive resource areas in accordance with the project SWPPP. If water is discharged to a well-vegetated upland area, dewatering filter bags and controlled discharge rates would be used to minimize the potential for erosion and subsequent release of sediment.

3.2.3.5 Trench Backfilling

Once the pipe is installed, the trench would then be backfilled to match existing grade to the extent practicable. Construction debris would not be permitted in the backfill. If excessive amounts of rocks are included in the backfill, the pipeline would be protected with rock shield or similar protective coating and/or backfilled with clean padding before backfilling with the rocky material.

3.2.3.6 Hydrostatic Testing

After backfilling, the applicant would hydrostatically test the pipeline in accordance with Pipeline and Hazardous Materials Safety Administration (PHMSA) regulations. Hydrostatic testing confirms that the pipeline system is capable of operating at the design pressure. Hydrostatic testing involves filling a segment of the pipeline with water and maintaining a prescribed pressure for a specified amount of time. The length of test segments would be determined by topography and water availability. Hydrostatic test water use and discharge would be consistent with applicable state rules.

3.3 Restoration and Cleanup

Construction crews will attempt to minimize ground disturbance whenever feasible, but areas will be disturbed during the normal course of work. Once construction is completed, disturbed areas that would no longer be used for agricultural production would be restored via broadcast seeding using a native seed

mix comprised of species such as big bluestem (*Andropogon gerardi*), Indian grass (*Sorghastrum nutans*), and switchgrass (*Panicum virgatum*). The applicant would monitor areas where seeding and erosion control measures have been implemented and would follow-up with reseeding measures where vegetative cover by the restoration seeding or plantings is inadequate to provide long term stability and sustainable native plant communities.

Appropriate erosion and sediment control BMPs will also be installed. Erosion control measures may consist of anchored straw mulch, hydromulch, wood chip mulch, erosion control blankets, or other suitable measures. When used, the contractor would be responsible for acquiring mulch that is certified free of noxious or invasive weeds. Preventing the introduction of noxious weeds and invasive species is accomplished by cleaning equipment prior to on-site arrival, making sure visible dirt or plant parts are removed using methods such as vehicle washing, high pressure compressed air blowers, or brushing, as applicable. If used, erosion control blanketing would be wildlife-friendly with non-welded weaves to minimize impacts to small wildlife. In cases where soil compaction has occurred, the construction crew or a restoration contractor would use methods deemed suitable for the site to alleviate the compaction.

The applicant may install shrub plantings along the western and northern perimeters of the project area as a wind and snow break. Typical native shrubs to be considered include red osier dogwood (*Cornus sericea*), gray dogwood (*Cornus racemosa*), elderberry (*Sambucus canadensis*), hazelnut (*Corylus americana*), and silver buffaloberry (*Shepherdia argentea*), typically planted between five to ten feet apart and allowed to grow up to 20 feet tall.

Additionally, temporary restoration before the completion of construction in some portions of the project area may be required per National Pollutant Discharge Elimination System (NPDES) and Minnesota Pollution Control Agency (MPCA) construction permit requirements.

After construction activities have been completed, the applicant will contact applicable adjacent property owners to discuss any damage that has occurred during construction. If drain tile or other property have been damaged or otherwise affected, the applicant will repair damages or reimburse adjacent property owners to repair the damages. The applicant would confirm that township, city, and county roads used for access during construction would be restored to their prior condition. The applicant would coordinate with township road supervisors, city road personnel, or county highway departments to document existing road conditions and address any issues that arise during construction with roadways to ensure the roads are adequately restored, if necessary, after construction is complete.

3.4 Operation and Maintenance Procedures

3.4.1 Generation Project

The output of the CTs depends on ambient weather conditions (primarily temperature and humidity), fuel, and altitude. For purposes of this application, nominal generating capacity for each CT is considered to be approximately 216 MW at summer ambient conditions of 95°F and relative humidity of 20 percent, with an altitude of 1,540 feet above sea level.

The generation station will be operated and maintained by approximately five staff, and the site would include the necessary infrastructure to accommodate this staff. The generation station's service life is anticipated to be approximately 40 years. It is expected to be operationally ready and able to produce power for greater than 95 percent of the year.

The scope and frequency of CT maintenance work would be in accordance with power industry standards and equipment manufacturer recommendations. The estimated service life of the units is in excess of 35 years and is dependent upon the number and type of starts for peaking service. The frequency of major CT component maintenance is based on the number of unit start-ups and firing hours, and falls into two categories:

- Hot gas path inspection and component replacement would occur about every 1,800 factored starts or 32,000 firing hours, requiring an 11- to 13-day outage; and
- Major overhauls would be scheduled about every 3,600 factored starts or 64,000 firing hours and require a 23-to-25-day outage.

Based on the anticipated capacity factors and an average of six hours of operation per start, the CT units are anticipated to require major maintenance every five to ten years. The project would also respond to changing power demand. The project will have the ability to ramp at approximately 32 MW per minute.

Operating the diesel generators involves several key steps to ensure they function optimally during emergencies:

- Pre-Start Checks: Before starting the generators, it's essential to perform a series of checks, including fuel levels, oil levels, coolant levels, and battery charge. Checking that all systems are within operational parameters helps prevent issues during operation.
- Starting the Generator: The generators are typically started using an automatic transfer switch that detects power outages and starts the generator within seconds. Manual start options are also available for testing and maintenance purposes.
- Load Management: Once the generator is running, it needs to be connected to the load. This involves gradually increasing the load to avoid sudden surges that could damage the generator or connected equipment.
- Monitoring: Continuous monitoring of key parameters such as voltage, frequency, oil pressure, and temperature is crucial. Modern generators often come equipped with digital control panels that provide real-time data and alerts.

Regular maintenance is important for the longevity and reliability of the diesel generators. Main aspects of generator maintenance includes:

- Routine Inspections: Conducting regular inspections helps identify potential issues before they become serious problems. This includes checking for leaks, inspecting belts and hoses, and checking that all connections are secure.
- Oil and Filter Changes: Regularly changing the oil and filters is essential to keep the generator running smoothly. This typically involves replacing the oil filter, fuel filter, and air filter at specified intervals.
- Coolant System Maintenance: The coolant system should be checked and flushed periodically to prevent overheating. This check helps make sure the coolant levels are adequate and the system is free from contaminants.
- Battery Maintenance: The batteries that start the generator need to be kept in good condition. This involves checking the charge, cleaning terminals, and checking that the electrolyte levels are correct.

- Load Testing: Periodic load testing makes sure the generator can handle its full rated load. This helps verify that the generator will perform as expected during a power outage.
- Record Keeping: Maintaining detailed records of all maintenance activities, inspections, and tests tracks the generator's performance and future maintenance schedule.

3.4.2 Transmission Lines

The project is designed and will be maintained in accordance with the NESC and the applicant's standards. In general, transmission lines offer a high level of reliability and lengthy service life, often spanning decades, and seldom undergo complete retirement. Transmission lines have very few mechanical elements, are designed to function for decades, and are constructed to withstand weather extremes typical of the region. Transmission lines require only moderate maintenance, particularly in the first few years of operation. The applicant would be responsible for the operation and maintenance, which would perform annual aerial inspections inspection of the lines from the ground approximately every four years. Typically, one to two workers are required to perform aerial inspections with drones and three workers are required to perform the ground inspections; ground inspections are performed by both driving and walking. Any defects identified during these inspections will be assessed and corrected.

The applicant would also perform necessary vegetation management for the line either through mechanical clearing or herbicide use, generally occurring every four years. The annual inspections are the principal operating and maintenance cost for transmission facilities. 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.

The transmission lines service life, as estimated by the applicant, is approximately 60 years. However, practically speaking, high voltage transmission lines are seldom completely retired.

3.4.3 Pipeline

As a natural gas pipeline, the project's design, construction, maintenance, and operation functions are regulated by PHMSA under 49 CFR Part 192, which governs transportation of hazardous liquids by the pipeline. The applicant would abide by applicable PHMSA regulations and would coordinate directly with various regional, state, and local agencies, and other stakeholders for compliance.

3.5 Project Costs

The current estimated capital cost of the project is based on a December 2028 commercial operation date. This estimated project cost includes information currently available to the applicant regarding the extent and duration of tariffs that may be applicable to project facilities. Total estimated capital costs for the project are within the range of $650 million to $800 million, excluding allowance for funds used during construction costs.

The applicant requests that the Commission allow the final project cost to be adjusted, either up or down, to reflect changes in pricing due to government actions, such as tariffs or trade investigations. This adjustment mechanism allows for significant disruptions to supply and market prices to be accounted for (reference). More generally, the estimate includes design and engineering, procurement of equipment, site preparation, building construction, equipment installation, plant start-up and testing, and other costs associated with the development and construction of the project. Because of the proximity of the project

to an existing gas pipeline and 345 kV transmission substation, the capital costs for the project are lower than they would be at another location.

Annual operating costs will vary depending on how often the unit is run. As previously noted, the project is expected to have a service life of approximately 40 years. Annual operating costs are estimated to be between $4 million and $6 million.

3.6 Project Schedule

It is anticipated that commercial operation of the project will begin in December 2028. This date presumes the MEC project will go into service in June 2028. Actual construction is expected to begin in the summer of 2026 to achieve that in-service date (Table 3-1).

Table 3-1 Project Schedule

Project Milestone	Estimated Date
Commission CN and permit decisions	Spring 2026
Start of construction	Summer 2026
Commercial operation date	December 2028

3.7 Alternatives to the Project

As described in Chapter 2, the Commission must determine if the project is needed or if another project or no project would be more appropriate for the state of Minnesota.

3.7.1 Need for the Project

The purpose of the project, as described in Chapter 1.2, is to construct a generating facility and associated transmission line and pipeline infrastructure to deliver reliable electrical service to meet anticipated energy demands. The project meets this need for firm dispatchable resources and is key to maintaining system reliability. The project is also needed to support the continued transition away from carbon-emitting resources and supports providing generation following the applicant's plans to retire its last coal-fired generating unit in 2030. In addition, the project supports regional recommendations to better coordinate gas and electric infrastructure and to build resources to maintain services during extreme weather events. Lastly, the project is needed to support the MEC and renewable resources that are planned to be interconnected with that project, offsetting the need for two additional standalone synchronous condenser units at the Garvin Substation.

3.7.2 System Alternatives

This chapter evaluates alternatives to the project that may meet the need for the project. These alternatives are known as system alternatives. The scoping decision (Appendix A) describes the system alternatives that will be analyzed in this EA.

- No-build alternative
- Demand side management
- Purchased power

- Use of renewable energy sources
- Transmission rather than generation

This chapter discusses whether these system alternatives are feasible (whether they can be engineered, designed, and constructed) and available (whether the alternative is readily obtainable and at the appropriate scale), and, if so, whether they can meet the project need.

3.7.2.1 No-build Alternative

In the applicant's 2024 IRP docket, the Commission determined that the applicant would need to develop up to 800 MWs of firm dispatchable resources to meet electrical demand (reference (4)). Under a no-build alternative, this need would remain unmet. Under a no-build alternative scenario, system reliability and resource adequacy are also expected to be affected when the applicant retires its last coal-fired generation unit by the end of 2030. In addition, under the no-built alternative, two additional synchronous condensers would need to be constructed to support the already approved MEC project.

The no-build alternative would avoid the potential human and environmental impacts of the project as described in this EA. Further the no-build alternative is feasible and available. However, this alternative would not meet the need for the project.

3.7.2.2 Demand Side Management

Demand side management incentivizes individuals and businesses to reduce or shift their electrical usage. Examples include smart thermostats or water heaters, rooftop solar, lighting efficiency, or home weatherization. The applicant noted in its joint application that it analyzed conservation and demand side management tools that reduce overall demand, as well as tools that reduce peak demand, as part of the system alternatives analysis. The applicant notes that it has the capability of reducing peak demand by over 1,000 MW through demand response programs, which has allowed the applicant to eliminate the need for several new power plants, passing on indirect rate savings to its customers.

Demand side management is feasible and available; the applicant has indicated that it will continue to support demand side management measures. However, demand side management is not a firm, dispatchable resource. Accordingly, demand side management would not meet the need for the project.

3.7.2.3 Purchased Power

Purchased power means that instead of constructing the project, the applicant would purchase power to meet the purpose of the project. While the applicant has pursued power purchase agreement negotiations, these power purchase agreements are intended to provide supply in addition to the project, not instead of the project. Further, purchased power would need to be available to support the MEC and planned renewable resources. Thus, while purchased power is feasible and available, it does not meet the need for the project.

3.7.2.4 Use of Renewable Energy Sources

The project could be replaced with renewable energy sources. However, based on modeling completed by the applicant, renewable energy sources alone do not meet the same capacity needs as firm, dispatchable generation does. Further, dispatchable resources are needed to maintain reliability and to allow for the construction of additional renewable resources as coal-based generation is retired.

Renewable energy source are feasible and available; however, they would not meet the need for the project.

3.7.2.5 Transmission rather than Generation

Developing new transmission rather than dispatchable power through generation was considered and determined by the applicant to be unfeasible (reference (5)). Using transmission rather than generation would require the construction of new transmission infrastructure to access new or existing energy-generating resources. Such resources, which would provide additional firm, dispatchable generation resources, are not known to exist at this time. In addition, a transmission resource can take more than five years to plan, permit, site, and construct; if new generation resources were available for a transmission line to connect to, it would likely not be in-service in time to meet demand needs. Thus, transmission, though feasible and available, would not be timely and would not meet the need for the project.

4 Affected Environment, Potential Impacts, and Mitigation Measures

This chapter provides an overview of human and environmental resources that may be affected by the project. It discusses potential project impacts on these resources and measures that could be used to avoid, minimize, and mitigate these impacts.

Project construction and operation may impact certain human and environmental resources. Some impacts will be short-term and similar to those of any large construction project (e.g., noise, dust, soil disturbance). Impacts may be mitigated by measures common to most construction projects; for example, the use of erosion-control blankets and silt fencing.

Other impacts will exist for the life of the project and may include aesthetic impacts, impacts on agriculture, and impacts on natural resources. Long-term impacts are generally not well mitigated by construction measures, meaning these impacts do not flow from how the project is constructed but rather where it is located and its design. Long-term impacts can be mitigated through prudent project design.

4.1 Describing Potential Impacts and Mitigation

This chapter analyzes the potential human and environmental impacts of the project on various resources. Understanding these impacts involves contextualizing their duration, size, intensity, and location. This form of contextual information serves as the basis for assessing the overall project impacts on resources.

- Duration—Impacts vary in length of time. Short-term impacts are temporary and generally associated with construction. Long-term impacts are associated with operation and usually end with decommissioning and reclamation. Permanent impacts extend beyond the decommissioning stage.
- Size—Impacts vary in size. To the extent possible, potential impacts are described quantitatively, for example, the number of impacted acres or the percentage of affected individuals in a population.
- Intensity—Impacts vary in the severity to which a resource is affected, in whatever context that impact occurs.
- Location—Impacts are location dependent. For example, common resources in one location might be uncommon in another.

Instead of assigning values based on resource significance, qualitative descriptors are employed. These descriptors provide a standardized language for comparing impact levels and characteristics of both the proposed and alternative routes. This approach offers the reader a clear, common understanding of potential route impacts that enhances the route comparison task. For this work, the qualitative descriptors are as follows:

- **Minimal**—Minimal impacts do not considerably alter an existing resource condition or function. Minimal impacts may, for some resources and at some locations, be noticeable to an average observer. These impacts generally affect common resources over the short term.
- **Moderate**—Moderate impacts alter an existing resource condition or function and are generally noticeable or predictable for the average observer. Effects may be spread out over a large area,

making them difficult to observe, but they can be estimated by modeling or other means. Moderate impacts may be long-term or permanent to common resources but are generally short- to long-term for rare and unique resources.

- **Significant**—Significant impacts alter an existing resource condition or function to the extent that the resource is severely impaired or cannot function. Significant impacts are likely noticeable or predictable for the average observer. Effects may be spread out over a large area, making them difficult to observe, but can be estimated by modeling. Significant impacts can be of any duration and may affect common and rare and unique resources.

This EA also discusses ways to avoid, minimize, or mitigate specific impacts. These actions are collectively referred to as mitigation.

- **Avoid**—Avoiding an impact means that the impact is eliminated altogether by moving or not undertaking parts or all of a project.
- **Minimize**—Minimizing an impact means to limit its intensity by reducing the project size or moving a portion of the project from a given location.
- **Mitigate**—Impacts that cannot be avoided or minimized could be mitigated. Impacts can be mitigated by repairing, rehabilitating, or restoring the affected environment, or compensating for it by replacing or providing a substitute resource elsewhere.

4.1.1 Regions of Influence

Potential impacts to human and environmental resources are analyzed in this EA within specific regions of influence (ROI). The ROI for each resource is the geographic area within which the project may exert some influence. It is used in the EA as the basis for assessing potential impacts to each resource as a result of the project. Regions of influence vary with the resource being analyzed and potential impact (Table 4-1). In this EA, the following ROIs are used:

- **Project area -** Includes the parcels within which all project features are located.
- **Local vicinity -** Includes the area within 1,600 feet of project area.
- **One mile -** A distance of one mile from project area.
- **Region -** Lyon County.

Table 4-1 Regions of Influence for Human and Environmental Resources

Type of Resource	Resource Element	Region of Influence (ROI)
Human Settlement	Displacement, Land Use and Zoning, Public Health and Safety	Local vicinity
Human Settlement	Noise	Local vicinity
Human Settlement	Aesthetics, Cultural Values, Recreation, Public Services	One mile
Human Settlement	Environmental Justice, Socioeconomics	Region
Land-Based Economies	Agriculture, Forestry, Mining	Project area
Land-Based Economies	Tourism	One mile
Archaeological and Historic Resources	Archaeological and Historic Resources	One mile
Natural Environment	Geology and Groundwater, Soils, Surface Water, Vegetation, Rare and Unique Natural Resources – Sensitive Ecological Resources	Project area
Natural Environment	Wildlife	Local vicinity
Natural Environment	Rare and Unique Natural Resources – Protected Species	One mile
Natural Environment	Air Quality	Region
Greenhouse Gases	Greenhouse Gases	Region
Climate Change	Climate Change	Region

4.2 Environmental Setting

The Minnesota DNR and the U.S. Fish and Wildlife Service (USFWS) 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 (reference (6)). Through the ECS, the state of Minnesota is split into Ecological Provinces, Sections, and Subsections.

Under this classification system, this project is located in the Coteau Moraines Subsection of the North Central Glaciated Plains Section, set within the Prairie Parkland Province. The Prairie Parkland Province is associated with the part of the state historically dominated by tallgrass prairies under comparatively more arid conditions than much of Minnesota. The Prairie Parkland Province generally has a deep layer of glacial drift over bedrock, and in addition to being more arid, is also more fire-prone which in turn encourages the development of grasslands (reference (7)).

Within the Province, the North Central Glaciated Plains Section covers the southwestern portion of the state. Within the North Central Glaciated Plains Section there are flat to rolling areas of topography dominated by upland prairies with smaller areas of more diverse topography where river valleys cut through the uplands (reference (8)). At the smallest scale of the ECS applicable here, the Coteau Moraines Subsection provides the most detailed description of the environmental setting. The Coteau Moraines are a comparatively high landform covered by deep (600-800 feet) glacial till. The topography locally is flat to rolling, but with steeper hills and escarpments present to the north and northeast and where drainage features have developed along river valleys. Soils are loamy, deep, well drained soils and are well suited to agriculture. Historically, tallgrass prairie covered virtually all of the subsection. Wet

prairies were restricted to narrow stream margins, as was forest in deeper ravines and margins. (reference (9)).

4.3 Human Settlements

Generation projects have the potential to negatively impact human settlements through a variety of means. The generation station infrastructure, transmission line structures, and conductors could change the aesthetics of an area, displace homes or businesses, introduce new noise sources, lower property values, be incompatible with local zoning, and/or interfere with electronic communications. Impacts to human settlements resulting from the project are anticipated to be minimal to moderate.

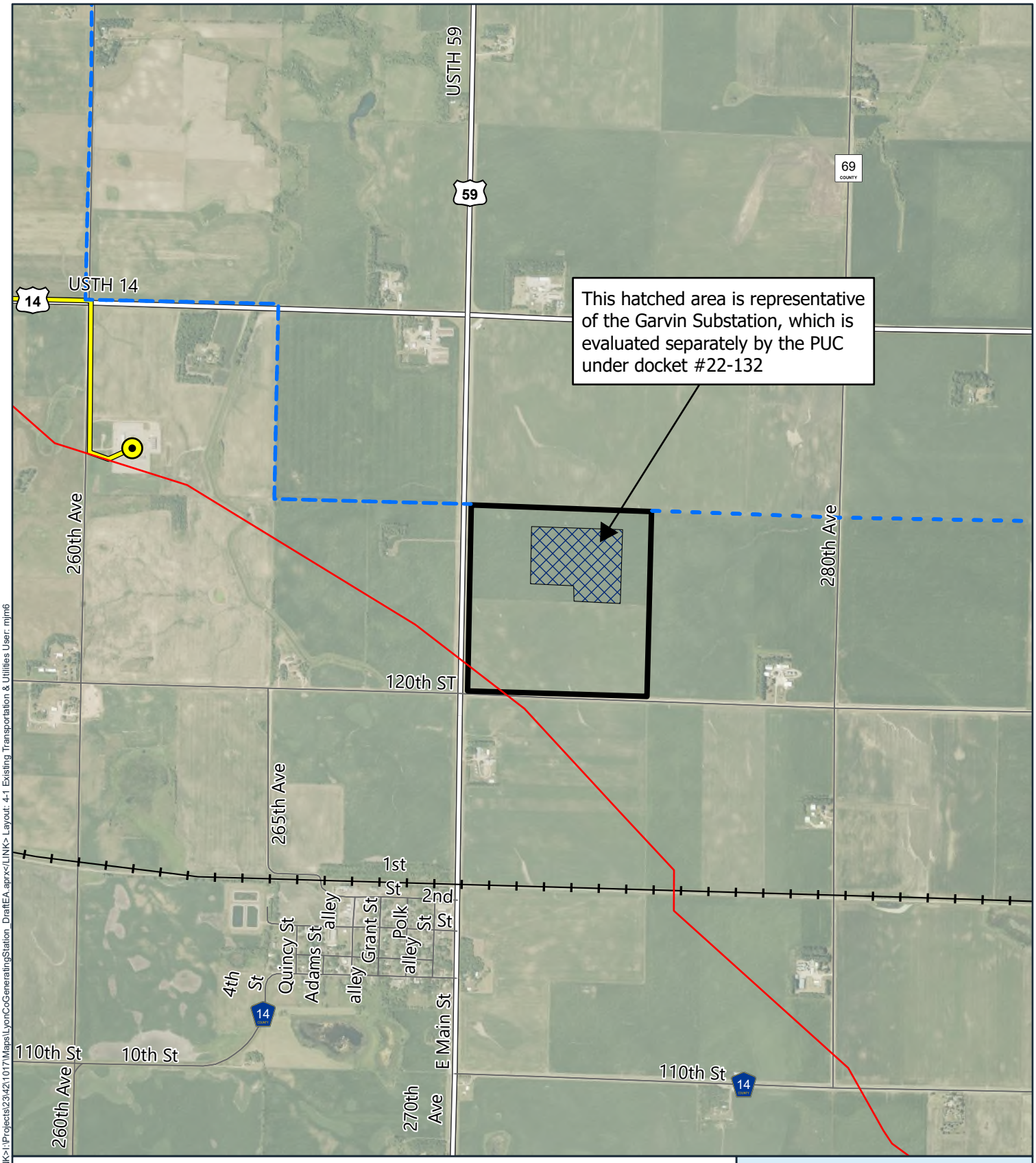
4.3.1 Aesthetics

The aesthetic and visual resources of a landscape are defined as the existing natural and built features that affect the visual quality and character of an area. Determining the relative scenic value or visual importance in any given area depends, in large part, on the individual viewer, or community of viewers, whose perceptions are shaped by their values and experiential connection to the viewing area, as well as their physical relationship to the view, including distance to structures, perspective, and duration of the view.

Landscapes that are, for the average person, harmonious in form and use are generally perceived as having greater aesthetic value. Infrastructure that is not harmonious with a landscape or affects existing landscape features reflects a change in the aesthetic view that, for some or many, could negatively affect a viewer's perception and expectation of the area. Assessing visual quality reflects the difference between the landscape change and the individual or communal reaction to that change. Individual or communal perspectives are complex and are affected by individual or shared values and experiences with the land. As such, some viewers may perceive the project setting as having high visual quality, while others may perceive the area to have less visual quality.

The project is in an agricultural setting with existing utility infrastructure including the Northern Border Natural Gas Pipeline and Highway 59 ROW; the Garvin Substation and MEC transmission line are planned utility infrastructure within the immediate vicinity (Map 4-1). The project would result in more industrial aesthetics becoming a part of the landscape. There are no Minnesota Scenic Byways near the project area. There are recreational activities within the local vicinity of the project area, like snowmobile trails, public lands and parks discussed further in section 4.8.5.

The project was developed to avoid proximity to residences, with no residences being located within the project area. There are two residences within 2,000 feet of the project area, with the closest residence located 865 feet south of the project area. The second closest residence is located approximately 1,668 feet east of the project area (Map 4-2).



Project Boundary
Substation
Garvin Substation
Northern Border Pipeline
Transmission Line
MEC Transmission Line
Railroad
US Highway
Road

0 0.5 1
Miles

Sources: XCEL, Barr, EIA, MnDOT, Esri

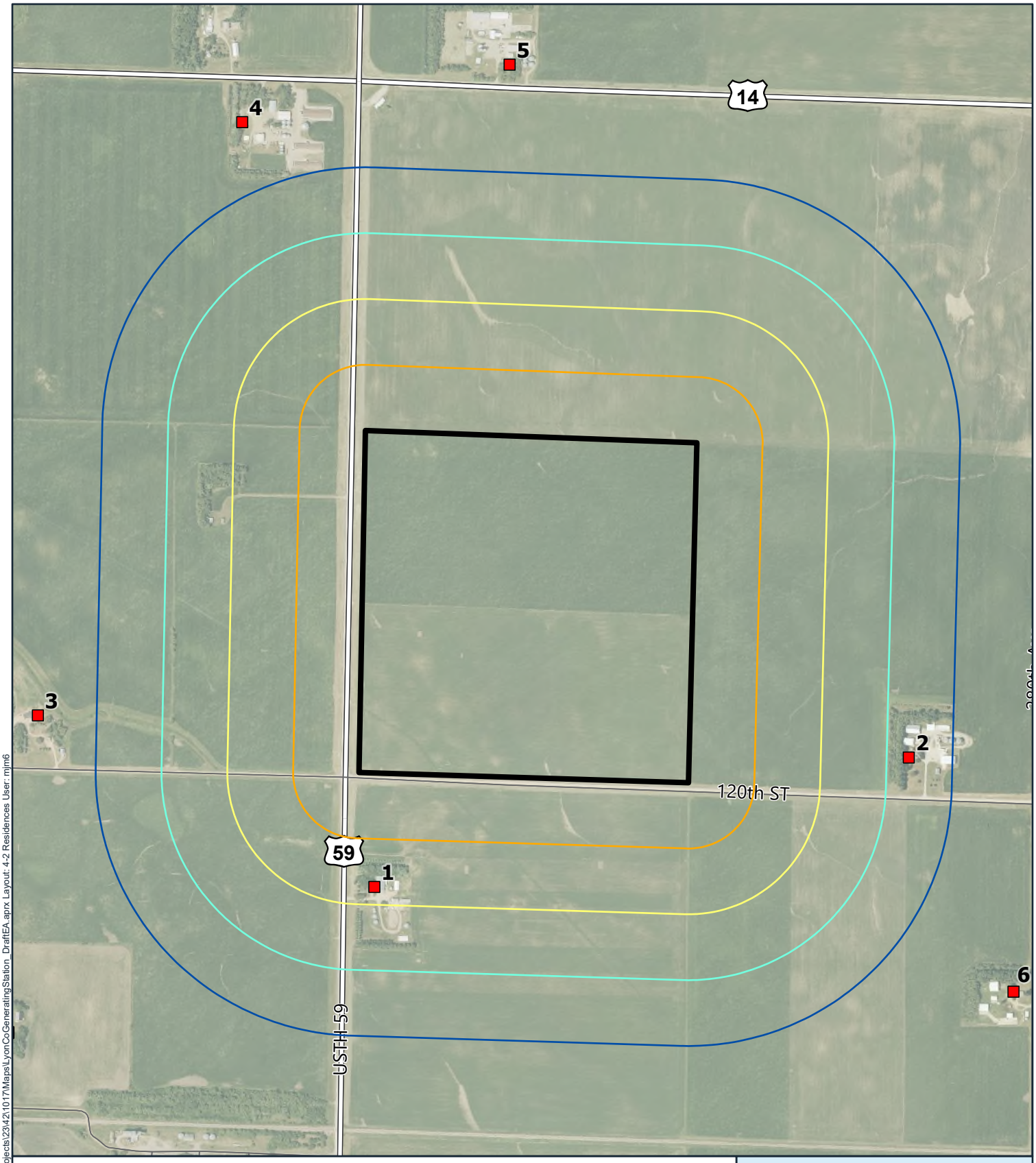
Lyon Co. Generating Station Project

Existing Transportation & Utilities

MAP 4-1

BARR

Barr Footer: ArcGISPro, 11/20/2025 9:45 AM File: <LINK>I:\Projects\23\421017\Maps\LyonCoGeneratingStation_DraftEA.aprx</LINK> Layout: 4-1 Existing Transportation & Utilities User: mjm6



Project Boundary
Residences
US Highway
Road
500 ft. Buffer
1,000 ft. Buffer
1,500 ft. Buffer
2,000 ft. Buffer

0 500 1,000
Feet

Sources: XCEL, Barr, Esri

Lyon Co. Generating Station Project

Residences

MAP 4-2

BARR

4.3.1.1 Impacts

The project's generation station, transmission line, and pipeline would create aesthetic impacts. The generation station CT stacks are estimated to be around 87 feet tall, while the transmission line structures will be approximately 90 to 160 feet in height. Future proposed development for the MEC project will also include structures of a similar height that will be introduced next to the project.

Aesthetic impacts are anticipated to be minimal to moderate. The degree of these impacts depends on:

- Proximity to homes, schools, churches, etc., where relatively more observers are present to experience aesthetic impacts. Map 4-2 provides an overview of residences and other buildings near the project.
- The presence of terrain and vegetation that could shield views of the generation station and transmission line and the preservation of such vegetation.
- The types of structures and structure designs used for the project.

4.3.1.2 Mitigation Measures

Minimization and mitigation measures include:

- Using structures and structure designs that minimize impacts (e.g., use of uniform structure types to the extent practical).
- Using construction methods that minimize damage to vegetation near the transmission line.
- Placing the generation station, transmission line, and pipeline structures and equipment to take advantage of existing natural screening to reduce the view of the line from nearby residences and roadways.

Impacts can be mitigated through standard or special permit conditions. A draft site permit for the project is included in Appendix D and contains permit conditions related to aesthetic impacts. Section 4.3.8 of the draft site permit is a standard condition that requires the permittee to consider landscape input with respect to visual impacts and to use care to preserve the natural landscape, minimize tree removal, and prevent any unnecessary destruction of the natural surroundings in the vicinity of the project during construction and operation.

A draft route permit for the project is included in Appendix E and contains permit conditions related to aesthetic impacts. It includes:

- Section 5.3.7 requires that the permittee work with landowners to locate the high-voltage transmission line to minimize the loss of agricultural land, forest, and wetlands, and to avoid homes and farmsteads.
- Section 5.3.7 requires that the permittee place structures at a distance, consistent with sound engineering principles and system reliability criteria, from intersecting roads, highways, or trail crossings.
- Section 5.3.22 details facility lighting requirements, stating that the permittee shall use shielded and downward facing lighting and LED lighting that minimizes blue hue.

4.3.2 Displacement

Displacement refers to the removal of a residence or building to facilitate the operation of the generation station, transmission line or pipeline. For safety code and maintenance reasons, utilities need to generally consider the distances from various utility equipment and infrastructure to any residences or other buildings that could be removed or displaced. Displacements are relatively rare and are more likely to occur in more populated areas where avoiding all residences and businesses is not always feasible. Displacements can be avoided through several means, including structure and equipment placement, the use of specialty structures, and modifications of the impact area.

4.3.2.1 Impacts

There are no residential or non-residential structures (e.g., agricultural outbuildings or animal product structures), churches, schools, daycares, or nursing homes located within the project area. The closest residence is 865 feet south of the project area Map 4-2. Therefore, there would be no displacement of residential or non-residential structures as a result of this project.

4.3.2.2 Mitigation Measures

No impacts to residential or non-residential buildings are anticipated; therefore, no mitigation measures are proposed.

4.3.3 Noise

Noise can be defined as undesired sound. Noise may include a variety of sounds of different intensities across the entire frequency spectrum. Noise is measured in units of decibels (dB) on a logarithmic scale. Because human hearing is not equally sensitive to all frequencies of sound, certain frequencies are given more “weight.” The A-weighted decibel (dBA) scale corresponds to the sensitivity range for human hearing. A noise level change of three dBA is barely perceptible to average human hearing. Due to the logarithmic dBA scale, a noise level of 70 dBA is approximately twice as loud as a 60 dBA sound to the average human hearing.

For cumulative increases resulting from sources of different magnitudes, the rule of thumb is that if there is a difference of greater than 10 dBA between noise sources, there would be no additive effect (i.e., only the louder source will be heard, and the quieter source would not contribute to noise levels). Predicted noise levels associated with the transmission line are typically much lower than the ambient noise and will not increase the existing background noise levels. Table 4-2 provides noise levels associated with common, everyday sources and places the magnitude of noise levels discussed here in context.

Table 4-2 Common Noise Sources and Levels

Sound Pressure Levels (dBA)	Common Indoor and Outdoor Noises
110	Rock band at 5 meters
100	Jet flyover at 300 meters
90	Chainsaw or gas lawnmower at 1 meter
85	Typical construction activities
80	Food blender at 1 meter
70	Vacuum cleaner at 3 meters
60	Normal speech at 1 meter
50	Dishwasher in the next room
40	Library
30	Bedroom
20	Quiet rural nighttime

Notes: Source: Minnesota Rules 7030.

The MPCA has established standards for regulating noise levels. The land use activities associated with residential, commercial, and industrial land have been grouped together into Noise Area Classifications (NACs) (Minnesota Rules, part 7030.0050). Each NAC is then assigned both daytime (7 a.m. to 10 p.m.) and nighttime (10 p.m. to 7 a.m.) limits for land use activities within the NAC (Minnesota Rules, part 7030.0040). Table 4-3 shows the MPCA daytime and nighttime limits in dBA for each NAC. The limits are expressed as a range of permissible dBA within a one-hour period; L50 is the dBA that may be exceeded by 50 percent (30 minutes) of the time within an hour, while L10 is the dBA that may be exceeded by 10 percent (six minutes) of the time within an hour. Residences, which are typically considered sensitive to noise, are classified as NAC-1.

Table 4-3 MPCA Noise Limits by Noise Area Classification

Noise Area Classification (NAC)	Daytime (dBA)L_{10}	Daytime (dBA)L_{50}	Nighttime (dBA)L_{10}	Nighttime (dBA)L_{50}
NAC 1: Residential and Other Sensitive Uses	65	60	55	50
NAC 2: Non-Residential Uses (retail, business and government services, recreational activities, transit passenger terminals)	70	65	70	65
NAC 3: Non-Residential Uses (manufacturing, fairgrounds and amusement parks, agricultural and forestry activities)	80	75	80	75

A sound study was conducted for the project to identify the applicable noise regulations, conduct ambient sound level measurements for the surrounding area, and create an acoustic model for the project to evaluate whether the project's acoustic design satisfies the state's noise standards. The full sound study report can be found in Appendix F, and contains more details of the measurements, including figures depicting measurement locations and nearby residents, hourly sound levels, and weather information over the duration of the survey.

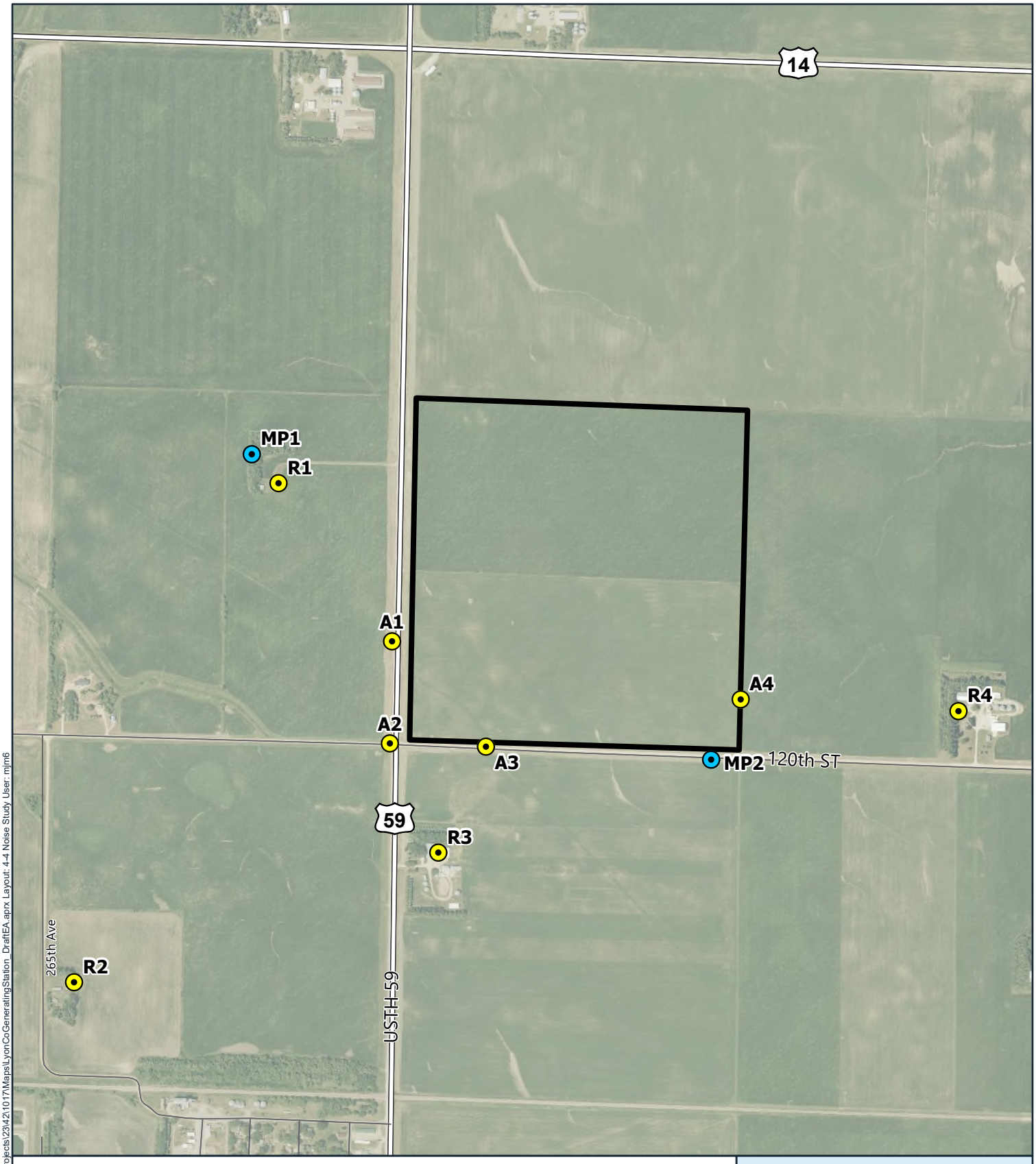
The area immediately surrounding the project is primarily agricultural farms, classified as NAC 3, although some of the farms include residential structures. These residences are subject to more conservative NAC 1 limits. The primary noise-generating equipment for this project is expected to operate as a steady sound source during operation and has the ability to operate day and/or night. The L50 MPCA limits would be used for the NAC 3 and NAC 1 areas of the project. The project predicted sound levels would meet these since all normal operating equipment will be modeled at maximum specified operational sound levels.

In the sound study, ambient measurements were collected at two locations representative of the property boundary and nearby noise sensitive receptors. These locations are referred to as measuring points (MP). MP1 was placed along the tree line close to the nearest residential receptor northwest of the Project Site and MP2 was placed near the south receiving agricultural property boundary (Map 4-3). Sound meters collected data continuously over the course of one 24-hour period beginning around 1 pm on March 7, 2025. MP2 experienced a power outage around 5:20 AM on March 7, so the meter only collected data for 16 hours. Existing ambient sounds levels at both locations consisted of distant traffic and occasional wind gusts, with MP1 also including occasional passing traffic and noise from a nearby compressor station. Based on the data collected at both locations, the lowest ambient sound level period was captured at MP2 prior to the power outage. The ambient measurement summary is shown in Table 4-4 below. Average daytime L50 sound levels currently range from 40 to 44 dBA and nighttime sound levels range from 28 to 32 dBA. Ambient sound levels for the project are currently below the MPCA noise limits for the surrounding receptors.

Table 4-4 Ambient Measurement Summary

Measurement location	Daytime Average (dBA) (7:00 AM to 10:00 PM)			Nighttime Average (dBA) (10:00 PM to 7:00 AM)		
	L10	L50	L90	L10	L50	L90
MP1	49	44	39	40	32	27
MP2	45	40	35	34	28	23

Additionally, there are two emergency generators on-site which will likely undergo occasional testing and have potential to operate in the event of an emergency condition. Testing is expected to occur only during the daytime hours and could last approximately 30 minutes at a time. Generator testing has potential to occur while the Project is normally operating (i.e., combustion turbines operational). However, emergency use for the generators would only be while the combustion turbine equipment was not operating. Therefore, two additional scenarios have been evaluated and compared the MPCA limits: 1) Generator Testing + Normal Operation, and 2) Emergency Generator Only. The “Generator Testing” results should be compared to the daytime MPCA sound level limits of 75 dBA at the agricultural property boundaries and 60 dBA outside residential structures. The “Emergency Generator Only” results should be compared to the nighttime MPCA sound level limits previously discussed.



Project Boundary
Nearest Receptors
Measurement Points (MPs)
US Highway
Road

0 500 1,000
Feet

Sources: XCEL, Barr, Esri

Lyon Co. Generating Station Project

Noise Study

MAP 4-3

BARR

4.3.3.1 Impacts

Project sound levels have been modeled to predict future sound levels associated with the project using predictive noise modeling. The project will operate at constant sound levels during normal operation and has the potential to operate day and/or night. Therefore, steady-state sound level predictions were completed for normal, continuous operation of the project, which should be comparable to the expected L50 sound levels for the project. Sound levels are shown for the specific nearest receptors of interest in Table 4-5, and show that the project is currently designed to meet the MPCA nighttime L50 limits at all the nearest receptors and comply with the MPCA noise requirements.

Table 4-5 Project Design Normal Operation Modeled Sound Level Results

Receptor name[1]	Noise Area Classification (NAC)	MPCA Nighttime Noise L50 Limits (dBA)	Project Modeled Sound Levels (dBA)
A1	NAC 3	75	56
A2	NAC 3	75	54
A3	NAC 3	75	60
A4	NAC 3	75	49
R1	NAC 1	50	46
R2	NAC 1	50	39
R3	NAC 1	50	50
R4	NAC 1	50	40

[1] A# denotes agricultural receptors along the receiving property lines. “R#” denotes residential receptors near receiving residential structures.

In addition to project normal operation, there is potential for occasional testing of the emergency diesel generator and potential for the emergency generator to operate in the event of an emergency. Generator testing is only expected to occur during the daytime hours and last approximately 30 minutes while the project is operating normally (i.e., combustion turbine is operational). Emergency generator operation in the event of emergency use is only expected to occur while the project is not operating normally (i.e., combustion turbine is not operating). Therefore, a conservative scenario where the emergency generator is being tested while the project is operating normally has been evaluated and compared to the daytime MPCA L50 noise limits, while the emergency use scenario where only the emergency generator is operating has been evaluated and compared to the nighttime MPCA L50 noise limits. The resulting sound levels for each are provided in Appendix F, and sound levels are provided for specific receptors of interest in Table 4-6 and Table 4-7 below.

Table 4-6 Emergency Generator Testing + Normal Operation Modeled Sound Level Results

Receptor name[1]	Noise Area Classification (NAC)	MPCA Nighttime Noise L50 Limits (dBA)	Project Modeled Sound Levels (dBA)
A1	NAC 3	75	58
A2	NAC 3	75	55
A3	NAC 3	75	60
A4	NAC 3	75	49
R1	NAC 1	60	48
R2	NAC 1	60	41
R3	NAC 1	60	51
R4	NAC 1	60	41

[1] A# denotes agricultural receptors along the receiving property lines. “R#” denotes residential receptors near receiving residential structures.

Table 4-7 Emergency Generator Only Modeled Sound Level Results

Receptor name[1]	Noise Area Classification (NAC)	MPCA Nighttime Noise L50 Limits (dBA)	Project Modeled Sound Levels (dBA)
A1	NAC 3	75	54
A2	NAC 3	75	50
A3	NAC 3	75	52
A4	NAC 3	75	40
R1	NAC 1	50	43
R2	NAC 1	50	35
R3	NAC 1	50	45
R4	NAC 1	50	33

[1] A# denotes agricultural receptors along the receiving property lines. “R#” denotes residential receptors near receiving residential structures.

According to the project-specific noise study, project sound levels will comply with Minnesota noise standards. Based on the current project acoustic design, including low-noise upgrades to the exhaust stacks and the air-cooled heat exchangers (ACHE), the project is expected to meet the MPCA L50 noise limits at the property boundaries and outside of the residential structures for all evaluated operating scenarios (i.e., normal operation, emergency generator testing, emergency generator only).

4.3.3.2 Mitigation Measures

Impacts due to noise are anticipated to be minimal. The applicant would minimize noise from the project by using low-noise upgrades to the exhaust stack exits and the air-cooled heat exchanges. These mitigation measures would meet the MPCA nighttime limits of 75 dBA at the property boundaries and 50 dBA at nearby residences.

Impacts can be mitigated through standard or special permit conditions. Section 4.3.7 of the Commission’s site permit (Appendix D), section 5.3.6 of the Commission’s route permit, and section 7.7 of the Commission’s routing permit (Appendix G) for construction of a large pipeline and associated facilities

requires permittees to comply with Minnesota's state noise standard at all times and to limit construction and maintenance activities to daytime working hours to the extent practicable".

4.3.4 Land Use and Zoning

If site and route permits are issued, they would supersede zoning restrictions and building or land use rules. To assess potential land use and zoning impacts the project was evaluated against local land use and zoning ordinances and comprehensive plans. Publicly available zoning and comprehensive plan information was reviewed for Lyon County.

The Lyon County Comprehensive Plan was adopted in July 2002 (reference (10)). The plan "sets forth the basic guiding principles that have been embraced by Lyon County to shape its future." The plan's future land use map shows that the project area has been planned to be agricultural. While the County has a wide range of land uses, the predominant land use is agricultural. Several of its land use goals support long-term orderly and efficient growth of residential, commercial, and industrial development in the County.

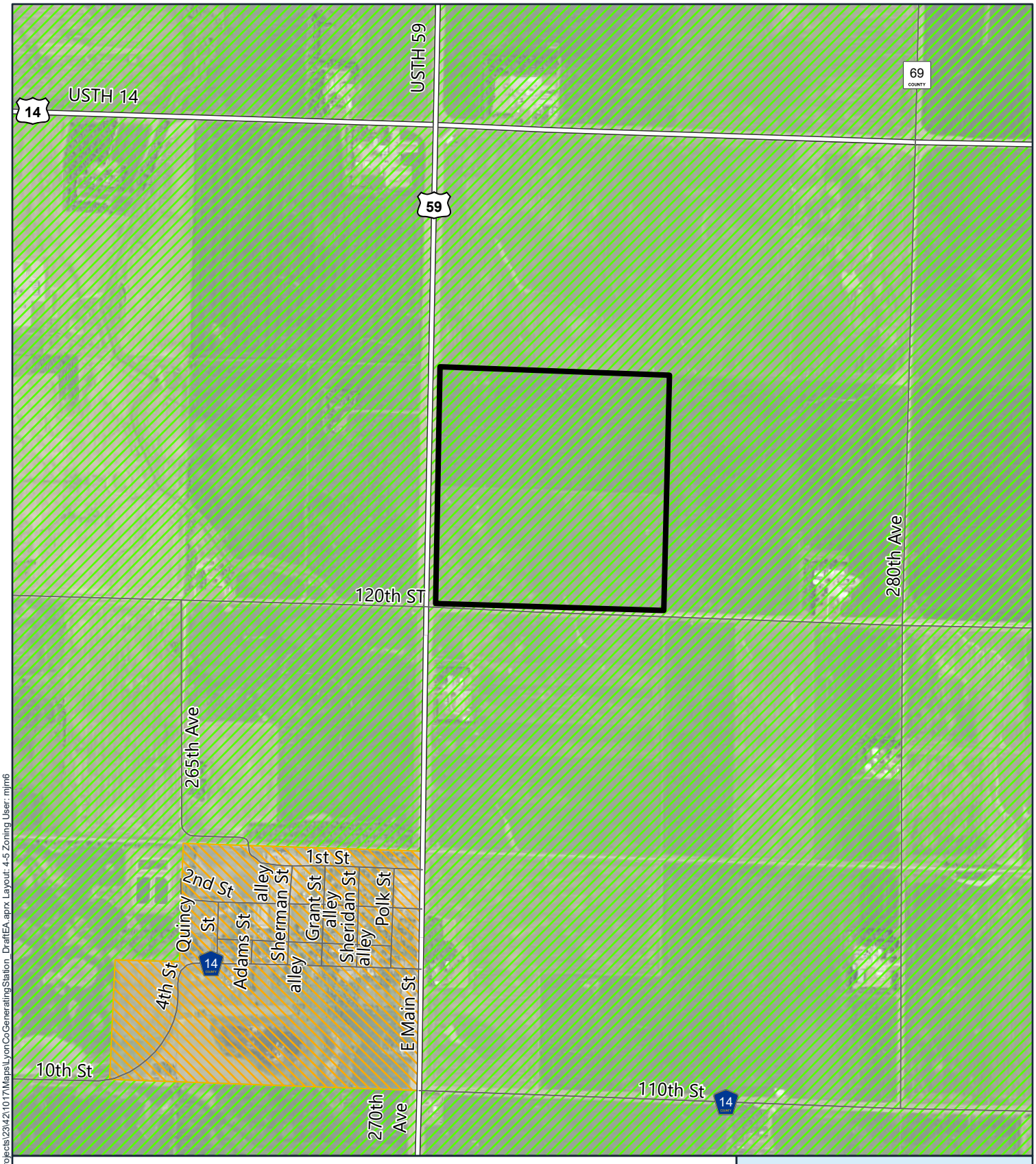
According to the Lyon County Zoning Ordinance, the entire project area and surrounding parcels are zoned as agricultural (Map 4-4). Part of the purpose of the agricultural district is to provide a district that will allow extensive areas of the county to be retained in agricultural use and to secure economy in governmental expenditures for public services, utilities, and schools. Essential services, such as electrical power lines, bulk gas, or fuel pie, not subject to Commission jurisdiction, would require a conditional use permit for construction and operation in the agricultural zoning district (reference (11)).

4.3.4.1 Impacts

Impacts from all project components, including the generation station, transmission line, and the pipeline, are anticipated to be negligible. The land use near the project area is not expected to change as a result of the project. Permanent impacts are limited to the project area, which is owned by the applicant. The project would be consistent with authorized uses within the agricultural district and is compatible with future land use planning goals.

4.3.4.2 Mitigation Measures

Land use impacts can be mitigated by minimizing aesthetic impacts of the project, to the extent that zoning and land use plans address aesthetics (e.g., landscaping). The project area would be entirely within agricultural land owned by the applicant, with no neighboring properties land use being affected. Construction and operation of the project would be contained within the project area.



Project Boundary
US Highway
Road

Zoning (Lyon County)
Agriculture
City

0 0.25 0.5
Miles

Sources: XCEL, Barr, Lyon County, Esri

Lyon Co. Generating Station Project
XCEL Energy

Regional Zoning

MAP 4-4

BARR

Barr Footer: ArcGISPro, 11/19/2025 4:38 PM File: I:\Projects\23\42\1017\Maps\LyonCoGeneratingStation_DraftEA.aprx Layout: 4-5 Zoning User: mjm6

4.3.5 Cultural Values

Cultural values consist of share community beliefs or attitudes that define what is collectively important to the group. These values provide framework for both individual and communal thought and action. Cultural values can be informed by history, heritage, local resources, economy, local and community events, and common experiences.

The project area, located within Lyon County, was primarily populated by the Dakota Sioux in the early to mid-1800s. Lyon County is on ceded lands within the 1851 Treaty of Traverse des Sioux boundary – a treaty between the Sioux-Sisseton and Wahpeton bands of the Dakota and the U.S. government (reference (12)). After the treaty, Lyon County was established with the U.S. government in 1869 and named after General Nathaniel Lyon. Early settlers in the region came from Germany, Belgium, Iceland and Scandinavian countries (reference (13)). The Lyon County Historical Society in the city of Marshall collects and preserves knowledge about the history of the county and surrounding region (reference (14)). Lyon County offers annual events that celebrate local interests and history, like the Lyon County Fair, 4-H competitions, Belgian American days, and Sounds of Summer (reference (15)).

Cultural values are also informed by the work and recreational pursuits of residents and by geographical features. The project is located in a heavily agricultural area within Lyon County and is surrounded by mostly agricultural and rural land. Farming and the ability to continue to farm and support livelihoods through farming tend to be strong regional values. There are natural amenities, like lakes, rivers, and wildlife areas within the county that offer opportunities for fishing, hunting, and other recreational activities. Nearby Garvin County Park encompasses approximately 750 acres of wooded hills, prairie, and stream corridors. The park includes wooded trails, camp sites, a tubing hill, and other opportunities for recreation (reference (16)).

4.3.5.1 Impacts

The project's impact on cultural values is anticipated to be minimal. The project will not adversely impact the work of residents that underlie the area's cultural values, nor is it anticipated to adversely impact geographical features that inform these values. The applicant is committed to continuing to coordinate with Tribal Nations that may have an interest in the project, including the Upper Sioux Community and Lower Sioux Indian Community.

4.3.5.2 Mitigation Measures

The project would be limited to a discrete area and would be sited to avoid impacting public participation in community and regional events. Impacts on cultural values are anticipated to be minimal; therefore no mitigation measures are proposed.

4.3.6 Socioeconomics

Socioeconomic factors provide an indication of how economic activity affects and is shaped by social processes. Socioeconomic measures indicate how societies progress, stagnate, or regress because of their actions and interactions within and between the local, regional, or global economic scales.

Table 4-8 shows socioeconomic information for Lyon County and Minnesota using census data from 2023. As shown in Table 4-8, Lyon County has a population of approximately 25,498 people, making up about 0.4 percent of the state's population. Lyon County has a lower minority population, per capita

income, median household income, and unemployment rate than the state of Minnesota. Relative to the state, Lyon County has a higher percentage of persons who live below the poverty level.

Table 4-8 Socioeconomic Data

Data Category	Minnesota	Lyon County
Total Population	5,737,916	25,498
Minority Population (percent)	21.6	16.5
Per Capita Income	$46,957	$37,201
Median Household Income	$87,556	$72,761
Low Income Population (percent)	9.2	12.5
Unemployment Rate (percent)	2.8	2.7

Source: references: (17–20)

4.3.6.1 Impacts

Project construction is anticipated to begin in July 2026, with the full project in service in December 2028. The project would generate minor, short-term positive economic impacts, driven by increased construction activity and a small influx of contractor employees. Local businesses have the potential to experience short-term positive economic impacts through the use of the hotels, restaurants, and other services used by contractors during construction.

Project construction is expected to employ approximately 300 to 400 construction workers. The project would not directly result in a change in population or demographics of Lyon County. Instead of relocating, the project workers would likely commute to the project area over the construction timeline of 30 to 33 months on either a daily or weekly basis. This may result in a temporary increase in need for temporary housing, but it is not expected to affect the availability of permanent or rental housing. Temporary lodging is primarily available in Marshall; a city located around 16 miles north of the project area.

The applicant has committed to a construction workforce consisting primarily of union labor personnel. The project would create local job opportunities for various trade professionals who live and work in the area. Opportunities will also exist for subcontracting to local contractors for various construction positions, such as gravel, fill, and civil work. The 2025 combined wage and benefits package ranges from $46 to $180 per hour, depending on the job type, such as a foreman, apprentice, or equipment operator (reference (5)). Actual wages to be paid during the timeframe of this project are subject to negotiations between union trades and have not yet been established. Additional personal income will also be generated by the circulation and recirculation of dollars paid out by the project as business expenditures and state and local taxes.

In the long term, the project will likely provide beneficial impacts to the local tax base in the form of revenues from property taxes paid. Additionally, long-term benefits could include permanent job creation or relocation of project personnel to the area for operations. The presence of additional workers and increased employment for project operations could result in a slight increase in the population but would be accommodated by current retail staffing.

4.3.6.2 Mitigation Measures

No adverse socioeconomic impacts are anticipated; therefore, mitigation is not proposed.

4.3.7 Environmental Justice

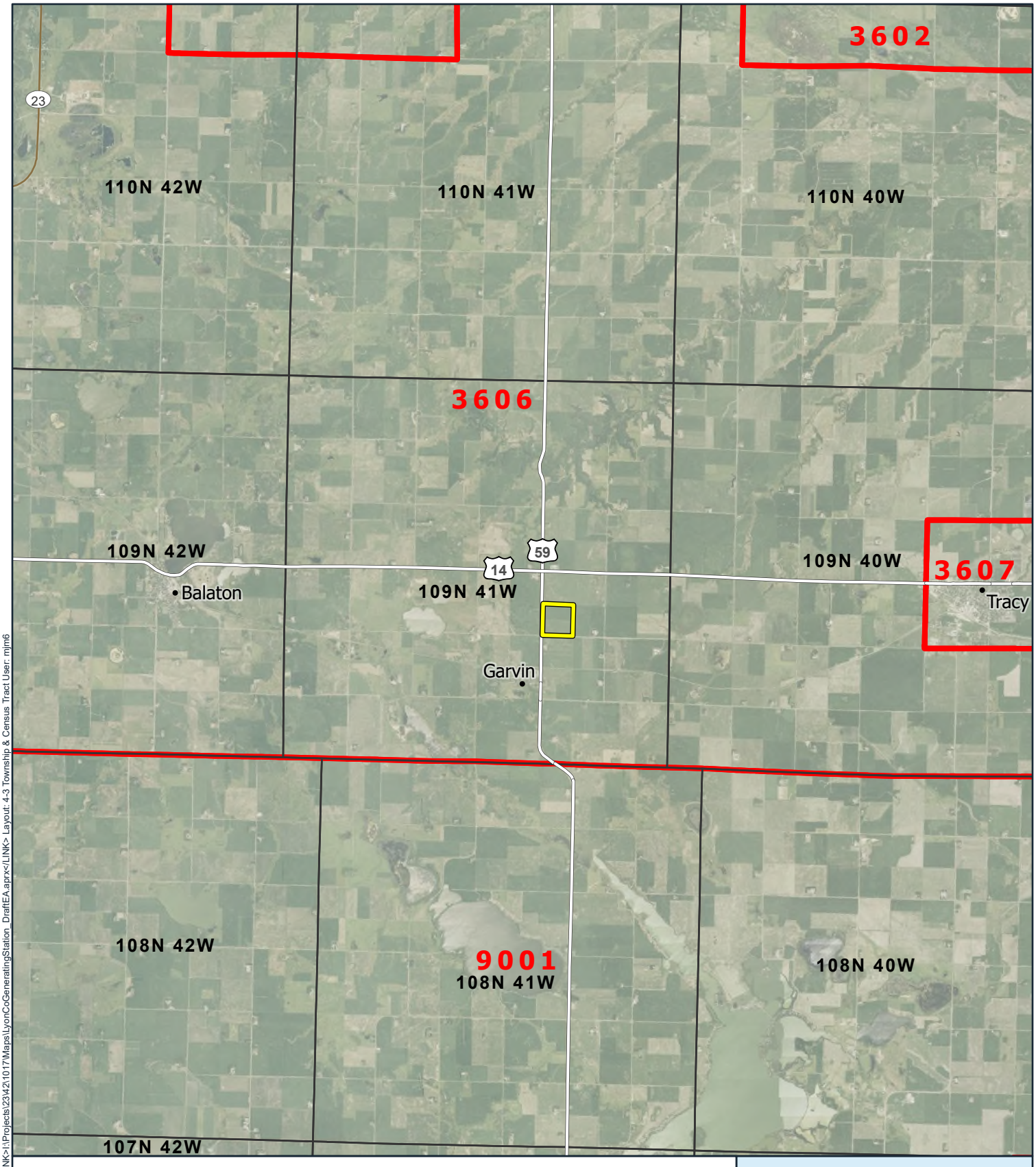
Environmental justice (EJ) is the “fair treatment of people of all races, cultures, incomes, and educational levels with respect to the development and enforcement of environmental laws, regulations, and policies. Fair treatment implies that no population should be forced to shoulder a disproportionate share of exposure to the negative effects of pollution due to lack of political or economic strength (reference (21)).” The goal of EJ is the “just treatment and meaningful involvement of all people, regardless of income, race, color, national origin, Tribal affiliation, or disability, in agency decision-making and other federal activities that affect human health and the environment (reference (22)).” The goal of this fair treatment is to review the project to identify potential disproportionately high and adverse effects from implementation of the project and identify alternatives that may mitigate these impacts.

MPCA’s Understanding Environmental Justice in Minnesota Mapping Tool (reference (23)) is an online mapping tool that uses census data to identify areas for meaningful community engagement and additional evaluation for disproportionate effects from pollution. The tool identifies Environmental Justice areas using the following four criteria, which aligns with the definition of an EJ area in Minn. Stat. § 216B.1691, subdivision 1(e):

- 40 percent or more of the area’s total population is nonwhite;
- 35 percent or more households in the area have an income that is at or below 200 percent of the federal poverty level;
- 40 percent or more of the area’s residents over the age of five have limited English proficiency; or
- The area is located within Indian country, as defined in US Code, title 18, section 1151.

According to the MPCA Mapping Tool the project area is not within an identified EJ area, and there are no EJ areas within one mile of the project. The project area is also not location within Indian Country, as defined above.

The EJ area definition guidelines from Minn. Stat. § 216B.1691, subdivision 1(e) were used to review data from the American Community Survey 2023 5-year estimates. There is one census tract located within the project area, census tract 3606 (Map 4-5). These census tracts would not be considered EJ areas, according to Minn. Stat. § 216B.1691 (Table 4-9).



Project Boundary
PLSS Township
Census Tract
U.S. Highway
State Route

0 2 4
Miles

Sources: XCEL, Barr, US Census Bureau, BLM, Esri

Lyon Co. Generating Station Project
XCEL Energy

Township & Census Tract

MAP 4-5

BARR

Table 4-9 Population, Low-Income, and Minority Data

Area	Minnesota	Lyon County	Census Tract 3606
Population	5,713,716	25,498	2,699
Percent Minority Population	23.3	18	9
Percent people at or below 200 percent of the Federal Poverty Level	9.2	12.5	5.4
Percent Limited English-speaking Households	0.07	0	0

Source: references (24–26)

4.3.7.1 Impacts

Based on the data provided by the MPCA, the project does not intersect and is not within a mile of an EJ area. It is not anticipated that the project would adversely or disproportionately impact EJ areas of concern.

4.3.7.2 Mitigation Measures

No impacts to EJ communities are anticipated; therefore, no mitigation measures are proposed.

4.4 Public Services and Transportation

Transmission line and power generation projects have the potential to negatively impact public services (e.g., roads, utilities, and emergency services). These impacts are typically temporary in nature (e.g., the inability to fully use a road or utility while construction is in process). However, impacts could be more long-term if they change the area so that public service options are foreclosed or limited.

This section summarizes the project's potential impacts on local roadways/railways, public utilities, emergency services, and airports and provides methods for mitigating these impacts. Temporary and long-term impacts to public services resulting from the project are anticipated to be minimal.

4.4.1 Transportation

The project is located in a rural area north of Garvin, Minnesota. Roads within the ROI include US Highway 59 (US 59) and 120th street. The generation station is approximately 0.8 miles south of US 14. The project runs adjacent to US 59 for approximately 0.3 miles. Access to the generation station would be from US 59. The generation station site and associated transmission lines would not cross any roads. There are no passenger rail service or rail freight lines in the ROI (Map 4-1). The existing traffic volume on nearby roads is documented in Table 4-10.

Table 4-10 Existing Daily Traffic Levels

Roadway	Roadway Segment	TCDS ID[1]	Data Year	AADT[2]
US Highway 14	East of US 59	2815	2025	2163
US Highway 14	West of US 59	2817	2023	1486
US Highway 59	North of US 14	2825	2025	2693
US Highway 59	South of CSAH 14 East of Garvin	6746	2024	2000
280th Ave	North of US 14	29115	2022	50

[1] Traffic Count Database System Traffic Viewer Application Unique ID
[2] Annual Average Daily Traffic; Source: MNDOT, 2025

4.4.1.1 Impacts

The proposed transmission lines would connect to the MEC Garvin substation. These transmission lines would not be co-located with existing transmission lines or any existing ROW, but instead on the Xcel-owned land north of the proposed generation station and west of the MEC Garvin substation. There would be no direct permanent impacts on US 59. Impacts to transportation would be limited to those associated with construction equipment and delivery vehicles accessing the site via US 59. The equipment and material deliveries generated by construction are estimated to be approximately 900 truckloads over the approximately 30-month period of construction. This traffic would result in a temporary 18 percent increase in traffic along US Highway 59 south of CSAH 14 during construction activities. Deliveries and workers could use any combination of federal, state, and county highways and other township roads throughout the project area. All necessary provisions would be made to conform to safety requirements for maintaining the flow of public traffic.

The project could lead to temporary traffic delays, detours, and congestion during construction, although these would be primarily due to the movement of oversized equipment or deliveries to the project. Temporary road or lane closures may occur during the construction process for safety purposes. Construction would not be occurring in the road ROW, so once equipment is moved, there would be no further impacts. Construction workers and construction-related vehicles using public roadways to access the transmission line ROW are likely to have localized adverse impacts on traffic volumes. Temporary closings are not expected to have significant impacts on transportation in the area because of the generally rural nature of the area and subsequent low traffic levels on most roads.

During project operations, the workforce and support services would generate an approximate maximum of 10 additional vehicle trips per day. No impacts on area roads would occur from operations.

4.4.1.2 Mitigation Measures

Oversized/overweight load permits must be obtained from the MnDOT when size and/or weight limits are exceeded. Where the transmission line parallels existing highway and other road rights-of-way, the transmission line right-of-way shall occupy and utilize the existing right-of-way to the maximum extent possible; consistent with the criteria in Minn. R. 7850.4100, and the other requirements of this route permit; and for highways under the jurisdiction of the MnDOT, the procedures for accommodating utilities in trunk highway rights-of-way.

The applicant would coordinate with township road supervisors or county highway departments to document existing road conditions and address any issues that arise during construction with roadways to ensure the roads are adequately restored, if necessary, after construction is complete.

4.4.2 Public Utilities

Electric utility services in and around the project area are provided by Xcel Energy and the Lyon-Lincoln Electric Coop (reference (27)). Natural gas services near the project are provided by Minnesota Energy Resources. The Northern Border Pipeline carries natural gas through the area and would supply the generation station CTs with fuel, as discussed in Chapter 3 above (reference (28)). The pipeline is south of the generation station and transmission lines, but the pipeline component of the project will create a connection to the generation station to supply the CTs (Map 1-1).

4.4.2.1 Impacts

The project components, including transmission lines, generation station, and pipeline, will not disturb electric utilities and thus no disruptions to electrical service are anticipated. The pipeline is not anticipated to disrupt service; however, there is a marginal chance of a brief disruption of natural gas supply during the interconnect procedure. Any interruption would be localized to the area immediately downstream from the project area.

4.4.2.2 Mitigation Measures

Potential impacts to pipelines can be avoided and mitigated by coordination with the appropriate pipeline companies, which the applicant will undertake as part of the natural gas pipeline connection process. During construction, the permittee shall minimize any disruption to public services or public utilities. To the extent disruptions to public services or public utilities occur these would be temporary, and the permittee will restore service promptly. Where any impacts to utilities have the potential to occur the permittee will work with both landowners and local agencies to determine the most appropriate mitigation measures if not already considered as part of this permit.

The permittee shall cooperate with all entities that have existing easements or infrastructure within the pipeline route to ensure minimal disturbance to existing or planned developments.

The applicant will use the Gopher State One-Call system to locate and mark all underground utilities to avoid potential impacts.

4.4.3 Emergency Services

Emergency services in the region are provided by law enforcement and emergency response agencies in the county and nearby communities. The Lyon County Sheriff's Office, headquartered in Marshall, MN, provides emergency response. For fire response, the project is located within Fire Region 9, the West-Central Region, and fire services for the area are provided by the Balaton Fire Department and the Tracy Fire Department (reference (29)).

Ambulance services are broken into Primary Service Areas (PSAs), which provide emergency medical response services throughout each PSA. The project area is located within the Lyon PSA with services provided by Tracy Ambulance and the Balaton Fire Department (reference (30)). Emergency medical response facilities include Sanford Tracy Emergency Services and the Murray County Hospital, the

closest of which is Sanford Tracy Emergency Services in Tracy, Minnesota, approximately 9 miles from the project area.

4.4.3.1 Impacts

The project is not anticipated to impact emergency services. Temporary road closings may occur. Temporary closings are not expected to have significant impacts on public services and access in the area because of the generally rural nature of the area and subsequent low traffic levels on most roads. The use of US 59 for large equipment or material deliveries would be coordinated with local jurisdictions to provide safe access for police, fire, and other emergency service vehicles. Any accidents that might occur during the project's construction would be handled through local emergency services. Given the limited number of construction workers involved in the project and the low probability of a construction-related accident, the current emergency services are expected to have ample capacity to address any potential emergencies that may occur during project construction.

4.4.3.2 Mitigation Measures

Mitigation and minimization measures for potential impacts to emergency services are standard Commission permit conditions. The applicant will be required to prepare an Emergency Response Plan (ERP) according to section 7.12 of the draft site permit (Appendix D). The applicant will file the ERP, along with any comments from emergency responders, with the Commission at least 14 days prior to the pre-construction meeting and a revised ERP, if any, at least 14 days prior to the pre-operation meeting.

4.4.4 Airports

Power transmission structures and conductors can conflict with the safe operation of an airport if they are too tall and/or too close to the applicable safety zones. Different classes of airports have different safety zones depending on several characteristics, including runway dimensions, classes of aircraft they can accommodate, as well as navigation and communication systems (reference (31)). Based on this classification, different airports have different setback requirements for structures, such as those used for the proposed transmission lines.

There are no FAA airports, public airports, or private airports located within one mile of the project. As such, impacts to airports are not anticipated. The nearest airport is Tracy Municipal, north of the town of Tracy and approximately 9 miles from the project area. The Federal Aviation Administration (FAA) and MnDOT have each established development guidelines on the proximity of tall structures to public-use airports. Transmission lines near public airports are limited by FAA height restrictions, which prohibit transmission line structures above a certain height, depending on the distance from the specific airport. Private airstrips and personal-use airstrips cannot be used for commercial transportation or by the general public and are, therefore, not subject to FAA regulatory obstruction standards. MnDOT has established separate zoning areas around airports. The most restrictive safety zones are safety zone A, which does not allow any buildings, temporary structures, places of public assembly, or transmission lines, and safety zone B, which does not allow places of public or semi-public, assembly such as churches, hospitals, or schools. Consistent with FAA regulations, MnDOT zoning requirements only apply to public airports (Minn. R. 8800.2400).

4.4.4.1 Impacts

The project has been sited to avoid interference with the safe operation of existing public airports and private airstrips. The applicant will coordinate with the FAA for appropriate notifications associated with project construction as necessary.

4.4.4.2 Mitigation Measures

No impacts to airports are anticipated; therefore, no mitigation measures are proposed.

4.5 Public Health and Safety

The project has the potential to negatively impact public health and safety during project construction and operation. As with any project involving heavy equipment, pipelines, and transmission lines, there are safety issues to consider during construction. Potential health and safety impacts include injuries due to falls, equipment use, and electrocution. Potential health impacts related to the operation of the project include health impacts from EMF, stray voltage, induced voltage, and electrocution.

4.5.1 Electric and Magnetic Fields

Electric and magnetic fields (EMF) are invisible areas of energy associated with the use of electrical power. For lower EMF frequencies associated with power lines, electric and magnetic fields are relatively decoupled. Generally, electric fields are dependent on the voltage of a transmission line and magnetic fields are dependent on the current carried by a transmission line. Electric fields are the result of electric charge, or voltage, on a conductor. Using a garden hose as an analogy, voltage is equivalent to the pressure of the water moving through the hose. The intensity of an electric field is related to the magnitude of the voltage on the conductor and is typically described in terms of kV per meter (kV/m). Magnetic fields are created and increase from the strength of the flow of current though wires or electrical devices. Using the same analogy, current is equivalent to the amount of water moving 61 through the garden hose. The intensity of a magnetic field is proportional to the related to the magnitude of the current flow through the conductors and is typically described in units of magnetic flux density expressed as Gauss or milliGauss. Magnetic fields, unlike electric fields, are not shielded or weakened by materials that do not conduct electricity (e.g., trees, buildings). Rather, they pass through most materials.

Both magnetic and electric fields decrease rapidly with increased distance from the source. EMF are invisible just like radio, television, and cellular phone signals, all of which are part of the electromagnetic spectrum. EMF are found anywhere there are energized, current-carrying conductors, such as near transmission lines, local distribution lines, substation transformers, household electrical wiring, and common household appliances (reference (32)).

4.5.1.1 Impacts

No impacts due to EMF are anticipated from the generation station and pipeline.

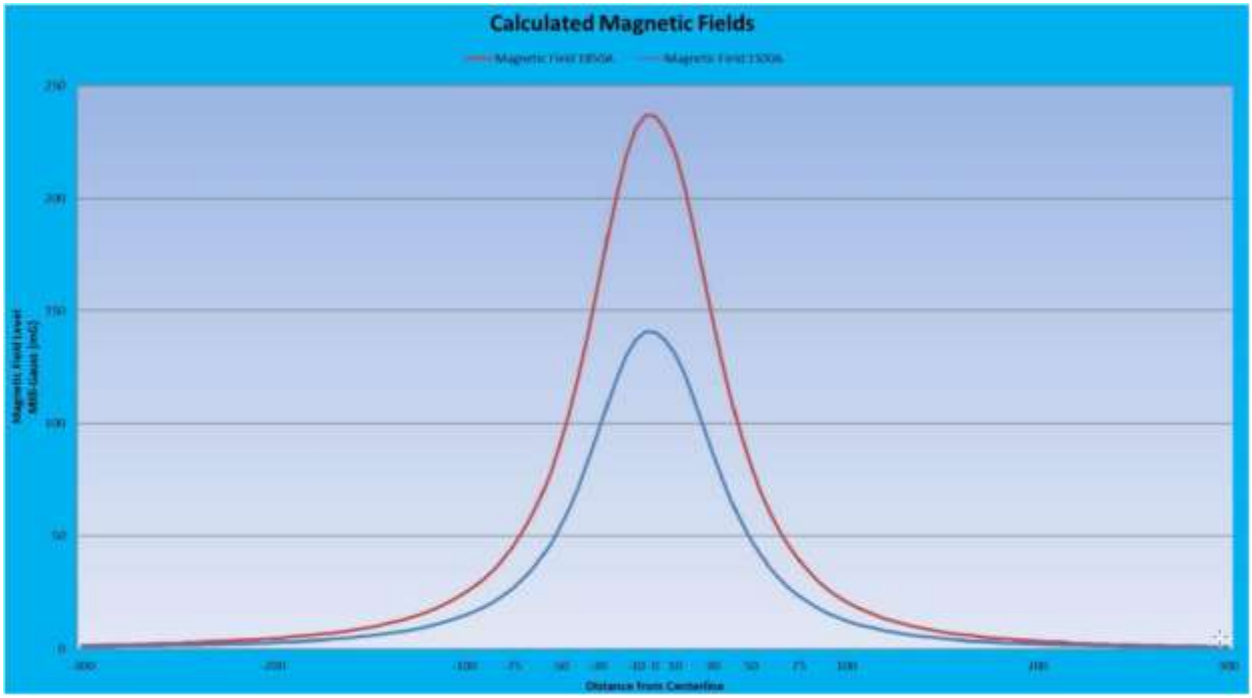
Impacts from the transmission line are anticipated to be negligible. There is currently no federal standard for transmission line electric fields. The Commission has established a standard for the maximum electric field under transmission lines as 8 kV/m measured at one meter (3.28 feet) above the ground (reference (33)). All transmission lines in Minnesota must meet this standard. The maximum electric field measured at one meter above ground associated with the project is estimated to be 4.14 kV/m, well below the 8 kV/m standard. The Commission has not adopted a magnetic field standard for transmission

lines. However, the Commission has adopted a prudent avoidance approach in routing transmission lines and, on a case-by-case basis, considers mitigation strategies for minimizing EMF exposure levels associated with transmission lines. Magnetic fields for the project were calculated for two different typical system conditions during the project's first year in service. The first typical system condition is System Peak Energy Demand. The current flow, which is estimated loading of 1,100 MVA, is represented on the line during the peak hour of system-wide energy demand. The other typical system condition is System Average Energy Demand. The current flow, with estimated loading of 660 MVA, is represented on the line during a non-peak time (winter months) when there are high levels of wind generation and the transmission system is intact and has no outages. The above calculated magnetic field values for the two scenarios are shown in Table 4-11 and Figure 4-1. The magnetic field data shows the magnetic field levels decrease rapidly as the distance from the centerline increases. The maximum magnetic field measured at the ROW (150 feet), which is the closest distance from the centerline to the edge of the project area, would be between 2.6 MVA and 25 MVA. The transmission line is between 412-430 feet from the project boundary, which is a greater distance than was accounted for in the table.

Table 4-11 Calculated Magnetic Fields for Transmission Line (3.28 feet above Ground)

Structure Type	System Condition	Current (Amps)	Distance to Proposed Centerline (feet)												
			-300	-200	-100	-75	-50	-25	0	25	50	75	100	200	300
345 kV/345 kV Double-circuit Monopole	Peak System Energy Demand (1100 MVA/1100 MVA)	1850/1850	1.5	4.5	25	45	90	161	237	167	95	45	24	3.5	1
	High Wind Utilization (660 MVA/660 MVA)	1100/1100	1	2.6	15	27	54	96	141	99	56	27	14	2	0.6

Figure 4-1 Calculated mG for Proposed 345 kV Transmission Line Design (1 meter above ground)



4.5.1.2 Mitigation Measures

No EMF impacts are anticipated for the project; therefore, no mitigation measures are proposed.

Impacts can be mitigated through standard or special permit conditions identified in the transmission line draft route permit (Appendix E). Specifically, Section 5.4.2 draft route permit states that the permittee shall design, construct, and operate the transmission line in such a manner that the electric field measured one meter above ground level immediately below the transmission line shall not exceed 8.0 kV/m rms.

4.5.2 Implantable Medical Devices

Implantable medical devices, such as cardiac pacemakers, implantable cardioverter defibrillators (ICDs), neurostimulators, and insulin pumps, may be subject to interference from electromagnetic interference (EMI), which could mistakenly trigger a device or inhibit it from responding appropriately (reference (34)). While EMI can result in either inappropriate triggering or inhibition of a device from responding properly, only a small percentage of these occurrences are caused by external EMI. The American Conference of Governmental Industrial Hygienists (ACGIH) and ICD Manufacturers' recommended magnetic and electric field exposure limits are 1 g and 1 kV/m, respectively, for people with pacemakers (references (34, 35)). One gauss is five to 10 times greater than the magnetic field likely to be produced by a high-voltage transmission line (reference (34)).

4.5.3 Impacts

No impacts to implantable medical devices are anticipated from the generation station or the pipeline.

EMF exposure produced by transmission lines generally does not affect implantable devices, but in the event that they are affected it is typically a temporary asynchronous pacing. Electric and magnetic field levels decrease with distance. Accordingly, impacts to implantable medical devices and their users are anticipated to be negligible at the edge of the project area. If a medical device is affected, the device will return to normal operation when the person moves away from the source of the EMF (reference (34)). Therefore, no adverse health impacts or permanent impacts on implantable medical devices are anticipated as a result of the project.

4.5.4 Mitigation Measures

No adverse health impacts or permanent impacts on implantable medical devices are anticipated; therefore, no mitigation measures are proposed.

4.5.5 Stray Voltage

Electrical systems that deliver power to end-users and electrical systems within the end-user's business, home, farm, or other buildings are grounded to the earth for safety and reliability reasons. The grounding of these electrical systems results in a small amount of current flow through the earth. Stray voltage could arise from neutral currents flowing through the earth via ground rods, pipes, or other conducting objects, or from faulty wiring or faulty grounding of conducting objects in a facility. Thus, stray voltage could exist at any business, house, or farm which uses electricity independent of whether a transmission line is nearby.

A small amount of current flows through the earth at points where utility distribution systems are grounded. This is called neutral-to-earth voltage (NEV), which is voltage that is associated with distribution lines and electrical wiring within buildings and other structures (reference (36)). Stray voltage is not created by transmission lines, as they do not directly connect to businesses or residences. Stray voltage is generally associated with electrical distribution lines and electrical service at a residence or on a farm. Site-specific mitigation measures may be required to address potential stray voltage impacts (reference (37)).

4.5.5.1 Impacts

No impacts due to stray voltage are anticipated from the project. Transmission lines do not create stray voltage as they do not directly connect to businesses, residences, or farms. The project will not directly connect to businesses or residences in the area and will not change local electrical service.

The generation station and pipeline would likewise not create stray voltage.

4.5.5.2 Mitigation Measures

No impacts due to stray voltage are anticipated; therefore, no mitigation measures are proposed.

Impacts can be mitigated through standard or special permit conditions. The draft transmission line route permit for the project is included in Appendix E and contains permit conditions related to stray voltage impacts. Section 5.4.1 states that the permittee shall design, construct, and operate the transmission line in a manner so that the maximum induced steady-state short-circuit current shall be limited to five

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

4.5.6 Induced Voltage

It is possible for transmission line-generated electric fields to extend to a conductive object that is near a line. This may induce a voltage on the object; the magnitude of the voltage depends on several factors, such as the size, shape, and orientation of the object below the transmission line. Smaller conductive objects near the line could cause a nuisance shock to a person, but this nuisance shock is not a potential safety hazard. If there were insulated pipelines, electric fences, telecommunication lines, or other conductive objects with greater lengths and sizes, induced voltage from a transmission line could become unsafe to people who touch them; however, this still has not been found to be a health safety hazard (reference (38)).

4.5.6.1 Impacts

Impacts are anticipated to be negligible from the generation station and the pipeline.

Minimal impacts due to induced voltage are anticipated from the transmission line. Shocks from induced voltage from transmission lines are considered more of a nuisance than a danger. The transmission line will follow the NESC, which requires the steady-state (continuous) current between the earth and an insulated object located near a transmission line to be below 5 milliamps (mA) (reference (38)). In addition, the Commission limits electric fields to 8 kV/m to prevent serious hazard from shocks due to induced voltage under transmission lines (reference (39)). Any issued route permits would have to meet the NESC standards and the Commission's electric field limit.

4.5.6.2 Mitigation Measures

Potential impacts from induced voltage would be mitigated through the applicant's appropriate design measures, NESC standards, and Commission permit conditions.

4.6 Climate Change

4.6.1 Greenhouse Gases

Some of the most abundant gases in the atmosphere are known as greenhouse gases (GHGs). The most common GHGs include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and fluorinated gases. The concentration of GHGs in the atmosphere has a direct relationship to global warming and climate change. GHGs are known to trap heat in Earth's atmosphere by absorbing light energy and emitting a portion of the released energy back towards Earth (reference (40)). Trapped heat in the atmosphere creates a warming effect known as the GHG effect, in which the temperatures of Earth's atmosphere rise as more GHGs are added to the atmosphere. This drives further changes to the climate, affecting precipitation, flooding, and storms (reference (41)).

The amount of energy absorbed by 1 ton of a GHG over a given period is known as the Global Warming Potential (GWP). The order of common GHGs by GWP from lowest to highest is CO_2, CH_4, N_2O, and fluorinated gases (reference (40)). For ease of comparison, GWPs are calculated relative to the energy absorption of 1 ton of CO_2. Emission of a given GHG is normalized using the GWP; the resultant value is referred to as carbon dioxide equivalent (CO_2e).

4.6.1.1 Impacts

During project construction and operation, small amounts of GHGs will be generated. GHG emissions from project construction will be largely from the combustion of fossil fuels such as gasoline and diesel for vehicles and construction equipment. Primary sources of GHG emissions during operation include the CTs, emergency diesel generator, emergency diesel fire pump, heaters, tanks, circuit breakers, and piping fugitives. Additionally, GHG emissions will be generated from temporary and permanent changes in land carbon sinks. GHG emissions will be localized to the project area and are not anticipated to result in long-term impacts.

Potential emission of the fluorinated gas, SF_6, is also associated with operation of the transmission lines. SF_6 is a powerful GHG used in high-voltage circuit breakers in transmission systems. The use of such a substance is extremely common due to its stability and effectiveness at insulating electrical equipment.

Table 4-12 provides a preliminary estimate of the CO_2, CH_4, and N_2O construction emissions. GHG emissions resulting from project construction are estimated to be 14,289 metric tons of CO_2e. Table 4-13 provides a preliminary estimate of CO_2, CH_4, N_2O, and SF_6 emissions during project operations. Annual GHG emissions resulting from operation are estimated to be 773,421 metric tons CO_2e for the generation station, 685 metric tons CO_2e for the transmission lines, and 976 metric tons CO_2e for the pipeline. The anticipated operational GHG emissions from the project are 775,082 metric tons/year, which is approximately 0.6% of the total CO_2e emissions that were emitted in Minnesota in 2022, and approximately 3.0% of the total CO_2e emissions that were emitted by electricity generation in Minnesota in 2022 (reference (1)) Table 4-14 provides a preliminary estimate of the land use change emissions. GHG emission resulting from land use change during construction and operation are estimated to be 2,071 metric tons CO_2e. CO_2 and CH_4 emissions were calculated using factors for diesel and gasoline combustion from 40 CFR Part 98 Table C-1 and C-2. Land use change emissions were calculated using the emission factors from the Minnesota Environmental Quality Board (EQB) Climate Calculator (reference (42)). Detailed calculations are in Appendix I.

Table 4-12 Greenhouse Gas Emissions from Project Construction

Emission Source	CO2 (metric tons)	CH4 (metric tons)	N2O (metric tons)	CO2e (metric tons)
Construction Equipment	14,242	0.58	0.12	14,289
TOTAL	**14,242**	**0.58**	**0.12**	**14,289**

Table 4-13 Greenhouse Gas Emissions from Project Operation

Emission Source	CO_2 (metric tons/yr)	CH_4 (metric tons/yr)	N_2O (metric tons/yr)	SF_6 (metric tons/yr)	CO_2e (metric tons/yr)
Generation Station Operation	772,686	13.47	1.35	-	773,421
Transmission Lines Operation	-	-	-	0.03	685
Pipeline Operation	-	34.84	-	-	976
TOTAL	**772,686**	**48.32**	**1.35**	**0.03**	**775,082**

Table 4-14 Greenhouse Gas Emissions from Project Land Use Change

Emission Source	CO_2 (metric tons)	CO_2e (metric tons)
Construction Land Use Change	188	188
Operation Land Use Change	1,883	1,883
TOTAL	**2,071**	**2,071**

4.6.1.2 Mitigation Measures

The draft routing permit, route permit, and site permit do not contain mitigation measures specific to GHG emissions. Mitigation measure proposed by the applicant are discussed below.

Where possible, construction equipment would use lower GHG-emitting fuels, such as low-sulfur diesel and gasoline. Additionally, equipment would not idle unnecessarily during construction, thereby reducing emissions during construction.

The CTs are proposed to combust natural gas. Natural gas has lower CO_2 emissions than coal or diesel fuel (120 lb/MMBtu vs. 160 lb/MMBtu); therefore, the generation station would emit less GHGs than other generating units that combust diesel or coal. Further, the CTs would be capable of co-combusting hydrogen. GHG emissions from hydrogen combustion are much lower than that of diesel or natural gas combustion. Additionally, these more efficient, lower GHG-emitting generation units will displace the operation of older, less efficient and higher-GHG emitting generation units in Xcel Energy's system. Over time, these new CTs will allow for more renewable energy sources to operate, which will displace coal and other less-efficient natural gas and diesel generation units.

The project would assist with Minnesota's Next Generation Energy Act goals by co-combusting natural gas and hydrogen to emit less GHGs than other generating units that combust diesel or coal. Additionally, the project would provide firm, dispatchable generation to deliver reliable service and meet anticipated energy demands. The project would also provide transmission system support for the MEC and the renewable resources that are planned to be interconnected with the MEC.

4.6.2 Climate Change and Resilience

Climate change is observed as changes in temperature and precipitation patterns, increases in ocean temperatures and sea level, changes in extreme weather events, and ecosystem changes. These

changes are largely attributed to the greenhouse effect. As the amount of GHGs in Earth's atmosphere increases, the greenhouse effect causes Earth to become warmer (reference (43)).

There are also naturally occurring climate variations. These are cyclical patterns caused by variations in ocean circulation and atmospheric pressure patterns that occur on timescales of weeks to decades. Increased global surface temperatures could change these natural climate patterns and the resulting impact on regional precipitation and temperature anomalies (reference (44)).

Warmer and wetter conditions have been observed in Minnesota since observations first began in 1895, especially in the past several decades. An increase in precipitation volume and intensity has also been observed, including large-area extreme rainstorms. A rise in temperatures, particularly during the winter season in Minnesota, has been occurring as well. These trends are expected to continue (reference (45)).

To understand how climate change is anticipated to affect the project area, historical and projected climate data are considered, as well as climate hazard projections. The DNR's Minnesota Climate Explorer tool provides a summary of historical climate data for various regions across Minnesota; for this project, data was analyzed for Lyon County (reference (46)).

Figure 4-2 summarizes the mean, maximum, and minimum average daily temperature from 1895 to 2024 for Lyon County. It also shows the temperature trends per decade from 1895 to 2024 and from 1980 to 2024 to represent the full record of data and more recent data since 1980, respectively (reference (46)). In each temperature statistic, Lyon County exhibits an increase in daily temperature from 1895 to 2024. The annual average minimum temperature has increased at the largest rate of the three temperature statistics for the full record of data and for data from 1980 to 2024.Table 4-15 summarizes the trends for mean, maximum, and minimum average daily temperatures.

Figure 4-2 Historical Annual Mean, Maximum, and Minimum Daily Air Temperature (°F) for Lyon County from 1895 to 2024

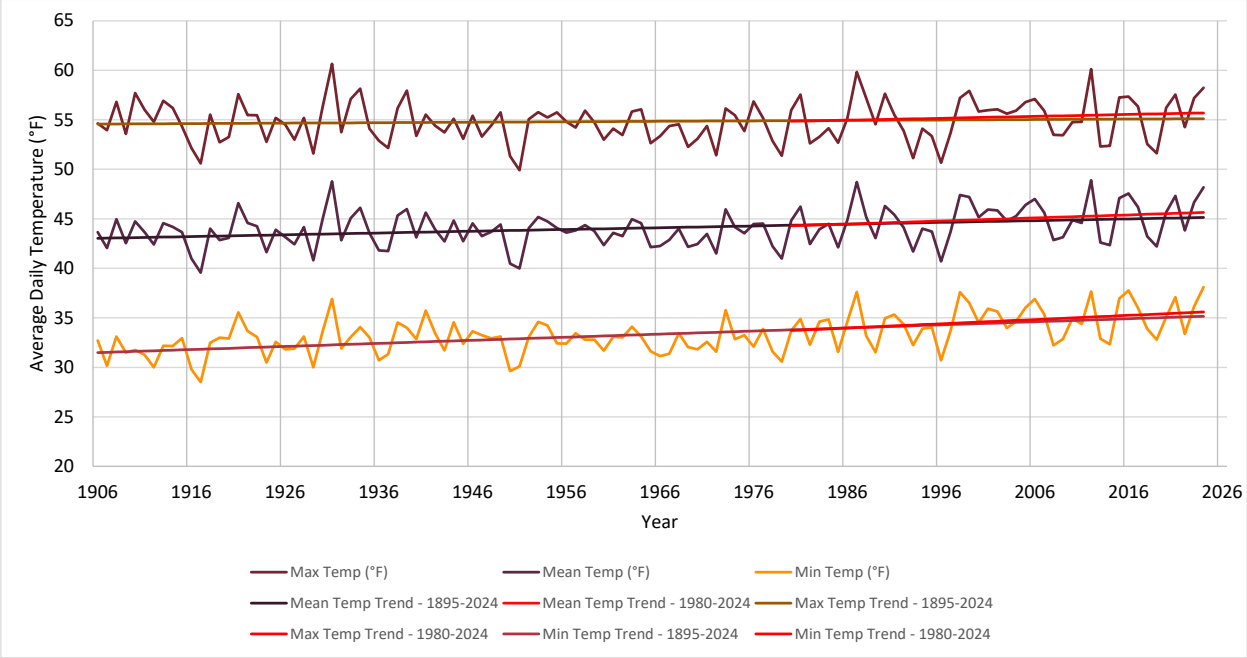


Table 4-15 Historical Annual Mean, Maximum, and Minimum Daily Air Temperature Trends (°F/decade) for Lyon County from 1895 to 2024

Temperature Statistic	Years	Trend (°F/decade)
Minimum Average Daily	1895-2024	0.31
Minimum Average Daily	1980-2024	0.43
Mean Average Daily	1895-2024	0.18
Mean Average Daily	1980-2024	0.31
Maximum Average Daily	1895-2024	0.05
Maximum Average Daily	1980-2024	0.19

Figure 4-3 shows the total annual precipitation for Lyon County from 1895 to 2024. Total annual precipitation increased from 1895 to 2024 by a rate of 0.37 inches/decade and increased from 1980 to 2024 by a rate of 0.60 inches/decade.

Figure 4-3 Historical Total Annual Precipitation (inches) for Lyon County from 1895 to 2024

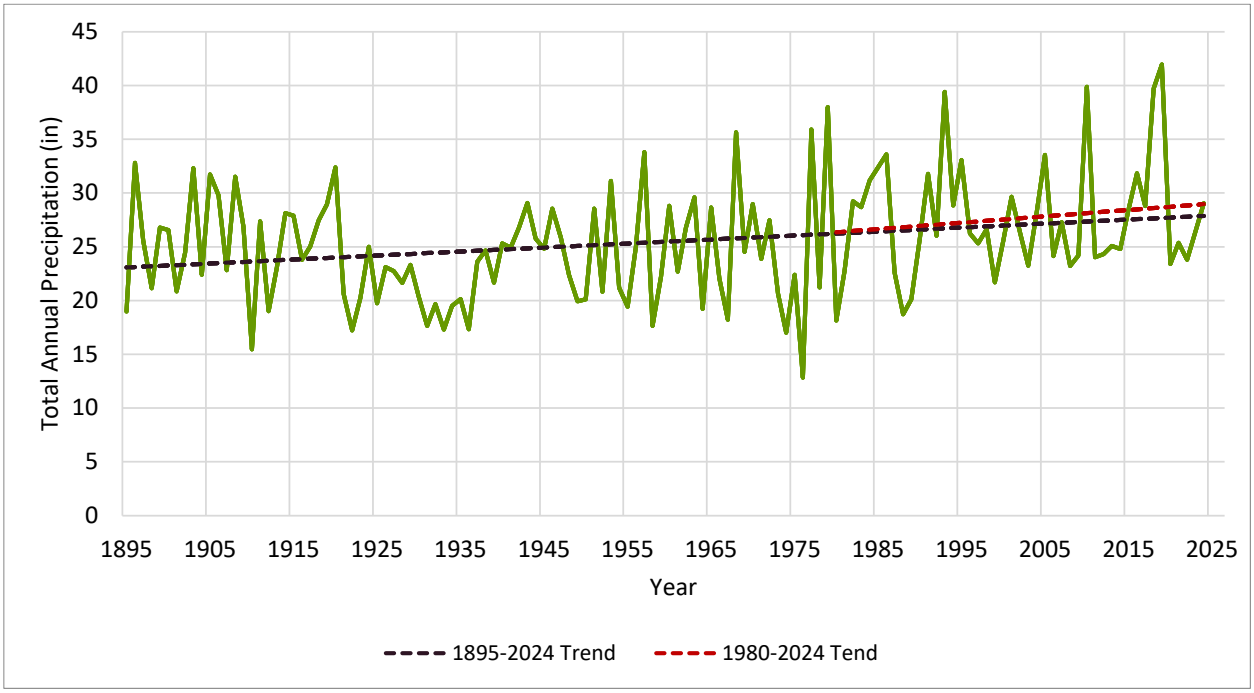
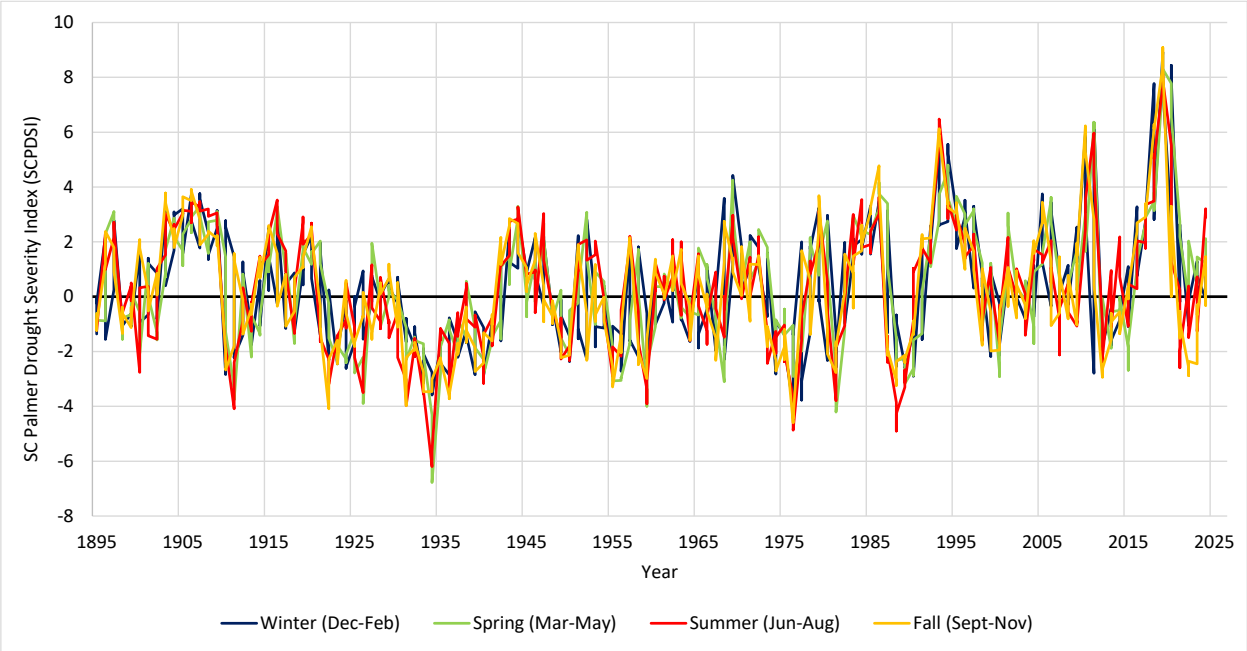


Figure 4-4 shows the seasonal drought severity for Lyon County from 1895 to 2024 using the Self-Calibrated Palmer Drought Severity Index (scPDSI). The scPDSI is a meteorological drought index that measures the departure of moisture. Negative scPDSI values indicate drought conditions, positive values indicate wet conditions, and values near zero indicate normal conditions (reference (47)). Lyon County experienced frequent drought episodes from 1910 to 1940. From 1980 to 2024, seasonal wet conditions have generally been more frequent than drought conditions.

Figure 4-4 Historical Drought Severity for Lyon County from 1895 to 2024



Future projections are based on the Minnesota dynamically downscaled climate model data that was developed by the University of Minnesota and are summarized in three scenarios: Shared Socioeconomic Pathway (SSP) 245, SSP370, and SSP585. SSP is a measure adopted by the Intergovernmental Panel on Climate Change (IPCC) to represent various greenhouse gas concentration pathways as well as social and economic decisions (reference (48)).

SSP245 represents a “Middle of the Road” scenario in which economic, social, and technological trends follow historical patterns, population growth is moderate, and inequality persists. Additionally, SSP245 includes an intermediate emissions scenario, where a net radiative forcing of 4.5 watts per meter squared (W/m^2) is received by Earth due to the GHG effect, and emissions begin to decrease around 2040 (reference (48)).

SSP370 represents a “Regional Rivalry” scenario where nations focus on regional issues instead of cross-collaboration and development. SSP370 also includes a high emissions scenario, where a net radiative forcing of 7.0 W/m^2 is received by Earth (reference (48)).

SSP585 represents a “Fossil-fueled Development” scenario where there is increased development in competitive markets driven by an increased global consumption of fossil fuels. SSP585 also includes a very high emissions scenario, where a net radiative forcing of 8.5 W/m^2 is received by Earth and no emissions are reduced through 2100 (reference (48)).

Table 4-16 shows the modeled historical and projected temperature values for the project. Under all scenarios for each statistic, temperature values are projected to increase through the end of the 21st century. The largest increases occur in the minimum daily temperature under most scenarios.

Table 4-16 Modeled Historical and Projected Temperature Trends for the Project

Scenario	Time Period	Average Daily Temperature (°F) - Ensemble Mean	Minimum Daily Temperature (°F) - Ensemble Mean	Maximum Daily Temperature (°F) - Ensemble Mean
Historical	1995-2014	44.7	35.4	57.1
ssp245	2040-2059	48.4 (3.7)	39.2 (3.8)	60.6 (3.6)
ssp245	2060-2079	49.5 (4.9)	40.4 (5.0)	61.7 (4.6)
ssp245	2080-2099	51.2 (6.5)	42.0 (6.6)	63.5 (6.4)
ssp370	2040-2059	49.2 (4.5)	39.8 (4.4)	61.7 (4.7)
ssp370	2060-2079	51.4 (6.7)	42.0 (6.6)	63.8 (6.7)
ssp370	2080-2099	53.4 (8.7)	44.1 (8.7)	65.6 (8.6)
ssp585	2040-2059	49.0 (4.3)	39.7 (4.3)	61.2 (4.2)
ssp585	2060-2079	51.5 (6.8)	42.4 (7.0)	63.6 (6.6)
ssp585	2080-2099	55.7 (11.0)	46.8 (11.4)	67.6 (10.5)

Table 4-17 shows the modeled historical and projected precipitation values for the project. Under the SSP245 scenario, a slight increase in precipitation is projected from 2040-2079, and a slight decrease is projected from 2080-2099. Under SSP370, a decrease in precipitation from modeled historical values is projected to occur from 2040-2079, and an increase is projected from 2080-2099. For SSP585, an increase in precipitation from modeled historical values is projected.

Table 4-17 Modeled Historical and Projected Precipitation Trends for the Project

Scenario	Time Period	Total Annual Precipitation (in) - Ensemble Mean
Historical	1995-2014	29.8
ssp245	2040-2059	31.2 (1.5)
ssp245	2060-2079	32.1 (2.3)
ssp245	2080-2099	29.3 (-0.5)
ssp370	2040-2059	27.9 (-1.8)
ssp370	2060-2079	29.2 (-0.6)
ssp370	2080-2099	31.1 (1.3)
ssp585	2040-2059	30.9 (1.1)
ssp585	2060-2079	33.8 (4.0)
ssp585	2080-2099	33.2 (3.4)

The Climate Mapping for Resilience and Adaptation (CMRA) tool provides climate projections to help with assessments of local exposure and climate-related hazards (reference (49)). CMRA was used to assess projected storm intensity changes for RCP 4.5 and RCP 8.5. RCP 4.5 is a lower emissions scenario where humans reduce fossil fuel usage, and RCP 8.5 is a higher emissions scenario where emissions continue to increase due to fossil fuel usage. Table 4-18 shows historical and projected annual days

exceeding 99th percentile precipitation. For RCP 4.5, the most annual days exceeding 99th percentile precipitation, 5.5 days, occurs in Mid Century (2035-2064). For RCP 8.5, the most annual days exceeding 99th percentile precipitation, 6.4 days, occurs in Late Century (2070-2099).

Table 4-18 Historical and projected Annual Days Exceeding 99th Percentile Precipitation

Scenario	Time Period	Annual Days Exceeding 99th Percentile Precipitation
Historical	1976-2005	4.4
RCP 4.5	Early Century (2015-2044)	5.1
RCP 4.5	Mid Century (2035-2064)	5.5
RCP 4.5	Late Century (2070-2099)	5.4
RCP 8.5	Early Century (2015-2044)	5.2
RCP 8.5	Mid Century (2035-2064)	5.4
RCP 8.5	Late Century (2070-2099)	6.4

The First Street Risk Factor risk assessment and map tool was used to determine a risk assessment for Lyon County to help identify current and future climate change risks (reference (50)). In Lyon County, flood risk is moderate, wildfire risk is moderate, wind risk is minor, air quality risk is minor, and heat risk is minor (references (51–55)).

4.6.2.1 Impacts

The project would result in GHG emissions that would contribute to climate change impacts such as changes in temperature, precipitation, and extreme weather events. These emissions are discussed in Section 4.6.1.1. Energy projects are generally considered critical facilities and require extra attention when considering climate change risks. The climate change risks most susceptible to the project include increases in annual temperatures, increases in storm frequencies and intensities, and more frequent wildfires.

High temperatures can affect the sagging of a transmission line conductor and its thermal tolerance (reference (56)). Changes in storm timing and intensity may increase the risk of local flooding. Due to increases in annual temperatures, there may be periods of dry weather and concerns of wildfires caused by increases in drought severity.

4.6.2.2 Mitigation Measures

The draft pipeline routing permit, transmission line route permit, and site permit do not contain mitigation measures specific to GHG emissions. Mitigation measures to reduce GHG emissions are discussed in Section 4.6.1.2 of this EA. Below is a list of the key resiliency efforts for the project:

- The transmission lines would be routed and engineered to be resilient under changing climatic factors, including increased average temperatures. The transmission lines would be designed to meet or surpass relevant local and state codes, including the NESC and the applicant's standards.
- During construction, a SWPPP would be implemented to manage stormwater and reduce the potential for runoff and erosion. Where areas are subject to higher rates of erosion, vegetation

establishment would be achieved within the timelines required in the SWPPP, thereby minimizing potential impacts for erosion. During the project's operations, vegetative cover would minimize potential for erosion impacts to waterways. Storm events would also be considered during the SWPPP development to design permanent stormwater features.

- Wildfire risks would be mitigated by performing necessary vegetation management for the transmission line. Additionally, an emergency diesel fire pump would be at the site to protect against fire, should a fire arise.

4.7 Air Quality

The Clean Air Act (CAA) is a federal law that regulates air emissions from stationary and mobile sources. The CAA requires the EPA to set National Ambient Air Quality Standards (NAAQS) for six common air pollutants, referred to as "criteria pollutants" (reference (57)) The six criteria pollutants are ground-level ozone (O_3), particulate matter (PM_{10}/$PM_{2.5}$), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), carbon monoxide (CO), and lead (Pb). NAAQS are set to address the public health and welfare risks posed by these pollutants (reference (58)). Attainment with national air quality standards in the state of Minnesota is assessed at the county level and rely on compliance at the facility ambient air boundary. The EPA currently designates Lyon County to be in attainment for all NAAQS.

In Minnesota, air quality is monitored using stations located throughout the state. The MPCA uses data from these monitoring stations to calculate the Air Quality Index (AQI) on an hourly basis for O_3, $PM_{2.5}$, SO_2, NO_2, and CO. Each day is categorized based on the pollutant with the highest AQI value for a particular hour (reference (59)).

The project area is located nearest to the Marshall air quality monitor in Marshall, Minnesota, approximately 20 miles north of the project area. This station monitors for O_3 and $PM_{2.5}$. A summary of days in each AQI category at the Marshall monitor for the most recent five-year period available, covering 2020-2024, is provided in Table 4-19.

Table 4-19 Summary of the Air Quality at the Marshall Monitor for 2020 - 2024

Year	Good	Moderate	Unhealthy for Sensitive Groups	Unhealthy	Very Unhealthy
2020	309	51	0	0	0
2021	263	91	3	2	0
2022	303	51	0	2	0
2023	206	142	10	3	0
2024	276	89	1	0	0

Air quality at this monitoring station has generally been considered good for the majority of the past five reported years. In 2023, 142 days were classified as moderate, 10 days were classified as unhealthy for sensitive groups, and three days were classified as unhealthy.

4.7.1 Impacts

Air emissions will occur during both the construction and operational phases of the project. Air emissions during construction will primarily consist of emissions from construction equipment and will include

pollutants such as CO_2, nitrogen oxides (NO_X), $PM_{2.5}$, and PM_{10}. Dust generated from earth disturbing activities also gives rise to particulate matter. Emissions from construction vehicles could be minimized by using modern equipment with lower emissions ratings. Adverse effects on the surrounding environment are expected to be negligible due to the temporary disturbance during construction and the intermittent nature of the emission- and dust-producing construction phases.

During operation of the transmission lines and natural gas pipeline, air emissions will be minimal. Small amounts of NO_X will be produced from the operation of the transmission lines through ionization of air molecules during corona discharge. These emissions are expected to be minimal. A small amount of O_3 will be created due to corona from the operation of transmission lines. The emission of O_3 during operations is not anticipated to have a significant impact on the environment (reference (60)). Emissions from maintenance activities associated with mobile source combustion are likely to be temporary and minimal.

Operation of the generation station includes two 210 MW CTs and associated ancillary equipment, including one emergency diesel generator, an emergency diesel fire pump, diesel storage tanks, a natural gas-fired water bath heater, and natural gas piping components. Obtaining a Title V air permit from the MPCA is required to construct and operate the generation station. The Title V air permit will contain regulatory requirements, limits, and compliance demonstration requirements. Xcel Energy submitted a Title V air permit application to the MPCA on September 24, 2025.

The generation station does not meet the definition of a major emission facility with respect to the EPA Prevention of Significant Deterioration (PSD) and will not require PSD review. The generation station will be a minor source of hazardous air pollutants (HAPs) as it will emit less than 10 tons of any single HAP and less than 25 tons of combined HAPs from all emission sources. The generation station will be limited in emissions based upon annual heat input to the CTs. Each CT will be limited to 6,670,868 million British thermal units (Btu) per year (based on 3,050 operating hours per year per CT). The emergency generators and fire pump will also be limited to 500 hours per year of operation. Table 4-20 summarizes the maximum potential to emit (PTE) for the generation station along with the PSD Threshold values and the maximum hourly emission rate for each CT.

Table 4-20 Summary of the Generation Station Maximum Hourly CT Emission Rates and PTE Values Against PSD Thresholds

Pollutant	Maximum Hourly CT Emission Rate[2] (lb/hr)	Generation Station Limited PTE[1] (tons per year)	PSD Threshold (tons per year)
PM	8.0	25.0	250
PM_{10}	8.0	25.0	250
$PM_{2.5}$	8.0	25.0	250
NO_X	75.1	249.5	250
SO_2	6.7	20.1	250
CO	36.1	221.1	250
VOC	3.5	36.3	250
CO_2e	277,299.4	855,109	--

[1] Total emissions include emissions from fugitive insignificant activities, CTs, fire pump, water bath heater, and emergency generators.
[2] lb/hr = pounds per hour during normal operation. Emission rates are for steady state normal operation at 100% load.

Air dispersion modeling was conducted for the generation station to determine whether emissions from the generation station would or would not cause or contribute to a violation of the Minnesota Ambient Air Quality Standards (MAAQS) and NAAQS. Modeling was conducted in accordance with the EPA's Guidance on Air Quality Models (40 C.F.R. Part 51 Appendix W) and MPCA's Air Dispersion Modeling Practices (reference (61)). Xcel Energy submitted a modeling protocol to the MPCA that was conditionally approved on August 14, 2025. The modeling results were approved by the MPCA on December 17, 2025.

According to MPCA guidance, a significant impact level (SIL) analysis was conducted to determine if cumulative impacts analysis (CIA) modeling would be required. A SIL analysis was conducted for SO_2, PM_{10}, $PM_{2.5}$, NO_2, and CO. Table 4-21 summarizes the results for the respective pollutants and averaging periods. All pollutants and averaging periods result in values below the SIL standards, except for 1-hr NO_2, which is approximately 484% of the SIL.

Table 4-21 Summary of SIL Modeling Results

Pollutant	Averaging Period	Modeled Concentration (H1H)[1] (µg/m³)	SIL (µg/m³)	Percent of SIL
SO_2	1-hr	1.56	7.86	19.8%
	3-hr	2.20	25	9.0%
	24-hr	0.60	5	12.0%
	Annual	0.02	1	2.0%
PM_{10}	24-hr	1.05	5	21.0%
	Annual	0.13	1	13.0%
$PM_{2.5}$	24-hr	1.05	1.2	87.5%
	Annual	0.13	0.2	60.0%
NO_2	1-hr	52.16	7.52	693.6%
	Annual	0.93	1	93.0%
CO	1-hr	846.49	2000	42.0%
	8-hr	420.01	500	84.0%

[1] The modeled results are the high 1st high (H1H; highest) modeled impacts over 5 years (2018-2022) for the generation station sources only.

Because the 1-hour NO_2 does not pass the SIL, further CIA modeling is required to demonstrate compliance with the NO_2 1-hour MAAQS and NAAQS. The SIL results for the other pollutants are below the SIL, and therefore, no further modeling demonstration is required.

The CIA modeling demonstration includes sources from the generation station, any nearby sources within 10 kilometers, and the current background value for the area. Results from the 1-hr NO_2 CIA are summarized in Table 4-22 compared to the MAAQS/NAAQS standard.

Table 4-22 Summary of CIA Modeling Results

Pollutant	Averaging Period	Modeled Impact[1] (µg/m^3)	Background Value (µg/m^3)	Total CIA Result[2] (µg/m^3)	NAAQS/MAAQS (µg/m^3)	Percent of NAAQS/MAAQS
NO_2	1-hr	97.4	73.0	170.4	188	90.6%

[1] Modeled impact includes the generation station sources and one nearby source (Northern Border Pipeline Compressor-12). Results show the highest 8th highest result averaged over 5 years (2018 – 2022).
[2] The total CIA result includes the sum of the modeled impact and background value.

The results in Table 4-22 show that the 1-hr NO_2 CIA modeling results are compliant with the MAAQS and NAAQS.

To understand the impact of emissions on human health from the generation station, an air emissions risk assessment (AERA) was conducted. Per MPCA guidance, any proposed electric production facility greater than or equal to 25 MW must complete an AERA. An AERA evaluates air impacts to human health under three main pathways and four exposure levels. The pathways include inhalation, indirect (i.e., farmer, urban gardener, and resident), and multi-pathways (i.e., farmer, urban gardener, and resident). The exposure levels include acute (i.e., hourly, daily), subchronic (i.e., monthly), chronic non-cancer (i.e., annual), and chronic cancer (i.e., annual). The MPCA risk assessment screening spreadsheet (RASS) is a tool used to determine the air impacts to human health on the nearby communities. The RASS results from the generation station show that the facility will not negatively impact human health. Xcel Energy submitted an AERA protocol to the MPCA on April 30, 2025, and results were approved by the MPCA on December 15, 2025.

4.7.2 Mitigation Measures

There are no mitigation measures specific to impacts to air quality in the draft transmission line or pipeline route permits.

If construction activities generate problematic dust levels, the applicant may employ construction-related practices such as wetting of unpaved roads and exposed or barren ground to control fugitive dust. Additionally, cleared rights-of way, storage areas, and access roads would be restored and revegetated once construction is complete, limiting further dust production during operation.

During operation of the pipeline and transmission lines, air emissions will be minimal. Small amounts of emissions will be associated with the intermittent project operation and maintenance activities via mobile combustion and roadway dust generation. If dust levels become problematic during operation and maintenance activities, the applicant may employ fugitive dust control practices such as wetting of unpaved roads.

The generation station will be limited in emissions based upon annual heat input to the CTs with each CT limited to 6,670,868 million British thermal units per year (based on approximately 3,050 hours per year per turbine). In lieu of the annual heat input, startup/shutdown and low-load limits initially proposed for the CTs, facility-wide emission caps will be determined in consultation with the MPCA. The exact amount for each cap is currently being negotiated with the MPCA but will be between 240 and 245 tons (12-month rolling sum) for NO_X and CO and 9 tons for formaldehyde. A NO_X and CO continuous emission monitoring system (CEMS) will be used to demonstrate compliance with the facility CAPs. The emergency engines will continue to be limited to 500 hours of operation per engine.

In addition, to limit VOC emissions, the permit will include 12-month rolling sum limits for low load operation and start-up/shutdown events. Discussions are currently taking place to establish these limits with the MPCA (reference (62)).

For the generation station, the CTs will be equipped with low-NO_X burners to limit NO_X formation and Xcel Energy will also employ good combustion practices (i.e., operation of combustion equipment at best combustion efficiency) to reduce CO, VOC, and CO_2 emissions. Combusting natural gas, a low sulfur and low ash fuel, will also reduce particulate matter and SO_2 emissions compared to alternative fossil fuel sources (reference (63)).

Furthermore, the CTs will be subject to New Performance Standards (NSPS) including 40 CFR Part 60 KKKK (NSPS KKKK, Performance for Stationary Combustion Turbines) and Subpart TTTTa (NSPS TTTTa, Standards of Performance for Greenhouse Gas Emissions). The CTs must be limited to 15 ppm NO_X at 15 percent O_2 under NSPS KKKK. The installment of the low-NO_X burners will limit NO_X to 9 ppm and therefore satisfying the NSPS KKKK requirement. Xcel Energy will satisfy NSPS TTTTa by meeting the CO_2 limit for intermediate or low load units. Additionally, co-firing with hydrogen will also help in maintaining compliance with the CO_2 limit as emissions from combusting hydrogen are primarily water vapor.

The CTs and other sources at the generation station will also be subject to compliance monitoring and testing. Xcel Energy will satisfy the NSPS KKKK compliance demonstration requirements by monitoring NO_X with a continuous emissions monitoring (CEMS) and demonstrating fuel consumption by fuel sampling or fuel contract specifications. For satisfying compliance with NSPS TTTTa, Xcel Energy will maintain fuel purchase records of pipeline quality natural gas if the unit is categorized in the low load category or by monitoring CO_2 under the intermediate category in operations. Additionally, stack testing will be expected to some degree as required by the Title V air permit.

As a part of the air dispersion modeling demonstration, the applicant developed a General Public Preclusion Plan (GPPP) that outlines the forms and controls the facility will use to restrict access to the general public along the fence line. The GPPP will be updated with site-specific information once the project is completed.

4.8 Land-Based Economies

The project's construction and operation have the potential to impact land-based economies. The generation station, transmission lines, and pipeline are all long-term physical modifications on the landscape, which, by their presence and operation, would prevent or otherwise limit the use of land for other purposes.

Land-based economies include agriculture, forestry, mining, and recreation and tourism activities, which are discussed in more detail in the following sections. Potential project impacts on land-based economies are assessed through several key elements. The majority of elements considered under land-based economies would be minimally impacted by the project due to a lack of those resources in the ROI; only agricultural impacts are discussed here in any detail.

4.8.1 Agriculture

Agriculture is the sole existing land use in the project area (Map 4-6). According to the USDA's 2022 Census of Agriculture, Lyon County encompasses approximately 461,907 acres, of which 424,591 acres (92 percent) are dedicated to farming. Of these farmed lands, 389,195 acres are actively cultivated, while

the remaining farmed areas are used for silviculture (reference (64)). Lyon County hosts a total of 869 individual farms, with an average farm size of 489 acres.

The primary crops grown in Lyon County include corn for grain, corn for silage, oats for grain, and wheat for grain. In terms of livestock, hogs and pigs are the most prevalent, followed by cattle and calves, sheep and lambs, and poultry. The market value of agricultural production in Lyon County in 2022 was approximately $763 million, with livestock, poultry, and their products accounting for about 59 percent of this value, and crop sales making up the remaining 41 percent (reference (64)).

County ditches play a critical role in supporting agricultural productivity in Lyon County. The county maintains over 200 miles of documented county ditches, which are essential for managing water on agricultural lands. These ditches help remove excess water from fields with poorly drained soils. There are two county ditches within the project area, County Ditch 29 and County Ditch 24 (Map 4-7). These ditches consist primarily of subsurface field drain tile (Map 4-7)

While the project area includes cultivated cropland, it does not encompass areas used for animal husbandry or specialty crop production. The area is currently under active cultivation for species of corn and soybeans.

The USDA Natural Resource Conservation Service (NRCS) Soil Survey Geographic (SSURGO) database (reference (65)) identifies farmland soils based on three categories, which are subject to protection under the Farmland Protection Policy Act (FPPA). These categories include prime farmland, prime farmland when drained, and farmland of statewide importance (reference (66)). Prime farmland is defined by the NRCS as land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. A total of 149.3 acres within the ROI have soil that is characterized as prime farmland, farmland of statewide importance, or prime farmland if drained, which equates to 100 percent of the agricultural land within the project area (Map 4-7).

4.8.1.1 Impacts

The project will permanently convert 149.3 acres of cultivated cropland into an industrial land use. This conversion will have a minimal impact on the availability of the agricultural land in Lyon County, as agricultural production will continue in the surrounding areas during both the construction and operational phases of the project. The project would avoid impacts to County Ditch 29 and County Ditch 24 and would not negatively impact changes in water runoff during construction or operations of the project.

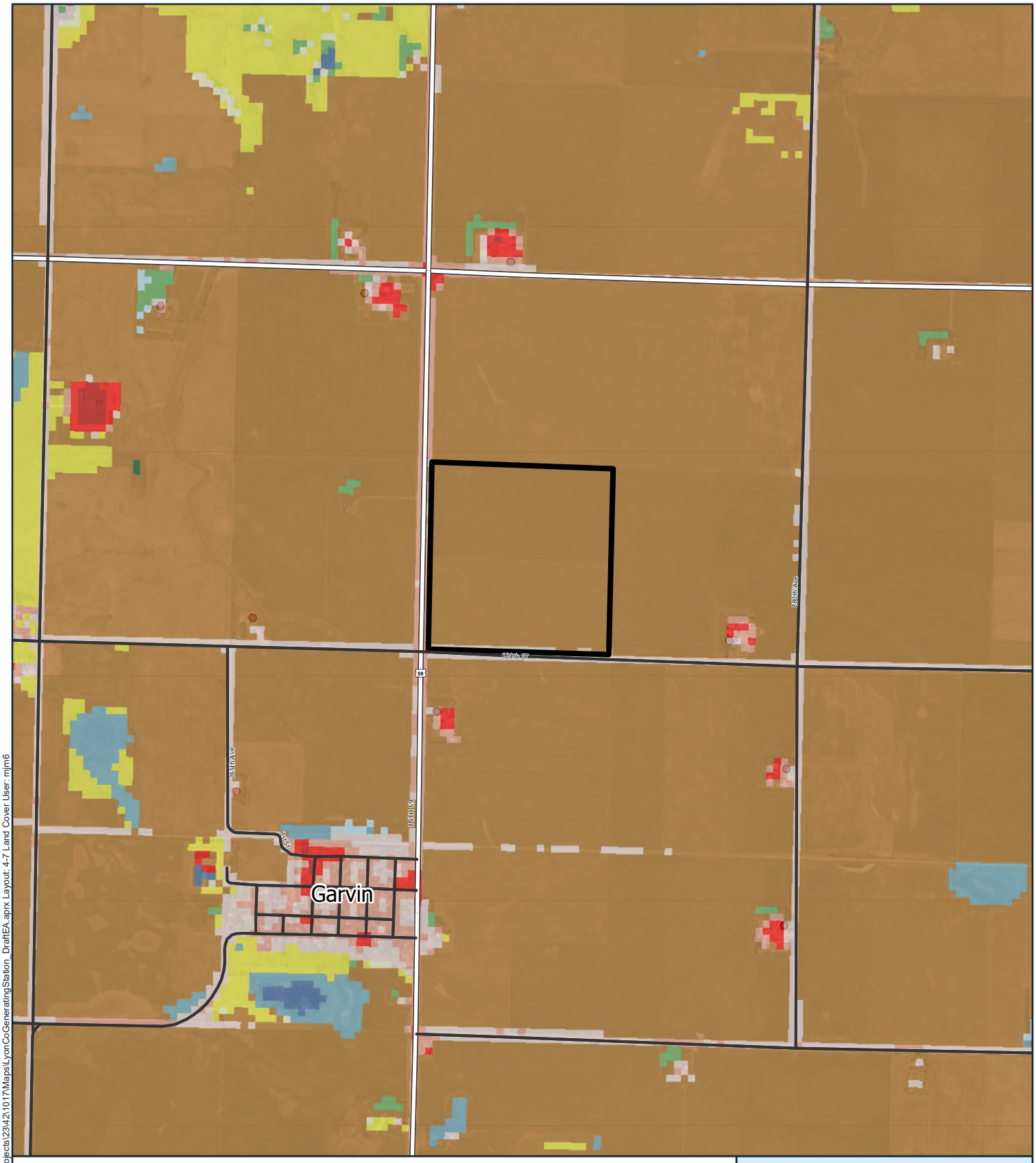
Minnesota Rule, part 7850.4400, Subpart 4, prohibits the siting of a large electric power generating plant where more than 0.5 acres of prime farmland is occupied per megawatt of net generating capacity. The generation capacity of the proposed CTs totals 420 MW. At this capacity, the 149.3 acres of prime farmland converted would not violate the requirements of Minnesota Rules 7850.4400, Subpart 4.

4.8.1.2 Mitigation Measures

Several sections of the draft site permit (Appendix D) address agricultural mitigation and soil-related impacts:

- Section 4.3.9 requires protection and segregation of topsoil.
- Section 4.3.10 requires measures to minimize soil compaction.

- Section 4.3.11 requires the permittee to “implement erosion prevention and sediment control practices recommended by the [MPCA]” and to “obtain a [CSW Permit].” A CSW Permit requires both temporary and permanent stormwater controls to ensure that stormwater does not become a problem on or off-site.
- Section 4.3.16 requires the permittee to develop an agricultural impact mitigation plan (AIMP) in coordination with the Minnesota Department of Agriculture (MDA).
- Section 4.3.17 requires the permittee to restrict pesticide use to those pesticides and methods of application approved by the MDA, DNR, and the EPA. All pesticides shall be applied in a safe and cautious manner so as not to damage adjacent properties, including crops, orchards, tree farms, apiaries, or gardens. The permittee shall contact the landowner at least 14 days prior to pesticide application on their property.
- Section 4.3.18 requires the permittee to develop an Invasive Species Management Plan to prevent the introduction and spread of invasive species during the construction of the project.
- Section 4.3.19 requires the permittee to take reasonable precautions against the spread of noxious weeds.
- Section 4.3.23 requires the permittee to avoid, promptly repair, or replace all drainage tiles broken or damaged during all phases of the project's life unless otherwise negotiated with the affected landowner.
- Section 4.3.27 requires the permittee to fairly restore or compensate landowners for damages to crops, fences, drain tile, etc., during construction.



Project Boundary
US Highway
Road

NLCD Land Cover (2023)

- Open Water
- Developed, Open Space
- Developed, Low Intensity
- Developed, Medium Intensity
- Developed, High Intensity
- Deciduous Forest
- Herbaceuous
- Hay/Pasture
- Cultivated Crops
- Woody Wetlands
- Emergent Herbaceuous Wetlands

0 0.5
Miles

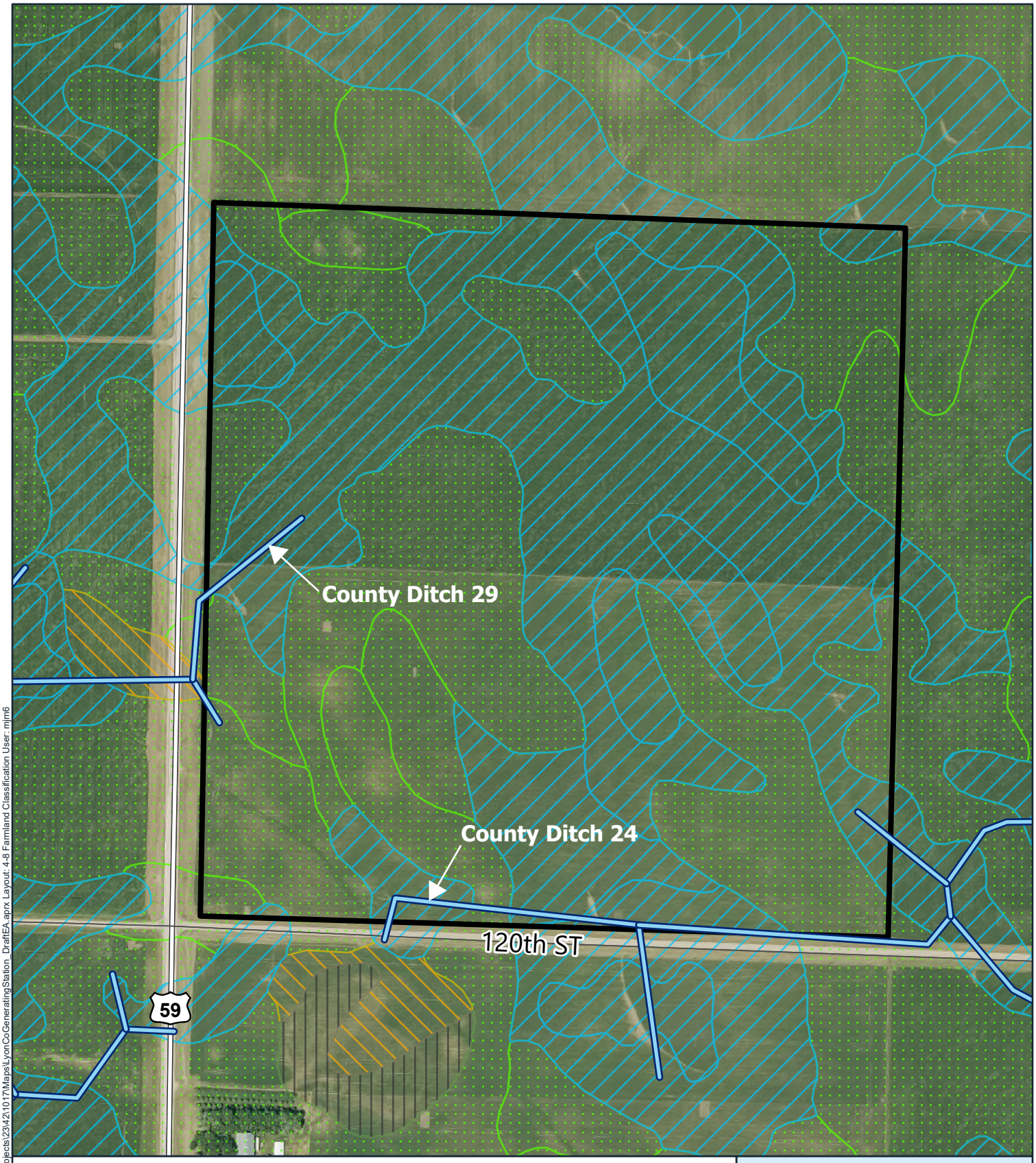
Sources: XCEL, NLCD, Barr, Esri

Lyon Co. Generating Station Project

Land Cover

4-6

BARR



Farmland Classification

- All areas are prime farmland
- Farmland of statewide importance
- Not prime farmland
- Prime farmland if drained

- Ditch
- Project Boundary
- US Highway
- Township Road

0 300 600
Feet

Sources: XCEL, Barr, NRCS, Lyon Co, Esri

Lyon Co. Generating Station Project

Prime Farmland

MAP 4-7

BARR

4.8.2 Forestry

Minnesota's forests primarily consist of aspen/birch, spruce/fir, and oak/hickory forest types, which are managed by private/tribal industry (44 percent), state government (24 percent), federal government (17 percent), and counties/municipalities (15 percent). As of 2020, Minnesota's forest products industry was the state's fifth largest manufacturing sector by employment and provided 64,500 jobs. In 2017, Minnesota's forest products industry produced $17.8 billion in shipment value (gross sales) and provided 8.5 percent of all manufacturing payroll employment (reference (67)).

Timber harvested in Minnesota is used for construction materials, paper products, and heating for homes, among other commercial goods. Additionally, timber harvested from private commercial forest lands is primarily used in the manufacturing of paper products.

According to the DNR forest inventory, no forested lands or commercial forestry operations exist within the project area.

4.8.2.1 Impacts

Due to the absence of known forested lands or forestry operations in the project area, impacts to forestry resources are not anticipated as a result of the project.

4.8.2.2 Mitigation Measures

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

4.8.3 Mining

Mining is a significant industry in Minnesota, with mining operations classified into two categories: metallic minerals and non-metallic minerals (reference (68)). Metallic minerals consist of materials such as iron ore, copper, and nickel, while non-metallic minerals consist of materials such as aggregate, peat, and kaolin clay. There are no known mining operations documented in the project area.

4.8.3.1 Impacts

Since there are no known mining operations documented in the project area, no direct impacts to mining are anticipated as a result of the project.

Construction of the project will require the use of sand and aggregate for structural backfill and to construct reliable access routes for construction equipment. Based on availability, some of the sand and aggregate material could come from sources near the Project. Increased demand for sand and aggregate material as a result of the project would be temporary and limited to the period of construction and is considered an indirect impact. Additional new mining operations or expansion of existing mines would not be necessary to satisfy project demand.

4.8.3.2 Mitigation Measures

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

4.8.4 Tourism

Tourism and recreational activities commonly overlap; the difference between the two is the distance traveled to access these opportunities. Recreational activities are generally located within the vicinity of one's home and easily accessible, while tourism involves activities are those that require more substantial travel and may incur additional expenses as a result. Tourism near the ROI is limited, with the annual Lyon County Fair located approximately 19 miles to the north in Marshall, MN (reference (69)), and camping at the Garvin County Park located approximately 2.5 miles north along the Cottonwood River.

4.8.4.1 Impacts

Since there are no known tourism-based businesses or attractions documented in the ROI, no impacts to recreation or tourism are anticipated as a result of the project.

4.8.4.2 Mitigation Measures

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

4.8.5 Recreation

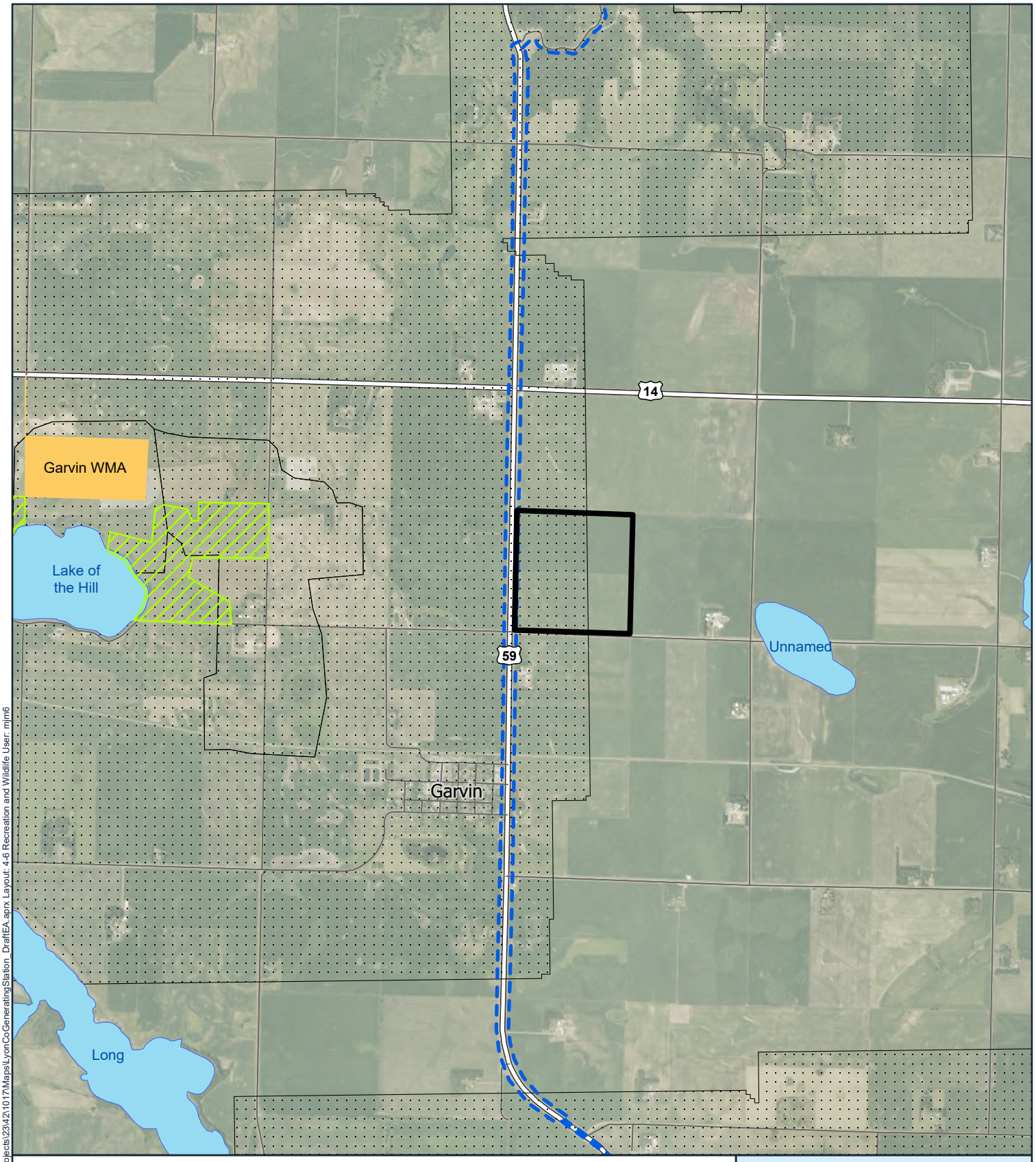
Recreational activities available nearby include snowmobiling, hunting, and fishing, as well as activities on state-managed lands (Map 4-8). Snowmobiling is the nearest recreational activity to the project area, with segments of the Lyon County Snowmobile Trail paralleling US Highway 59 where it passes the project area immediately to the west (reference (70)). The nearest managed public lands for recreational purposes include the Garvin Wildlife Management Area (WMA) to the west of the project area. The Garvin WMA offers opportunities for viewing and hunting deer, small game, and pheasants, (reference (71)). Garvin County Park is located approximately 2.5 miles north of the project along the Cottonwood River (reference (72)). The nearest Minnesota State Park is Lake Shetek State Park, approximately 8 miles to the south of the project area

4.8.5.1 Impacts

Project impacts on recreation are not anticipated. Potential impacts during the duration of construction are limited by the fact that construction is not planned to take place during the snowmobiling season (i.e., winter), and the trail will not be changed, obstructed, or rerouted. The nearest WMAs are located more than one mile from the project area; therefore, no notable impacts to recreation are anticipated as a result of the project.

4.8.5.2 Mitigation Measures

No mitigation measures are proposed.



Project Boundary
US Highway
Road
Minnesota Snowmobile Trails
USFWS Waterfowl Production Area
Shallow Lakes Identified by DNR Wildlife
Wildlife Management Area - WMA
Grassland Bird Conservation Areas

0 0.5 1
Miles

N

Sources: XCEL, Barr, Minnesota DNR, Esri

Lyon Co. Generating Station Project

Recreation and Wildlife

MAP 4-8

BARR

Barr Footer: ArcGISPro, 11/19/2025 4:39 PM File: I:\Projects\23\42\1017\Maps\LyonCoGeneratingStation_DraftEA aprx Layout: 4-6 Recreation and Wildlife User: mjm6

4.9 Archaeological and Historic Resources

Archaeological resources are defined as the material remains of past human life or activities (reference (73)). Pursuant to the Minnesota Historic and Architectural Survey Manual (reference (74)), historic resources are defined as sites, buildings, structures, or objects that are over 45 years in age and "create tangible links to the American past, whether in relation to historical events and people, traditional ways of life, architectural design, or methods of construction" (reference (75)).

Federal laws and regulations, including Section 106 of the National Historic Preservation Act of 1966 (Section 106) and the Archaeological Resources Protection Act of 1979, provide standards for cultural resources identification, evaluation, and mitigation of impacts. Pursuant to Section 106, significant archaeological and/or historic resources (i.e., historic properties) are those resources that are included or eligible for inclusion in the National Register of Historic Places (NRHP). If the project were to become a federal undertaking, it would be subject to Section 106 requirements.

The project is also subject to the Minnesota Historic Sites Act (Minn. Statutes 138.661 to 138.669) and the Field Archaeology Act (Minn. Statutes 138.31 to 138.42), and the Minnesota Private Cemeteries Act (Minn. Stat. §307.08). The Minnesota Historic Sites Act (Minn. Statutes 138.661 to 138.669) requires that state agencies consult with the SHPO before undertaking or licensing projects that may affect properties on the State or National Registers of Historic Places. The Minnesota Field Archaeology Act (Minn. Statutes 138.31 to 138.42) establishes the position of State Archaeologist and requires State Archaeologist approval and licensing for any archaeological work that takes place on non-federal public property.

Under the Minnesota Private Cemeteries Act (Minn. Statutes 307.08), when human burials are known or suspected to exist in a project area, the landowner or developer must submit construction and development plans to the Office of the State Archaeologist (OSA) for their review before the plans are finalized and prior to any disturbance within the burial area. If the known or suspected burials are thought to be Native American or of Native American ancestry, the landowner or developer must submit construction and development plans to the OSA and the Minnesota Indian Affairs Council (MIAC) for their review before the plans are finalized and prior to any disturbance within the burial area. The OSA and MIAC have 45 days to make recommendations for the preservation or removal of the human burials or remains that may be endangered by construction or development activities.

Known archaeological and historic resources within one mile of the project (the ROI for cultural resources) were identified through a review of the OSA online portal and the Minnesota SHPO's online portal (Minnesota's Statewide Historic Inventory Portal [MnSHIP]) in September 2025. MnSHIP is a comprehensive database of all documented historic architectural resources for the entire state, while the OSA portal is a database of all previously recorded archaeological sites in the state. Because each database relies on documented sites or resources, it is possible that a project may encounter an undocumented resource.

In addition, at the request of the Xcel Energy, Burns & McDonnell Engineering Company, Inc. (Burns & McDonnell) conducted a Phase I Cultural Resource Survey in April 2024 to determine whether cultural resources are present within the project area (Appendix J). This survey resulted in the identification of one historic architectural resource within the northwestern portion of the survey area (The Garvin Corner Store/LY-CUS-00053), approximately 0.5 mile north of the current project footprint. Burns & McDonnell recommended a determination of No Historic Sites Affected and submitted the survey report to SHPO

and the OSA for concurrence on March 4, 2025. SHPO concurred with these recommendations on April 23, 2025, and the OSA provided concurrence on May 06, 2025.

4.9.1 Archaeological Resources

The OSA online portal indicates that there are no previously recorded archaeological resources located within the project area, and no archaeological resources were identified during the Phase I cultural resources survey of the project area conducted by Burns & McDonnell in April 2024. Within the 1-mile ROI, three archaeological sites have been recorded, all of which are unevaluated for the NRHP (Table 4-23). In addition, one NRHP-eligible site (Krueger/Johnson site 21LY0044) is located 0.25 miles north of the ROI. The OSA Portal was also reviewed for historic cemetery locations, as documented in Vermeer and Terrell. No historic cemeteries have been recorded within one mile of the project area.

Table 4-23 Archaeological Sites within the ROI

Site Number	Site Name	Site Description	NRHP Status	Location
21LY0079	Lake of the Hill	Precontact Lithic Scatter	Unevaluated	0.5 mile
21LY0123	Garvin Whistle Stop	Garvin Railroad Stop	Unevaluated	0.5 mile
21LY0153	No Name	Euro-American Artifact Scatter	Unevaluated	0.75 mile

The Lake of the Hill site (21LY0079) is a precontact lithic scatter spanning 2 acres along an intermittent stream 0.5 mile west of the project area. The site was identified during a 1981 Phase I archaeological reconnaissance and is unevaluated for NRHP eligibility. No additional information is available through the OSA Portal.

The Garvin Whistle Stop (21LY0123) consists of the remains of a whistle stop along the Chicago and Northwestern railroad, established in the 1880s. Two features were identified during a 2004 survey conducted by Burns & McDonnell, including a rectangular concrete pad and foundation debris. No associated artifacts were identified. This site is approximately 0.5 miles southwest of the project area and remains unevaluated for NRHP eligibility.

Site 21LY0153 is a post-contact artifact scatter (circa 1888-1970s) approximately 0.75 mile west of the project area. This site consists of remnants of a Euro-American farmstead, constructed in 1888 and occupied through the 1970s. It was identified during a Phase I archaeological reconnaissance survey conducted by Impact 7G, Inc. in November 2023 and is unevaluated for NRHP eligibility.

4.9.2 Historic Architecture

Review of the MnSHIP portal indicates that there are 27 known historic architectural resources located within the ROI, none of which are within the project area (Table 4-24). This includes one resource identified during the 2024 Phase I cultural resources survey conducted by Burns & McDonnell within the survey area (LY-CUS-00053/Garvin Corner Store). The project area has since been redefined and this resource now lies approximately 0.5 mile north of the project footprint. The Garvin Corner Store is an extant structure constructed in 1967 (having replaced earlier constructions), formerly operating as a retail store, and currently unoccupied. This resource is not eligible for listing on the NRHP.

Of the 27 historic architectural resources in the ROI, one is eligible for listing on the NRHP (XX-RRD-CNW027/ Winona and St. Peter Railroad Company/Chicago and Northwestern Railway Company: Main

Line). This railroad, extending between Winona, MN and the South Dakota state line near Verdi, was originally constructed between 1862 and 1873, with major realignments occurring in 1879 and 1900. This is an active railroad corridor that is significant for its contribution to the transportation of manufacturing and agricultural goods and supplies, including lumber and wheat, between sawmills, farms, and commercial centers in southwestern Minnesota during the late nineteenth century. The period of significance is 1862 to 1910 (reference (76)). Because this railroad is located approximately 0.5 miles south of the project area, this historic resource would not be impacted by the project.

The remaining 26 properties consist primarily of twentieth century farmsteads and commercial, industrial, and public buildings in and around Garvin, MN. Seven of these resources are not eligible for listing on the NRHP and the remaining 18 are unevaluated. The project is not anticipated to impact these resources.

Table 4-24 Historic Architecture with the ROI

Resource Number	Resource Name/Type	NRHP Eligibility	Location
XX-ROD-00168	Trunk Highway 59	Not Eligible	0.02 mile
LY-CUS-00034	Farmstead	Unevaluated	0.18 mile
LY-CUS-00033	Farmstead	Unevaluated	0.21 mile
LY-CUS-00032	Farmstead	Unevaluated	0.35 mile
LY-CUS-00053	Garvin Corner Store	Not Eligible	0.47 mile
LY-CUS-00047	Multifamily Dwelling	Unevaluated	0.47 mile
XX-ROD-00016	Trunk Highway/U.S. Highway 14 (formerly Trunk Highway 7)	Not Eligible	0.50 mile
XX-RRD-CNW027	Winona and St. Peter Railroad Company/Chicago and North Western Railway Company: Main Line	Eligible	0.51 mile
LY-CUS-00052	County Ditch No. 29	Unevaluated	0.51 mile
LY-CUS-00031	Farmstead	Unevaluated	0.57 mile
LY-GVC-00001	Grain Elevator	Unevaluated	0.58 mile
LY-CUS-00030	Farmstead	Unevaluated	0.61 mile
LY-CUS-00035	Farmstead	Unevaluated	0.63 mile
XX-RRD-CSP047	Chicago, Milwaukee, St. Paul, and Pacific Railroad	Unevaluated	0.63 mile
LY-CUS-00004	Julien Farmstead	Not Eligible	0.63 mile
LY-GVC-00004/ LY-GVC-00006	First Congregational Church	Unevaluated	0.63 mile
LY-GVC-00008	Bank	Unevaluated	0.63 mile
LY-GVC-00002	Post Office	Unevaluated	0.64 mile
LY-CUS-00005	John S. Owens Farmstead	Not Eligible	0.65 mile
LY-GVC-00005	Hoiland Lutheran Chapel	Unevaluated	0.65 mile
LY-GVC-00009	Commercial Building	Unevaluated	0.66 mile
LY-GVC-00014	Garvin (Also Terry and Kent)	Unevaluated	0.71 mile
LY-GVC-00012	House	Not Eligible	0.77 mile
LY-GVC-00011	Lake Sarah Lutheran Church	Not Eligible	0.77 mile
LY-GVC-00003	District School No. 47	Unevaluated	0.77 mile
LY-GVC-00007	Creamery	Unevaluated	0.81 mile
LY-CUS-00029	Farmstead	Unevaluated	0.82 mile

4.9.3 Impacts

Impacts to archaeological and historic resources could result from construction activities such as ROW clearing, grading and filling, placement of structures, construction of access roads, temporary construction areas, and vehicle and equipment operation. Impacts could also result from the removal of historic resources or if the project is located near or within view of a historic resource and the resulting change in viewshed negatively affects the setting, feeling, and/or association of the resource. This issue is especially pertinent for cultural resources where the surrounding environment plays a crucial role in defining their character and significance.

However, because no archaeological resources have been identified within the project area, no impacts to archaeological resources are anticipated. Further, no NRHP-eligible or unevaluated resources are within the project area or within the ROI of the project. Thus, no known historic resources would be impacted by the project. The SHPO concurred on April 23, 2025 (reference (77)) and the OSA concurred on May 6, 2025 (reference (78)) that no archaeological resources or historic properties would be impacted by the project.

4.9.4 Mitigation Measures

During the project design process, the applicant has considered the locations of previously documented cultural resources and has made efforts to avoid them. A Phase I Cultural Resource Inventory was completed at the applicant's request in April 2024. No cultural resources were identified within the project area during this survey, nor are any previously recorded cultural resources present within or adjacent to the project area.

However, as stated in Section 4.3.21 of the draft site permit (Appendix D), the applicant will prepare an Unanticipated Discoveries Plan prior to project construction which will detail procedures to be followed should unanticipated archaeological resources be encountered during project construction. The applicant will train workers about the need to avoid cultural properties, how to identify cultural properties, and procedures to follow if undocumented cultural properties, including gravesites, are found during construction. In the case that archaeological resources are discovered, construction will cease in that location, and the SHPO will be notified. Construction will not resume until appropriate mitigation measures are implemented.

Further, if human remains or suspected burial sites are discovered during construction, the state archaeologist will be contacted, and construction will cease at the location until the applicant, and the state archaeologist have developed adequate mitigation measures as per Minn. Stat. 307.08.

4.10 Natural Environment

Transmission lines and generation stations have the potential to impact the natural environment through temporary, construction-related impacts and long-term impacts on water resources, vegetation, and wildlife as discussed in the following sections.

4.10.1 Geology

The surface geology within the project area is dominated by quaternary-aged glacial deposits from the most recent Wisconsin glaciation. Loamy, pebbly diamicton originating from stagnation moraine sediments deposited by the Des Moines glacial lobe are most prevalent within the project area and are part of the New Ulm Formation (reference (79)). Glacial deposits beneath the project area are anticipated

to be approximately 200 feet thick or greater (reference (80)). The bedrock underlying the project area consists of Cretaceous-aged, undifferentiated materials deposited in marine and non-marine settings. This material consists of conglomerate, sandstone, mudstone, shale, marlstone, siltstone, and minor amounts of lignite intermixed (reference (81)).

Karst topography is formed from the dissolution of carbonate minerals, found in limestone and dolostone, over time from rain and groundwater. Where karst topography is present, there is the potential for encountering common karst features, including sinkholes, caves, and springs. The bedrock that underlies the project does not consist of limestone or dolostone. No karst features are present in the project area. The nearest mapped karst feature is a spring located approximately two miles northeast of the project area (reference (82)).

Topography is generally flat with an elevation around 1,520 feet above mean sea level.

The project area seismic risk is very low; it is located within an area rated as less than a two-percent chance of damage from natural or human-induced earthquakes in 10,000 years (reference (83)).

Landslides are common throughout Minnesota due to the presence of unconsolidated glacial till deposits on the surface. Landslide susceptibility can vary based on several factors, including the slope angle, water content, and sediment properties. Human factors including inadequate storm water management, undercutting of slopes, placement of artificial fill, and land-use changes, such as urbanization and agricultural practices, can lead to erosion and landslides. Landslides most commonly occur in Minnesota due to slope failure during heavy rain events (reference (84)). The USGS United States Landslide Inventory has no records of landslides in the project area (reference (85)).

4.10.1.1 Impacts

The construction methods used for the project will not alter the geology of the region; therefore, no impacts to geologic resources are anticipated. The bedrock is not conducive to forming karst features, so encountering any unmapped features is unlikely. Changes in slope are not anticipated during the project, and as a result, there would be limited risk of landslides.

4.10.1.2 Mitigation Measures

No impacts on geologic resources are anticipated; therefore, no mitigation measures are proposed.

4.10.2 Soils

Soil information for the project was obtained from the USDA NRCS SSURGO database and are identified in Table 4-25 (reference (86)). The dominant soils within the project area are silty clay (60%), loam (25%), and silty clay loam (12%). Agriculture is the sole existing land use in the project area. Prime farmland is discussed in Chapter 4.8.1.

Table 4-25 Soil Types in the Project Area

Soil Type	Slopes	Drainage Class	Acres in Project Area	Percent of Project Area
Hokans-Svea complex	1-4%	Well drained	2.1	5.70%
Svea loam	1-3%	Moderately well drained	0.4	1.00%
Barnes, occasional saturation-Buse-Svea complex	1-6%	well drained	10.5	29.30%
Lakepark-Roliss-Parnell, depressional, complex	0-3%	Poorly drained	6.4	17.90%
Poinsett-Waubay silty clay loams	1-6%	Well drained	3.8	10.60%
Highpoint Lake silty clay	0-2%	Moderately well drained	10.1	28.20%
		Total	35.9	100%

According to the SSURGO database, exposed soils in the project area have a slight erosion hazard. The ratings in this interpretation indicate the hazard of soil loss from off-road and off-trail areas after disturbance activities that expose the soil surface.

Soil compaction susceptibility within the project area ranges from low to medium. Soil compaction is primarily caused by wheel traffic and occurs when moist or wet soil particles are pressed together, reducing pore space between them.

4.10.2.1 Impacts

Project impacts on soils are anticipated to be minimal and temporary in nature. Soil impacts are dependent, to some extent, on the surface conditions at the time of construction. Construction activities that occur on wet soils tend to have longer lasting impacts regardless of the soil type. During dry conditions, soil disturbances will be temporary, minimal, and generally less invasive than typical agricultural practices such as plowing and tilling.

Surface soils would be disturbed during the construction and operation stages of all project elements. Soil erosion may occur if surface vegetation is removed, exposing soils to wind and water erosion. Topsoil could be lost to improper handling or erosion, and loss of soils could indirectly and adversely impact water resources in the area. Soil compaction and rutting could occur from movement of heavy equipment within the project area.

4.10.2.2 Mitigation Measures

Mitigation and minimization measures for potential impacts to soil are standard Commission permit conditions. Several sections of the draft site permit (Appendix D) address impacts to soil:

- Section 4.2.9 requires that the permittee shall implement measures to protect and segregate topsoil from subsoil on all lands utilized for project construction unless otherwise negotiated with affected landowner.
- Section 4.2.10 requires that the permittee shall implement measures to minimize soil compaction of all lands during all phases of the project's life and shall confine compaction to as small an area as feasible. The permittee shall use soil decompaction measures on all lands utilized for project

construction and travelled on by heavy equipment (e.g., cranes and heavy trucks), even when soil compaction minimization measures are used.

- Section 4.2.11 requires that the permittee shall:
    - Implement erosion prevention and sediment control practices recommended by the Minnesota Pollution Control Agency (MPCA) Construction Stormwater Program. If construction of the project disturbs more than one acre of land or is sited in an area designated by the MPCA as having potential for impacts to water resources, the permittee shall obtain a National Pollutant Discharge Elimination System/State Disposal System (NPDES/SDS) Construction Stormwater Permit from the MPCA that provides for the development of a Stormwater Pollution Prevention Plan (SWPPP) that describes methods to control erosion and runoff.
    - Implement reasonable measures to minimize erosion and sedimentation during construction and shall employ perimeter sediment controls, protect exposed soil by promptly planting, seeding, using erosion control blankets and turf reinforcement mats, stabilizing slopes, protecting storm drain inlets, protecting soil stockpiles, and controlling vehicle tracking. Contours shall be graded as required so that all surfaces provide for proper drainage, blend with the natural terrain, and are left in a condition that will facilitate re-vegetation and prevent erosion. All areas disturbed during construction of the project shall be returned to pre-construction conditions.

Several sections of the draft transmission line route permit (Appendix E) address impacts to soil:

- Section 5.3.8 requires that the permittee shall:
    - Implement erosion prevention and sediment control practices recommended by the Minnesota Pollution Control Agency (MPCA) Construction Stormwater Program. If construction of the transmission facility disturbs more than one acre of land or is sited in an area designated by the MPCA as having potential for impacts to water resources, the Permittee shall obtain a National Pollutant Discharge Elimination System/State Disposal System (NPDES/SDS) Construction Stormwater Permit from the MPCA that provides for the development of a Stormwater Pollution Prevention Plan (SWPPP) that describes methods to control erosion and runoff.
    - Implement reasonable measures to minimize erosion and sedimentation during construction and shall employ perimeter sediment controls, protect exposed soil by promptly planting, seeding, using erosion control blankets and turf reinforcement mats, stabilizing slopes, protecting storm drain inlets, protecting soil stockpiles, and controlling vehicle tracking. Contours shall be graded as required so that all surfaces provide for proper drainage, blend with the natural terrain, and are left in a condition that will facilitate re-vegetation and prevent erosion. All areas disturbed during construction of the transmission facility shall be returned to pre-construction conditions.
- Section 5.3.17 requires that the permittee shall avoid, promptly repair, or replace all drainage tiles broken or damaged during all phases of the transmission facility's life. The permittee shall keep records of compliance with this section and provide them upon the request of Commission staff.

Several sections of the draft pipeline route permit (Appendix G) address impacts to soil:

- Section 7.8 requires that the permittee shall:

    - Implement erosion prevention and sediment control practices recommended by the Minnesota Pollution Control Agency (MPCA) Construction Stormwater Program. If construction of the project disturbs more than one acre of land or is sited in an area designated by the MPCA as having potential for impacts to water resources, the permittee shall obtain a National Pollutant Discharge Elimination System/State Disposal System (NPDES/SDS) Construction Stormwater Permit from the MPCA that provides for the development of a Stormwater Pollution Prevention Plan (SWPPP) that describes methods to control erosion and runoff.
    - Implement reasonable measures to minimize erosion and sedimentation during construction and shall employ perimeter sediment controls, protect exposed soil by promptly planting, seeding, using erosion control blankets and turf reinforcement mats, stabilizing slopes, protecting storm drain inlets, protecting soil stockpiles, and controlling vehicle tracking. Contours shall be graded as required so that all surfaces provide for proper drainage, blend with the natural terrain, and are left in a condition that will facilitate re-vegetation and prevent erosion. All areas disturbed during construction of the project shall be returned to pre-construction conditions.
- Section 7.9 requires that the permittee shall take precautions to minimize mixing of topsoil and subsoil during excavation of the trench for the pipe unless otherwise negotiated with the affected landowner.
- Section 7.10 stipulates compaction of agricultural lands by the permittee must be kept to a minimum and mitigated in accordance with its agricultural protection plan.

As summarized in the route permit application, the applicant proposes the following mitigation measures to minimize potential impacts to soil:

- Implementing measures to reduce soil compaction including decompaction of soils during restoration or temporary workspaces, including travel lanes.
- Installing best management practices, such as minimizing the number of vehicle trips, use of silt fencing or other effective sediment controls, and segregation of topsoil and subsoil.
- Developing a SWPPP that complies with MPCA rules and guidelines

4.10.3 Groundwater

Groundwater in Minnesota is largely a function of local geologic conditions that determine the type and properties of aquifers. Minnesota is divided into six groundwater provinces based on bedrock and glacial geology. Aquafers within these provinces occur in two general geologic settings: unconsolidated sediment (e.g., clay, sand, gravel) deposited by glaciers, streams, and lakes; and bedrock (e.g., limestone, granite) comprising a wide range of rock types and ages. Combining these settings creates the groundwater provinces. The project site is within Province 5, the Western Province, and is characterized by buried sand aquifers and relatively extensive surficial sand plains, part of a thick layer of sediment deposited by glaciers overlying the bedrock. Province 5 contains fractured bedrock commonly buried deeply beneath glacial sediment and is of limited use as an aquifer.

Pollution sensitivity of near-surface materials in the project area is rated as “very low” (reference (87)). The sensitivity to pollution of near-surface materials is an estimate of the time it takes for water to infiltrate the land surface to a depth of 10 feet. To achieve a very low rating, this is estimated to take months to a year (reference (88))

The project area was reviewed for EPA designated sole source aquifers (SSAs), wells listed on the Minnesota Well Index (MWI) and MDH Wellhead Protection Areas (WHPAs). There are no SSA or WHPAs within the project area.

The MDH maintains the MWI, which provides basic information (e.g., location, depth, geology, construction, and static water level) for wells and borings drilled in Minnesota. A search of the MWI identified one sealed well (344042) in the project area, which is under ownership of the applicant (reference (89)) and was drilled for geotechnical evaluation purposes for the Garvin Substation. No other wells (active or inactive) were identified in the project area.

4.10.3.1 Impacts

The May 2025 RPA included an optional system for evaporative cooling of the combustion turbines via cooling the inlet air; the system was described in Section 3.1.6 of the RPA. After evaluation of water treatment and wastewater disposal options, the applicant decided to remove the evaporative cooling system from the project design (reference (90)). Thus, the evaporative cooling system described in Section 3.1.6 of the RPA will no longer be used. The evaporative cooling system was the project's only source for process wastewater. Therefore, the project is not anticipated to have a significant impact on groundwater resources within the project area. Additionally, the permits for Wastewater General Pond and Water Appropriation identified in Table 9-1 of the RPA are no longer relevant.

4.10.3.2 Mitigation Measures

No adverse groundwater impacts are anticipated; therefore, mitigation is not proposed.

4.10.4 Surface water

The project is located in the Cottonwood River watershed in southwestern Minnesota. The Cottonwood River drains east to the Minnesota River. Surface waters in Minnesota are regulated by different entities at the federal and state levels. The USACE regulates the placement of dredged or fill materials in wetlands and other waters under its jurisdiction. The DNR regulates watercourses, water basins, and wetlands that are designated as significant recreational or natural resources in Minnesota and are referred to as public waters in the DNR Public Water Inventory (PWI). The PWI does not identify any public water basins, wetlands, or watercourses in the project area. The closest PWI wetland is Buttermilk Slough (42003400), which is approximately 0.9 miles southwest of the project (Map 4-9).

Based on data available on the Federal Emergency Management Agency (FEMA) National Flood Hazard Layer (NFHL), the project area is within an area of minimal flooding and is not within a FEMA-designated floodplain (Panels 27083C0575D and 27083C0600D) (reference (91, 92)).

Section 303(d) of the Clean Water Act (CWA) requires that states publish a list of streams and lakes that do not meet their designated uses because of excess pollutants (impaired waters) every two years. There are no impaired waters within one mile of the project area. The closest impaired water is the Cottonwood River, which is approximately 2.06 miles north of the project area.

Wetlands are defined as areas that are inundated by surface or groundwater with a frequency to support, and under normal circumstances does or would support, a prevalence of vegetation or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction. Wetlands are protected at the federal level under Section 404 of the CWA and at the state level under the Minnesota Wetland Conservation Act (WCA) and the DNR PWI program. According to the USFWS National

Wetlands Inventory (NWI), two freshwater emergent wetlands collectively totaling approximately 2.23 acres are located in the project area (Map 4-9).

The applicant's consultant, Burns & McDonnell, conducted a Level 1 offsite hydrology review of the project area. The offsite hydrology review identified one potential palustrine emergent (PEM) wetland in the project area. In April 2024, Burns & McDonnell conducted a field-based wetland delineation and confirmed one farmed, depressional wetland to be present within the project area (reference (93)). This field delineated wetland is approximately 0.51 acres in size and is present along the eastern boundary of the project area (Map 4-9).

The applicant submitted the results of this wetland delineation for concurrence from the Lyon County Soil & Water Conservation District as the WCA Local Government Unit (LGU) and USACE on February 25, 2025. USACE responded on March 4, 2025, that no further consultation would be required since the wetland would be avoided (reference (94)). The Lyon County Soil & Water Conservation District responded on March 20, 2025, with a Notice of Decision approving the wetland boundaries as delineated in the April 2024 wetland delineation ((94)).

4.10.4.1 Impacts

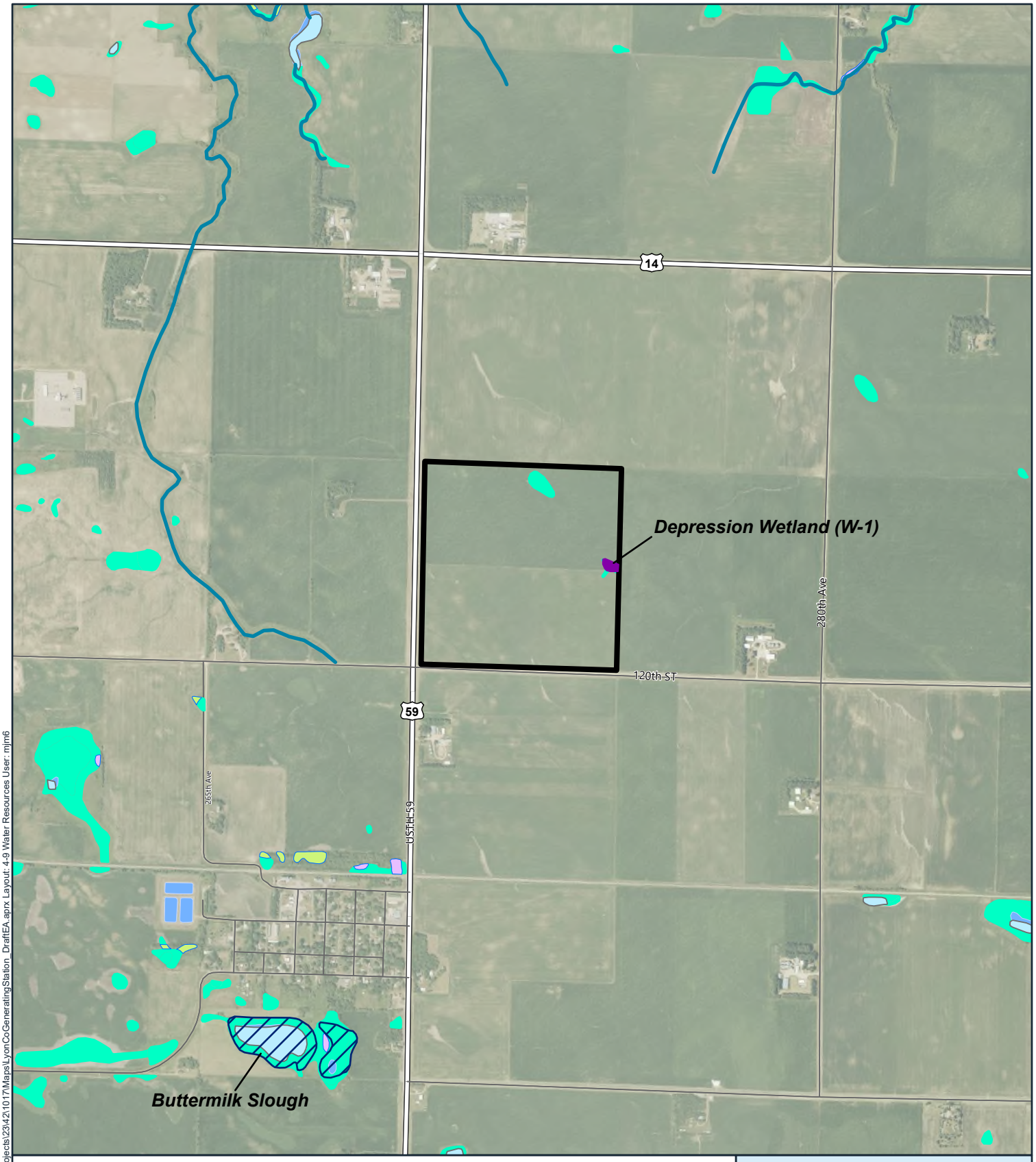
The project has been sited to avoid the field delineated wetland; therefore, no direct impacts to wetlands are anticipated. In addition, the project will not directly impact other surface waters.

Wetlands and other surface waters can be indirectly impacted by soil erosion and sediment deposition during construction. Sedimentation and ground disturbance in wetlands and other surface waters can make them more susceptible to the establishment of invasive plant species, such as reed canary grass, which could adversely impact wetland function by reducing vegetative biodiversity and altering wildlife habitat.

4.10.4.2 Mitigation Measures

It is anticipated that impacts to surface waters would be avoided with the construction of this project.

The project will be required to obtain an NPDES/SDS permit for construction stormwater runoff. The applicants will apply for authorization to discharge stormwater associated with construction activity under the MPCA NPDES/SDS Construction Stormwater General permit (MNR100001). The project will develop a SWPPP that will identify BMP's that will be implemented during construction to minimize erosion, and sedimentation impacts to surface waters. Erosion and sedimentation abatement measures, for example, will be employed to mitigate impacts on surface waters.



Project Boundary
US Highway
Road
Public Water Inventory Wetland
Field Delineated Wetland

National Wetlands Inventory
Freshwater Emergent Wetland
Freshwater Forested Wetland
Freshwater Pond
Freshwater Shrub Wetland

National Hydrography Dataset
Stream/River (Intermittent)
Lake/Pond

0 0.5
Miles

Sources: XCEL, Barr, USGS, USFWS, Esri

Lyon Co. Generating Station Project
XCEL Energy

Water Resources
MAP 4-9

BARR

4.10.5 Vegetation

The DNR and the U.S. Forest Service (USFS) 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 (reference (9)). The ECS splits the state of Minnesota into Ecological Provinces, Sections, and Subsections.

The project area is situated in the Coteau Moraines Subsection of the North Central Glaciated Plains Section and Prairie Parkland Province. Vegetation in the Coteau Moraines Subsection consisted almost entirely of tallgrass prairie prior to European settlement. Wet prairie vegetation was restricted to the edges of streams, and forest vegetation was restricted to ravines along streams (reference (9)). At present, agricultural vegetation dominates the Coteau Moraines Subsection, with very few areas of pre-settlement vegetation remaining.

4.10.5.1 Impacts

Project construction would result in short-term and long-term impacts on existing agricultural vegetation. Short-term impacts on existing vegetation would include localized clearing and ground disturbance associated with project construction activities. Long-term impacts on vegetation would occur in areas where agricultural landcover would be permanently converted to developed landcover consisting of project infrastructure.

Construction and maintenance activities have the potential to result in the introduction or spread of noxious weeds and other non-native species. Noxious weeds, which are regulated under Minn. Stat. 18.76, can be introduced to new areas through propagating material like roots or seeds transported by contaminated construction equipment. Activities that could potentially lead to the introduction of noxious weeds and other non-native species include ground disturbance that leaves soils exposed for extended periods, introduction of topsoil contaminated with weed seeds, vehicles importing weed seed, and conversion of landscape type.

Construction of the transmission lines would result in short-term and long-term impacts on existing vegetation. Short-term impacts on existing vegetation would include localized clearing and ground disturbance associated with staging and stringing areas. Long-term impacts on vegetation would occur in areas where transmission line structures would be placed. In these locations, up to 150 square feet of agricultural landcover would be permanently converted to developed landcover for transmission line structure foundations. With the exception of the transmission line structures, no other permanent changes to vegetation/landcover types would occur underneath or adjacent to the transmission lines.

Construction of the generation station would result in short-term and long-term impacts on existing vegetation. Short-term impacts on existing vegetation would include localized clearing and ground disturbance associated with pipeline installation and the establishment and use of access roads and staging areas. Long-term impacts on vegetation would occur in areas where agricultural landcover would be permanently converted to impervious surface associated with the generation station; this would include approximately 14 acres; and additional 1.8 acres of agricultural land would be converted to stormwater ponds. Areas not permanently converted to developed landcover would remain vegetated. Within the fenced area surrounding the generation station, non-impervious land would be seeded with a native seed mix. Outside of the fenced area agricultural use would continue.

4.10.5.2 Mitigation Measures

Mitigation and minimization measures for potential impacts to vegetation resources are standard Commission permit conditions.

Several sections of the draft site permit (Appendix D) address impacts to vegetation:

- Section 4.2.15 requires that the permittee shall disturb or clear vegetation within the designated site only to the extent necessary to assure the safe construction, operation, and maintenance of the project. The permittee shall minimize the number of trees removed within the designated site specifically preserving to the maximum extent practicable windbreaks, shelterbelts, and living snow fences.
- Section 4.2.16 requires that the permittee employ best management practices to avoid the potential introduction and spread of invasive species on lands disturbed by project construction activities. The permittee shall develop an Invasive Species Prevention Plan and file it with the Commission at least 14 days prior to the pre-construction meeting. The permittee shall comply with the most recently filed Invasive Species Prevention Plan.
- Section 4.2.17 requires that the permittee take all reasonable precautions against the spread of noxious weeds during all phases of construction. When utilizing seed to establish temporary and permanent vegetative cover on exposed soil the permittee shall select site appropriate seed certified to be free of noxious weeds. To the extent possible, the permittee shall use native seed mixes. The permittee shall keep records of compliance with this section and provide them upon the request of Commission staff.

Several sections of the draft transmission line route permit (Appendix E) address impacts to vegetation:

- Section 7.3.10 requires that the permittee shall:
    - Minimize the number of trees to be removed in selecting the right-of-way specifically preserving to the maximum extent practicable windbreaks, shelterbelts, living snow fences, and vegetation in areas such as trail and stream crossings where vegetative screening may minimize aesthetic impacts, to the extent that such actions do not violate sound engineering principles or system reliability criteria.
    - Remove tall growing species located within the transmission line right-of-way that endanger the safe and reliable operation of the transmission line. The Permittee shall leave undisturbed, to the extent possible, existing low growing species in the right-of-way or replant such species in the right-of-way to blend the difference between the right-of-way and adjacent areas, to the extent that the low growing vegetation will not pose a threat to the transmission line or impede construction.
    - Develop a vegetation management plan (VMP), in coordination with the Vegetation Management Plan Working Group (VMPWG), using best management practices established by the DNR and BWSR. The Permittee shall file the VMP and documentation of the coordination efforts between the Permittee and the DNR with the Commission as part of the plan and profile required in Section 9.2 of the Permit.
- Section 5.3.12 requires that the permittee shall employ best management practices to avoid the potential introduction and spread of invasive species on lands disturbed by transmission facility construction activities. The permittee shall develop an Invasive Species Prevention Plan and file it with the Commission at least 14 days prior to the pre-construction meeting. The Permittee shall comply with the most recently filed Invasive Species Prevention Plan.

- Section 5.3.13 requires that the permittee shall take all reasonable precautions against the spread of noxious weeds during all phases of construction. When utilizing seed to establish temporary and permanent vegetative cover on exposed soil the permittee shall select site appropriate seed certified to be free of noxious weeds. To the extent possible, the permittee shall use native seed mixes. The permittee shall keep records of compliance with this section and provide them upon the request of Commission staff.

Several sections of the draft pipeline route permit (Appendix G) address impacts to vegetation:

- Section 7.1.4 requires that the permittee shall clear the permanent ROW and temporary ROW preserving to the maximum extent practicable windbreaks, shelterbelts, living snow fences, and vegetation in areas such as trail and stream crossings where vegetative screening may minimize aesthetic impacts, to the extent that such actions do not impact the safe operation, maintenance, and inspection of the pipeline and are in compliance with all applicable laws and regulations. Tree stumps will be removed at the landowner's request or when necessitated due to trench location. The permittee will dispose of all debris created by clearing at a licensed disposal facility.
- Section 7.16 requires that the permittee shall employ best management practices to avoid the potential spread of invasive species on lands disturbed by project construction activities.
- Section 7.17 requires that the permittee shall take all reasonable precautions against the spread of noxious weeds during all phases of construction. When utilizing seed to establish temporary and permanent vegetative cover on exposed soil the permittee shall select site appropriate seed certified to be free of noxious weeds. To the extent possible, the permittee shall use native seed mixes. The permittee shall consult with landowners on the selection and use of seed for replanting.

As summarized in the route permit application, the applicant proposes the following mitigation measures to minimize potential impacts to vegetation:

- Once construction is completed in an area, disturbed areas that will not be used for permanent project facilities and those areas not to remain in agricultural production would be restored via broadcast seeding using a native seed mix comprised of species such as big bluestem (*Andropogon gerardi*), Indian grass (*Sorghastrum nutans*), and switchgrass (*Panicum virgatum*).
- Possibly planting native shrubs along the western and northern boundaries of the project area to serve as windbreaks and snowbreaks.
- Preventing the introduction of noxious weeds and invasive species by cleaning equipment and removing visible dirt or plant parts using methods such as vehicle washing, high-pressure compressed air blowers, or brushing, as applicable.
- Monitoring areas where seeding and erosion control measures have been implemented and following up with reseeding measures where vegetative cover by the restoration seeding or plantings is inadequate to provide long-term stability and sustainable native plant communities.

These BMPs would be included in the project's Vegetation Management Plan, which the applicant would prepare in coordination with applicable agencies prior to construction.

In their scoping comment, the DNR recommends the following measures to minimize potential impacts to vegetation:

- Use of a Vegetation Management Plan for areas not used for permanent facilities.

- The DNR advises against the use of dust suppression agents containing chloride. Chloride does not break down and may accumulate to toxic levels for wildlife and plants.

4.10.6 Wildlife and their Habitats

Wildlife habitat diversity within and adjacent to the project area is low, consisting almost entirely of disturbed habitats associated with agriculture and rural development. Typical wildlife species inhabiting the area include mammals, such as deer, fox, squirrels, and raccoons; songbirds, such as robins and red-winged blackbirds; and reptiles, such as garter snakes (reference (95)).

The state of Minnesota is in the Mississippi Flyway of North America. The Mississippi Flyway is a bird migration route that follows the Mississippi River and includes the states of Alabama, Arkansas, Indiana, Illinois, Iowa, Kentucky, Louisiana, Michigan, Minnesota, Mississippi, Missouri, Ohio, Tennessee, and Wisconsin, and the Canadian provinces of Saskatchewan, Manitoba, and Ontario (reference (96)). Migratory birds use portions of the Mississippi Flyway as resting grounds during spring and fall migration, as well as breeding and nesting grounds throughout the summer. Suitable agricultural habitat for migratory birds is present in the area.

The USFWS Information for Planning and Consultation (IPaC) online tool was queried for the project and identified several migratory birds that could be present in the project area; many of these species are classified as USFWS Birds of Conservation Concern (Appendix H). Most of these migratory bird species inhabit areas with some natural elements, such as wetlands, waterbodies, or forested areas. Migratory birds are protected under the Migratory Bird Treaty Act (MBTA) of 1918 (16 USC 703-712), which prohibits the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests.

The IPaC query also identified bald eagles *(Haliaeetus leucocephalaus*) as potentially being present in the project area. Bald eagles are protected under the MBTA and the federal Bald and Golden Eagle Protection Act (BGEPA; 16 USC 668-668d), which specifically prohibits the taking or possession of and commerce in, either alive or dead, or any part, nest, or egg of these eagles. Bald eagles inhabit areas or large trees near rivers or lakes.

Minnesota is home to over 2,000 known native wildlife species, and over 300 of these species have been identified as Species in Greatest Conservation Need (SGCN) because they are rare, their populations are declining, or they face serious threats that can cause them to decline, and thus have populations below levels desirable to promote their long-term health and stability. Minnesota's Wildlife Action Plan 2015-2025 includes a habitat approach, which focuses on sustaining and enhancing terrestrial and aquatic habitats for SGCN in the context of the larger landscapes (reference (97)). The Wildlife Action Plan lays out the basis for the long-term vision of a Wildlife Action Network composed of terrestrial and aquatic habitat cores and corridors to support biological diversity and ecosystem resilience with a focus on SGCN.

The entire project area and surrounding areas are located in a Wildlife Action Network corridor ranked low. The Wildlife Action Network is a metric that can be used to assess buffers and connectors of habitats representing the diversity of habitat quality, supporting SGCN. As detailed by the DNR, "Consideration should be given to projects or activities that could result in the loss, degradation or fragmentation of habitat within the Wildlife Action Network, as habitat loss was identified as a substantial contributor to SGCN population declines" (reference (97)).

Lands that are preserved or managed for wildlife are scattered across the geographic area and include a Grassland Bird Conservation Area, a Waterfowl Production Area, and a Wildlife Management Area (Map 4-8).

The USFWS designates Grassland Bird Conservation Area priority areas for grassland protection and enhancement that are thought to provide suitable habitat for many or all priority grassland bird species in tall grass prairie. A Grassland Bird Conservation Area intersects the western half of the project area (Map 4-8).

The USFWS established Waterfowl Production Areas to conserve some of the most threatened and productive migratory bird habitats in the country. The Lyon County Waterfowl Production Area is located approximately one mile west of the project area (Map 4-8).

The DNR manages over one million acres of land as Wildlife Management Areas to protect lands and waters that have a high potential for wildlife production, public hunting, trapping, fishing, and other compatible recreational uses. The Garvin Wildlife Management Area is located approximately 1.5 miles west of the project area (Map 4-8).

There are over 5,000 shallow lakes that are greater than 50 acres in size in the state of Minnesota; these shallow lakes serve as important habitat to wildlife species (reference (98)). Several shallow lakes are scattered across the general area (Map 4-8). The DNR Shallow Lakes Program designates certain shallow lakes as shallow wildlife lakes; this designation allows them to protect and enhance wildlife habitat on these larger lakes (reference (99)). None of the shallow lakes in the general area are DNR-designated shallow wildlife lakes.

4.10.6.1 Impacts

Construction activities that generate noise, dust, or disturbance of habitat could result in short-term, indirect impacts on wildlife. Given the agricultural nature of the project area, most wildlife inhabiting the area are accustomed to human activity and disturbance to some capacity. However, during project construction, wildlife in the project area would likely abandon habitats for similar habitat in the area. Clearing and grading activities could directly impact some less-mobile species, such as birds, if eggs or nestlings are located in the project area; however, agricultural activities pose a similar risk to birds. Due to lack of suitable habitat in the project area, impacts to bald eagles or the migratory Birds of Conservation Concern identified in the IPaC query (Appendix H) are not anticipated.

As discussed in Section 4.10.5.1, vegetation would be permanently removed in locations where transmission line structures would be placed; this would result in a loss of agricultural habitat. However, similar agricultural habitat is present within and adjacent to the project area.

The transmission lines could have potential impacts on avian species (for example, songbirds, raptors, and waterfowl) as a result of electrocution and/or collision with transmission line infrastructure. Electrocution occurs when an arc is created by contact between a bird and energized lines or an energized line and grounded structure equipment. Electrocution occurs more frequently with larger bird species, such as hawks, because they have wider wingspans that are more likely to create contact with the conductors. Independent of the risk of electrocution, birds could be injured by colliding with transmission line structures and conductors. The risk of collision is influenced by several factors including habitat, flyways, foraging areas, and bird size. Waterfowl, especially larger waterfowl such as swans and geese, are more likely to collide with transmission lines.

Once the project is operational, wildlife would be free to access habitats underneath and adjacent to the transmission lines.

Construction of the generation station would result in loss of approximately 14 acres of habitat; however, similar quality agricultural habitats are abundant in the area. In addition, approximately 1.8 acres of agricultural habitat would be converted to stormwater ponds, which could serve as habitat for aquatic species or waterfowl. Prior to the project being operational, the generation station would have a chain-link fence constructed around it for security reasons; this could limit access for wildlife species that are not able to navigate the chain-link fence.

4.10.6.2 Mitigation Measures

Mitigation and minimization measures for potential impacts to wildlife are standard Commission permit conditions.

Several sections of the draft site permit (Appendix D) address impacts to wildlife:

- Section 4.2.27 requires that the permittee shall use shielded and downward-facing lighting and LED lighting that minimizes blue hue.
- Section 4.2.28 requires that the permittee shall utilize non-chloride products for onsite dust control during construction.
- Section 4.2.29 requires that the permittee shall use only “bio-netting” or “natural netting” types of erosion control materials and mulch products without synthetic (plastic) fiber additives or malachite green dye.

Several sections of the draft transmission line route permit (Appendix E) address impacts to wildlife:

- Section 5.3.16 requires that the permittee, in cooperation with the DNR, shall identify areas of the transmission line where bird flight diverters will be incorporated into the transmission line design to prevent large avian collisions attributed to visibility issues. Standard transmission design shall incorporate adequate spacing of conductors and grounding devices in accordance with Avian Power Line Interaction Committee standards to eliminate the risk of electrocution to raptors with larger wingspans that may simultaneously come in contact with a conductor and grounding devices. The permittee shall submit documentation of its avian protection coordination with the plan and profile pursuant to Section 9.2 of the draft transmission line route permit.
- Section 5.3.22 requires that the permittee shall use shielded and downward facing lighting and LED lighting that minimizes blue hue.
- Section 5.3.23 requires that the permittee shall utilize non-chloride products for onsite dust control during construction.
- Section 5.3.24 requires that the permittee shall use only “bio-netting” or “natural netting” types of erosion control materials and mulch products without synthetic (plastic) fiber additives or malachite green dye.

There are no mitigation measures specific to impacts to wildlife in the draft pipeline routing permit (Appendix G).

In addition to wildlife impact mitigation measures, the standard permit conditions to minimize potential impacts to vegetation, would be applicable to minimizing impacts to wildlife and their habitats; these are summarized in Section 4.10.5.2.

As summarized in the route permit application, the applicant proposes the following mitigation measures to minimize potential impacts to wildlife or wildlife habitat:

- Implementation of several construction best management practices that are beneficial to wildlife including: wildlife training for construction personnel, posted speed limits, spill prevention measures, and general construction housekeeping such as trash removal and maintaining a clean work area.
- Designing transmission line facilities to comply according to Avian Power Line Interaction Committee recommended guidance to reduce the potential for avian electrocutions (reference (x) and reference (100)).

In their scoping comment, the DNR recommends the following measures to minimize potential impacts to wildlife:

- LED lighting tends to emit blue hue which can adversely affect wildlife and insects. While acknowledging the project is not a commercial solar site, the DNR's Commercial Solar Siting Guidance is relevant in advising the nominal color temperature of lighting installed at facilities does not exceed 4,000 kelvin. The Commercial Solar Siting Guidance also recommends lighting is downlit and shielded lighting to minimize blue hue, backlight, and glare.
- The DNR advises against the use of dust suppression agents containing chloride. Chloride does not break down and may accumulate to toxic levels for wildlife and plants.
- Due to entanglement issues with small animals, the DNR recommends that erosion control blankets be limited to "bio-netting" or "natural netting" types, and specifically not products containing plastic mesh netting or other plastic components. Hydro-mulch products may contain small synthetic (plastic) fibers to aid in their matrix strength. These loose fibers could potentially re-suspend and make their way into nearby waterways.

4.11 Rare and Unique Natural Resources

Rare and unique natural resources include federally and state-protected species and sensitive ecological resources.

Federally endangered or threatened species are protected under Section 7 of the ESA of 1973 and are typically evaluated and protected by the USFWS. Data on federally protected species were reviewed using the USFWS IPaC online tool.

At the state level, the evaluation and protection of Minnesota's rare and unique natural resources are overseen by the DNR Division of Ecological and Water Resources through the identification and evaluation of threatened and endangered species and sensitive ecological resources. State endangered or threatened species are protected under the Minnesota Endangered Species Statute (Minnesota Statute § 84.0895). The DNR Natural Heritage Inventory System (NHIS) database (License Agreement #2025-012) was used to assess the potential presence of state protected species within and near the project area.

Publicly available GIS datasets and the DNR's Minnesota Conservation Explorer online tool were used to assess the presence of sensitive ecological resources in the area. Sensitive ecological resources could provide habitat suitable for federal and/or state protected species.

4.11.1 Protected Species

The USFWS IPaC online tool was queried on September 26, 2025, for a list of federally threatened and endangered species, proposed species, candidate species, and designated critical habitat that may be present within or near the project area. The IPaC query identified the proposed threatened monarch butterfly (*Danaus Plexippus*) and the proposed endangered Suckley's cuckoo bumble bee (*Bombus suckleyi*) as potentially being present in the project area (Appendix H). The IPaC query did not identify any designated critical habitat within or near the project area.

Federally proposed threatened or endangered species are species that the USFWS has determined are in danger of extinction throughout all or a significant portion of their range and have proposed a draft rule to list them as threatened or endangered. Proposed species are not protected by the take prohibitions of the federal ESA.

Monarch butterflies are found in areas with a high number of flowering plants, which provide sources of nectar. Monarchs rely exclusively on the presence of milkweed (*Asclepias* spp.) to complete the caterpillar life stage (reference (101)).

Suckley's cuckoo bumble bees are parasitic bees that invade the nests of other bumble bees and rely on them to rear their young. Habitat for Suckley's cuckoo bumble bees includes prairies, grasslands, meadows, woodlands, and non-intensive agricultural areas (reference (102)).

The DNR's NHIS database was reviewed in September 2025 to determine if any Minnesota state-listed species have been documented within the vicinity of the project area. According to the NHIS database, no state endangered, threatened, or special concern species have been documented within one mile of the project area.

4.11.2 Sensitive Ecological Resources

The project area is located within a Prairie Conservation Plan (Plan) corridor. The Plan is a 25-year strategy for accelerating prairie conservation in the state, focusing efforts on grasslands and wetlands (reference (103)). The Plan identifies conservation areas and creates a vision of a connected landscape from Canada to Iowa. The Plan identifies three site designations as areas to focus conservation efforts, including core areas, corridors, and strategic habitat complexes. The Plan uses a core and corridor approach to protect and restore Minnesota's native prairie by identifying large critical core areas and the corridors to connect them. The entire project area is in the Altamont Moraine corridor; this corridor and other Prairie Conservation Plan sites are extensively mapped in this area.

The project area and surrounding area are highly agricultural, with minimal areas of natural vegetation; as such, sensitive ecological resources are not present within or adjacent to the project area.

4.11.2.1 Impacts

Potential impacts on rare and unique natural resources are similar for all project elements; as such, the discussion below pertains to all project elements.

Given that the entire project area is agricultural, desirable habitat for monarch butterflies in the project area is not present. However, it is possible that some flowering plants could be present along the perimeter of the project area. The Minnesota-Wisconsin Endangered Species Determination key in IPaC was completed and a no effect determination was concluded for the monarch butterfly (Appendix H).

The project area is not likely to provide suitable habitat for Suckley's cuckoo bumble bees given that it is intensively farmed with corn and soybeans; as such this species is not likely to be present in the project area. The IPaC query/analysis indicates that there are no determination keys available for this species; however, given the lack of quality habitat and the rarity of this species in Minnesota, a no effect determination is anticipated for the Suckley's cuckoo bumble bee.

Given the agricultural landscape and lack of state-listed species documented within one mile of the project, impacts to state-listed species are not anticipated from the project.

Impacts to the Prairie Conservation Plan corridor that is mapped throughout the area are not anticipated given the relatively small size of the project area and the fact that the project area is essentially devoid of native vegetation.

A Natural Heritage Review request (MCE #2025-00277) was submitted to the DNR as part of the route permit application. The DNR's Natural Heritage Review response indicated that the DNR does not believe that the project would have negative impacts on state protected species or sensitive ecological resources; the Natural Heritage Review response is provided in Appendix H.

4.11.2.2 Mitigation Measures

Mitigation and minimization measures for potential impacts to rare and unique natural resources are standard Commission permit conditions (Appendix D).

Section 4.2.14 of the draft site permit requires that the permittee not place the LEPGP or associated facilities in native prairie, as defined in Minn. Stat. § 84.02, subd. 5, unless addressed in a prairie protection and management plan and not located in areas enrolled in the Native Prairie Bank Program. The permittee shall not impact native prairie during construction activities unless addressed in a prairie protection and management plan.

Section 4.2.14 of the draft site permit also requires that the permittee shall prepare a prairie protection and management plan in consultation with the DNR if native prairie, as defined in Minn. Stat. § 84.02, subd. 5, is identified within the project boundary. The permittee shall file the prairie protection and management plan with the Commission at least 30 days prior to submitting the Site Plan required by Section 8.3 of the draft site permit. The prairie protection and management plan shall address steps that will be taken to avoid impacts to native prairie and mitigation to unavoidable impacts to native prairie by restoration or management of other native prairie areas that are in degraded condition, by conveyance of conservation easements, or by other means agreed to by the permittee, the DNR, and the Commission.

There are no mitigation measures specific to impacts to rare and unique natural resources in the draft transmission line or pipeline route permits. However, the standard permit conditions to minimize potential impacts to vegetation and wildlife would be applicable to minimizing impacts to federal and state protected species and sensitive ecological resources; these are summarized in Sections 4.10.5.2 and 4.10.6.2, respectively.

Impacts to federal or state-protected species are not anticipated from the project. However, as summarized in the route permit application, the applicant proposes restoring areas that will not be used for permanent project facilities and those areas not to remain in agricultural production with a native seed mix comprised of species such as big bluestem, Indian grass, and switchgrass. Planting native vegetation in these areas could enhance potential habitat for monarch butterfly and suckley's cuckoo bumble bee.

As discussed in Section 4.10.5.2 and Section 4.10.6.2, in their scoping comment the DNR recommended measures to minimize potential impacts to vegetation and wildlife, respectively; these measures could also benefit federal and/or state protected species in the area.

4.12 Cumulative Potential Effects

Under the Minnesota Power Plant Siting Act (Minn. Stat. 216E), Minnesota Rule 4410.0200 is applied to define and evaluate cumulative potential effects as impacts on the environment that result from:

> *The incremental effects of a project in addition to other projects in the environmentally relevant area that might reasonably be expected to affect the same environmental resources, including future projects actually planned or for which a basis of expectation has been laid, regardless of what person undertakes the other projects or what jurisdictions have authority over the projects (Minnesota Rule 4410.0200).*

Considering cumulative potential effects serves to assist decision-makers in avoiding decisions about a specific project in isolation. Effects that might seem minimal when viewed in the context of a single project can accumulate and become significant when the broader landscape of all relevant, inter-related projects is considered.

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

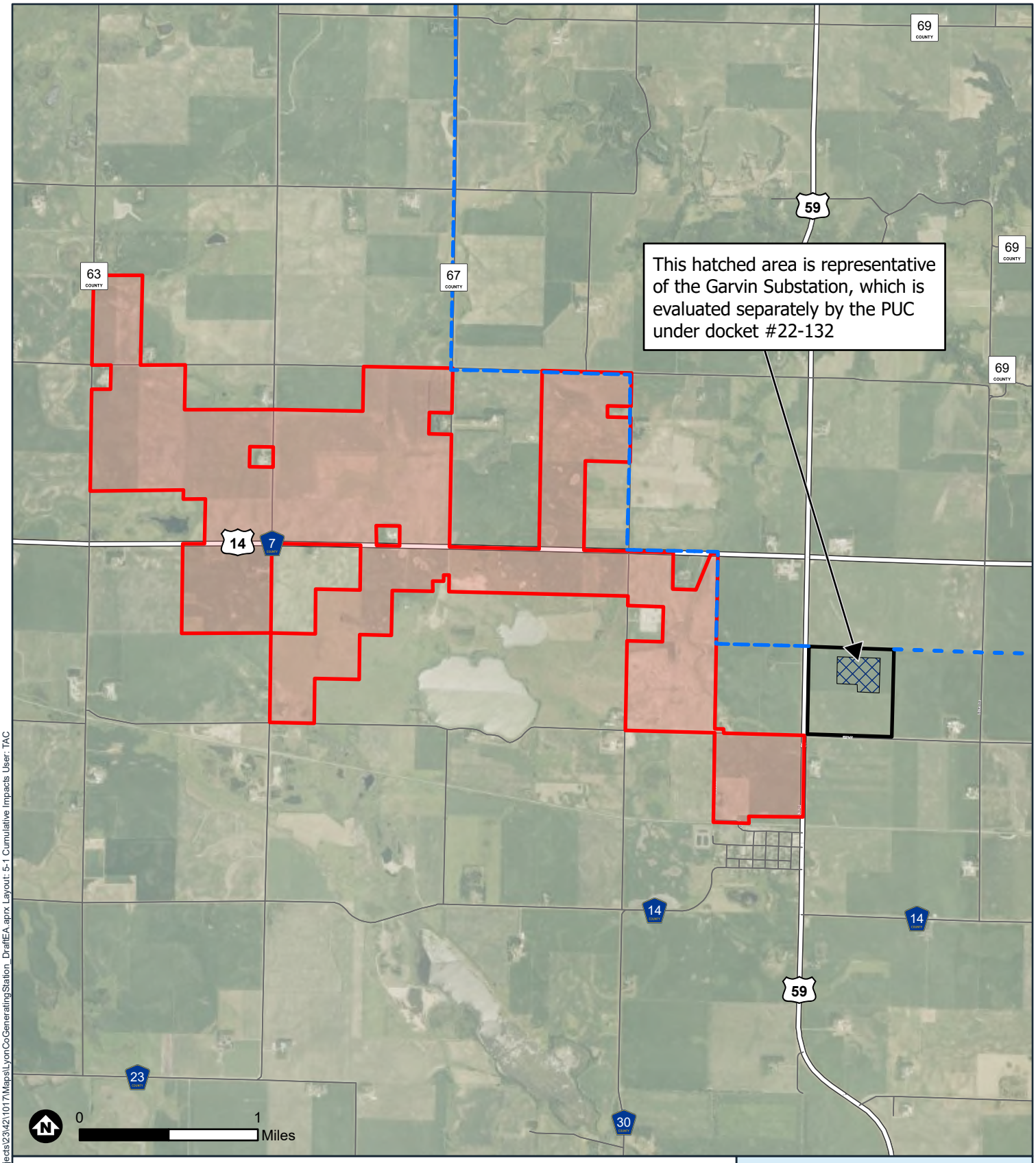
Cumulative effects are discussed here for projects that are currently happening or are planned with construction schedules that would overlap the project or are otherwise foreseeable within the environmentally relevant area. The websites of agencies/local governments were reviewed, and in some cases agencies/local governments were directly contacted to identify current and reasonably foreseeable future projects that are located within areas traversed by the project; these agencies included: the Minnesota Environmental Quality Board, Commission, MnDOT, BWSR, MPCA, and DNR. The Lyon County website was also reviewed to identify any relevant projects.

Current and reasonably foreseeable future projects are summarized in Table 4-26 and shown on Map 4-10. Most of the projects identified consist of transportation-related projects and generally include routine maintenance and repair activities. The MnDOT website was used to identify state-level projects for District 8 that intersect or are adjacent to the project. Local transportation projects were identified through a review of the Lyon County website. While these transportation-related projects would provide long-term benefits to the area, their potential for cumulative effects would generally be minimal and tied to short-term construction-related effects.

As noted in Table 4-26 and shown on Map 4-10, there is one current project (the MEC project) and three reasonably foreseeable projects in the area. The Coneflower Solar project will interconnect to the grid via the MEC project. As such, the MEC project will need to be in service for the Coneflower Solar project to be operational.

Table 4-26 Current and Reasonably Foreseeable Future Projects

Project	Description	Anticipated Timeframe	Location	Source
Minnesota Energy Connection Project	Current: Xcel Energy is planning to construct an approximately 180-mile, 345 kV double-circuit transmission line between the existing Sherburne County Generation Station Substation (Sherco Substation) in the city of Becker, Minnesota, and the proposed Garvin Substation (Docket Nos. E002/CN-22-131 and E002/TL-22-132).	2025- 2031	Garvin Substation (Lyon County) and counties north and northeast (Sherburne, Stearns, Kandiyohi, Wright, Meeker, Chippewa, Yellow Medicine, Renville, Redwood counties)	https://puc.eip.mn.gov/web/project/15000
Coneflower Solar Project	Reasonably foreseeable: Coneflower Energy, LLC is proposing to construct an up to 235-megawatt solar energy generating facility in Lyon County, Minnesota.	2026	Region A, Lyon County	https://puc.eip.mn.gov/web/project/15699
MnDOT -Hwy 59	Reasonably foreseeable: Culvert replacement	2026	Lyon County, north of the City of Marshall	Hwy 59 Culvert Replacement - MnDOT
MnDOT – Hwy 75	Reasonably foreseeable: Resurfacing (Hwy 14), reconstruction (Hwy 75), and infrastructure and utility replacement	2027	Lincoln County, west of the project from the Lyon County line to the City of Lake Benton	Highway 75 and Hwy 14 Lake Benton Project - MnDOT



Project Boundary
Garvin Substation
Coneflower Solar Project
MEC Transmission Line
US Highway
Road

Sources: XCEL, Barr, Minnesota eFiling, Esri

Lyon Co. Generating Station Project

Cumulative Potential Effects

MAP 4-10

BARR

Barr Footer: ArcGISPro, 1/2/2026 10:17 AM File: I:\Projects\23\42\1017\Maps\LyonCoGeneratingStation_DraftEA.aprx Layout: 5-1 Cumulative Impacts User: TAC

Xcel Energy has received a route permit to construct a 345 kV connection between the existing Sherburne County Generation Station Substation in Becker, Minnesota, and a new substation near the city of Garvin (MEC Project). This new substation will be the point of interconnection for the Coneflower Solar project. Unless otherwise indicated, the described project components and potential impacts discussed here are sourced from MEC's Route Permit Application and Environmental Impact Statement and Coneflower Solar project Environmental Assessment (reference (104)).

If Coneflower Solar, MEC, and the Lyon County Generation Station are all constructed, the landscape surrounding the city of Garvin will experience considerable change (Map 4-10). Under these circumstances, this area, currently primarily used for agricultural production, would house:

- The 1,723-acre Coneflower Solar project;
- The 345 kV gen-tie line connecting the Coneflower Solar project to the Garvin Substation;
- The 40-acre Garvin substation;
- The double circuit 345 kV transmission line that terminates the MEC route at the Garvin Substation;
- Two natural gas turbine generators for the Lyon County Generation Station Project
- Two 345 kV transmission lines to connect the Lyon County Generation Station to the MEC Garvin Substation
- Various other facilities associated with the projects, including on-site operation facilities, emergency diesel generators, and a natural gas metering and pressure regulating station
- Workers periodically accessing all of these sites to facilitate operations and maintenance.

Construction for MEC has already begun, and the proposed construction start date for Lyon County Generation Station Project is in the second quarter of 2026. Construction schedules are likely to overlap; if they do, potential cumulative impacts include increased noise levels, traffic delays, and reroutes. It is assumed that the majority of construction-related project impacts are short-term. The discussion offered here is focused on the potential long-term project impacts; thus, this section largely focuses on operational impacts, with a few relevant longer-term construction-related impacts.

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

4.12.1 Human Settlements

Cumulative potential effects on human settlements are anticipated to be minimal to moderate, with increased potential for some significant impacts, depending on viewer sensitivity and distance to the projects, such as neighboring landowners.

4.12.1.1 Aesthetics

The Lyon County Generation Station, Coneflower Solar project, and MEC project will all result in aesthetic impacts. Multiple new high-voltage transmission lines, the solar facility, the new substation, the turbines, and associated facilities will introduce several new visual elements into the landscape. Thus, aesthetic impacts will increase in the project area as a result of these combined projects. The concentrated area in

which these projects are proposed to be constructed will alter the current landscape and may cause considerable changes in the viewshed at certain vantage points.

4.12.1.2 Socioeconomics

While construction of the Lyon County Generation Station project, Coneflower Solar project, and MEC project will generate construction related jobs, the projects are not anticipated to create significant numbers of long-term jobs. However, it is anticipated that the project would have a minor benefit to the local communities through the creation of jobs and the generation of local income tax and lease payments for solar easements. In addition, once the projects are operational, the individual projects would pay property tax and production taxes on the land and energy production to the local government

4.12.1.3 Noise

Construction of the projects will create increased noise through vehicle activity and use of heavy construction equipment. Once operational, noise from the Coneflower Solar project and MEC are anticipated to be negligible. The Lyon County Generation project has been designed to meet state noise standards and plans on adding noise-mitigating measures to facilities such as exhaust stack acoustic silencers (Section 3.1.1.2). As discussed in Chapter 4.3.3, ambient noise was evaluated as part of the Lyon County Generation Station Project sound study (Appendix F). The existing ambient sound levels at the monitored locations were below MPCA noise standards and consisted of noise from distant traffic and occasional wind gusts.

The Coneflower Solar project will generate noise from the inverters, transformer, and tracking system, but this noise will dissipate with distance, falling well below L50 dBA standards by the time it reaches the nearest residence. Operational noise from MEC is largely anticipated to be associated with transformer or shunt reactor “hum,” allowing the project to comply with state noise standards. There is potential for additive noise to result in increased cumulative noise impacts.

4.12.1.4 Property Values

The Coneflower Solar project may affect the property values of homes within 0.5 miles of the project, with a potential reduction in home sale prices of approximately 4% (reference (104)). MEC may negatively impact property values depending on how the transmission line and substation affect property aesthetics and how they overlay with farmable areas.

The Lyon County Generation Station project may similarly impact property values depending on how the transmission lines and turbine generators affect adjacent property aesthetics and if potential buyers have concerns over being located in close proximity to a natural gas combustion facility. Residences within the local vicinity may see a combination of the solar facility, multiple transmission lines, the new substation, combustion turbines, and various other new industrial facilities in their viewsheds. The overall impact level is anticipated to dissipate with distance. however, limited sales information is available.

A review of the literature identified one peer-reviewed journal article that addressed impacts to property values based on proximity to utility-scale, PV solar facilities. The study found that on average, homes within 0.5 miles of a solar facility sold for about 1.5 percent less than homes 2–4 miles away, with no measurable effect beyond 1 mile (reference (105)). Due to the uncertainty associated with property value impacts and the variety of real estate and market factors that drive property values, potential impacts on property values could be minimal to significant.

4.12.1.5 Cultural Values

Garvin is a small city, currently estimated to have a population of 125 people, in a quiet, rural location. The construction and operation of three large energy projects will change the character of Garvin and impact residents' sense of place. This impact is difficult to assess, as each individual in the area has their own opinions and ideas that influence their sense of place.

As discussed in Chapter 4.3.5, farming and the ability to continue to farm and support livelihoods through farming tend to be strong regional values. The county boasts natural amenities, including lakes, rivers, and wildlife areas, that provide opportunities for fishing, hunting, and other recreational activities. Nearby Garvin County Park encompasses approximately 750 acres of wooded hills, prairie, and stream corridors. The project would result in a minor loss of farmable land within the county and would not affect any of the identified recreational activities within the community. Therefore, it is anticipated that the project will result in minor impacts to cultural values of the surrounding community overall.

4.12.2 Public Health and Safety

Cumulative potential effects on public health and safety could occur from EMF, implantable medical devices, stray voltage, or induced voltage. As discussed in Chapter 4.5 effect on public health and safety are generally anticipated to be negligible to minimal. There is potential for moderate impacts, but standard permit conditions and anticipated project design make this unlikely.

4.12.2.1 Electromagnetic Fields

EMF generated by the Coneflower Solar project is not anticipated to negatively impact human health (reference (104)). MEC will be constructed to maintain proper safety clearances, and negative impacts to human health from EMF exposure are not anticipated. The overall impact intensity is anticipated to be negligible to minimal. It is noted that transmission lines can induce voltage on a parallel distribution circuit that is directly underneath the transmission line. This includes insulated electric fences used in livestock operations, which can be charged via an induced voltage from a transmission line. All three projects will each have high-voltage transmission lines associated with their operations. This increases the potential for induced voltage to occur, but notable changes in EMF are not anticipated.

4.12.3 Archaeological and Historic Resources

The project does not contain known archaeological or historical properties within the ROW or the route width. Other historical features identified within one mile of the project are not considered eligible for preservation or have not been evaluated for eligibility. Archaeological resources within the Coneflower Solar project area have not yet been identified, and therefore, cumulative potential effects are unknown. In addition, a Phase 1 Cultural Resource Reconnaissance survey and Architectural History Inventory will be completed for MEC prior to construction. The applicant will coordinate with SHPO and Tribal Nations to design an appropriate survey strategy and any required avoidance or minimization measures. It is anticipated that impacts to archaeological resources will be minimized with proper mitigation measures, such as an Unanticipated Discoveries Plan.

4.12.4 Natural Environment

The cumulative potential effects on the natural environment are expected to be minimal.

4.12.4.1 Air quality

The Lyon County Generation Station project, which will combust natural gas during project operation, will produce various air pollutants, including CO_2, NO_X, $PM_{2.5}$, and PM_{10}. (Chapter 0). The Lyon County Generation Station project has submitted an air permit and will comply with all applicable environmental regulations throughout the project's lifespan. The Coneflower Solar project will generate negligible fugitive dust and exhaust emissions during operation (Section 4.7.1). The MEC project will produce minimal amounts of ozone and nitrous oxide. As only the Lyon County Generation Station project is anticipated to emit pollutants, the overall cumulative potential effect from these projects is expected to be negligible to minimal.

4.12.4.2 Wildlife

Components of the Coneflower Solar project, such as PV panels and fencing, can create a collision, entanglement, and funneling risk for wildlife. Transmission line structures and the substation from the MEC project can present a collision or electrocution risk for birds or wildlife that enter the premises. The transmission lines associated with Lyon County Generation Station pose a similar collision or electrocution risk for birds. The combined increase in transmission infrastructure within the project area may result in cumulative potential effects on wildlife, especially birds. The presence of multiple WPAs around these projects will entice migratory and non-migratory birds alike to the attractive nesting and breeding habitat. These birds will face increased collision risk as additional transmission structures are constructed as discussed in Chapter 4.10.6. The overall impact level is anticipated to remain minimal to moderate. The potential for increased cumulative potential effects can be mitigated if all three projects incorporate wildlife-impact mitigation measures where applicable in their design.

4.12.4.3 Rare and Unique Natural Resources

The cumulative potential effects on rare and unique natural resources are uncertain and difficult to assess. The most likely cumulative potential effects would be increased collision or electrocution risk for birds that are federally or state listed as endangered, threatened, proposed threatened, or of conservation concern as discussed in Chapter 4.10.6. If rare bird species are drawn to the avian habitat throughout the area, they will have to navigate multiple transmission structures.

5 Application of Routing and Siting Factors to the Project

5.1 Generation Station and Transmission Line Routing and Siting Factors

The Commission is charged with locating transmission lines and generation projects in a manner that is "compatible with environmental preservation and the efficient use of resources" and that minimizes "adverse human and environmental impact(s)" while ensuring electric power reliability (Minn. Stat. 216E.02). Minn. Stat. 216E.03, subdivision 7(b) identifies considerations that the Commission must consider when designating transmission lines routes.

Minn. R. 7850.4100 lists 14 factors for the Commission to consider in its site and transmission line permitting decisions, including impacts on human settlements, land-based economies, and the natural environment (see Factors Considered by the Commission for Site and Route Permits sidebar). Through an analysis of these factors, this chapter presents the merits of the applicant's generation station and transmission line.

Many of the project impacts relative to the applicable permit factors are anticipated to be avoided or minimized by the (1) general and special conditions in the Commission's site and route permits, and (2) the requirements of "downstream" permits such as the construction stormwater permit.

The discussion related to the generation station and transmission line focuses on the first 12 routing factors (See Minn. R. 7850.4100, factors A through L). Routing factors M and N— the unavoidable and irreversible impacts of the project—are discussed at the end of this chapter.

Routing factor G ("mitigate adverse environmental impacts") has several parts and speaks generally to environmental impacts. The examination of such impacts suggested by routing factor G is included in the discussion of other routing factors and elements that more specifically address an environmental impact (e.g., effects on vegetation and wildlife, routing factor E).

Finally, factors H and J address similar issues, the use or paralleling of existing rights-of-way. Routing factor H relates to the use or paralleling of existing rights-of-way but also includes items that do not have a ROW, such as survey lines, natural division lines, and agricultural field boundaries. Factor J relates to the use of existing transportation, pipeline, and electrical transmission rights-

Factors Considered by the Commission for Site and Route Permits

To determine whether to issue a site or route permit, the Commission shall consider the following factors of Minnesota Rules, part 7850.4100.

A. Effects on human settlement, including, but not limited to, displacement, noise, aesthetics, cultural values, recreation, and public services.
B. Effects on public health and safety.
C. Effects on land-based economies, including, but not limited to, agriculture, forestry, tourism, and mining.
D. Effects on archaeological and historic resources.
E. Effects on the natural environment, including effects on air and water quality resources and flora and fauna.
F. Effects on rare and unique natural resources.
G. Application of design options that maximize energy efficiencies, mitigate adverse environmental effects, and could accommodate expansion of transmission or generating capacity.
H. Use or paralleling of existing rights-of-way, survey lines, natural division lines, and agricultural field boundaries.
I. Use of existing large electric power generating plant sites.
J. Use of existing transportation, pipeline, and electric transmission systems or rights-of-way.
K. Electrical system reliability.
L. Costs of constructing, operating, and maintaining the facility, which are dependent on design and route.
M. Adverse human and natural environmental effects that cannot be avoided.
N. Irreversible and irretrievable commitments of resources.

of-way. Within this chapter, these factors are considered similarly—the use or paralleling of existing rights-of-way and where there is infrastructure that has a ROW.

5.2 Pipeline Routing Criteria

The Commission is charged with selecting pipeline routes that minimize adverse human and environmental impacts while ensuring pipeline reliability and integrity. Permits issued by the Commission include a permitted pipeline and anticipated alignment, as well as conditions specifying construction, restoration, and operation standards.

The Commission considers 10 factors in its pipeline route permitting decisions, including impacts on human settlements, land-based economies, and the natural environment (see Factors Considered by the Commission for a Pipeline Route Permit sidebar). Through an analysis of the routing factors, this chapter presents the merits of the applicant's proposed pipeline. The discussion related to the pipeline routing factors focuses on all 10 routing factors (See Minn. R. 7852.1900, factors A through J).

Routing factor J refers to the relevant applicable policies, rules, and regulations of other states and federal agencies, and local government. It is anticipated that the pipeline will meet applicable policies, rules, and regulations and will obtain all necessary "downstream" permits identified in the Route Permit Application.

Factors Considered by Commission for a Pipeline Route Permit

To determine whether to issue a pipeline route permit, the Commission shall consider the following factors of Minnesota Rules, part 7852.1900.

A. Human settlement, existence and density of populated areas, existing and planned future land use, and management plans.
B. The natural environment, public and designated lands, including but not limited to natural areas, wildlife habitat, water, and recreational lands.
C. Lands of historical, archaeological, and cultural significance.
D. Economies within the route, including agricultural, commercial or industrial, forestry, recreational, and mining operations
E. Pipeline cost and accessibility.
F. Use of existing rights-of-way and right-of-way sharing or paralleling.
G. Natural resources and features.
H. The extent to which human or environmental effects are subject to mitigation by regulatory control and by application of the permit conditions contained in part 7852.3400 for pipeline right-of-way preparation, construction, cleanup, and restoration practices.
I. Cumulative potential effects of related or anticipated future pipeline construction.
J. The relevant applicable policies, rules, and regulations of other state and federal agencies, and local government land use laws including ordinances adopted under Minnesota Statutes, section 299J.05, relating to the location, design, construction, or operation of the proposed pipeline and associated facilities.

5.3 Project Impact Summary

The potential project impacts are summarized in Table 5-1 and described further in Chapters 5.3.1 through 5.3.4. Those elements with minimal or no potential to be impacted by the project are not discussed in this chapter.

Table 5-1 Human and Environmental Impacts of the Applicant's Proposed Project

Element		Project Impacts
Human Settlement	Residences within 0-500 feet (count)	0
	Residences within 500-1,000 feet (count)	1
	Residences within 1,000-2,000 feet (count)	1
Environmental Justice	Communities of EJ concern within the project area	0
Land-Based Economies	Agricultural land in the project area (acres)	149.3
Archaeological and Historic Resources	Archaeological sites in the project area (count)	0
	Historic resources in the project area (count)	0
Water Resources	Stream crossings (count)	0
	PWI crossings (count)	0
	Wetlands within the project area (count)	1
Vegetation	Forested landcover in the project area (acres)	0
Wildlife	Wildlife Management Areas in the project area (acres)	0
	Scientific and Natural Areas in the project area (acres)	0
	Potential for Federal- or state-protected species in the project (count)	0
ROW Sharing and Paralleling	Transmission line (feet)	0
	Roadway (feet)	0
	Field, parcel, or section lines (feet)	0
	Total ROW sharing and paralleling (feet)[1]	0
Estimated Cost	Total estimated construction cost (million)	650 - 800

[1] Although the project does not share or parallel existing rights-of-way, it is located entirely on property owned by the applicant and not intended for other uses.

5.3.1 Human Settlements

Potential impacts on human settlements are assessed through an evaluation of several elements, as discussed in Section 4.3. For most of the human settlement elements, project impacts are anticipated to be minimal. The analysis of impacts on human settlements focuses on those elements where project-related effects may occur, including aesthetics and noise.

5.3.1.1 Aesthetics

Aesthetic impacts are assessed, in part, by considering the existing viewshed, landscape, and how the project may alter these aesthetic attributes. Determining the relative scenic value or visual importance in any given area depends, in large part, on the values and expectations held by individuals and communities about the aesthetic resource in question.

Based on the project's proximity to residences, aesthetic impacts may occur as a result of the project. There are two residences within 2,000 feet of the project. The project will result in the introduction of new

infrastructure in a relatively rural area. However, aesthetic impacts may be minimized by co-locating the project adjacent to the MEC project.

5.3.1.2 Noise

The project's noise impacts have been evaluated through a sound study that included ambient measurements, predictive modeling, and regulatory compliance checks. Predictive modeling shows that the project's operational noise will remain within both daytime and nighttime L50 limits for all modeled receptors (Appendix F). Mitigation measures such as low-noise equipment upgrades and limiting emergency generator testing to daytime hours further reduce project-related noise generation. As a result, no significant noise impacts are anticipated from the project.

5.3.2 Land-Based Economies

Potential impacts to land-based economies are assessed through an evaluation of the elements discussed in Chapter 0. The project will minimally impact the majority of elements considered under land-based economies. Potential agricultural impacts that may occur as a result of the project are discussed further.

5.3.2.1 Agriculture

According to the NLCD, there are 149.3 acres of agricultural land within the project area. This agricultural land comprises cultivated crop land and equates to 100 percent of the total land cover within the ROW. Permanent impacts to agriculture as a result of the project include loss of farmland due to the generation station and structure placement in agricultural fields, which can restrict certain types of farming equipment.

5.3.3 Natural Environment

Potential impacts to the natural environment are assessed by looking at several specific elements as described in Chapter 4.10. For some elements of the natural environment, the project's impacts are anticipated to be minimal and are therefore not discussed in this Chapter. This Chapter addresses the elements that may be impacted by the project, specifically air quality.

5.3.3.1 Air Quality

Construction of the proposed project will generate temporary emissions from equipment and dust, but these impacts are expected to be minor and short-term. During operation, air emissions from the transmission lines, natural gas pipeline, and generation station will be minimal and regulated under a Title V air permit. Modeling and risk assessments conducted in accordance with MPCA and EPA guidance demonstrate that the facility's permitted emissions will comply with state and federal air quality standards and will not adversely affect human health. Mitigation measures such as dust control during construction, low-NO_X burners, good combustion practices, and adherence to applicable New Source Performance Standards will further minimize emissions and ensure regulatory compliance.

5.3.4 Use of Existing Rights-of-Way

Sharing ROW with existing infrastructure minimizes fragmentation of the landscape and can minimize human and environmental impacts (e.g., aesthetic and agricultural impacts). The project is located adjacent to the MEC Garvin Substation, which limits the extent of new ROW required to the greatest extent practical.

5.3.5 Summary of Project-Specific Siting and Routing Factors

The discussion here uses text and a color graphic to summarize the relative merits of the project as described in Table 5-2. The summary of project-specific siting and routing factors for the generation station and transmission line are summarized in Table 5-3 and the pipeline's project specific routing factors are summarized in Table 5-4. The color graphic and related notes for a specific siting and routing factor or element are not meant to suggest that accommodations and/or changes need to be made to the site/route, but are provided as a comparison to be evaluated together with all other siting/routing factors. For example, if the generation station is "red" for a particular factor or element, this is not meant to indicate a fatal flaw within the proposed site.

For factors that express the state of Minnesota's interest in the efficient use of resources (e.g., the use and paralleling of existing rights-of-way), the graphic represents the consistency of the route with these interests. For the remaining routing factors, the graphic represents the magnitude of the anticipated impacts.

Table 5-2 Guide to Relative Merits of the Project

Anticipated Impacts or Consistency with Routing Factor	Symbol
Minimal: Impacts are anticipated to be minimal with mitigation – OR – the project is very consistent with this routing factor.	
Moderate: Impacts are anticipated to be minimal to moderate with mitigation; special permit conditions may be required for mitigation	
Significant: Impacts are anticipated to be moderate to significant and likely unable to be mitigated – OR –the project is not consistent with the routing factor or consistent only in part. Indicates that the route is impactful with respect to the routing factor.	

Table 5-3 Summary of Siting and Routing Factors for the Generation Station and Transmission Line

Routing Factor/Resource	Generation Station Construction	Generation Station Operation	Transmission Line Construction	Transmission Line Operation	Summary
A. Human Settlement – Displacement, Noise, Aesthetics, Cultural Values, Recreation, and Public Services					There are two residents within 2,000 feet of the project area. The project will result in a viewshed change for the area.
B. Public Health and Safety					No impacts to public health and safety are anticipated as a result of the project.
C. Land-based Economies – Agriculture, Forestry, Tourism, and Mining					Permanent impacts to agriculture as a result of the project may include loss of farmland due to construction of the generation station and structure placement in agricultural fields and restriction of farming equipment. Impacts to agricultural operations have been mitigated by proposing a project adjacent to the MEC.
D. Archaeological and Historic Resources					No impacts to archaeological and historic resources are anticipated as a result of the project.
E. Natural Environment – Air and Water Quality Resources and Flora and Fauna					The project will generate air emissions during construction and project operations. CIA modeling results are compliant with the MAAQS and NAAQS. Please refer to Chapter 4.7.
F. Rare and Unique Natural Resources					The project is not anticipated to adversely affect any rare or unique natural resources.
G. Application of Design Options that Maximize Energy Efficiencies, Mitigate Adverse Environmental Effects, and could Accommodate Expansion of Transmission or Generating Capacity					The project has been designed to maximize energy efficiencies and mitigate adverse environmental effects.

Routing Factor/Resource	Generation Station Construction	Generation Station Operation	Transmission Line Construction	Transmission Line Operation	Summary
H. Use or Paralleling of Existing Rights-of-Way, Survey Lines, Natural Division Lines, and Agricultural Field Boundaries	●	●	●	●	The project is sited entirely within an existing agricultural field on property owned by the applicant and adjacent to the existing MEC project. Though use of existing ROW will not occur, the project location minimizes new transmission ROW.
I. Use of existing large electric power-generating plant sites	◓	◓	◓	◓	The project will not utilize any existing large electric power generating plant sites. However, it will be located adjacent to the MEC Garvin Substation.
J. Use of Existing Transportation, Pipeline, and Electrical Transmission Systems or Rights-of-Way	●	●	●	●	The project is located on land owned by the applicant and sited adjacent to the MEC project. Though use of existing ROW will not occur, the project location minimizes new transmission ROW.
K. Electrical System Reliability	●	●	●	●	The project supports electrical system reliability.
L. Costs of Construction, Operating, and Maintaining the Facility which are Dependent on Design and Route	●	●	●	●	The project has been designed to minimize construction and operating costs to the extent possible.
M. Adverse Human and Natural Environmental Effects which Cannot be Avoided	●	●	●	●	Unavoidable adverse human and environmental effects have been minimized to the extent possible.
N. Irreversible and Irretrievable Commitments of Resources	●	●	●	●	Irreversible and irretrievable commitments of resources have been minimized to the extent possible.

Table 5-4 Summary of Routing Factors for the Natural Gas Pipeline

Routing Factor/Resource	Pipeline Route	Summary
A. human settlement, existence and density of populated areas, existing and planned future land use, and management plans;		The project is located in a rural setting and is not designated for future residential or commercial development. There are two residences located within 2,000 feet of the project area.
B. the natural environment, public and designated lands, including but not limited to natural areas, wildlife habitat, water, and recreational lands;		The pipeline is located in an agricultural field with no native vegetation, surface water resources, or public lands.
C. lands of historical, archaeological, and cultural significance;		No impacts to archaeological and historic resources are anticipated as a result of the project.
D. economies within the route, including agricultural, commercial or industrial, forestry, recreational, and mining operations;		Permanent impacts to agriculture as a result of the project would include loss of farmland due to the construction of the pipeline through an agricultural field. Impacts to agricultural operations have been mitigated by proposing a project adjacent to the MEC project and the existing Northern Border pipeline, which reduces the extent of impacts to agricultural property.
E. pipeline cost and accessibility;		The costs of the pipeline have been minimized to the extent practical by locating the project adjacent to the MEC Garvin Substation and Northern Border Natural Gas Pipeline, which limits the need for additional pipeline..
F. use of existing rights-of-way and right-of-way sharing or paralleling;		The pipeline is sited adjacent to the MEC on land owned by the applicant.
G. natural resources and features;		The pipeline is located in an agricultural field with no native vegetation, surface water resources, or public lands.
H. the extent to which human or environmental effects are subject to mitigation by regulatory control and by application of the permit conditions contained in part 7852.3400 for pipeline right-of-way preparation, construction, cleanup, and restoration practices;		The environmental impacts identified in this EA would be minimized through the conditions identified in the draft pipeline route permit.

Routing Factor/Resource	Pipeline Route	Summary
I. cumulative potential effects of related or anticipated future pipeline construction; and		There are no anticipated cumulative potential effects related to future pipeline construction.
J. the relevant applicable policies, rules, and regulations of other state and federal agencies, and local government land use laws including ordinances adopted under Minnesota Statutes, section 299J.05, relating to the location, design, construction, or operation of the proposed pipeline and associated facilities.		The project would adhere to all policies, rules, and regulations of state, federal or local governments.

5.4 Unavoidable Impacts

Potential impacts and the possible ways to mitigate against them are discussed in previous sections of this chapter. However, even with mitigation strategies, certain impacts cannot be avoided.

Unavoidable adverse effects associated with construction of the project would last only for the duration of construction and include:

- Fugitive dust
- Increased traffic
- Visual and noise disturbances
- Disturbance to agricultural operations, as well as crop losses
- Soil compaction and erosion
- Vegetative clearing
- Disturbance and temporary displacement of wildlife, as well as direct impacts to wildlife inadvertently struck or crushed during structure placement or other activities
- Minor amounts of agricultural habitat loss
- Converting the underlying land use to an industrial use
- GHG emissions

Unavoidable adverse impacts associated with project operation include:

- Visual impact of infrastructure
- Change in landscape character
- Loss of land use for other purposes, such as agriculture
- Injury or death of avian species that collide with, or are electrocuted by, conductors
- Potential decrease to property values
- GHG and air emissions

5.5 Irretrievable and Irreversible Impacts

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

Irreversible impacts include the land required to construct the project. While it is possible that the infrastructure could be removed and the area restored to previous conditions, this is unlikely to happen in the reasonably foreseeable future (approximately 50 years). Certain land uses within the project area will no longer be able to occur.

An irretrievable commitment of resources means the resource is not recoverable for later use by future generations. These impacts are primarily related to project construction, including the use of water, aggregate, hydrocarbons, steel, concrete, wood, and other consumable resources. The commitment of labor and fiscal resources is also considered irretrievable.

6 References

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2. NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION. 2023 Long-Term Reliability Assessment. Online. December 2023. Available from: https://www.nerc.com/pa/RAPA/ra/Reliability%20Assessments%20DL/NERC_LTRA_2023.pdf

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Appendices

Appendix A

Scoping Decision

MINNESOTA
PUBLIC UTILITIES COMMISSION

Sasha Bergman, Executive Secretary

Notice of Environmental Assessment Scoping Decision

In the Matter of the Combined Application for a Certificate of Need, Site Permit, Transmission Line Route Permit, and Partial Exemption and Pipeline Routing Permit for the Lyon County Generating Station Project

Docket Nos. E002/CN-25-145, G002/GS-25-154, E002/TL-25-161, and G002/GP-25-163

Issued: October 30, 2025

PLEASE TAKE NOTICE that the Minnesota Public Utilities Commission (Commission) has issued the scoping decision for the environmental assessment (EA) that will be prepared for the proposed Lyon County Generating Station project in Lyon County, Minnesota.

The EA will be prepared by the Commission's Energy Infrastructure Permitting (EIP) environmental review staff and will address the potential human and environmental impacts of the project. The scoping decision identifies those issues that will be studied, as well as those that will not be addressed.

The scoping decision and other relevant documents are available:

- On the Commission's website: https://puc.eip.mn.gov/web/project/16322 and
- On the State of Minnesota's eDockets system: https://www.edockets.state.mn.us/documents (enter any of the docket numbers "25-145; 25-154; 25-161; 25-163").

The EA is scheduled to be completed in January 2026. A public hearing will be held in the project area after the EA is complete and available for review.

If you would like more information or if you have questions, please contact Commission staff: Jim Sullivan (jim.sullivan@state.mn.us) (651) 539-1064 or Craig Janezich (craig.janezich@state.mn.us) (651) 201-2203.

To place your name on the project mailing list, email docketing.puc@state.mn.us or call Leesa Norton at (651) 201-2246 with the docket numbers (25-145; 25-154; 25-161; 25-163), your name, email address, and mailing address. Please indicate how you would like to receive notices, delivered either by email or U.S. mail. Placing your name on the project mailing list ensures that you receive the most up-to-date information about the project.

This notice and the scoping decision can be made available in alternative formats, i.e., large print or audio, by calling (651) 539-1529 (voice).

MINNESOTA
PUBLIC UTILITIES COMMISSION

In the Matter of the Combined Application for a Certificate of Need, Site Permit, Transmission Line Route Permit, and Partial Exemption and Pipeline Routing Permit for the Lyon County Generating Station Project

ENVIRONMENTAL ASSESSMENT SCOPING DECISION

DOCKET NOS. E002/CN-25-145, G002/GS-25-154, E002/TL-25-161, and G002/GP-25-163

The above matter has come before the Executive Secretary of the Minnesota Public Utilities Commission (Commission) for a decision on the scope of the environmental assessment (EA) that will be prepared for Xcel Energy's proposed Lyon County Generating Station Project (project), in Garvin Township, Lyon County, Minnesota. The Commission is reviewing this project application under Minnesota Statute 216E (2023).

Project Description

On May 9, 2025, Xcel Energy submitted an application to the Commission for a generating station project in Garvin Township, Lyon County, Minnesota. The project includes two 210 megawatt (MW) combustion turbines, two short, double-circuit 345 kV transmission lines, a short natural gas pipeline, and related facilities on approximately 155 acres owned by Xcel Energy.[1] The combustion turbines are estimated to permanently occupy approximately 12 acres; the transmission lines are estimated to occupy approximately 16 acres; and the pipeline is estimated to occupy approximately one acre.[2] The natural gas pipeline will be approximately 965 feet long, with 12-inch and 8-inch segments, operating at 550 pounds per square inch gauge (psig) and connecting to the existing Northern Border Pipeline. Construction is anticipated to begin in July of 2027, with a proposed in-service date of December 2028.[3]

Project Purpose

Xcel Energy is seeking approval for its project to provide reliable, firm dispatchable power as the company transitions from fossil fuels to renewable and carbon-free energy sources. The need for up to 800 MW of such resources was identified in the 2019 Integrated Resource Plan (IRP) and reaffirmed in the 2024 IRP, which projected increased peak demand and energy consumption.[4] The project was proposed in the Firm Dispatchable Docket and included in a Settlement Agreement approved by the Commission in April 2025.[5] Xcel Energy indicates that the project is critical for meeting growing demand,

[1] Lyon County Generating Station Project, Combined Application to the Minnesota Public Utilities Commission for a Certificate of Need, Site, transmission, and pipeline permit for a large electric generating facility, May 9th, 2025, eDockets Numbers 20255-218749-01 (through -16). (Herein "Combined Permit Application").
[2] Combined Permit Application, Section 7, 49.
[3] Combined Permit Application, Section 1.1, 4.
[4] In the Matter of the 2020-2034 Upper Midwest Integrated Resource Plan of Northern States Power Company d/b/a Xcel Energy, MPUC Docket No. E002/19-368, Order Approving Plan with Modifications and Establishing Requirements for Future Filings (Apr. 15, 2022) (2019 IRP Order). See eDocket 20224-184828-01
[5] See In the Matter of Northern States Power Company d/b/a Xcel Energy's 2024-2040 Integrated Resource Plan and In the Matter of Xcel Energy's Competitive Resource Acquisition Process for up to 800 Megawatts of Firm Dispatchable Generation, MPUC Docket Nos. E002/RP24-67 and E002/CN-23-212, Joint Settlement Agreement (Oct. 3, 2024). See eDocket 202410-210671-01

supporting coal plant retirements by 2030, and maintaining grid reliability. Additionally, Xcel Energy notes that the project will also enhance system stability by including two synchronous condensers, enabling up to 1,100 MW of generation on the Minnesota Energy Connect transmission line.

Regulatory Background

Certificate of Need

In Minnesota, no person may construct a large energy facility without a certificate of need (CN) from the Commission.[6] With a generating capacity of up to 420 MW, Xcel Energy's proposed project is a large energy facility and thus requires a CN.[7]

Site Permit

In Minnesota, no person may construct a large electric power generating plant without a site permit from the Commission.[8] A large electric power generating plant is defined as a facility capable of operating at a capacity of 50 MW or more.[9] The project will be capable of producing up to 420 MW and therefore requires a site permit from the Commission.

Route Permit

In Minnesota, no person may construct a high voltage transmission line without a route permit from the Commission.[10] A high voltage transmission line is defined as conductor of electric energy designed for and capable of operation at a voltage of 100 kilovolts or more and greater than 1,500 feet in length.[11] The transmission lines associated with the project will operate at a voltage of 345 kV and will be longer than 1,500 feet in length; therefore, they require a route permit from the Commission.

Pipeline Routing Permit

In Minnesota, no person may construct a natural gas pipeline designed to be operated at a pressure of more than 275 psig without a pipeline routing permit from the Commission.[12] The natural gas pipeline associated with the project will be designed to operate at 550 psig and thus requires a pipeline routing permit from the Commission.

Commission Energy Infrastructure Permitting (EIP) staff will prepare an EA for the project.[13] An EA contains an overview of the resources affected by the project. It also discusses potential human and environmental impacts and possible mitigation measures.[14] An EA is the only required state environmental review document for the project.[15]

[6] Minn. Stat. § 216B.243.
[7] Minn. Stat. § 216B.2421.
[8] Minn. Stat. § 216E.03 (2023).
[9] Minn. Stat. § 216E.01 (2023).
[10] Minn. Stat. § 216E.03 (2023).
[11] Minn. Stat. § 216E.01 (2023).
[12] Minn. Stat. § 216G.02.
[13] Minn. Rule 7859.1900.
[14] Minn. Stat. §216E.04, subd. 5 (2023); Minn. Rule 7850.3700, subp. 4 (2024).
[15] *Ibid.*

Scoping Process

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

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

Public Information and Scoping Meetings

On August 11, 2025, Commission staff held an in-person public meeting in Marshall, Minnesota. Nine individuals from the public attended this meeting, with one attendee providing a supporting comment. The following evening, August 12, 2025, Commission staff held a virtual meeting; no members of the public attended this event.[16]

Written Public Comments

A comment period ending on August 27, 2025, provided the public with an opportunity to provide input on the scope of the EA. Written comments were received from two state agencies, Lyon County, and a labor union.[17]

Agency Comments

The Minnesota Department of Natural Resources (DNR) provided comments on the potential impacts of the proposed project.[18] A DNR Water Appropriation Permit is required if groundwater use exceeds 10,000 gallons per day or one million gallons per year. For temporary dewatering under 50 million gallons and less than one year, a general permit may apply. Permits are managed via the DNR's Minnesota Permitting and Reporting System (MPARS).

The DNR noted that Xcel Energy had completed Preliminary Well Construction Assessments (PWCA) at two project locations, both rated moderate risk. The DNR requires demonstrating sustainable water use and may necessitate an aquifer test or observation wells. The DNR requested that the EA fully outline all construction and operational water needs, including groundwater use for cooling.

Subsequent to the DNR's comments, the applicant informed the Commission that they have revised their project to include air-cooling for the project rather than the evaporative, water-cooling system described in their May 9, 2025, permit application.[19] The applicant's September 29, 2025, revision

[16] Public comments made at the August 11, 2025, in-person scoping meeting held in Marshall, Minnesota [20258-222404-01]; Public comments from the August 12, 2025, virtual scoping meeting [20258-222405-01].
[17] Written Comments on the Scope of Environmental Assessment were received from the Minnesota Department of Natural Resources (DNR) [20258-222476-01]; Minnesota Department of Transportation (MNDOT) [20258-222454-01]; Lyon County Planning and Zoning – Soil and Water Conservation District [20258-222600-01]; and, Laborers' International Union of North America (LIUNA) [20258-222488-01].
[18] DNR comment, August 27, 2025, eDocket Number 20258-222476-01
[19] Xcel Energy noted in their October 1, 2025, correspondence to EIP that they will no longer use the evaporative cooling system proposed in their May 9, 2025, permit application, opting instead for an air-cooled system. This air cooling will be described and analyzed in the Environmental Assessment; the applicant's revision eliminates the need for a DNR Water Appropriation Permit and Minnesota Pollution Control Agency Wastewater Permit. (See eDocket 202510-223500-01).

removes the need for groundwater resources, thereby eliminating the need for a DNR Water Appropriation Permit.

The DNR also recommended that the EA address lighting impacts on wildlife, suggesting lighting not exceed 4,000K in color temperature and be downlit and shielded. For dust control, the use of chloride-based agents is discouraged due to environmental risks. DNR recommended that fugitive dust control measures be addressed in the EA. Wildlife-friendly erosion control is advised, avoiding plastic mesh products and synthetic hydro-mulch fibers. Regarding vegetation, DNR recommended that the project adopt a Vegetation Management Plan (VMP) to stabilize soil and support habitat. The DNR supports Xcel Energy's proposed use of native tall grasses but recommends adding native forbs to improve pollinator and wildlife benefits.[20]

The Minnesota Department of Transportation (MnDOT) reviewed the project's permit applications and provided comments focussed on minimizing impacts to U.S. Highway 59.[21] MnDOT expects minimal impacts to its right-of-way if their key concerns are addressed, which include access point management, stormwater management, and traffic control. MnDOT has discussed two possible access points to US 59 with Xcel Energy: one temporary access point for construction, and one permanent access point (an improved existing access). All access points must meet MnDOT standards, and frontage roads will not be allowed on MnDOT right-of-way.

MnDOT requested that the project not increase runoff to US 59. Due to the close proximity of a proposed stormwater pond to the highway, MnDOT may require a drainage permit. A site plan and modeling review will determine the need for this permit. Lastly, Xcel Energy must comply with MnDOT's traffic control guidelines during construction to ensure public safety. Coordination with MnDOT District 8 staff is necessary, and relevant manuals and resources have been provided.

Lyon County Planning and Zoning – Soil and Water Conservation District

The Lyon County Planning and Zoning – Soil and Water Conservation District noted that Xcel Energy staff have consulted with Lyon County staff about the proposed project near Garvin, Minnesota, specific to potential impacts to County Ditches 29 and 24, located on the construction site, which primarily consist of subsurface field drain tiles.[22] Under Minnesota drainage law, these drainage systems must be properly managed.[23] Lyon County requested that all drainage laws are followed and that neighboring lands are not negatively affected by changes in water runoff during or after construction.

LIUNA Minnesota and North Dakota (LIUNA)

Laborers' International Union of North America (LIUNA) supports the project and highlighted that the Commission has already thoroughly evaluated alternatives to the project through prior dockets.[24] LIUNA encouraged the Commission to expand impact evaluations beyond environmental and human considerations to include local employment and economic development impacts, as directed under Minnesota Statutes § 216I.05 and § 216E.03. Per LIUNA, the law mandates the evaluation of a proposed facility's socioeconomic effects, including the quantity, quality, and compensation of both

[20] *Ibid*, 2, eDocket Number 20255-218560-02.
[21] MNDOT comment, August 27, 2025, eDocket Number 20258-222454-01
[22] Lyon County Planning and Zoning, August 12, 2025, eDocket Number 20258-222600-01
[23] Minn. Stat. § 103E (2023).
[24] LIUNA, August 27, 2025, eDocket Number 20258-222488-01

construction and permanent jobs, and the overall economic impact on the region and the state. LIUNA anticipates that the Lyon County project will generate substantial construction employment and career opportunities in Southwest Minnesota, that will benefit the local economy and contribute to the ongoing development of a skilled workforce essential for supporting the region's growing energy infrastructure.[25]

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

MATTERS TO BE ADDRESSED

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

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

I. GENERAL DESCRIPTION OF THE PROJECT
- A. Project Description
- B. Project Purpose
- C. Project Costs

II. REGULATORY FRAMEWORK
- A. Certificate of Need
- B. Permits
  1. Site Permit
  2. Route Permit
  3. Pipeline Routing Permit
- C. Environmental Review
- D. Interconnection
  1. Grid
  2. Pipeline
- E. Other Permits and Approvals

III. ENGINEERING, DESIGN, AND CONSTRUCTION
- A. Natural Gas Turbines
- B. Transmission Line
- C. Pipeline

[25] *Ibid*.

IV. OPERATION AND DECOMMISSIONING

A. Maintenance
B. Vegetation Management
C. Decommissioning

V. AFFECTED ENVIRONMENT, POTENTIAL IMPACTS AND MITIGATIVE MEASURES

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

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

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

A. Environmental Setting
B. Human Settlements
    1. Noise
    2. Aesthetics (vegetative screening)
    3. Displacement
    4. Property Values
    5. Zoning and Land Use Compatibility (land use classification, tax revenue)
    6. Cultural Values
    7. Transportation and Public Services (road use)
C. Socioeconomics
    1. Environmental Justice
    2. Local Economies (employment, financial assurances)
D. Public Health and Safety
    1. Electric and Magnetic Fields
    2. Emergency Services
E. Land Based Economies
    1. Agriculture
    2. Forestry
    3. Mining
    4. Recreation and Tourism
F. Archaeological and Historic Resources (unanticipated discoveries)
G. Natural Environment

1. Water Resources
2. Soils
3. Geology
4. Flora
5. Fauna
6. Air Quality
    a) Regulatory Air Quality Analysis
    b) Inhalation Health Risk Analysis
7. Climate Change / Climate Resiliency

H. Threatened / Endangered / Rare and Unique Natural Resources
I. Cumulative Analysis
J. Adverse Impacts that Cannot be Avoided
K. Irreversible and Irretrievable Commitments of Resources

VI. ALTERNATIVES TO THE PROPOSED PROJECT

The EA, in accordance with Minnesota Rule 7849.1500, will describe and analyze the feasibility of the following system alternatives, and the human and environmental impacts and potential mitigation measures associated with each:

A. No Build Alternative
B. Demand Side Management
C. Purchased Power
D. Generation Using a Different Energy Source
    1. Renewable Energy Sources
E. Transmission Rather Than Generation

ISSUES OUTSIDE THE SCOPE OF THE EA

The EA will not address following topics:

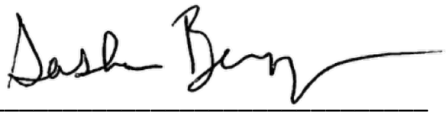
- Any sites or routes other than the project site and routes proposed by Xcel Energy.
- Any system alternative (an alternative to the proposed project) not specifically identified for study in this scoping decision.
- The manner in which landowners are compensated for the project.

SCHEDULE

The EA is anticipated to be completed and available in January 2026. Upon completion, it will be noticed and made available for public review. Public hearings will be noticed and held in the project area after issuance of the EA. Comments on the EA may be submitted into the hearing record.

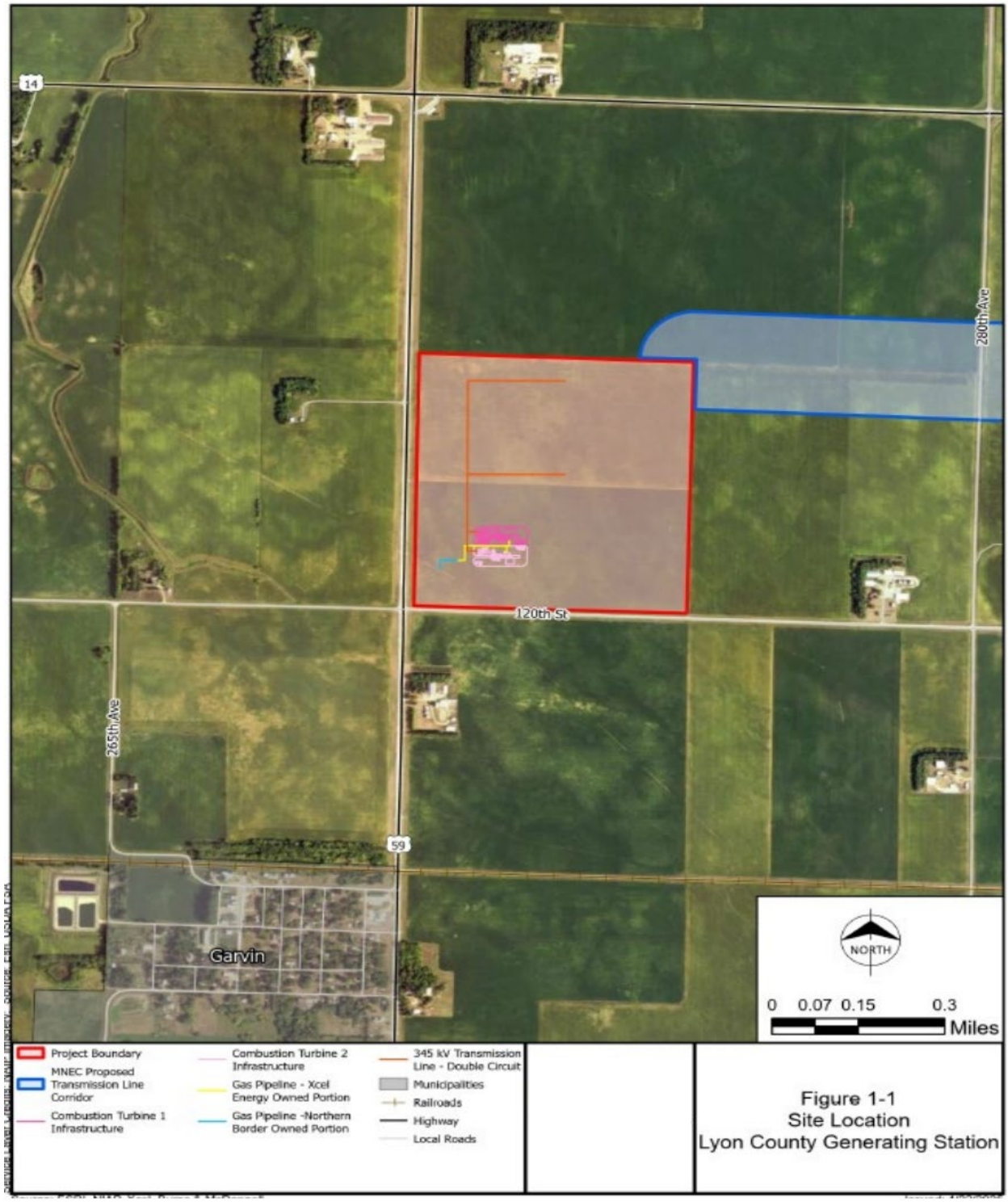
Signed this 29th day of October, 2025

STATE OF MINNESOTA
MINNESOTA PUBLIC UTILTIES COMMISSION



Sasha Bergman, Executive Secretary

Lyon County Generating Station – Project Overview Map



Appendix B

Spatial Data

Lyon County Generating Station Project
Appendix B
Spatial Datasources

Responsible	Dataset	Source Link	Date_Recvd	In Project Area Y/N
BWSR	State Conservation Easements	https://gisdata.mn.gov/dataset/plan-stateland-dnr	9/29/2025	N
BWSR	RIM Conservation Easements	https://gisdata.mn.gov/dataset/bdry-bwsr-rim-cons-easements	9/29/2025	N
DNR	Consolidated Conservation & School Trust Lands	https://gisdata.mn.gov/dataset/plan-stateland-dnr	9/29/2025	N
DNR	MBS Railroad Right-of-Way Prairies	https://gisdata.mn.gov/dataset/biota-mcbs-railroad-prairies	9/29/2025	N
DNR	DNR Native Prairies	https://gisdata.mn.gov/dataset/biota-dnr-native-prairies	9/29/2025	N
DNR	MBS Sites of Biodiversity Significance	https://gisdata.mn.gov/dataset/biota-mcbs-sites-of-biodiversity	9/29/2025	N
N	MBS Native Plant Communities by Type	https://gisdata.mn.gov/dataset/biota-dnr-native-plant-comm	9/29/2025	N
N	MN DNR Scientific and Natural Areas	https://gisdata.mn.gov/dataset/bdry-scientific-and-nat-areas	9/29/2025	N
DNR	Calcareous Fens	https://gisdata.mn.gov/dataset/biota-nhis-calcareous-fens	9/29/2025	N
DNR	DNR Forest Stand	https://gisdata.mn.gov/dataset/biota-dnr-forest-stand-inventory	9/29/2025	N
DNR	Wetland Banking Easement	https://gisdata.mn.gov/dataset/bdry-wetland-banking-easements	9/29/2025	N
DNR	MDNR Old growth stands	https://gisdata.mn.gov/dataset/biota-dnr-forest-inv-old-growth	9/29/2025	N
USFWS	Rusty Patched Bumble High Potential Zones	https://www.arcgis.com/home/item.html?id=b2e7e0c1ddad4f50a20bcfc1bfcfbbcb https://gis-fws.opendata.arcgis.com/	9/29/2025	N
DNR	Lakes of Biological Significance	https://gisdata.mn.gov/dataset/env-lakes-of-biological-signific	9/29/2025	N
HDR	Residences	I:\Projects\23\23\1019\Original_Source_Data\HDR\2025_01_31	9/29/2025	N
GNIS	Churches	https://www.arcgis.com/home/item.html?id=ce731871e955437dac62f659f5ab5805	9/29/2025	N
MDE	Schools (Public & Private, > Kindergarten)	https://gisdata.mn.gov/dataset/struc-school-buildings	9/29/2025	N
MDHS	Daycares/Child-care centers/Pre-schools	https://gisdata.mn.gov/dataset/econ-child-care	9/29/2025	N
MDH	Hospitals	https://gisdata.mn.gov/dataset/health-facility-hospitals	9/29/2025	N
MDH	Nursing Homes	https://gisdata.mn.gov/dataset/health-facility-nursing-boarding	9/29/2025	N
Lyon County	Zoning	https://www.lyonco.org/departments/planning-and-zoning	9/29/2025	Y
MNDOT	Airport/Heliport Locations	https://gisdata.mn.gov/es/dataset/trans-airports	9/29/2025	N
MNDOT	Undocumented or Private Airstrips	https://gisdata.mn.gov/es/dataset/trans-airports	9/29/2025	N
SHPO	Historic Sites from SHPO	https://geocrm.gisdata.mn.gov/arcgis/rest/services/MnSHIP_public_external/HistoricProp_public_wfs/FeatureServer	9/29/2025	N
SHPO	MnSHIP Historic Property Points	https://geocrm.gisdata.mn.gov/arcgis/rest/login?redirect=https%3A//geocrm.gisdata.mn.gov/arcgis/rest/services/MnSHIP_public_external/HistoricProp_public_wfs/FeatureServer	9/29/2025	N
SHPO	MnSHIP Historic Property Lines	https://geocrm.gisdata.mn.gov/arcgis/rest/login?redirect=https%3A//geocrm.gisdata.mn.gov/arcgis/rest/services/MnSHIP_public_external/HistoricProp_public_wfs/FeatureServer	9/29/2025	N
SHPO	MnSHIP Historic Property Polygons	https://geocrm.gisdata.mn.gov/arcgis/rest/login?redirect=https%3A//geocrm.gisdata.mn.gov/arcgis/rest/services/MnSHIP_public_external/HistoricProp_public_wfs/FeatureServer	9/29/2025	N
MNIT	Communication Towers	https://gisdata.mn.gov/dataset/util-fcc	9/29/2025	N
MNDOT	Native American Reservation Lands	https://www.arcgis.com/home/item.html?id=8fded139728f48b3b374a5dbf41dd4ec	9/29/2025	N
MNDOT	Military Reservation Lands	https://www.arcgis.com/home/item.html?id=6b911a60a5a4465a85fd5c42668bf907	9/29/2025	N
MNDOT	Aggregate Sources	https://www.dot.state.mn.us/materials/asis_GE.html	9/29/2025	N
DNR	Mineral Leases (Active vs. Ever Offered)	https://gisdata.mn.gov/dataset/plan-state-minleases	9/29/2025	N
UMN	Minnesota Law Enforcement Locations	https://umn.maps.arcgis.com/apps/mapviewer/index.html?layers=ed4469ef539440529daad12013af4bc6	9/29/2025	N
UMN	Minnesota Fire Stations	https://umn.maps.arcgis.com/apps/mapviewer/index.html?layers=678dc7e3a5054456a145ab4e7671abbf	9/29/2025	N
USDA	SSURGO Prime Farmland	https://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx	9/29/2025	Y
USDA	SSURGO Hydric soils	https://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx	9/29/2025	Y
USDA	SSURGO Soil map unit symbol	https://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx	9/29/2025	Y
USDA	SSURGO Soil map unit name	https://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx	9/29/2025	Y
USDA	SSURGO Erosion Hazard (Off-Road, Off-Trail)	https://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx	9/29/2025	Y
USGS	NLCD 2023	https://www.usgs.gov/centers/eros/science/national-land-cover-database	9/29/2025	Y
DNR	DNR State Trails	https://gisdata.mn.gov/dataset/trans-state-trails-minnesota	9/29/2025	N
DNR	DNR State Park Trails	https://gisdata.mn.gov/dataset/trans-state-park-trails-roads	9/29/2025	N
DNR	State Forest Camp Grounds	https://gisdata.mn.gov/dataset/struc-state-forest-campgrounds	9/29/2025	N
DNR	Campsites	https://gisdata.mn.gov/dataset/struc-parks-and-trails-campsites	9/29/2025	N
DNR	County/Local Trails	https://gisdata.mn.gov/dataset/trans-state-park-trails-roads	9/29/2025	N
Lyon County	County/Locak Parks	https://www.lyonco.org/departments/environmental/parks-trails	9/29/2025	N
DNR	State Parks	https://gisdata.mn.gov/dataset/bdry-dnr-lrs-prk	9/29/2025	N

Lyon County Generating Station Project
Appendix B
Spatial Datasources

Responsible	Dataset	Source Link	Date_Recvd	In Project Area Y/N
DNR	State Forests	https://gisdata.mn.gov/dataset/bdry-state-forest	9/29/2025	N
USFW	National Forest	https://gis-fws.opendata.arcgis.com/	9/29/2025	N
USFW	National Parks	https://gis-fws.opendata.arcgis.com/	9/29/2025	N
MNDOT	Scenic Byways	https://gisdata.mn.gov/dataset/trans-routes-tour	9/29/2025	N
DNR	Snowmobile Trails 2024-2025 Season	https://gisdata.mn.gov/dataset/trans-snowmobile-trails-mn	9/29/2025	N
DNR	Water Access Points	https://gisdata.mn.gov/dataset/loc-water-access-sites	9/29/2025	N
DNR	MN DNR State Water Trails	https://gisdata.mn.gov/dataset/trans-water-trails-minnesota	9/29/2025	N
DNR	Hunter Walking Trails	https://gisdata.mn.gov/dataset/trans-hunter-walking-trails	9/29/2025	N
DNR	Wild and Scenic River District	https://gisdata.mn.gov/dataset/bdry-wild-and-scenic-river-admin	9/29/2025	N
DNR	Hunter Walking Trails	https://gisdata.mn.gov/dataset/trans-state-park-trails-roads	9/29/2025	N
MPCA	MPCA What's in My Neighborhood Sites	https://gisdata.mn.gov/dataset/env-my-neighborhood	9/29/2025	N
MDH	MDH Wellhead protection area	https://gisdata.mn.gov/dataset/water-wellhead-protection-areas	9/29/2025	N
MDH	MDH County Well Index	https://gisdata.mn.gov/dataset/water-well-information-non-pws	9/29/2025	Y
FEMA	FEMA Floodplain / Flood Hazard Areas	https://msc.fema.gov/portal/advanceSearch	9/29/2025	N
MPCA	MPCA Impaired Streams	https://gisdata.mn.gov/dataset/env-impaired-water-2024-draft	9/29/2025	N
MPCA	MPCA Impaired Lakes	https://gisdata.mn.gov/dataset/env-impaired-water-2024-draft	9/29/2025	N
USGS	NHD Flowlines	https://prd-tnm.s3.amazonaws.com/index.html?prefix=StagedProducts/Hydrography/NHD/State/GDB/	9/29/2025	N
USGS	NHD Waterbodies	https://prd-tnm.s3.amazonaws.com/index.html?prefix=StagedProducts/Hydrography/NHD/State/GDB/	9/29/2025	N
DNR	Public Water Inventory Streams	https://gisdata.mn.gov/dataset/water-mn-public-waters	9/29/2025	N
DNR	Public Water Inventory Basins/Wetlands	https://gisdata.mn.gov/dataset/water-mn-public-waters	9/29/2025	N
DNR	Trout Streams	https://gisdata.mn.gov/dataset/env-trout-stream-designations	9/29/2025	N
DNR	Trout Lakes	https://gisdata.mn.gov/dataset/env-trout-lake-designation	9/29/2025	N
DNR/USFWS	NWI (MN Update)	https://gisdata.mn.gov/dataset/water-nat-wetlands-inv-2009-2014	9/29/2025	Y
DNR	MN DNR Shallow Lakes	https://gisdata.mn.gov/dataset/water-shallow-lakes-id-by-wldlif	9/29/2025	N
DNR	MN DNR Wildlife Lakes	https://gisdata.mn.gov/dataset/env-designated-wildlife-lakes	9/29/2025	N
DNR	Outstanding Resource Value Waters	https://gisdata.mn.gov/dataset/env-orv-waters	9/29/2025	N
DNR	Minnesota Spring Inventory	https://files.dnr.state.mn.us/waters/groundwater_section/mapping/cga/c08_fillmore/pdf_files/plate09.pdf	9/29/2025	N
DNR	MN DNR State Wildlife Management Areas	https://gisdata.mn.gov/dataset/bdry-dnr-wildlife-mgmt-areas-pub	9/29/2025	N
USFWS	MN DNR Waterfowl Production Area	https://hub.arcgis.com/datasets/fedmaps::waterfowl-production-areas/explore?location=44.481474%2C-97.583468%2C9.66	9/29/2025	N
DNR	MN DNR State Aquatic Management Areas	https://gisdata.mn.gov/dataset/plan-mndnr-fisheries-acquisition	9/29/2025	N
DNR	MN DNR State Game Refuges	MN State Game Refuges Boundaries	9/29/2025	N
DNR	MN DNR Migratory Fowl Feeding and Resting Areas	https://gisdata.mn.gov/dataset/env-migratory-waterfowl-areas	9/29/2025	N
USFWS	National Wildlife Refuge	https://www.fws.gov/service/national-wildlife-refuge-system-gis-data-and-mapping-tools https://gis-fws.opendata.arcgis.com/datasets/fws::fws-national-realty-tracts-simplified/explore	9/29/2025	N
USFWS	USFWS Interests	https://catalog.data.gov/dataset/fws-cadastral-geodatabase-external-facing-e829d	9/29/2025	N
Audubon	Audobon Society Important Bird Areas	https://www.arcgis.com/home/webmap/viewer.html?webmap=3b3d225539f8449daf84be6aa89eab50	9/29/2025	N
USFWS	Grassland Bird Conservation Areas	https://www.arcgis.com/home/webmap/viewer.html?webmap=3b3d225539f8449daf84be6aa89eab50	9/29/2025	Y
Audubon	Gray Owl Management Area	https://www.arcgis.com/home/webmap/viewer.html?webmap=3b3d225539f8449daf84be6aa89eab50	9/29/2025	N
Merjent	Pipelines	Northern Border Pipeline approx. alignment dataset	9/29/2025	Y
Merjent	Transmission Lines	MEC Transmission Lines dataset	9/29/2025	Y
USDA	Surface texture (sandy loam, loam, silt loam, muck, etc.) – acres by type	https://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx	9/29/2025	Y
USDA	Rutting Hazard (Slight, Moderate, Severe) – acres by category	https://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx	9/29/2025	Y
USDA	Erosion Hazard (Off-Road, Off-Trail)	https://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx	9/29/2025	Y
Burns & McDonnell	Field Delineated Wetlands	Field Delineated Wetlands Dataset	9/29/2025	Y

Appendix C

Material Safety Data Sheets

Section 1: Identification of the substance or mixture and of the supplier

Product Name:	Natural Gas
CAS Number:	74-82-8
Synonyms/Other Means of Identification:	Methane Fuel Gas Marsh Gas Natural Gas, Dry Compressed Natural Gas
Intended Use:	Fuel
Manufacturer:	Northern Natural Gas Company 1111 South 103rd Street Omaha, Nebraska 68124
24 Hour Contact/Operations Communication Center	888-367-6671
Emergency Health and Safety Number:	Chemtrec: 800-424-9300 (24 Hours)
SDS Information:	Phone: 402-398-7000

Section 2: Hazard(s) Identification

GHS Classification
Simple Asphyxiant

Flammable gases – Category 1	H220*
Gases under pressure – Compressed gas	H280

Label Elements

Signal word
DANGER

Hazard Statement
Extremely flammable gas. (H220)*
Contains gas under pressure. May explode if heated.
Gas may displace oxygen and cause rapid suffocation. (H280)*

Precautionary Statement(s):
Keep away from heat/sparks/open flames/hot surfaces. No smoking. (P210)*
Leaking gas fire: Do not extinguish, unless leak can be stopped safely. (P377)*
Eliminate all ignition sources if safe to do so. (P381)*
Protect from sunlight. Store in a well-ventilated place. (P410+P403)*

Other Hazards
This product is hazardous according to OSHA 29 CFR §1910.1200. This product normally contains no hazardous components, other than ethane, as defined in OSHA 29 CFR §1910.1200 (i.e., greater than 1%). This product may contain small amounts of heavier hydrocarbons. This product and/or components present at concentrations greater than 0.1% are not carcinogenic according to OSHA, IARC, or NTP. Components of this product are normally within the ranges listed in Section 3: Composition/Information on Ingredients; however, depending on the geographical source, gas composition may vary.

** (Applicable GHS hazard code.)*

Section 3: Composition/Information on Ingredients

Component	CAS Number	Concentration (%)[1]	Exposure Limit
Methane	74-82-8	> 85	Simple asphyxiant (ACGIH)
Ethane	74-84-0	< 12	Simple asphyxiant (ACGIH)
Propane	74-98-6	< 2	1000 ppm PEL (OSHA) Simple asphyxiant ACGIH

[1] All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

Section 4: First Aid Measures

General: Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice. If frostbite or freezing occurs, immediately flush with plenty of lukewarm water to gently warm the affected area. Do not use hot water. Do not rub affected area. Seek immediate medical attention.

Eye Contact: If irritation or redness develops from exposure, flush eyes with clean water for at least 15 minutes. If symptoms persist, seek medical attention. Direct contact with liquefied/pressurized gas or frost particles may produce severe and possible permanent eye damage from freeze burns. If frostbite or freezing occurs, immediately flush with plenty of lukewarm water. Do not use hot water. Do not rub eyes, seek medical attention.

Skin Contact: First aid is not normally required; however, solid and liquid forms of this material and pressurized gas can cause frostbite, blisters and redness. If frostbite occurs, immediately flush with plenty of lukewarm water to gently warm the affected area. Do not use hot water. Do not rub affected area. Seek immediate medical attention. It is good practice to wash any chemical from the skin.

Inhalation (Breathing): Exposure may produce rapid breathing, headache, dizziness, visual disturbances, muscular weakness, tremors, narcosis, unconsciousness, and death, depending on the concentration and duration of exposure. If respiratory symptoms develop, move victim away from source of exposure and into fresh air in a position comfortable for breathing. Take proper precautions to ensure your own safety before attempting rescue (e.g., wear appropriate respiratory protective equipment, use the buddy system). If breathing is difficult, oxygen or artificial respiration should be administered by qualified personnel. If symptoms persist, seek medical attention.

Ingestion (Swallowing): This material is a gas under normal atmospheric conditions and ingestion is unlikely. Solid and liquefied forms of this material and pressurized gas can cause freeze burns.

Most important symptoms and effects

Acute: Anesthetic effects at high concentrations. Gas can be toxic as a simple asphyxiant by displacing oxygen from the air. Lack of oxygen can be fatal. Compressed gases may create low temperatures when they expand rapidly. Leaks and uses that allow rapid expansion may cause a frostbite hazard.

Delayed: None known or anticipated (See Section 11 for information on effects from chronic exposure, if any.)

Notes to Physician: Epinephrine and other sympathomimetic drugs may initiate cardiac arrhythmias in persons exposed to high concentrations of hydrocarbon solvents (e.g., in enclosed spaces or with deliberate abuse). The use of other drugs with less arhythmogenic potential should be considered. If sympathomimetic drugs are administered, observe for the development of cardiac arrhythmias.

Section 5: Fire-Fighting Measures

NFPA 704 Hazard Class

Health: 1 **Flammability:** 4 **Instability:** 0
(0-Minimal, 1-Slight, 2-Moderate, 3-Serious, 4-Severe)

Unusual Fire & Explosion Hazards: Extremely flammable. This material forms flammable mixtures with air and can be ignited by heat, sparks, flames or other sources of ignition (e.g., static electricity, pilot lights, mechanical/electrical equipment, and electronic devices, such as cellphones, computers, calculators, and pagers that have not been certified as intrinsically safe). Vapors may travel considerable distances to a source of ignition where they can ignite,

flash back, or explode. May create vapor/air explosion hazard indoors, in confined spaces, outdoors, or in sewers. If container is not properly cooled, it can rupture in the heat of a fire. Contents under pressure.

Extinguishing Media: Stop the flow of gas. Dry chemical, carbon dioxide or halon is recommended. Carbon dioxide can displace oxygen. Use caution when applying carbon dioxide in confined spaces. Water can be used to cool the fire but may not extinguish the fire.

Fire Fighting Instructions: Evacuate area upwind of source. Stop the flow of gas. If gas source cannot be shut off immediately, equipment and surfaces exposed to the fire should be cooled with water to prevent overheating and explosions. For fires beyond the initial stage, emergency responders in the immediate hazard area should wear protective clothing. When the potential chemical hazard is unknown, in enclosed or confined spaces, a self-contained breathing apparatus should be worn. In addition, wear other appropriate protective equipment as conditions warrant (see Section 8).

Isolate immediate hazard area and keep unauthorized personnel out. Stop spill/release if it can be done safely. If this cannot be done, allow fire to burn. Move undamaged containers from immediate hazard area if it can be done safely. Stay away from ends of container. Water spray may be useful in minimizing or dispersing vapors and protecting personnel. Cool equipment exposed to fire with water, if it can be done safely.

Hazardous Combustion Products: Combustion may yield smoke, carbon monoxide and other products of incomplete combustion. Oxides of nitrogen and sulfur also may be formed.

See Section 9 for Flammable Properties including Flash Point and Flammable (Explosive) Limits

Section 6: Accidental Release Measures

Any spill or uncontrolled release of this product, including any substantial threat of release, may be subject to state and federal reporting requirements. Consult those regulations applicable to your facility or operation.

Personal Precautions: Extremely flammable
Spillages of liquid product will create a fire hazard and may form an explosive atmosphere. Keep all sources of ignition and hot metal surfaces away from spill/release if safe to do so. Eliminate all potential sources of ignition. The use of explosion-proof electrical equipment is recommended. Handling equipment and tools must be grounded to prevent sparking. Evacuate all nonessential personnel to an area upwind. Equip responders with proper protection equipment (see Section 5) and advise of hazards. Beware of accumulation of gas in low areas or contained areas, where explosive concentrations may occur. Prevent from entering drains or any place where accumulation may occur. Ventilate the area to prevent formation of flammable or oxygen-deficient atmospheres and allow the gas to evaporate. Stay away and upwind from the spill/release. Avoid direct contact with material. For large spillages, notify persons downwind of the spill/release, isolate immediate hazard area and keep unauthorized personnel out. Wear appropriate protective equipment, including respiratory protection, as conditions warrant (see Section 8). See Sections 2 and 7 for additional information on hazards and precautionary measures.

Environmental Precautions: Stop spill/release if it can be done safely. Water spray may be useful in minimizing or dispersing vapors. If spill occurs on water, notify appropriate authorities. Waste natural gas in compressed-gas cylinders must be disposed of as a hazardous waste.

Methods for Containment and Clean-Up: Notify relevant authorities in accordance with all applicable regulations. Recommended measures are based on the most likely spillage scenarios for this material; however, local conditions and regulations may influence or limit the choice of appropriate actions to be taken.

Section 7: Handling and Storage

Precautions for safe handling: Keep away from ignition sources such as heat/sparks/open flame – No smoking. Take precautionary measures against static discharge. Use good personal hygiene practices and wear appropriate personal protective equipment (see Section 8). Do not eat, drink or smoke when handling this product.

Contents under pressure. Gas can accumulate in confined spaces and limit oxygen available for breathing. Use only with adequate ventilation. The use of explosion-proof electrical equipment is recommended and may be required (see appropriate fire codes). Handling equipment and tools must be grounded to prevent sparking. Refer to NFPA-70 and/or API RP 2003 for specific bonding/grounding requirements. Electrostatic charge may accumulate and create a

hazardous condition when handling or processing this material. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Do not enter confined spaces such as tanks or pits without following proper entry procedures such as ASTM D-4276 and 29CFR 1910.146. Before entering storage tanks and commencing any operation in a confined area, check the atmosphere for oxygen content, hydrogen sulfide (H2S) and flammability. Cold burns may occur during filling operations. Containers and delivery lines may become cold enough to present cold burn hazard.

The use of hydrocarbon fuel in an area without adequate ventilation may result in hazardous levels of incomplete combustion products (e.g., carbon monoxide, oxides of sulfur and nitrogen, benzene and other hydrocarbons) and/or dangerously low oxygen levels.

Conditions for safe storage: Keep containers tightly closed and properly labeled. Use and store this material in cool, dry, well-ventilated areas away from heat, direct sunlight, hot metal surfaces, and all sources of ignition. Store only in approved containers. Post No Smoking or Open Flame signs in the area. Keep away from any incompatible material (see Section 10). Protect containers against physical damage. Follow standard procedures for handling cylinders, tanks and loading/unloading. Refer to NFPA 58 and API 2510. Fixed storage containers must be grounded and bonded during transfer of product. Outdoor or detached storage is preferred. Indoor storage should meet OSHA standards and appropriate fire codes.

Empty used-containers retain residue and may be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks or other sources of ignition. They may explode and cause injury or death. Avoid exposing any part of a compressed-gas cylinder to temperatures above 125°F (51.6°C). Gas cylinders should be stored outdoors or in well-ventilated storerooms at no lower than ground level and should be quickly removable in an emergency.

Naturally Occurring Radioactive Material (NORM): This product may contain NORM and customers should be aware of the potential for NORM within their processing system. The actual concentration of NORM in the product is dependent on the geographical source of the natural gas and storage time prior to its delivery. Process equipment (e.g., lines, filters, pumps and reaction units) may accumulate radioactive daughters and emit gamma radiation during operation. Equipment emitting gamma radiation may be presumed to be internally contaminated with alpha-emitting decay products that may be a hazard if inhaled or ingested. Consult applicable NORM regulations for worker protection guidelines and handling requirements before initiating maintenance operations that require opening contaminated equipment.

Section 8: Exposure Controls/Personal Protection

Component	ACGIH	OSHA	Other
Natural gas	1000 ppm TWA As Aliphatic Hydrocarbons C1-4	----	----

Note: State, local or other agencies or advisory groups may have established more stringent limits. Consult an industrial hygienist or similar professional, or your local agencies, for further information.

Engineering controls: Both local exhaust and general room ventilation may be essential in work areas to prevent accumulation of explosive mixtures. If mechanical ventilation is used, electrical equipment must meet National Electrical Code requirements. If current ventilation practices are not adequate to maintain airborne concentrations below the established exposure limits, additional engineering controls may be required. Use explosion-proof equipment. Proper grounding procedures to avoid static electricity should be followed. Gas detectors should be used when flammable gases/vapors may be released. Emergency eyewash fountains and safety shower(s) should be available in the immediate vicinity of any potential exposure.

Eye/Face Protection: The use of eye/face protection is not normally required; however, good industrial hygiene practice suggests the use of eye protection that meets or exceeds ANSI Z.87.1 whenever working with chemicals. Use chemical-type goggles and face shields when handling liquefied gases. Safety glasses and/or face shields are recommended when handling high-pressure cylinders and piping systems or whenever gases are discharged.

Skin/Hand Protection: Wear suitable protective clothing. The use of skin protection is not normally required; however, good industrial hygiene practice suggests the use of protective gloves or other appropriate skin protection whenever working with chemicals. If there is potential for contact with high concentrations of compressed gas, use insulated, impervious plastic or neoprene-coated canvas gloves and protective gear (apron, face shield, etc.) to protect hands and other skin areas. Wear cryogenic gloves when working with liquefied natural gas.

Respiratory Protection: A NIOSH-approved, self-contained breathing apparatus (SCBA), or equivalent, operated in a pressure demand or other positive pressure mode should be used in situations of oxygen deficiency (oxygen content less than 19.5%), unknown exposure concentrations, or situations that are immediately dangerous to life or health (IDLH).

A respiratory protection program that meets or is equivalent to OSHA 29 CFR 1910.134 and ANSI Z88.2 should be followed whenever workplace conditions warrant a respirator's use.

Work/Hygiene Practices: Emergency eyewash fountains and safety shower(s) for first aid treatment of potential freeze burns should be available in the vicinity of any significant exposure from compressed gas release. Personnel should not enter areas where the atmosphere is below 19.5% volume oxygen without special procedures/equipment.

Suggestions provided in this section for exposure control and specific types of protective equipment are based on readily available information. Users should consult with the specific manufacturer to confirm the performance of their protective equipment. Specific situations may require consultation with industrial hygiene, safety or engineering professionals.

Section 9: Physical and Chemical Properties

Note: Unless otherwise stated, values are determined at 20°C (68°F) and 760 mm Hg (1 atm). Data represent typical values and are not intended to be specifications.

Appearance:	Colorless
Physical Form:	Compressed Gas
Odor:	Odorless to slight hydrocarbon. Various Northern Natural Gas branch lines are odorized. Odorized gas has a rotten egg or garlic type odor.
Odor Threshold:	No data available
pH:	Not applicable
Gas Density (air=1):	0.6
Specific Gravity:	Not applicable - Gas
Initial Boiling Point/Range:	-259°F (-162°C)
Melting/Freezing Point:	No data available
Solubility in Water:	Very slightly soluble
Partition Coefficient (N-octanol/water) (Kow):	No data available
Percent Volatile:	100%
Flammability (solid, gas):	Extremely Flammable
Evaporation Rate:	Gas at normal ambient conditions
Flash Point:	-306°F (-187.8°C)
Test Method:	(estimate)
Lower Explosive Limits (vol % in air):	5.0%
Upper Explosive Limits (vol % in air):	15.0%
Auto-ignition Temperature:	1004°F (540°C)

Section 10: Stability and Reactivity

Stability: Stable under normal ambient and anticipated conditions of use

Conditions to Avoid: Avoid high heat, open flames and all possible sources of ignition. Explosive reaction can occur between natural gas and oxidizing agents. Spontaneous ignition with chlorine dioxide. Heat will increase pressure in the storage tank.

Materials to Avoid (Incompatible Materials): Avoid contact with acids, aluminum chloride, barium peroxide, chlorine, chlorine dioxide, halogens and oxidizing agents.

Hazardous Combustion or Decomposition Products: Combustion may produce carbon monoxide, carbon dioxide and other harmful substances.

Hazardous Polymerization: Not known to occur

Section 11: Toxicological Information

Information on Toxicological Effects of Substance/Mixture

Acute Toxicity	Hazard	Additional Information	LC50/LD50 Data
Inhalation	Unlikely to be harmful	Asphyxiant. High concentrations in confined spaces may limit oxygen available for breathing. See Signs and Symptoms	>20,000 ppm (gas)
Skin Absorption	Skin absorption is not anticipated		Not applicable
Ingestion (Swallowing)	Ingestion is not anticipated		Not applicable

Aspiration Hazard: Not applicable

Skin Corrosion/Irritation: Skin exposure is not anticipated. Solid and liquid forms of this material and pressurized gas can cause frostbite, blisters and redness of skin.

Serious Eye Damage/Irritation: Not expected to be irritating. Direct contact with liquefied/pressurized gas or frost particles may produce severe and possible permanent eye damage from freeze burns.

Signs and Symptoms: Light hydrocarbon gases are simple asphyxiates and can cause anesthetic effects at high concentrations. Symptoms of overexposure, which are reversible if exposure is stopped, can include shortness of breath, drowsiness, headaches, confusion, decreased coordination, visual disturbances and vomiting. Continued exposure can lead to hypoxia (inadequate oxygen), rapid breathing, cyanosis (bluish discoloration of the skin), numbness of the extremities, unconsciousness and death.

Skin Sensitization: Skin contact is not anticipated.

Respiratory Sensitization: Not expected to be a respiratory sensitizer

Specific Target Organ Toxicity (Single Exposure): Not expected to cause organ effects from single exposure

Specific Target Organ Toxicity (Repeated Exposure): Not expected to cause organ effects from repeated exposure

Carcinogenicity: Not expected to cause cancer
This substance is not listed as a carcinogen by IARC, NTP or OSHA.

Germ Cell Mutagenicity: Not expected to cause heritable genetic effects

Reproductive Toxicity: Not expected to cause reproductive toxicity

Other Comments: High concentrations may reduce the amount of oxygen available for breathing, especially in confined spaces. Hypoxia (inadequate oxygen) during pregnancy may have adverse effects on the developing fetus.

Section 12: Ecological Information

Ecotoxicity: Petroleum gases will readily evaporate from the surface; they would not be expected to have significant adverse effects in the aquatic environment.
Classification: No classified hazards

Persistence and Degradability: The hydrocarbons in this material are expected to be inherently biodegradable. In practice, hydrocarbon gases are not likely to remain in solution long enough for biodegradation to be a significant loss process. Hydrogen sulfide, if present in refinery gas streams, will be rapidly oxidized in water and insoluble sulfides precipitated from water when metallic radicals are present.

Bioaccumulative Potential: This product is not expected to bioaccumulate.

Mobility in Soil: Due to the extreme volatility of petroleum gases, air is the only environmental compartment in which they will be found. In air, these hydrocarbons undergo photo degradation by reaction with hydroxyl radicals with half-lives ranging from 3.2 days for n-butane to 7 days for propane.

Other Adverse Effects: None anticipated

Section 13: Disposal Considerations

This material is a gas and would not typically be managed as a waste.

Waste natural gas in compressed-gas cylinders must be disposed of as a hazardous waste.

Section 14: Transport Information

U.S. Department of Transportation (DOT)

Proper Shipping Name:	UN1971, Natural gas, compressed, 2.1
Non-Bulk Package Marking:	Natural gas, compressed, UN1971
Non-Bulk Package Labeling:	Flammable gas
Bulk Package/Placard Marking:	Flammable gas/1971
Packaging - References:	49 CFR §173.306; §173.302; §173.302 ***(Exceptions; Non-bulk; Bulk)***
Hazardous Substance:	None
Emergency Response Guide:	115

International Maritime Dangerous Goods (IMDG)

Shipping Description:	UN1971, Natural gas, compressed, 2.1
Non-Bulk Package Marking:	Natural gas, compressed, UN1971
Labels:	Flammable gas
Placards/Marking (Bulk):	Flammable gas/1971
Packaging - Non-Bulk:	P200
EMS:	F-D, S-U

International Civil Aviation Org. / International Air Transport Assoc. (ICAO/IATA)

UN/ID:	UN1971
Proper Shipping Name:	Natural gas, compressed
Hazard Class/Division:	2.1
Subsidiary risk:	None
Packing Group:	None
Non-Bulk Package Marking:	Natural gas, compressed, UN1971
Labels:	Flammable gas, Cargo Aircraft Only
ERG Code:	10L

Section 15: Regulatory Information

Federal Clean Water Act: Any spill or release of liquid oils associated with this product into “navigable waters” (essentially any surface water, including certain wetlands) or adjoining shorelines sufficient to cause a visible sheen or deposit a sludge or emulsion must be reported immediately to the National Response Center (1-800-424-8802). Also, contact appropriate state and local regulatory agencies as required.

CERCLA Section 103: The Comprehensive Environmental Response Compensation and Liability Act of 1980 (CERCLA) requires notification to the National Response Center of a release of quantities of Hazardous Substances equal to or greater than the reportable quantities in 40 CFR 302.4. The CERCLA definition of hazardous substances contains a “petroleum exclusion” clause that exempts natural gas, natural gas liquids and any indigenous components of such (e.g. benzene) from the CERCLA Section 103 reporting requirements.

CERCLA/SARA – Section 302 Extremely Hazardous Substances and TPQs (in pounds):
This material does not contain any chemicals subject to the reporting requirements of SARA 302 and 40 §CFR 372.

CERCLA/SARA – Section 311/312 (Title III Hazard Categories)

Acute Health:	Yes
Chronic Health:	No
Fire Hazard:	Yes
Pressure Hazard:	Yes
Reactive Hazard:	No

CERCLA/SARA – Section 313 and 40 CFR 372:
This material does not contain any chemicals subject to the reporting requirements of SARA 313 and 40 §CFR 372.

EPCRA Section 304: The emergency Planning and Community Right-to-Know Act (EPCRA) requires emergency planning based on Threshold Planning Quantities and release reporting based on reportable quantities in 40 CFR §355. There are no known components present in this product that would require reporting under this statute.

EPA (CERCLA) Reportable Quantity (in pounds):
EPA's Petroleum Exclusion applies to this material – (CERCLA 101(14)).

International Hazard Classification

Canada:
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the SDS contains all the information required by the Regulations.

WHMIS Hazard Class:
A - Compressed Gas
B1 - Flammable Gases

National Chemical Inventories
All components either are listed on the US TSCA Inventory, or are not regulated under TSCA.
All components either are on the DSL, or are exempt from DSL listing requirements.

U.S. Export Control Classification Number: EAR99

Section 16: Other Information

Date of Issue:	04/02/2012
Status:	FINAL
Previous Issue Date:	11/19/2012
Revised Sections or Basis for Revision:	This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR §1910.1200.

Guide to Abbreviations:
ACGIH = American Conference of Governmental Industrial Hygienists
CASRN = Chemical Abstracts Service Registry Number
CEILING = Ceiling Limit (15 minutes)
CERCLA = The Comprehensive Environmental Response, Compensation, and Liability Act
EPA = Environmental Protection Agency
GHS = Globally Harmonized System
IARC = International Agency for Research on Cancer
INSHT = National Institute for Health and Safety at Work
IOPC = International Oil Pollution Compensation
LEL = Lower Explosive Limit
NE = Not Established
NFPA = National Fire Protection Association
NTP = National Toxicology Program
OSHA = Occupational Safety and Health Administration
PEL = Permissible Exposure Limit (OSHA)
SARA = Superfund Amendments and Reauthorization Act
STEL = Short Term Exposure Limit (15 minutes)

TLV = Threshold Limit Value (ACGIH)
TWA = Time Weighted Average (8 hours)
UEL = Upper Explosive Limit
WHMIS = Worker Hazardous Materials Information System (Canada)

Disclaimer of Expressed and implied Warranties:
The information presented in this Safety Data Sheet is based on data believed to be accurate as of the date this Safety Data Sheet was prepared. However, no warranty of merchantability, fitness for any particular purpose, or any other warranty is expressed or is to be implied regarding the accuracy or completeness of the information provided above, the results to be obtained from the use of this information or the product, the safety of this product, or the hazards related to its use. No responsibility is assumed for any damage or injury resulting from abnormal use or from any failure to adhere to recommended practices. The information provided above, and the product, are furnished on the condition that the person receiving them shall make their own determination as to the suitability of the product for their particular purpose and on the condition that they assume the risk of their use. In addition, no authorization is given nor implied to practice any patented invention without a license.

Appendix D

Draft Site Permit

STATE OF MINNESOTA PUBLIC UTILITIES COMMISSION

SITE PERMIT FOR
LYON COUNTY GENERATING STATION PROJECT

A LARGE ELECTRIC POWER GENERATING PLANT

IN
LYON COUNTY

ISSUED TO
NORTHERN STATES POWER COMPANY D/B/A XCEL ENERGY

PUC DOCKET NO. G002/GS-25-154

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

Northern States Power Company d/b/a Xcel Energy

Norther States Power Company is authorized by this site permit to construct and operate the Lyon County Generating Station, consisting of two 210 megawatt combustion turbines and associated facilities in Lyon County, Minnesota.

The large electric power generating plant shall be constructed and operated within the site identified in this site permit and in compliance with the conditions specified in this site permit.

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

BY ORDER OF THE COMMISSION

_____

Sasha Bergman,
Executive Secretary

CONTENTS

ATTACHMENTS

1 SITE PERMIT

The Minnesota Public Utilities Commission (Commission) hereby issues this site permit to Northern States Power Company, a Minnesota corporation, doing business as Xcel Energy (Permittee) pursuant to Minnesota Statutes Chapter 216E. This site permit authorizes the Permittee to construct and operate two approximately 210 megawatt (MW) combustion turbines and associated facilities in Lyon County, Minnesota (Lyon County Generating Station Project, henceforth known as LEPGP or Project). The large electric power generating plant (LEPGP) shall be constructed and operated within the site identified in this site permit and in compliance with the conditions specified in this site permit.

1.1 Pre-emption

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

2 PROJECT DESCRIPTION

The generation station includes two 210 MW combustion turbines (CTs) and associated facilities, including on-site operation facilities, water bath heater, emergency diesel fire pump, and an emergency diesel generator.

2.1 Project Location

The Project is located in the following:

County	Township Name	Township	Range	Section
Lyon	Custer Township	109	41	23

2.2 Associated Facilities

The generation station would include the following facilities:

- Two combustion turbines
- On-site administrative building
- two emergency diesel generators
- One 350 hp emergency diesel fire pump

- One 9.9 MMBtu/hr, natural gas-fired water bath heater to heat the natural gas prior to combustion

3 DESIGNATED SITE

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

The Designated Site serves to provide the Permittee with the flexibility to make minor adjustments to the layout to accommodate requests by landowners, local government units, federal and state agency requirements, and unforeseen conditions encountered during the detailed engineering and design process. Any modification to the location of the LEPGP or an associated facility shall be done in such a manner as to have human and environmental impacts that are comparable to those associated with the layouts on the maps attached to this site permit. The Permittee shall identify any modifications in the Site Plan pursuant to Section 8.3.

4 GENERAL CONDITIONS

The Permittee shall comply with the following conditions during construction and operation of the LEPGP.

4.1 Site Permit Distribution

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

4.2 Construction and Operation Practices

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

4.2.1 Field Representative

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

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

4.2.2 Site Manager

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

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

4.2.3 Employee Training

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

4.2.4 Independent Third-Party Monitoring

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

The Permittee shall file with the Commission the approved scope of work and the name, address, email, and telephone number of the third party-monitor at least 14 days prior to commencing any construction and upon any change in contact information that may occur during Project construction.

The Permittee shall keep records of compliance with this section and ensure that status reports detailing the construction monitoring are filed with the Commission in accordance with the approved scope of work.

4.2.5 Public Services, Public Utilities, and Existing Easements

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

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

4.2.6 Temporary Workspace

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

4.2.7 Noise

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

4.2.8 Aesthetics

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

4.2.9 Topsoil Protection

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

4.2.10 Soil Compaction

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

4.2.11 Soil Erosion and Sediment Control

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

The Permittee shall implement reasonable measures to minimize erosion and sedimentation during construction and shall employ perimeter sediment controls, protect exposed soil by promptly planting, seeding, using erosion control blankets and turf reinforcement mats, stabilizing slopes, protecting storm drain inlets, protecting soil stockpiles, and controlling

vehicle tracking. Contours shall be graded as required so that all surfaces provide for proper drainage, blend with the natural terrain, and are left in a condition that will facilitate re-vegetation and prevent erosion. All areas disturbed during construction of the Project shall be returned to pre-construction conditions.

4.2.12 Public Lands

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

4.2.13 Wetlands and Water Resources

The Permittee shall not place the LEPGP or associated facilities in public waters or public waters wetlands, as shown on the public water inventory maps prescribed by Minnesota Statutes Chapter 103G. The Permittee shall locate the LEPGP and associated facilities in compliance with the standards for development of the shorelands of public waters as identified in Minn. R. 6120.3300, and as adopted, Minn. R. 6120.2800, unless there is no feasible and prudent alternative.

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

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

4.2.14 Native Prairie

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

The Permittee shall prepare a prairie protection and management plan in consultation with the DNR if native prairie, as defined in Minn. Stat. § 84.02, subd. 5, is identified within the Project Boundary. The Permittee shall file the prairie protection and management plan with the Commission at least 30 days prior to submitting the Site Plan required by Section 8.3 of this site permit. The prairie protection and management plan shall address steps that will be taken to avoid impacts to native prairie and mitigation to unavoidable impacts to native prairie by restoration or management of other native prairie areas that are in degraded condition, by conveyance of conservation easements, or by other means agreed to by the Permittee, the DNR, and the Commission.

4.2.15 Vegetation Removal

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

4.2.16 Invasive Species

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

4.2.17 Noxious Weeds

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

4.2.18 Roads

The Permittee shall advise the appropriate governing bodies having jurisdiction over all state, county, city, or township roads that will be used during the construction phase of the Project. Where practical, existing roadways shall be used for all activities associated with construction

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

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

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

The Permittee shall promptly repair private roads or lanes damaged when moving equipment or when accessing construction workspace, unless otherwise negotiated with the affected landowner. The Permittee shall keep records of compliance with this section and provide them upon the request of Commission staff.

4.2.19 Archaeological and Historic Resources

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

The Permittee shall develop an Unanticipated Discoveries Plan (UDP) to identify guidelines to be used in the event previously unrecorded archeological or historic properties, or human remains, are encountered during construction, or if unanticipated effects to previously identified archaeological or historic properties occur during construction. This is in addition to and not in lieu of any other obligations that may exist under law or regulation relating to these matters. The Permittee shall file the UDP with the Commission at least 14 days prior to the preconstruction meeting.

The Permittee shall train workers about the need to avoid cultural properties, how to identify cultural properties, and procedures to follow if undocumented cultural properties, including gravesites, are found during construction. If human remains are encountered during construction, the Permittee shall, in accordance with Minn. Stat. Ch. 307 (Private Cemeteries Act), immediately halt construction and promptly notify local law enforcement and the State Archaeologist. The Permittee shall not resume construction at such location until authorized by

local law enforcement or the State Archaeologist. The Permittee shall keep records of compliance with this section and provide them upon the request of Commission staff.

4.2.20 Interference

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

4.2.21 Restoration

The Permittee shall restore the areas affected by construction of the Project to the condition that existed immediately before construction began to the greatest extent possible. Restoration shall be compatible with the safe operation, maintenance, and inspection of the Project. Within 60 days after completion of all restoration activities, the Permittee shall file with the Commission a Notice of Restoration Completion.

4.2.22 Cleanup

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

4.2.23 Pollution and Hazardous Wastes

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

4.2.24 Damages

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

4.2.25 Public Safety

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

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

4.2.26 Site Identification

The Permittee shall mark the LEPGP with a clearly visible identification number and or street address.

4.2.27 Facility Lighting

The Permittee shall use shielded and downward facing lighting and LED lighting that minimizes blue hue.

4.2.28 Dust Control

The Permittee shall utilize non-chloride products for onsite dust control during construction.

4.2.29 Wildlife Friendly Erosion Control

The Permittee shall use only “bio-netting” or “natural netting” types of erosion control materials and mulch products without synthetic (plastic) fiber additives or malachite green dye.

4.3 Other Requirements

4.3.1 Safety Codes and Design Requirements

The Permittee shall design the LEPGP and associated facilities to meet or exceed all relevant local and state codes, the National Electric Safety Code, and North American Electric Reliability Corporation requirements. This includes standards relating to clearances to ground, clearance to crossing utilities, clearance to buildings, strength of materials, clearances over roadways, right-of-way widths, and permit requirements.

4.3.2 Other Permits and Regulations

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

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

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

5 DELAY IN CONSTRUCTION

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

6 COMPLAINT PROCEDURES

At least 14 days prior to the pre-construction meeting, the Permittee shall file with the Commission the complaint procedures that will be used to receive and respond to complaints. The complaint procedures shall be in accordance with the requirements of Minn. R. 7829.1500 or Minn. R. 7829.1700, and as set forth in the complaint procedures attached to this site permit.

Upon request, the Permittee shall assist Commission staff with the disposition of unresolved or longstanding complaints. This assistance shall include, but is not limited to, the submittal of complaint correspondence and complaint resolution efforts.

7 COMPLIANCE REQUIREMENTS

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

7.1 Pre-Construction Meeting

Prior to the start of construction, the Permittee shall participate in a pre-construction meeting with Commission staff to review pre-construction filing requirements, scheduling, and to coordinate monitoring of construction and site restoration activities. Within 14 days following the pre-construction meeting, the Permittee shall file with the Commission a summary of the topics reviewed and discussed and a list of attendees. The Permittee shall indicate in the filing the anticipated construction start date.

7.2 Pre-Operation Meeting

At least 14 days prior to commercial operation of the Project, the Permittee shall participate in a pre-operation meeting with Commission staff. Within 14 days following the pre-operation meeting, the Permittee shall file a summary of the topics reviewed and discussed and a list of attendees with the Commission.

7.3 Site Plan

At least 14 days prior to the pre-construction meeting, the Permittee shall file with the Commission and provide the counties where the Project will be constructed with a Site Plan that includes specifications and drawings for site preparation and grading; specifications and locations of the LEPGP and associated facilities; and procedures for cleanup and restoration. The documentation shall include maps depicting the Designated Site, LEPGP, and associated facilities layout in relation to that approved by this site permit.

The Permittee may not commence construction until the earlier of (i) 30 days after the pre-construction meeting or (ii) until Commission staff has notified the Permittee in writing that it has completed its review of the documents and determined that the planned construction is consistent with this site permit.

If the Commission notifies the Permittee in writing within 30 days after the pre-construction meeting that it has completed its review of the documents and planned construction, and finds that the planned construction is not consistent with this site permit, the Permittee may submit additional and/or revised documentation and may not commence construction until the Commission has notified the Permittee in writing that it has determined that the planned construction is consistent with this site permit.

If the Permittee intends to make any significant changes in its Site Plan or the specifications and drawings after submission to the Commission, the Permittee shall notify the Commission and county staff at least five days before implementing the changes. No changes shall be made that would be in violation of any of the terms of this site permit.

7.4 Status Reports

The Permittee shall file with the Commission monthly Construction Status Reports beginning with the pre-construction meeting and until completion of restoration. Construction Status Reports shall describe construction activities and progress, activities undertaken in compliance with this site permit, and shall include text and photographs.

If the Permittee does not commence construction of the Project within six months of this site permit issuance, the Permittee shall file with the Commission Pre-Construction Status Reports on the anticipated timing of construction every six months beginning with the issuance of this site permit until the pre-construction meeting. The status updates shall include information on the Project's Midcontinent Independent System Operator (MISO) interconnection process, if applicable.

7.5 Labor Statistic Reporting

The Permittee shall file quarterly Labor Statistic Reports with the Commission within 45 days of the end of the quarter regarding construction workers that participated in the construction of the Project. The Labor Statistic Reports shall:

A. detail the Permittee's efforts and the site contractor's efforts to hire Minnesota workers; and

B. provide an account of:

    1) the gross number of hours worked by or full-time equivalent workers who are Minnesota residents, as defined in Minn. Stat. § 290.01, subd. 7;
    2) the gross number of hours worked by or full-time equivalent workers who are residents of other states, but maintain a permanent residence within 150 miles of the Project; and
    3) the total gross hours worked or total full-time equivalent workers.

The Permittee shall work with its contractor to determine the suitable reporting metric. The report may not include personally identifiable data.

7.6 Prevailing Wage

The Permittee, its contractors, and subcontractors shall pay no less than the prevailing wage rate as defined in Minn. Stat. § 177.42 and shall be subject to the requirements and enforcement provisions under Minn. Stat. §§ 177.27, 177.30, 177.32, 177.41 to 177.435, and 177.45. The Permittee shall keep records of contractor and subcontractor pay and provide them at the request of Commission staff.

7.7 In-Service Date

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

7.8 As-Builts

Within 90 days after completion of construction, the Permittee shall submit to the Commission copies of all final as-built plans and specifications developed during the Project construction.

7.9 GPS Data

Within 90 days after completion of construction, the Permittee shall submit to the Commission, in the format requested by the Commission, geo-spatial information (*e.g.*, ArcGIS compatible map files, GPS coordinates, associated database of characteristics) for all structures associated with the Project.

7.10 Right of Entry

The Permittee shall allow Commission designated representatives to perform the following, upon reasonable notice, upon presentation of credentials and at all times in compliance with the Permittee's site safety standards:

A. To enter upon the facilities easement of the property for the purpose of obtaining information, examining records, and conducting surveys or investigations.

B. To bring such equipment upon the facilities easement of the property as is necessary to conduct such surveys and investigations.

C. To sample and monitor upon the facilities easement of the property.

D. To examine and copy any documents pertaining to compliance with the conditions of this site permit.

7.11 Project Energy Production

The Permittee shall, by February 1st following each complete or partial year of Project operation, file a report with the Commission on the monthly energy production of the facility including:

A. the installed nameplate capacity of the permitted facility;
B. the total monthly energy generated by the facility in MW hours;
C. the total yearly energy generated by the facility in MW hours;
D. the operational status of the facility and any major outages, major repairs, or performance improvements occurring in the previous year; and
E. any other information reasonably requested by the Commission.

The Permittee shall file this information in a format recommended by Commission staff. This information shall be considered public and must be filed electronically.

7.12 Emergency Response

The Permittee shall prepare an Emergency Response Plan (ERP) in consultation with the emergency responders having jurisdiction over the Project prior to construction. The Permittee shall file the ERP, along with any comments from emergency responders to the Commission at least 14 days prior to the pre-construction meeting and a revised ERP, if any, at least 14 days prior to the pre-operation meeting. At least 14 days prior to the pre-operation meeting the Permittee shall file with the Commission an affidavit of the distribution of the ERP to emergency responders and Public Safety Answering Points (PSAP) with jurisdiction over the Project. The Permittee shall obtain and register the Project address or other location indicators acceptable to the emergency responders and PSAP having jurisdiction over the Project.

7.13 Extraordinary Events

Within 24 hours of discovery of an occurrence, the Permittee shall notify the Commission of any extraordinary event. Extraordinary events include but shall not be limited to fires, acts of sabotage, and injuries to workers or private persons. The Permittee shall, within 30 days of the occurrence, file a report with the Commission describing the cause of the occurrence and the steps taken to avoid future occurrences.

8 COMMISSION AUTHORITY AFTER SITE PERMIT ISSUANCE

8.1 Final Designated Site Boundaries

After completion of construction the Commission shall determine the need to adjust the final boundary of the Designated Site required for the Project. This site permit may be modified, after notice and opportunity for hearing, to represent the actual Designated Site required by the Permittee to operate the Project authorized by this site permit.

8.2 Expansion of Designated Site Boundaries

No expansion of the site boundary described in this site permit shall be authorized without the approval of the Commission. The Permittee may submit to the Commission a request for a change in the boundary of the site for the Project. The Commission will respond to the requested change in accordance with applicable statutes and rules.

8.3 Modification of Conditions

After notice and opportunity for hearing this site permit may be modified or amended for cause, including but not limited to the following:

A. violation of any condition in this permit;
B. endangerment of human health or the environment by operation of the Project; or
C. existence of other grounds established by rule.

8.4 More Stringent Rules

The issuance of this site permit does not prevent the future adoption by the Commission of rules or orders more stringent than those now in existence and does not prevent the enforcement of these more stringent rules and orders against the Permittee.

9 SITE PERMIT AMENDMENT

The Commission has the authority to modify this site permit at any time. The Permittee may request an amendment of the conditions of this site permit by submitting a request to the Commission in writing describing the amendment sought and the reasons for the amendment. The Commission may amend the conditions after affording the Permittee and interested persons such process as is required under Minn. R. 7850.4900.

10 TRANSFER OF SITE PERMIT

The Permittee may request at any time that the Commission transfer this site permit to another person or entity (transferee). In its request, the Permittee must provide the Commission with:

A. the name and description of the transferee;
B. the reasons for the transfer;
C. a description of the facilities affected; and
D. the proposed effective date of the transfer.

The transferee must provide the Commission with a certification that it has read, understands and is able to comply with the plans and procedures filed for the LEPGP and all conditions of this site. The Commission may authorize transfer of the site permit after affording the Permittee, the transferee, and interested persons such process as is required under Minn. R. 7850.5000.

11 REVOCATION OR SUSPENSION OF SITE PERMIT

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

Appendix E

Draft Transmission Line Route Permit

STATE OF MINNESOTA PUBLIC UTILITIES COMMISSION

ROUTING PERMIT FOR
CONSTRUCTION OF A LARGE NATURAL GAS PIPELINE
AND ASSOCIATED FACILITIES

IN
LYON COUNTY

ISSUED TO
NORTHERN STATES POWER COMPANY D/B/A XCEL ENERGY
PUC DOCKET NO. G002/GP-25-163

In accordance with the requirements of Minnesota Statutes Chapter 216G and Minnesota Rules Chapter 7852 this route permit is hereby issued to:

Northern States Power Company d/b/a Xcel Energy

Northern States Power Company is authorized by this routing permit to construct a 1,400-foot natural gas pipeline.

The pipeline and associated facilities shall be built within the route identified in this permit and as portrayed on the official route maps and in compliance with the conditions specified in this permit.

Approved and adopted this ____ day of _____

BY ORDER OF THE COMMISSION

_____
Sasha Bergman,
Executive Secretary

CONTENTS

ATTACHMENTS

1 ROUTING PERMIT

The Minnesota Public Utilities Commission (Commission) hereby issues this routing permit to Northern States Power Company, a Minnesota corporation, doing business as Xcel Energy (Permittee) pursuant to Minnesota Statutes Chapter 216G and Minnesota Rules Chapter 7852. This permit authorizes the Permittee to construct a 1,400-foot natural gas pipeline, and as identified in the attached routing maps, hereby incorporated into this document.

1.1 Pre-emption

Pursuant to Minn. Stat. § 216G.02, subd. 4, this permit shall be the sole route approval required to be obtained by the Permittee for construction of the pipeline facilities. This permit shall supersede and preempt all zoning, building, or land use rules, regulations, or ordinances promulgated by regional, county, local and special purpose government.

1.2 Definitions

"Affected landowner," as defined in Minn. R. 7852.0100, subp. 3, "means an owner or lessee of record of real property, any part of which is within the proposed pipeline route."

"Associated Facilities" means all parts of those physical facilities through which hazardous liquids or gas moves in transportation, including but not limited to pipe, valves, and other appurtenances connected or attached to pipe, pumping and compressor units, fabricated assemblies associated with pumping and compressor units, metering and delivery stations, regulation stations, holders, breakout tanks, fabricated assemblies, cathodic protection equipment, telemetering equipment, and communication instrumentation located on the right-of-way. (Minn. R. 7852.0100, subp. 7).

"Construction" means any clearing of land, excavation, or other action for the purpose of constructing new pipeline that would adversely affect the natural environment of a pipeline route. Construction does not include changes needed for temporary use of a route for purposes of maintenance, repair, or replacement of an existing pipeline and associated facilities within existing rights-of-way, or for the minor relocation of less than three-quarters of a mile of an existing pipeline or for securing survey or geological data, including necessary borings to ascertain soil conditions. (Minn. R. 7852.0100, subp. 11).

2 PIPELINE SAFETY

Pursuant to Minn. Stat. § 216G.02, subd. 3(a) this pipeline routing permit may not set safety standards for the construction of the pipeline. Pipeline safety regulations are promulgated by the U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration

in the Federal Code of Federal Regulations Part 195 – Transportation of Hazardous Liquids by Pipeline (49 CFR 195).

3 PROJECT DESCRIPTION

The project includes approximately 1,400 feet of natural gas pipeline. The pipeline will consist 1,000 linear feet of 12-inch diameter pipe and 400 feet consisting of two branches of 8-inch diameter pipe. The pipeline will operate at approximately 550 psig and will connect the Lyon County Generating Station to an existing Norther Border natural gas pipeline.

3.1 Project Location

The project is located in Custer Township, Lyon County, Minnesota.

County	Township Name	Township	Range	Section
Lyon	Custer	109	41	23

3.2 Associated Facilities

The pipeline will feature a 150-foot by 150-foot fenced in area that will include a small building to house a filter and a metering station. The pipeline will include in-line components including isolation valves, pressure reducing valves to bring down the pressure in the existing Northern Border pipeline from approximately 1,400 psig to a range of 550 to 400 psig, and a natural gas fired water bath heater used to raise the temperature of the natural gas for use in the combustion turbines to approximately 60 degrees F, pending the gas quality.

3.3 Class Location

The pipeline will be designed to meet a Class 1 location designated as required by 49 CFR 192.5. The class location of a pipeline is a factor in determining the maximum allowable pressure of the pipeline and is based on the number and type of buildings intended for human occupancy that are situated in an area that extends 220 yards on either side of the centerline of any continuous 1.0-mile length of a gas pipeline. A Class 1 location is defined as 10 or fewer buildings intended for human occupancy.

4 DESIGNATED ROUTE

The route designated by the Commission in this permit is the route described below and shown on the routing maps attached to this permit. The route is generally described as follows:

The pipeline is an approximately 1,400-foot natural gas pipeline, consisting of 1,000 linear feet of 12-inch diameter pipe and 400 linear feet of two "branches" of up to 8-inch diameter pipe

The final alignment must be located within this designated route. The identified route widths on the attached route maps provide the Permittee with flexibility for minor adjustments of the alignment or right-of-way to accommodate landowner requests and unforeseen conditions. The final alignment (*i.e.*, permanent and maintained rights-of-way) will be located within this designated route unless otherwise authorized by this permit or the Commission.

4.1 Permanent Right-of-Way

This Permit authorizes the Permittee to obtain a new permanent right-of-way for the pipeline facility up to 100 feet in width. The permanent right-of-way is typically between 50 and 100 feet on both sides of the pipeline measured from its centerline.

4.2 Temporary Right-of-Way or Workspace

The Permittee is authorized by this permit to acquire temporary work space necessary to construct the project. The Permittee shall limit temporary workspace to special construction access needs required outside of the authorized permanent right-of-way. Temporary right-of-way shall be selected to limit the removal and impacts to vegetation. Temporary easements outside of the authorized route will be obtained from affected landowners through rental agreements.

4.3 Right-of-Way Conformance

The Project's anticipated alignment is intended to minimize potential impacts relative to criteria identified in Minn. R. 7852.1900. The actual right-of-way will generally conform to the anticipated alignment identified on the routing maps, unless changes are requested by individual landowners and agreed to by the Permittee or for unforeseen conditions that are encountered or as otherwise provided for by this permit.

Any right-of-way modifications within the designated route shall be located so as to have comparable overall impacts relative to the factors in Minn. R. 7852.1900, as does the right-of-way identified in this permit, and shall be specifically identified and documented in and approved as part of the plan and profile submitted pursuant to Section 8.1 of this permit.

4.4 Route Width Variations

Route width variations may be allowed to accommodate the potential site-specific constraints listed below. These constraints may arise from any of the following:

1. Unforeseen circumstances encountered during the detailed engineering and design process.
2. Federal or state agency requirements.
3. Existing infrastructure within the pipeline route, including but not limited to railroads, natural gas and liquid pipelines, high voltage electric transmission lines, or sewer and water lines.

Any alignment modifications arising from these site-specific constraints that would result in right-of-way placement outside of the designated route shall be specifically reviewed by the Commission under Minn. R. 7852.3400.

5 STATE AND FEDERAL MINIMUM DEPTH OF COVER REQUIREMENTS

Minn. Stat. § 216G.07, subd. 1, requires the pipeline trench to be excavated to a depth that sufficiently allows for at least 54 inches (4.5 feet) of backfill from ground surface to the top of pipeline in all areas where the pipeline crosses the right-of-way of any public drainage facility or any county, town, or municipal street or highway and where the pipeline crosses agricultural land. Where the pipeline crosses the right-of-way of any drainage ditch the pipeline shall be installed with a minimum level cover of not less than 54 inches (4.5 feet) below the authorized depth of the ditch, unless waived in the manner provided in Minn. Stat. § 216G.07, subd. 2 and 3.

In agricultural land, the Permittee may seek a depth requirement waiver from the affected landowners to install the pipeline at the same depth as required by U.S. Department of Transportation regulation 49 CFR 192.327. In all cases, the pipeline trench shall be excavated to a depth that sufficiently allows for at least 36 inches (3 feet) of backfill from ground surface to the top of pipeline.

6 PRE-CONSTRUCTION CONDITIONS

The following pre-construction conditions require submissions to the Commission. All submissions must be made by electronic filing.

6.1 Permit Distribution

Within 30 days of permit issuance, the Permittee shall send a copy of the permit to the office of each regional development commission, soil and water conservation district, watershed district, watershed management district, office of the auditor of each county, and the clerk of each city and township crossed by the designated route.

Within 30 days of permit issuance, the Permittee shall provide all affected landowners with a copy of this permit and the complaint procedures. In no case shall the landowner receive this route permit and complaint procedures less than five days prior to the start of construction on their property. An affected landowner is any landowner or designee that is within or adjacent to the permitted route.

The Permittee shall provide all affected landowners with complete information about the project keeping them informed throughout the initial survey, right-of-way acquisition, right-of-way preparation, construction, restoration, and future operation and maintenance. As provided by applicable laws and regulations the Permittee shall provide educational materials about the project and any restrictions or dangers associated with the project to landowners within the route whose land is crossed by the pipeline and, upon request, to any interested persons.

6.2 Plan and Profile

At least 30 days before right-of-way preparation for construction begins on any segment or portion of the project, the Permittee shall provide the Commission with a plan and profile of the right-of-way and the specifications and drawings for right-of-way preparation, construction, cleanup, and restoration for the segment of pipeline for which construction is scheduled. The documentation shall include maps depicting the plan and profile including the designated route, right-of-way, and pipeline alignment approved per this permit.

The Permittee may not commence construction until the 30 days has expired or until the Commission has advised the Permittee in writing that it has completed its review of the plan and profile documents and determined that the planned construction is consistent with this permit. If the Permittee intends to make any significant changes in its plan and profile or the specifications and drawings after submission to the Commission the Permittee shall notify the Commission at least five days before implementing the changes. No changes shall be made that would be in violation of any of the terms of this permit.

The Permittee shall also provide the Minnesota Office of Pipeline Safety with the same information provided to the Commission. The Permittee's plan and profile and specifications and drawings, shall become a condition of this permit and shall be complied with by the Permittee in accordance with Minn. R. 7852.3500.

6.3 Status Reports

The Permittee shall report to the Commission on progress during finalization of the route and construction of the pipeline. The Permittee shall report weekly. Reports shall begin with the submittal of the plan and profile for the project and continue until completion of restoration.

7 CONSTRUCTION CONDITIONS

The Permittee shall comply with the following conditions during pipeline right-of-way preparation, construction, cleanup, and restoration over the life of this permit.

7.1 Notification

The Permittee shall notify landowners or their designee at least 14 days in advance but not greater than 60 days in advance of entering the property.

7.2 Access to Property for Construction

The Permittee shall obtain all necessary permits authorizing access to public rights-of-way prior to any construction. The Permittee shall obtain approval of the landowners for access to private property prior to any construction. The Permittee shall consult with property owners to identify and address any special problems the landowners may have that are associated with the pipeline prior to any construction.

The Permittee shall work with landowners to provide access to their property, to locate the pipeline on their property to minimize the loss of agricultural land, forest, and wetlands, with due regard for proximity to homes and water supplies, even if the deviations will increase the cost of the pipeline, so long as the landowner's requested relocation does not adversely affect environmentally sensitive areas.

The Permittee shall negotiate agreements with landowners that will give the landowners access to their property; minimize the impact on planned future development of the property; and to assume any additional costs for such development that may be the result of installing roads, driveways and utilities that must cross the right-of-way. The Permittee shall not unreasonably deny a landowner's request to cross the easement to access the landowner's property.

The Permittee shall follow those specific construction practices and material specifications described in the Permittee's Application to the Commission for a pipeline route permit for the Lyon County Generating Station Project, dated May 9, 2025, and the record of the proceedings unless this permit establishes a different requirement in which case this permit shall prevail. The Permittee shall comply with the conditions for right-of-way preparation, construction, cleanup, and restoration contained in Minn. R. 7852.3600.

7.3 Field Representative

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

The Permittee shall file with the Commission the name, address, email, phone number, and emergency phone number of the field representative 14 days prior to commencing construction. The Permittee shall provide the field representative's contact information to affected landowners, residents, local government units and other interested persons 14 days prior to commencing construction. The Permittee may change the site manager at any time upon notice to the Commission, affected landowners, residents, local government units and other interested persons.

7.4 Agricultural Monitor and County Inspector Notification Requirements

The Permittee shall at least 14 days prior to the start of construction provide notice to all landowners affected by construction with the name, telephone number and email address of the Agricultural Monitor and County inspector designated by the County, if appointed.

7.5 Employee Training and Education of Permit Terms and Conditions

The Permittee shall inform all employees, contractors, and other persons involved in construction of the terms and conditions of this permit.

7.6 Public Services, Public Utilities, and Existing Easements

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

The Permittee shall cooperate with all entities that have existing easements or infrastructure within the pipeline route to ensure minimal disturbance to existing or planned developments.

7.7 Noise

The Permittee shall comply with noise standards established under Minn. R. 7030.0100 to 7030.0080, at all times at all appropriate locations during operation of the facility. Construction

and maintenance activities shall be limited to daytime working hours to the extent practicable to ensure nighttime noise level standards will not be exceeded.

7.8 Site Sediment and Erosion Control

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

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

7.9 Topsoil Protection

The Permittee shall take precautions to minimize mixing of topsoil and subsoil during excavation of the trench for the pipe unless otherwise negotiated with the affected landowner.

7.10 Landscape Preservation

Care shall be used to preserve the natural landscape, minimize tree removal, and prevent any unnecessary destruction of the natural surroundings in the vicinity of all pipeline construction and restoration activities.

7.11 Sensitive Areas

The Permittee shall stabilize stream banks and other sensitive areas disturbed by pipeline construction in accordance with the requirements of applicable state or federal permits.

7.12 Wetlands and Water Resources

Wetlands and riparian areas shall be accessed using the shortest route possible in order to minimize travel through wetland areas and prevent unnecessary impacts. No temporary workspace areas shall be placed within or adjacent to wetlands or water resources, as practicable. To minimize impacts, construction in wetland areas shall occur during frozen ground conditions where practicable and shall be according to permit requirements by the applicable permitting authority. When construction during winter is not possible, wooden or composite mats shall be used to protect wetland vegetation. Soil excavated from the wetlands and riparian areas shall be contained and not placed back into the wetland or riparian area.

Dewatering during periods of excessive precipitation or in areas where the natural groundwater table intersects the pipeline trench will not be directed into wetlands or water bodies. Dewatering discharges will be directed toward well vegetated upland areas. Should discharge activities need to be directed off the right-of-way landowner consent will be obtained and locations will be chosen to minimize impacts. All discharge activities will comply with applicable agency permits or approvals.

Areas disturbed by construction activities shall be restored to pre-construction conditions. Restoration of the wetlands will be performed by Permittee in accordance with the requirements of applicable state and federal permits or laws and landowner agreements. Wetland and water resource areas disturbed by construction activities shall be restored to pre-construction conditions in accordance with the requirements of applicable state and federal permits or laws and landowner agreements. All requirements of the U.S. Army Corps of Engineers (USACE), Minnesota Department of Natural Resources (DNR), and local units of government shall be met.

7.13 Vegetation Management

The Permittee shall clear the permanent right-of-way and temporary right-of-way preserving to the maximum extent practicable windbreaks, shelterbelts, living snow fences, and vegetation in areas such as trail and stream crossings where vegetative screening may minimize aesthetic impacts, to the extent that such actions do not impact the safe operation, maintenance, and inspection of the pipeline and are in compliance with all applicable laws and regulations.

Tree stumps will be removed at the landowner's request or when necessitated due to trench location. The Permittee will dispose of all debris created by clearing at a licensed disposal facility.

7.14 Application of Pesticides

The Permittee shall restrict pesticide use to those pesticides and methods of application approved by the Minnesota Department of Agriculture, DNR, and the U.S. Environmental Protection Agency. Selective foliage or basal application shall be used when practicable. All pesticides shall be applied in a safe and cautious manner so as not to damage adjacent properties including crops, orchards, tree farms, apiaries, or gardens. The Permittee shall contact the landowner or designee to obtain approval for the use of pesticide at least 14 days prior to any application on their property. The landowner may request that there be no application of pesticides on any part of the site within the landowner's property. The Permittee shall provide notice of pesticide application to affected landowners and known beekeepers operating apiaries within three miles of the project site at least 14 days prior to such application.

7.15 Invasive Species

The Permittee shall employ best management practices to avoid the potential spread of invasive species on lands disturbed by project construction activities.

7.16 Noxious Weeds

The Permittee shall take all reasonable precautions against the spread of noxious weeds during all phases of construction. When utilizing seed to establish temporary and permanent vegetative cover on exposed soil the Permittee shall select site appropriate seed certified to be free of noxious weeds. To the extent possible, the Permittee shall use native seed mixes. The Permittee shall consult with landowners on the selection and use of seed for replanting.

7.17 Roads

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

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

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

7.18 Archaeological and Historic Resources

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

Prior to construction, workers shall be trained about the need to avoid cultural properties, how to identify cultural properties, and procedures to follow if undocumented cultural properties, including gravesites, are found during construction. If human remains are encountered during construction, the Permittee shall immediately halt construction and promptly notify local law enforcement and the State Archaeologist. Construction at such location shall not proceed until authorized by local law enforcement or the State Archaeologist.

7.19 Livestock

Precautions to protect livestock must be taken by the Permittee unless otherwise negotiated with the affected landowner.

7.20 Security

The Permittee will install temporary gates or similar barriers, as needed, to prohibit public access to the right-of-way during construction.

7.21 Pollution and Hazardous Wastes

All appropriate precautions to protect against pollution of the environment must be taken by the Permittee. The Permittee shall be responsible for compliance with all laws applicable to the generation, storage, transportation, clean up and disposal of all wastes generated during pipeline construction and restoration of the right-of-way.

7.22 Cleanup

All waste and scrap that is the product of construction shall be removed from the right-of-way and all premises on which construction activities were conducted and properly disposed of upon completion of each task. Personal litter, including bottles, cans, and paper from construction activities shall be removed on a daily basis.

7.23 Restoration

The Permittee shall restore the right-of-way, temporary workspaces, access roads, abandoned right-of-way, and other public or private lands affected by construction of the pipeline to the natural conditions that existed immediately before construction of the pipeline and as required by other federal and state agency permits. Restoration must be compatible with the safe operation, maintenance, and inspection of the pipeline. Within 60 days after completion of all restoration activities the Permittee shall advise the Commission in writing of the completion of such activities.

7.24 Damages

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

8 OTHER PERMITS AND REGULATIONS

The Permittee shall comply with all applicable state rules and statutes. The Permittee shall obtain all required permits for the project and comply with the conditions of those permits unless those permits conflict with or are preempted by federal or state permits and regulations. A list of the permits known to be required is included in the permit application. The Permittee shall submit a copy of such permits to the Commission upon request.

9 DELAY IN CONSTRUCTION

If the Permittee has not commenced construction or improvement of the route within four years after the date of issuance of this permit the Commission shall suspend the permit in accordance with Minn. R. 7852.3300. If at the time of suspension, or at a later time, the Permittee decides to construct the pipeline, it shall certify to the Commission that there have been no significant changes in any material aspects of the conditions or circumstances existing when the permit was issued. If the Commission determines that there are no significant changes, it shall reinstate the permit. If the Commission determines that there is a significant change, it may order public information meetings or a new hearing and consider the matter further, or it may require the Permittee to submit a new application.

10 COMPLAINT PROCEDURES

Prior to the start of construction, the Permittee shall submit to the Commission the procedures that will be used to receive and respond to complaints. The procedures shall be in accordance

with the requirements of Minn. R. 7829.1500 or Minn. R. 7829.1700, and as set forth in the complaint procedures attached to this permit.

Upon request, the Permittee shall assist the Commission with the disposition of unresolved or longstanding complaints. This assistance shall include, but is not limited to, the submittal of complaint correspondence and complaint resolution efforts.

11 POST-CONSTRUCTION CONDITIONS

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

11.1 In-Service Date

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

11.2 As-Builts

Within 90 days after completion of construction, the Permittee shall submit copies of all final as-built plans and specifications developed during the project.

11.3 GPS Data

Within 90 days after completion of construction, the Permittee shall submit to the Commission, in the format requested by the Commission, geo-spatial information (e.g., ArcGIS compatible map files, GPS coordinates, associated database of characteristics) for the pipeline and associated facilities.

12 RIGHT OF ENTRY

The Permittee shall allow Commission designated representatives to perform the following, upon reasonable notice, upon presentation of credentials and at all times in compliance with the Permittee's site safety standards:

a. To enter upon the facilities easement of the property for the purpose of obtaining information, examining records, and conducting surveys or investigations.

b. To bring such equipment upon the facilities easement of the property as is necessary to conduct such surveys and investigations.

c. To sample and monitor upon the facilities easement of the property.

d. To examine and copy any documents pertaining to compliance with the conditions of this permit.

13 PERMIT AMENDMENT

The Permittee may apply to the Commission for an amendment of the route designation or to conditions specified in the permit in accordance with the requirements and procedures of Minn. R. 7852.3400.

14 PERMIT MODIFICATION OR SUSPENSION

If the Commission determines that substantial evidence supports a finding that a violation of the terms or conditions of this pipeline routing permit has occurred or is likely to occur, it may take action to modify or suspend this permit in accordance with Minn. R. 7852.3800. The Commission may at any time re-consider modification or suspension of this permit if the Permittee has undertaken effective measures to correct the violations.

15 PIPELINE CONSTRUCTION COMPLETION CERTIFICATE

In accordance with Minn. R. 7852.3900, the Permittee shall file with the Commission a written certification that the construction and remediation of the permitted pipeline has been completed in compliance with all permit conditions and landowner agreements. The certification shall be considered by the Commission within 60 days of its filing. The Commission shall accept or reject the certification of completion and make a final determination regarding cost or reimbursements due. If the certification is rejected, the Commission shall inform the Permittee in writing which deficiencies, if corrected, will allow the certification to be accepted. When corrections to the deficiencies are completed, the Permittee shall notify the Commission, and the certification shall be reconsidered as soon as possible. After acceptance of the certification, the Commission's jurisdiction over the Permittee's pipeline routing permit shall be terminated.

Appendix F

Noise / Sound Study

BURNS McDONNELL

XCEL ENERGY

Sound Study Report

Lyon County Generating Station Project

PROJECT NO. 170541

REVISION 5

NOVEMBER 19, 2025

Contents

Tables

List of Abbreviations

Abbreviation	Term/Phrase/Name
ACHE	air-cooled heat exchanger
ANSI	American National Standards Institute
BOP	balance-of-plant
CTG	combustion turbine generator
dB	decibel
dBA	A-weighted decibel
dBC	C-weighted decibel
GE, or GEV	General Electric or General Electric Vernova Inc.
Hz	hertz
ISO	International Organization for Standardization
L_{eq}	equivalent-continuous sound level
L_{10}	10-percentile exceedance sound level
L_{50}	50-percentile exceedance sound level
L_{90}	90-percentile exceedance sound level
MAR	Minnesota Administrative Rules
MP	measurement point
MPCA	Minnesota Pollution Control Agency
mph	miles per hour
NAC	noise area classification
NIST	U.S. National Institute of Standards and Technology
Project	Lyon County Generating Station Project
PWL	sound power level
SPL	sound pressure level

Executive Summary

Burns & McDonnell conducted a sound study for the proposed Xcel Energy Lyon County Generating Station Project (Project) located in Lyon County, Minnesota. The Project is a new development of a simple-cycle F-class combustion turbine plant consisting of two (2) General Electric Vernova Inc (GE or GEV) 7F05 combustion turbine generators (CTG) and associated balance-of-plant (BOP) equipment.

The objectives of the sound study were to identify the applicable noise regulations for the Project, conduct ambient sound level measurements for the surrounding area, and create an acoustic model for the Project to evaluate whether the Project acoustic design satisfies Project noise limits.

The State of Minnesota has noise limits which are enforced by the Minnesota Pollution Control Agency (MPCA). These include statistical exceedance level noise limits (L_{10} and L_{50}) based on receiving noise area classification (NAC). L_{10} sound limit would generally be applicable to sources that are transient or operate intermittently, since it represents the sound levels occurring more than 10 percent of any hour. While the L_{50} sound level limit would generally be more appropriate for sound sources operating continuously, since it represents the sound levels occurring more than 50 percent of any hour. Because the major noise producing equipment for this Project (when operational) are expected to operate as steady sound sources, the L_{50} sound level limits are more appropriate for Project noise limits. Project normal operation could operate day and/or night, so the L_{50} nighttime MPCA sound level limits of 75 dBA at the agricultural property boundaries and 50 dBA outside the residential structures are most appropriate for Project normal operation noise limits.

Additionally, there are two emergency generators on-site which will likely undergo occasional testing and have potential to operate in the event of an emergency condition. Testing is expected to occur only during the daytime hours and could last approximately 30 minutes at a time. Generator testing has potential to occur while the Project is normally operating (i.e., combustion turbines operational). However, emergency use for the generators would only be while the combustion turbine equipment was not operating. Therefore, two additional scenarios have been evaluated and compared the MPCA limits: 1) Generator Testing + Normal Operation, and 2) Emergency Generator Only. The “Generator Testing” results should be compared to the daytime MPCA sound level limits of 75 dBA at the agricultural property boundaries and 60 dBA outside residential structures. The “Emergency Generator Only” results should be compared to the nighttime MPCA sound level limits previously discussed.

Ambient measurements were collected at two (2) locations representative of the property boundary and nearby noise sensitive receptors. Sound meters collected data continuously over the course of one 24-hour period from approximately 1:00 PM on March 6 to 1:00 PM on March 7, 2025. Average daytime sound levels (7:00 AM to 10:00 PM) currently range from 40 to 44 A-weighted decibels (dBA) and nighttime sound levels (10:00 PM to 7:00 AM) range from 28 to 32 dBA. This indicates existing ambient sound levels are currently below the MPCA L_{50} noise limits for the surrounding receptors.

Project sound levels have been modeled to predict future sound levels associated with the Project. The sound power levels for the GEV supplied equipment are based on sound level data supplied by GEV, including low-noise options for the stack exit. BOP equipment is based on in-house data and has been specified so the Project will meet the MPCA noise limits. Based on the current Project acoustic design, including low-noise upgrades to the exhaust stacks and the air-cooled heat exchangers (ACHE), the Project is modeled to meet the MPCA noise limits at the property boundaries and outside of the nearest residential structures for all evaluated operating scenarios (i.e., normal operation, emergency generator testing, emergency generator only).

1.0 Acoustical Terminology

The term “sound level” is often used to describe two different sound characteristics: sound power and sound pressure. Every source that produces sound has a sound power level (PWL). The PWL is the acoustical energy emitted by a sound source and is an absolute number that is not affected by the surrounding environment. The acoustical energy produced by a source propagates through media as pressure fluctuations. These pressure fluctuations, also called sound pressure levels (SPL), are what human ears hear and microphones measure.

Sound is physically characterized by amplitude and frequency. The amplitude of sound is measured in decibels (dB) as the logarithmic ratio of a sound pressure to a reference sound pressure (20 micropascals). The reference sound pressure corresponds to the typical threshold of human hearing. To the average listener, a 3-dB change in a continuous broadband sound is generally considered “just barely perceptible”; a 5-dB change is generally considered “clearly noticeable”; and a 10-dB change is generally considered a doubling (or halving, if the sound is decreasing) of the apparent loudness.

Sound waves can occur at many different wavelengths, also known as the frequency. Frequency is measured in hertz (Hz) and is the number of wave cycles per second that occur. The typical human ear can hear frequencies ranging from approximately 20 to 20,000 Hz. Normally, the human ear is most sensitive to sounds in the middle frequencies (1,000 to 8,000 Hz) and is less sensitive to sounds in the lower and higher frequencies. As such, the A-weighting scale was developed to simulate the frequency response of the human ear to sounds at typical environmental levels. The A-weighting scale emphasizes sounds in the middle frequencies and de-emphasizes sounds in the low and high frequencies. Any sound level to which the A-weighting scale has been applied is expressed in A-weighted decibels, or dBA. For reference, the A-weighted sound pressure level and subjective loudness associated with some common sound sources are listed in Table 1-1. The C-weighting scale has more of an emphasis on low frequency content than the A-weighting scale and is generally used to describe the low frequency characteristics of sound levels (e.g., “rattling” or “rumbling” associated with sound levels).

Sound in the environment is constantly fluctuating, as when a car drives by, a dog barks, or a plane passes overhead. Therefore, sound metrics have been developed to quantify fluctuating environmental sound levels. These metrics include the exceedance sound level. The exceedance sound level is the sound level exceeded during “x” percent of the sampling period and is also referred to as a statistical sound level. Common exceedance sound level values are the 10-, 50-,90-percentile exceedance sound levels, denoted by L_{10}, L_{50}, and L_{90}. The equivalent-continuous sound level (L_{eq}) is the arithmetic average of the varying sound over a given time period and is the most common metric used to describe sound.

Table 1-1: Typical Sound Pressure Levels Associated with Common Sound Sources

Sound Pressure Level (dBA)	Subjective Evaluation	Environment
140	Deafening	Jet aircraft at 75 feet
130	Threshold of pain	Jet aircraft during takeoff at a distance of 300 feet
120	Threshold of feeling	Elevated train
110	Very loud	Jet flyover at 1,000 feet
100		Motorcycle at 25 feet
90	Moderately loud	Propeller plane flyover at 1,000 feet
80		Diesel truck (40 mph) at 50 feet
70	Loud	B-757 cabin during flight
60	Moderate	Air-conditioner condenser at 15 feet
50	Quiet	Private Office
40		Farm field with light breeze, birdcalls
30	Very quiet	Quiet residential neighborhood
20		Rustling leaves
10	Just audible	--
0	Threshold of hearing	--

Sources:
(1) Adapted from *Architectural Acoustics*, M. David Egan, 1988
(2) *Architectural Graphic Standards*, Ramsey and Sleeper, 1994

2.0 Applicable Regulations & Criteria

The Project is located in Lyon County, Minnesota. Noise emitted by the Project is governed by the State of Minnesota and is enforced by the Minnesota Pollution Control Agency (MPCA) in Minnesota Administrative Rules (MAR) *Chapter 7030, Noise Pollution Control*[1]. *Part 0040 – Noise Standards*, includes daytime and nighttime noise limits for all sources regulated by the code, separated by receiving noise area classification (NAC). The NACs are based on land use of the receptors which are defined in *Part 0050 – Noise Area Classification*. These limits have been reproduced in the following table.

Table 2-1: MPCA Noise Limits

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

The area immediately surrounding the Project site is primarily agricultural farms (NAC 3). Some of the surrounding agricultural properties include residences, which are subject to more stringent NAC 1 limits. In November of 2015, MPCA provided *"A guide to Noise Control in Minnesota"*[2] which provides information on acoustics terminology, measurement techniques, analysis expectations, and interpretations of the Minnesota noise regulations. Section 3.1 of the MPCA guidance document states the following:

> *"Measurements should be made in the appropriate NAC, at the area of normal outdoor human activity nearest to the noise source. The monitoring location may not necessarily be at the property line; for instance, if the property of the complainant is large and residential outdoor activity is limited to a backyard patio (possibly such as on a farm)."*

Based on this guidance, NAC 1 limits for these residences surrounding the Project should be applied closer to the residential structure instead of at the agricultural property line. Therefore NAC 3 limits will be applied at the receiving property boundaries and NAC 1 limits will only be applied at areas of normal outdoor human activity, near the residential structures.

The L_{10} sound limits would generally be applicable to sources that are transient or operate intermittently. Because the major noise producing equipment for this Project (when operational) are expected to operate as steady sound sources, the L_{50} sound level limits are more appropriate to compare Project sound levels to.

Normal operation for the Project could operate day and/or night, so the L_{50} nighttime sound level limits should be used as Project noise limits for normal operation. It is expected that if the Project predicted sound levels meet the L_{50} MPCA limits, then the L_{10} criteria should also be satisfied since all normal operating equipment will be modeled at maximum specified operational levels.

[1] MAR, Minnesota Pollution Control Agency: https://www.revisor.mn.gov/rules/7030/. (last accessed March 11, 2025).
[2] "A Guide to Noise control in Minnesota", MPCA: https://www.pca.state.mn.us/sites/default/files/p-gen6-01.pdf

Additionally, there are two emergency generators on-site which will likely undergo occasional testing and have potential to operate in the event of an emergency condition. Testing is expected to occur only during the daytime hours and could last approximately 30 minutes at a time. Generator testing has potential to occur while the Project is normally operating (i.e., combustion turbines operational). However, emergency use for the generators would only be while the combustion turbine equipment was not operating. The event of "generator testing" while the Project is in normal operation should be compared to the daytime MPCA sound level limits of 75 dBA at the agricultural property boundaries and 60 dBA outside residential structures, while the event of "emergency generator only" operation should be compared to the nighttime MPCA sound level limits previously discussed.

3.0 Ambient Measurements

Ambient measurements were collected for the Project area to represent existing sound levels at the nearest property boundaries and nearest residential receptors. Sound level measurements were made using sound level meters that meet the ANSI S1.4 requirements for a Type 1 Precision Sound Level Meter. One-half inch random-incidence microphones were used on the meters. Microphone windscreens were used for all measurements. Sound level meters were calibrated before and after each set of measurements using a sound level calibrator. Calibration level changes did not exceed ± 0.5 dB during the measurements. The meters and calibrator were checked within a year prior of the measurements to verify compliance with the U.S. National Institute of Standards and Technology (NIST) specifications.

Continuous, long-term sound level measurements were collected at two measurement locations surrounding the Project area. Measurement locations are shown in Figure A-1 of Appendix A, as well as the nearest receptors of interest. Measurement Point (MP) 1 was placed along the tree line close to the nearest residential receptor to the northwest of the Project (R1). MP2 was placed near the south receiving property boundary, in the right-of-way. The microphones were placed at a height of approximately five feet above the ground and mounted on a microphone pole which is connected to the monitoring system case.

The long-term monitors measured sound levels continuously over the course of one 24-hour period from approximately 1:00 PM on March 6 to 1:00 PM on March 7, 2025. MP2 experienced a power outage starting at approximately 5:20 AM on March 7th, so the meter only collected data for ~16 hours. Based on the comparison to the MP1 data, the lowest average daytime and nighttime hours were collected prior to the power outage at MP2. It is expected that from 5:00 AM to 6:00 AM, ambient sound levels at MP2 would likely trend upward until they steady out for the remainder of the measurement period, similarly to the MP1 data. The measured sound level data is shown in tabular form in Appendix B. Weather was generally acceptable for conducting ambient measurements. Weather data was gathered from a nearby meteorological station and shown in the tables in Appendix B.

The existing ambient sound levels at both locations consisted of distant traffic and occasional wind gusts. MP1 also included occasional passing traffic and noise from a nearby compressor station, which was audible during periods of low ambient sound levels. A summary of the ambient measurements is shown in the following Table 3-1 as the average A-weighted daytime and nighttime L_{10}, L_{50}, and L_{90} sound levels. As shown in the results, ambient nighttime sound levels are generally expected to be below the nighttime L_{50} limits for the Project.

Table 3-1: Ambient Measurement Summary

Measurement Location	Daytime Average (7:00 AM to 10:00 PM)			Nighttime Average (10:00 PM to 7:00 AM)		
	L_{10}	L_{50}	L_{90}	L_{10}	L_{50}	L_{90}
MP1	49	44	39	40	32	27
MP2	45	40	35	34	28	23

4.0 Sound Modeling

Operational sound levels for the proposed Project were performed using the Computer Aided Noise Abatement (CadnaA) modeling software. Equipment sound levels used for modeling were based on a combination of in-house data for the balance-of-plant (BOP) equipment and GEV provided data for the combustion turbine equipment.

4.1 Sound Modeling Methodology and Input Parameters

Predictive noise modeling was performed using the industry-accepted sound modeling software CadnaA, version 2025. The software is a scaled, three-dimensional program, which considers air absorption, terrain, ground absorption, and reflections and shielding for each piece of noise-emitting equipment. It predicts sound pressure levels at discrete locations and over a gridded area based on input source sound levels. The model calculates sound propagation based on International Organization for Standardization (ISO) 9613-2:2024, General Method of Calculation. ISO 9613-2 assesses the sound level propagation based on the octave band center-frequency range from 31.5 to 8,000 Hz.

The ISO standard considers sound propagation and directivity. The sound-modeling software calculates omnidirectional, downwind sound propagation, in tandem with user-specified directivities and propagation properties. Empirical studies accepted within the industry have demonstrated that modeling may over-predict sound levels in certain directions, and as a result, modeling results generally are considered a conservative measure of the Project's actual sound level.

The modeled atmospheric conditions were assumed to be calm. The temperature and relative humidity were left at the program's default values. Reflections and shielding were considered for sound waves encountering physical structures. Sound levels around the site can be influenced by reflections from physical structures onsite. The area surrounding the Project has mild elevation changes, which scatter and absorb the sound waves. Thus, terrain was included to account for surface effects such as ground absorption. Average ground absorption for the Project site was set to a value of 0.25 to account for the combination of hard pavements, crushed rock, and vegetative surfaces. Average ground absorption for the surrounding area was set to 1.0 to account for the generally soft, vegetative ground. Foliage was not included in the model. The modeling assumptions are outlined in Table 4-1. This model excludes noise sources not associated with the Project (e.g., existing nearby compressor station, traffic noise and local fauna). Only Project sound levels have been evaluated.

Table 4-1: Sound Modeling Parameters

Model Input	Parameter Value
Project and Facility Ground Absorption	0.25
Surrounding Land Ground Absorption	1.0
Number of Reflections	2
Receptor Height	5 feet above grade
Terrain	USGS topographic land data
Temperature	50 °F
Humidity	70%

4.2 Project Acoustical Design

The Project general arrangement is included as Figure A-2 of Appendix A. The Project is expected to include two (2) F-class simple-cycle combustion turbine generators (CTGs) along with associated BOP equipment. The CTGs are expected to be GEV 7F05 units. GEV has provided expected sound levels for the unit and associated GEV-provided equipment. The expected equipment sound levels used for this analysis are summarized in Table 4-2 below. They include low-noise options for the exhaust stack exit (i.e., upgrade stack silencer) and the air-cooled heat exchanger (ACHE) in order to meet the MPCA noise limits. The detailed sound power levels used for each piece of equipment in the noise model are provided in Appendix C.

Table 4-2: Project Expected Acoustical Design

Equipment	QTY	Sound Level Rating	Notes
Combustion Turbine Equipment – GE Provided			
GEV CTG Package	2	85 dBA SPL average at 3 feet	Standard package equipment *(includes exhaust diffuser noise barrier)*
Exhaust Stack Exit	2	110 dBA PWL	Includes low-noise silencer
BOP Equipment			
GSU Transformer	2	85 dBA at 3 feet	Standard offering
Air-Cooled Heat Exchanger	2	98 dBA PWL	Low-noise option
Auxiliary Transformer	2	75 dBA at 3 feet	Standard offering
Dew Point Heater	2	80 dBA at 3 feet	Standard offering
Emergency Generator	2	75 dBA at 50 feet	Standard Generator Enclosure
Pumps, valves, skids, etc.	--	85 dBA at 3 feet	Standard offering

4.3 Model Results

The Project will operate at fairly constant sound levels during normal operation and has the potential to operate day and/or night. Therefore, steady-state sound level predictions were completed for normal, continuous operation of the Project, which should be comparable to the expected L_{50} sound levels for the Project. The predicted overall steady-state operational A-weighted sound levels, which do not include contributions from ambient sound sources, are shown with 5-dB contours in Figure A-3 of Appendix A. Sound levels are also provided for the specific nearest receptors of interest in Table 4-3 below.

Table 4-3: Project Design Normal Operation Modeled Sound Level Results

Receptor Name[a]	Noise Area Classification (NAC)	MCPA Nighttime Noise L_{50} Limits (dBA)	Project Modeled Sound Levels (dBA)
A1	NAC 3	75	56
A2	NAC 3	75	54
A3	NAC 3	75	60
A4	NAC 3	75	49
R1	NAC 1	50	46
R2	NAC 1	50	39
R3	NAC 1	50	50
R4	NAC 1	50	40

a. "A#" denotes agricultural receptors along the receiving property lines. "R#" denotes residential receptors near receiving residential structures.

Model results are for continuous operation of the Project, using expected worst-case operational sound levels for all normal operating equipment. Predicted sound levels should be considered conservative for estimating L_{50} sound levels for the future Project. As shown in the contour figure and the previous table, the Project as currently designed is expected to meet the MPCA nighttime L_{50} limits at all the nearest receptors (agricultural and residential) and therefore comply with the MPCA noise requirements. As previously indicated, the Project acoustic design is expected to include an upgraded exhaust stack silencer and a low-noise ACHE.

In addition to Project normal operation, there is potential for occasional testing of the emergency diesel generator and potential for the emergency generator to operate in the event of an emergency. Generator testing is only expected to occur during the daytime hours and last approximately 30 minutes and has potential to occur while the Project is operating normally (i.e., combustion turbine is operational). Emergency generator operation in the event of emergency use is only expected to occur while the Project is not operating normally (i.e., combustion turbine is not operating). Therefore, a conservative scenario where the emergency generator is being tested while the Project is operating normally has been evaluated and compared to the daytime MPCA L_{50} noise limits, while the emergency use scenario where only the emergency generator is operating has been evaluated and compared to the nighttime MPCA L_{50} noise limits. The resulting sound levels for each are provided in Figures A-4 and A-5 of Appendix A, and sound levels are provided for specific receptors of interest in Table 4-4 and Table 4-5 below.

Table 4-4: Emergency Generator Testing + Normal Operation Modeled Sound Level Results

Receptor Name[a]	Noise Area Classification (NAC)	MCPA Daytime Noise L_{50} Limits (dBA)	Project Modeled Sound Levels (dBA)
A1	NAC 3	75	60
A2	NAC 3	75	57
A3	NAC 3	75	61
A4	NAC 3	75	50
R1	NAC 1	60	49
R2	NAC 1	60	42
R3	NAC 1	60	52
R4	NAC 1	60	42

a. "A#" denotes agricultural receptors along the receiving property lines. "R#" denotes residential receptors near receiving residential structures.

Table 4-5: Emergency Generator Only Modeled Sound Level Results

Receptor Name[a]	Noise Area Classification (NAC)	MCPA Nighttime Noise L_{50} Limits (dBA)	Project Modeled Sound Levels (dBA)
A1	NAC 3	75	58
A2	NAC 3	75	54
A3	NAC 3	75	55
A4	NAC 3	75	45
R1	NAC 1	50	46
R2	NAC 1	50	38
R3	NAC 1	50	48
R4	NAC 1	50	37

a. "A#" denotes agricultural receptors along the receiving property lines. "R#" denotes residential receptors near receiving residential structures.

5.0 Conclusion

Burns & McDonnell conducted a sound study for the proposed Xcel Energy Lyon County Generating Station Project located in Lyon County, Minnesota. The Project is a new development of a simple-cycle F-class combustion turbine plant consisting of two (2) GEV 7F05 CTGs and associated BOP equipment.

The State of Minnesota has noise limits which are enforced by the MPCA. These include noise limits based on receiving NAC and these limits are applicable to the Project. The area immediately surrounding the Project site is primarily agricultural farms (NAC 3) and residences on agricultural properties (NAC 1). According to the MPCA guidance document, measurements for residential receptors located on large farms should be limited to areas of normal activity. So, NAC 1 limits for these residences have been applied closer to the residential structure instead of at the agricultural property line. Based on Project operations, the L_{50} sound level limit is the most appropriate limit for the Project because of the continuous, steady noise source characteristics of the Project when operational.

Ambient measurements were collected at two (2) locations representative of the property boundary and nearby noise sensitive receptors. Average daytime L_{50} sound levels currently range from 40 to 44 dBA and nighttime sound levels range from 28 to 32 dBA. This indicates existing ambient sound levels are currently below the MPCA noise limits for the surrounding receptors.

Project sound levels have been modeled to predict future sound levels associated with the Project for normal operation and emergency generator operations. The sound power levels for the GEV supplied equipment are based on sound level data supplied by GEV, including low-noise options for the stack exit. BOP equipment is based on in-house data and has been specified so the Project will meet the MPCA noise limits. Based on the current Project acoustic design, including low-noise upgrades to the exhaust stacks and the ACHEs, the Project is expected to meet the MPCA L_{50} noise limits at the property boundaries and outside of the residential structures for all evaluated operating scenarios.

Appendix A – Figures

LEGEND

- Project Property Boundary
- Nearest Receptors
- Measurement Points (MPs)

REFERENCE

0 0.1 0.2
MILES

0 0.1 0.2
KILOMETERS

N

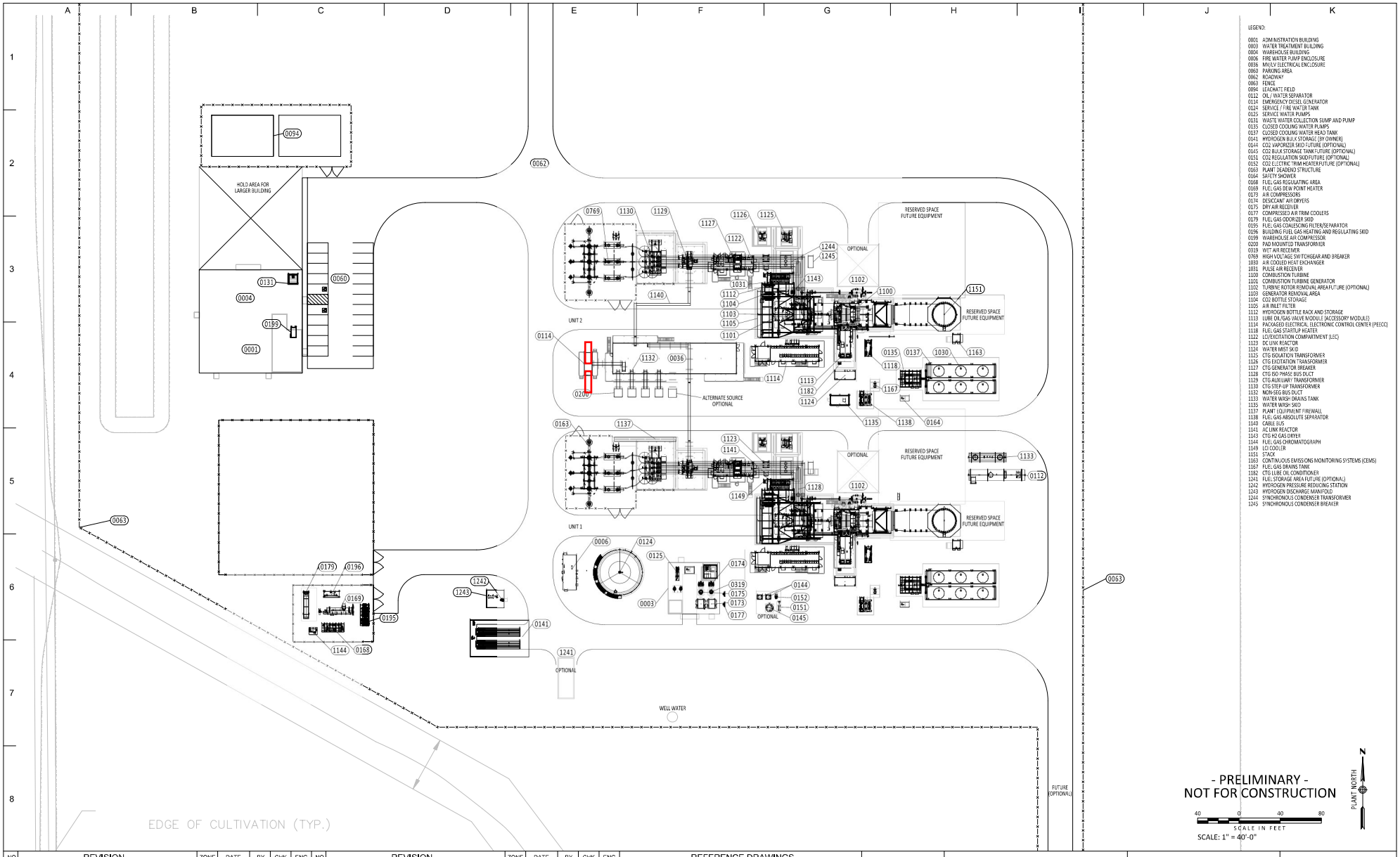
Figure A-1 - Ambient Measurement Points

LOCATION:	Lyon County, MN
PROJECT:	Xcel Energy Lyon County Generating Station
PROJ. NO.:	170541
CREATED:	03/21/2025

BURNS McDONNELL
www.burnsmcd.com

Path: Z:\Clients\ENS\XcelEnr\170541_LyonCoPermit\Studies\Modeling\Noise\GIS\Xcel Bison Lyon County GIS\Xcel Bison Lyon County GIS.aprx • Coordinate System: • Units:

Figure A-2 - General Arrangement



NO	REVISION	ZONE	DATE	BY	CHK	ENG
A	PRELIMINARY	XxX	OPEN	AJC	CMB	GD

NO	REVISION	ZONE	DATE	BY	CHK	ENG

REFERENCE DRAWINGS		
DWG NO.	MANUFACTURER	DESCRIPTION
000000	MANUFACTURER	REF DWG TITLE, LINE 1

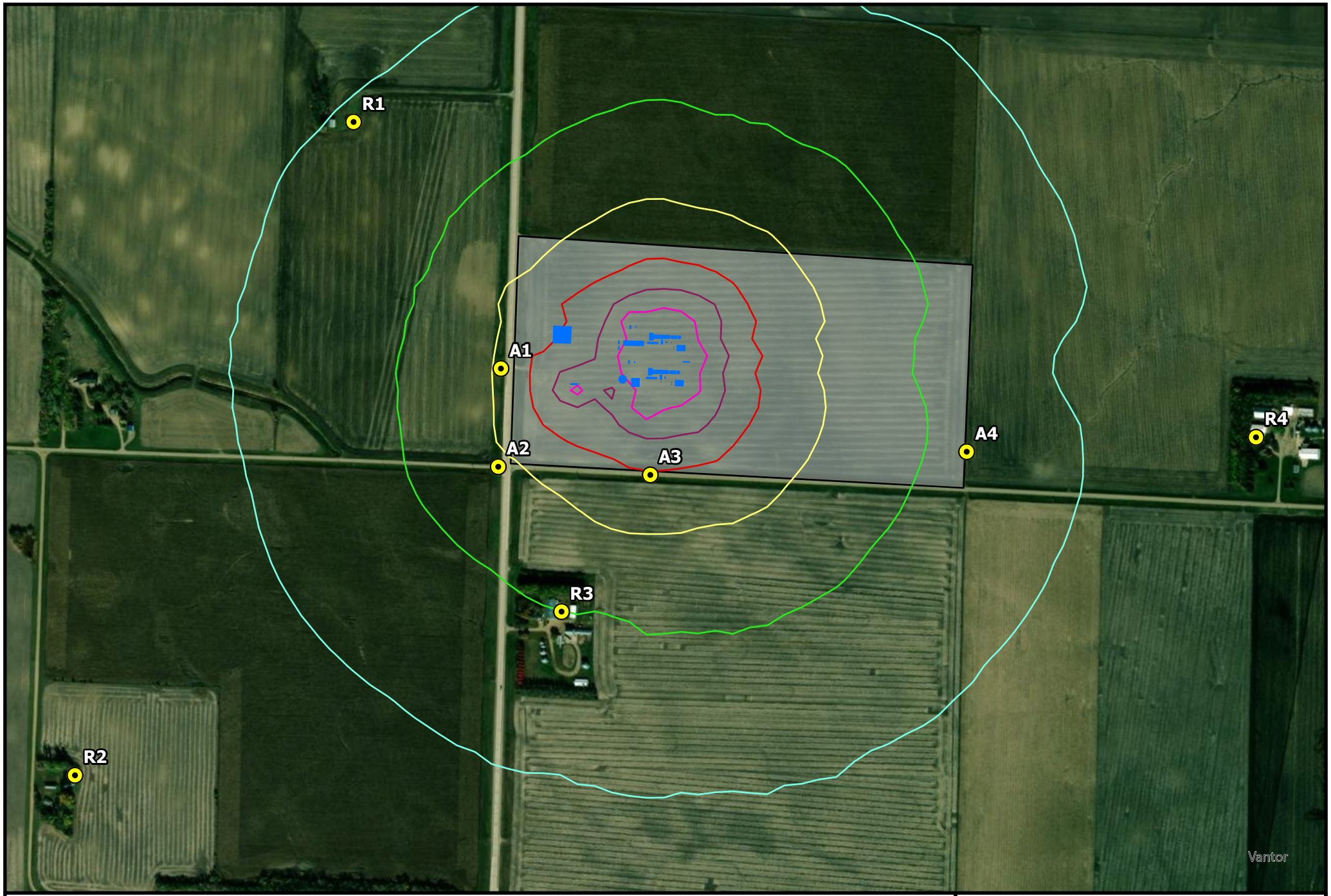
Xcel Energy®
PUBLIC SERVICE COMPANY OF COLORADO

DWN: XXX	DATE: OPEN	CHK:	DATE:
ENG:	DATE:	CHK:	DATE:
PM:	DATE:	PROJ. NO: 20043787	
APVD:	DATE:	SCALE: 1"■ 40'	

NSP LYON COUNTY
PLOT PLAN

DWG NO
3STU-M1000
SHEET NO
1
REV A

MF NO 00000



LEGEND

- Project Property Boundary
- Project Structures
- Nearest Receptors
- 45 dBA
- 50 dBA
- 55 dBA
- 60 dBA
- 65 dBA
- 70 dBA

REFERENCE

0 0.1 0.2 MILES

0 0.1 0.2 KILOMETERS

N

Figure A-3 - Sound Level Contours
Project Normal Operation

LOCATION:	Lyon County, MN
PROJECT:	Xcel Energy Lyon County Generating Station
PROJ. NO.:	170541
CREATED:	11/19/2025

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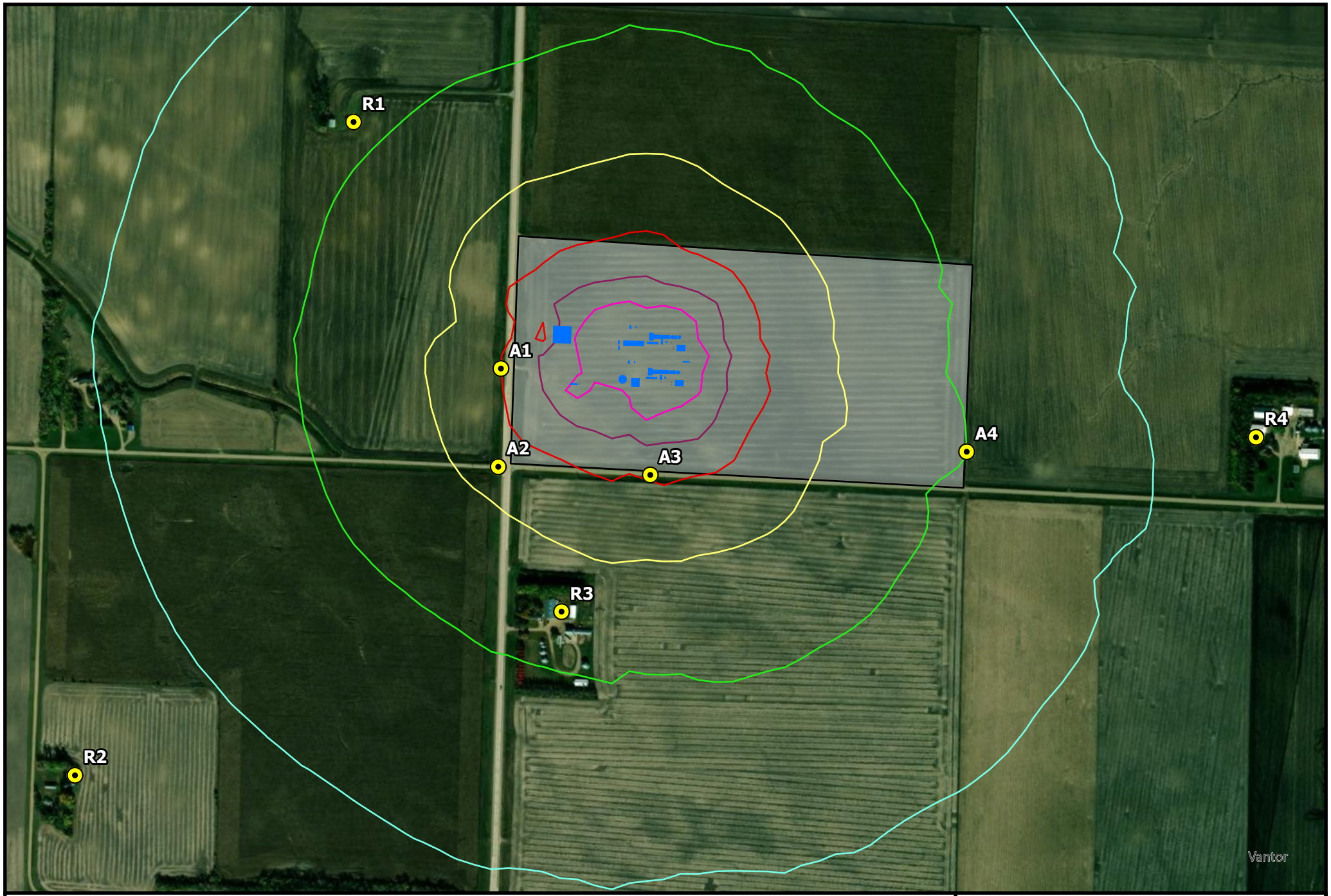
Path: Z:\Clients\EN\Xcel\Env\170541_LyonCoPermit\Studies\Modeling\Noise\GIS\Xcel Bison Lyon County GIS\Xcel Bison Lyon County GIS.aprx • Coordinate System: • Units:



LEGEND

- Project Property Boundary
- Project Structures
- Nearest Receptors
- 45 dBA
- 50 dBA
- 55 dBA
- 60 dBA
- 65 dBA
- 70 dBA

REFERENCE

0 0.1 0.2 MILES

0 0.1 0.2 KILOMETERS

N

Figure A-4 - Sound Level Contours
Emergency Generator Testing + Normal Operation

LOCATION:	Lyon County, MN
PROJECT:	Xcel Energy Lyon County Generating Station
PROJ. NO.:	170541
CREATED:	11/19/2025

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Path: Z:\Clients\EN\SXcelEnr\170541_LyonCoPermit\Studies\Modeling\Noise\GIS\Xcel Bison Lyon County GIS\Xcel Bison Lyon County GIS.aprx • Coordinate System: • Units:

LEGEND

- Project Property Boundary
- Project Structures
- Nearest Receptors
- 45 dBA
- 50 dBA
- 55 dBA
- 60 dBA
- 65 dBA
- 70 dBA

REFERENCE

0 0.1 0.2
MILES

0 0.1 0.2
KILOMETERS

N

Figure A-5 - Sound Level Contours
Emergency Generator Only

LOCATION:	Lyon County, MN
PROJECT:	Xcel Energy Lyon County Generating Station
PROJ. NO.:	170541
CREATED:	11/19/2025

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Path: Z:\Clients\ENS\Xcel\Env\170541_LyonCoPermit\Studies\Modeling\Noise\GIS\Xcel Bison Lyon County GIS\Xcel Bison Lyon County GIS.aprx • Coordinate System: • Units:

Appendix B – Ambient Sound Level Data

Table 1 - Hourly Average Sound Levels

Time	MP1 [dBA]				MP2 [dBA]				Weather Data				
	Leq	L10	L50	L90	Leq	L10	L50	L90	Temp (°F)	Dew Point (°F)	Humidity	Wind Dir	Aveage Wind Speed
3/6/25 1:00 PM	47	50	45	42	49	47	42	37	42	30	61%	NW	4 mph
3/6/25 2:00 PM	50	53	49	45	48	51	47	42	42	31	66%	NW	2 mph
3/6/25 3:00 PM	51	54	50	46	51	51	47	43	37	30	75%	NNW	5 mph
3/6/25 4:00 PM	49	51	48	45	45	48	44	40	34	28	78%	NNW	4 mph
3/6/25 5:00 PM	47	49	45	41	46	44	39	35	32	26	79%	NNW	4 mph
3/6/25 6:00 PM	45	48	43	38	44	43	38	33	31	26	81%	NNW	1 mph
3/6/25 7:00 PM	44	48	43	35	43	44	37	31	31	26	82%	-	-
3/6/25 8:00 PM	42	45	39	33	38	41	34	29	30	25	83%	-	-
3/6/25 9:00 PM	43	45	38	32	34	37	32	27	30	25	80%	NNW	1 mph
3/6/25 10:00 PM	40	42	33	28	33	36	29	25	30	25	80%	NNW	2 mph
3/6/25 11:00 PM	34	37	29	25	29	33	25	21	30	24	78%	NNW	1 mph
3/6/25 12:00 AM	31	34	25	23	26	28	22	19	29	23	77%	NNW	2 mph
3/7/25 1:00 AM	34	36	25	21	41	32	23	20	29	23	78%	NNW	1 mph
3/7/25 2:00 AM	36	38	30	25	35	36	28	23	29	23	79%	NNW	1 mph
3/7/25 3:00 AM	39	41	33	28	34	38	33	28	28	23	81%	NNW	2 mph
3/7/25 4:00 AM	37	40	35	30	34	37	32	27	28	23	81%	NNW	2 mph
3/7/25 5:00 AM	41	44	35	27	--	--	--	--	28	23	80%	NNW	1 mph
3/7/25 6:00 AM	43	47	41	36	--	--	--	--	28	22	76%	NNW	2 mph
3/7/25 7:00 AM	44	47	42	37	--	--	--	--	28	21	76%	NNW	2 mph
3/7/25 8:00 AM	45	49	43	38	--	--	--	--	29	21	74%	NNW	3 mph
3/7/25 9:00 AM	45	48	43	38	--	--	--	--	29	21	72%	NNW	3 mph
3/7/25 10:00 AM	44	47	42	37	--	--	--	--	31	20	64%	N	4 mph
3/7/25 11:00 AM	45	48	43	38	--	--	--	--	35	21	57%	NNW	3 mph
3/7/25 12:00 PM	45	48	42	38	--	--	--	--	37	22	53%	N	3 mph
Average Daytime:	**47**	**49**	**44**	**39**	**46**	**45**	**40**	**35**					
Average Nighttime:	**39**	**40**	**32**	**27**	**35**	**34**	**28**	**23**					

Appendix C – Modeled Sound Levels

Appendix C - Project Acoustic Design Modeled Sound Power Levels

Xcel Energy

Lyon County Generating Station

Name	Number of Sources	Sound Power Level (dB)[1] Octave Band Frequency (Hz) 31.5	63.0	125	250	500	1000	2000	4000	8000	Overall (dBA)	Notes[2]
GE Supplied Equipment												
GT Stack Exit	2 (1 per CTG)	131	123	115	110	109	104	90	81	71	**110**	GE Provided (Low-noise option)
GT Compartment Vent Fan	8 (4 per CTG)	102	102	110	101	98	95	94	98	95	**104**	GE Provided
GT Accessory Skid	2 (1 per CTG)	101	103	99	98	97	96	96	97	88	**103**	GE Provided
GT Exhaust Diffuser	2 (1 per CTG)	105	112	96	92	86	84	85	88	75	**94**	GE Provided
GT Exhaust Duct & Lower Stack	2 (1 per CTG)	119	121	111	106	100	98	99	102	89	**107**	GE Provided (Estimated sound levels)
GT Generator	2 (1 per CTG)	104	108	118	107	95	88	89	76	63	**104**	GE Provided
GT Load Compartment	2 (1 per CTG)	92	98	97	92	92	98	98	93	83	**103**	GE Provided
GT Air Inlet Face	2 (1 per CTG)	111	103	99	90	87	86	91	99	93	**102**	GE Provided
GT Air Inlet House	2 (1 per CTG)	104	98	100	102	96	81	95	82	57	**100**	GE Provided
GT Enclosure	2 (1 per CTG)	106	103	101	95	97	97	101	106	94	**109**	GE Provided
BOP Equipment												
ACHE Pump	4 (2 per ACHE)	82	94	90	93	94	97	92	80	61	**100**	Estimated 85 dBA @ 3-ft (B&H spectrum)
Dew Point Heater Stack	1	119	101	93	88	89	95	93	92	91	**100**	Estimated 85 dBA @ 3-ft (B&H spectrum)
Fuel Filter Skid	2 (1 per CTG)	103	96	90	85	87	88	97	97	92	**102**	Estimated 85 dBA @ 3-ft (B&H spectrum)
Fuel Gas Valve	1	101	94	88	83	85	86	95	95	90	**100**	Estimated 85 dBA @ 3-ft (B&H spectrum)
Water Pump	2	82	94	90	93	94	97	92	80	61	**100**	Estimated 85 dBA @ 3-ft (B&H spectrum)
ACHE	2 (1 per CTG)	99	99	92	96	94	93	92	89	72	**98**	Low-noise option (75 dBA @ 3-ft)
Air Intake Heater Skid	1	101	94	88	83	85	86	95	95	90	**100**	Estimated 85 dBA @ 3-ft (B&H spectrum)
Aux Transformer	2 (1 per CTG)	90	87	88	85	88	85	80	78	68	**89**	Estimated 75 NEMA (B&H transformer spectrum)
Dew Point Heater	1	109	106	104	99	96	92	85	81	77	**98**	Estimated 80 dBA @ 3-ft (B&H spectrum)
Emergency Generator	2	116	123	116	112	109	109	103	105	100	**114**	Estimated 75 dBA @ 50-ft (B&H spectrum) Standard Enclosure
GSU Transformer	2 (1 per CTG)	104	101	102	99	102	99	94	92	82	**103**	Estimated 85 NEMA (B&H transformer spectrum)
GT Fuel Module	2 (1 per CTG)	77	89	85	88	89	92	87	75	56	**95**	Estimated 85 dBA @ 3-ft (B&H spectrum)

Notes:

1. All sound levels are based on expected acosutic design for the project equipment (including low noise options where noted)

2. B&H - Bies & Hansen Engineering Noise Control (4th and 5th Ed.) - used for estimated frequency spectral data


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Appendix G

Draft Pipeline Routing Permit

STATE OF MINNESOTA PUBLIC UTILITIES COMMISSION

ROUTE PERMIT FOR
LYON COUNTY GENERATING STATION PROJECT

A HIGH-VOLTAGE TRANSMISSION LINE AND ASSOCIATED FACILITIES

IN
LYON COUNTY

ISSUED TO NORTHERN STATES POWER COMPANY D/B/A XCEL ENERGY

PUC DOCKET NO. E002/TL-25-161

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

Northern States Power Company d/b/a Xcel Energy

Northern States Power Company is authorized by this route permit to construct and operate two double circuit 345 kilovolt transmission lines with a combined total length of approximately 4,300 feet, in Lyon County, Minnesota.

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

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

BY ORDER OF THE COMMISSION

_____
Sasha Bergman,
Executive Secretary

CONTENTS

ATTACHMENTS

1 ROUTE PERMIT

The Minnesota Public Utilities Commission (Commission) hereby issues this route permit to Northern States Power Company, a Minnesota corporation, doing business as Xcel Energy (Permittee) pursuant to Minnesota Statutes Chapter 216E. This route permit authorizes the Permittee to construct and operate two double circuit 345 kilovolt transmission lines with a combined total length of approximately 4,300 feet in Lyon County (henceforth known as Transmission Facility). The high-voltage transmission line shall be constructed within the route identified in this route permit and in compliance with the conditions specified in this route permit.

1.1 Pre-emption

Pursuant to Minn. Stat. § 216E.10, this route permit shall be the sole route approval required for construction of the Transmission Facility. This route permit shall supersede and preempt all zoning, building, or land use rules, regulations, or ordinances promulgated by regional, county, local and special purpose governments.

2 TRANSMISSION FACILITY DESCRIPTION

The transmission lines include two double circuit 345 kilovolt (kV) transmission lines with a combined total length of approximately 4,300 feet. The transmission lines would be built to connect the Lyon County Generating Stationto the Garvin Substation.
The Transmission Facility is located in the following:

County	Township Name	Township	Range	Section
Lyon	Custer Township	109	41	23

2.1 Structures

The structure types as described in the Permittee's route permit application are detailed in the table below. Monopole steel structures are anticipated to be used for the double circuit configuration. Multiple pole designs may be used for angles and dead-end structures. All structures are proposed to be weatherized steel.

Line Type	Structure		Foundation	Height	Span
	Type	Material			
345 kV	Monopole	Steel	Concrete drilled pier	90-160 feet	1000

2.2 Conductors

Conductor types may include: Each double circuit 345 kV line would utilize bundled, or twisted pair, two 636 kilo circular mils (kcmil) Aluminum Conductor Steel Reinforced or similar performance conductor

2.3 Substations and Associated Facilities

No substations or associated facilities are authorized by this Route Permit. The transmission lines would be built to connect the Lyon County Generating Station to the Garvin Substation.

3 DESIGNATED ROUTE

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

The two double circuit 345 kV transmission lines would extend north from the Lyon County Generating Station to the Garvin Substation with a combined total length of approximately 4,300 feet.

The Designed Route includes an anticipated alignment and a right-of-way. The right-of-way is the physical land needed for the safe operation of the transmission line. The Permittee shall locate the alignment and associated right-of-way within the Designated Route unless otherwise authorized by this route permit or the Commission. The Designated Route provides the Permittee with flexibility for minor adjustments of the alignment and right-of-way to accommodate landowner requests and unforeseen conditions.

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

4 RIGHT-OF-WAY

This route permit authorizes the Permittee to obtain a new permanent right-of-way for the transmission line up to 150 feet in width. The permanent right-of-way is typically 75 feet on both sides of the transmission line measured from its centerline or alignment.

The anticipated alignment is intended to minimize potential impacts relative to the criteria identified in Minn. R. 7850.4100. The final alignment must generally conform to the anticipated alignment identified on the route maps unless changes are requested by individual landowners

and agreed to by the Permittee or for unforeseen conditions that are encountered or as otherwise provided for by this route permit.

Any right-of-way or alignment modifications within the Designated Route shall be located so as to have comparable overall impacts relative to the factors in Minn. R. 7850.4100, as does the right-of-way and alignment identified in this route permit and shall be specifically identified and documented in and approved as part of the plan and profile submitted pursuant to Section 9.2 of this route permit.

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

5 GENERAL CONDITIONS

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

5.1 Route Permit Distribution

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

5.2 Access to Property

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

5.3 Construction and Operation Practices

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

5.3.1 Field Representative

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

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

5.3.2 Employee Training

The Permittee shall train all employees, contractors, and other persons involved in the Transmission Facility construction regarding the terms and conditions of this route permit. The Permittee shall keep records of compliance with this section and provide them upon the request of Commission staff.

5.3.3 Independent Third-Party Monitoring

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

The Permittee shall file with the Commission the approved scope of work and the name, address, email, and telephone number of the third party-monitor at least 14 days prior to

commencing any construction or right-of-way preparation and upon any change in contact information that may occur during Project construction and restoration of the right-of-way.

The Permittee shall keep records of compliance with this section and ensure that status reports detailing the construction monitoring are filed with the Commission in accordance with the approved scope of work.

5.3.4 Public Services, Public Utilities, and Existing Easements

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

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

5.3.5 Temporary Workspace

The Permittee shall limit temporary easements to special construction access needs and additional staging or lay-down areas required outside of the authorized right-of-way. Temporary space shall be selected to limit the removal and impacts to vegetation. The Permittee shall obtain temporary easements outside of the authorized transmission line right-of-way from affected landowners through rental or lease agreements. Temporary easements are not provided for in this route permit.

The Permittee may construct temporary driveways between roadways and transmission structures to minimize impacts by using the shortest route feasible. The Permittee shall use construction mats to minimize impacts on access paths and construction areas. The Permittee shall submit the location of temporary workspaces and driveways with the plan and profile pursuant to Section 9.2.

5.3.6 Noise

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

5.3.7 Aesthetics

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

5.3.8 Soil Erosion and Sediment Control

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

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

5.3.9 Wetlands and Water Resources

The Permittee shall develop wetland impact avoidance measures and implement them during construction of the Transmission Facility. Measures shall include spacing and placing transmission structures at variable distances to span and avoid wetlands, watercourses, and floodplains. Unavoidable wetland impacts as a result of the placement of structures shall be limited to the immediate area around the structures. To minimize impacts, the Permittee shall construct in wetland areas during frozen ground conditions where practicable and according to

permit requirements by the applicable permitting authority. When construction during winter is not possible, the Permittee shall use wooden or composite mats to protect wetland vegetation.

The Permittee shall contain soil excavated from the wetlands and riparian areas and not place it back into the wetland or riparian area. The Permittee shall access wetlands and riparian areas using the shortest route possible in order to minimize travel through wetland areas and prevent unnecessary impacts. The Permittee shall not place staging or stringing set up areas within or adjacent to wetlands or water resources, as practicable. The Permittee shall assemble structures on upland areas before they are brought to the site for installation.

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

5.3.10 Vegetation Management

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

The Permittee shall remove tall growing species located within the transmission line right-of-way that endanger the safe and reliable operation of the transmission line. The Permittee shall leave undisturbed, to the extent possible, existing low growing species in the right-of-way or replant such species in the right-of-way to blend the difference between the right-of-way and adjacent areas, to the extent that the low growing vegetation will not pose a threat to the transmission line or impede construction.

The Permittees shall develop a vegetation management plan (VMP), in coordination with the Vegetation Management Plan Working Group (VMPWG), using best management practices established by the DNR and BWSR. The Permittee shall file the VMP and documentation of the coordination efforts between the Permittee and the DNR with the Commission as part of the plan and profile required in Section 9.2 of the Permit.

5.3.11 Application of Pesticides

The Permittee shall restrict pesticide use to those pesticides and methods of application approved by the Minnesota Department of Agriculture (MDA), DNR, and the U.S. Environmental Protection Agency (EPA). Selective foliage or basal application shall be used when practicable. All pesticides shall be applied in a safe and cautious manner so as not to damage adjacent properties including crops, orchards, tree farms, apiaries, or gardens. The Permittee shall contact the landowner at least 14 days prior to pesticide application on their property. The Permittee may not apply any pesticide if the landowner requests that there be no application of pesticides within the landowner's property. The Permittee shall provide notice of pesticide application to landowners and beekeepers operating known apiaries within three miles of the pesticide application area at least 14 days prior to such application. The Permittee shall use the MDA's Apiary Registry (https://mn.beecheck.org/map) to identify known apiaries for purposes of compliance with this condition. The Permittee shall keep pesticide communication and application records and provide them upon the request of Commission staff.

5.3.12 Invasive Species

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

5.3.13 Noxious Weeds

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

5.3.14 Roads

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

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

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

5.3.15 Archaeological and Historic Resources

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

The Permittee shall develop an Unanticipated Discoveries Plan (UDP) to identify guidelines to be used in the event previously unrecorded archeological or historic properties, or human remains, are encountered during construction, or if unanticipated effects to previously identified archaeological or historic properties occur during construction. The UDP is in addition to and not in lieu of any other obligations that may exist under law or regulation relating to these matters. The Permittee shall file the UDP with the Commission at least 14 days prior to the preconstruction meeting.

The Permittee shall train workers about the need to avoid cultural properties, how to identify cultural properties, and procedures to follow if undocumented cultural properties, including gravesites, are found during construction. If human remains are encountered during construction, the Permittee shall, in accordance with Minn. Stat. Ch. 307 (Private Cemeteries Act), immediately halt construction and promptly notify local law enforcement and the State Archaeologist. The Permittee shall not resume construction at such location until authorized by local law enforcement or the State Archaeologist. The Permittee shall keep records of compliance with this section and provide them upon the request of Commission staff.

5.3.16 Avian Protection

The Permittee in cooperation with the DNR shall identify areas of the transmission line where bird flight diverters will be incorporated into the transmission line design to prevent large avian

collisions attributed to visibility issues. Standard transmission design shall incorporate adequate spacing of conductors and grounding devices in accordance with Avian Power Line Interaction Committee standards to eliminate the risk of electrocution to raptors with larger wingspans that may simultaneously come in contact with a conductor and grounding devices. The Permittee shall submit documentation of its avian protection coordination with the plan and profile pursuant to Section 9.2.

5.3.17 Drainage Tiles

The Permittee shall avoid, promptly repair, or replace all drainage tiles broken or damaged during all phases of the Transmission Facility's life. The Permittee shall keep records of compliance with this section and provide them upon the request of Commission staff.

5.3.18 Restoration

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

5.3.19 Cleanup

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

5.3.20 Pollution and Hazardous Wastes

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

5.3.21 Damages

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

construction. The Permittee shall keep records of compliance with this section and provide them upon the request of Commission staff.

5.3.22 Facility Lighting

The Permittee shall use shielded and downward facing lighting and LED lighting that minimizes blue hue.

5.3.23 Dust Control

The Permittee shall utilize non-chloride products for onsite dust control during construction.

5.3.24 Wildlife Friendly Erosion Control

The Permittee shall use only "bio-netting" or "natural netting" types of erosion control materials and mulch products without synthetic (plastic) fiber additives or malachite green dye.

5.4 Electrical Performance Standards

5.4.1 Grounding

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

5.4.2 Electric Field

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

5.4.3 Interference with Communication Devices

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

5.5 Other Requirements

5.5.1 Safety Codes and Design Requirements

The Permittee shall design the transmission line and associated facilities to meet or exceed all relevant local and state codes, the National Electric Safety Code, and North American Electric Reliability Corporation requirements. This includes standards relating to clearances to ground, clearance to crossing utilities, clearance to buildings, strength of materials, clearances over roadways, right-of-way widths, and permit requirements.

5.5.2 Other Permits and Regulations

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

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

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

6 DELAY IN CONSTRUCTION

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

7 COMPLAINT PROCEDURES

At least 14 days prior to the pre-construction meeting, the Permittee shall file with the Commission the complaint procedures that will be used to receive and respond to complaints. The complaint procedures shall be in accordance with the requirements of Minn. R. 7829.1500 or Minn. R. 7829.1700, and as set forth in the complaint procedures attached to this route permit.

Upon request, the Permittee shall assist Commission staff with the disposition of unresolved or longstanding complaints. This assistance shall include, but is not limited to, the submittal of complaint correspondence and complaint resolution efforts.

8 COMPLIANCE REQUIREMENTS

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

8.1 Pre-Construction Meeting

Prior to the start of construction, the Permittee shall participate in a pre-construction meeting with Commission staff to review pre-construction filing requirements, scheduling, and to coordinate monitoring of construction and site restoration activities. Within 14 days following the pre-construction meeting, the Permittee shall file with the Commission a summary of the topics reviewed and discussed and a list of attendees. The Permittee shall indicate in the filing the anticipated construction start date.

8.2 Plan and Profile

At least 14 days prior to the pre-construction meeting, the Permittee shall file with the Commission, and provide the counties where the Transmission Facility, or portion of the Transmission Facility, will be constructed with a plan and profile of the right-of-way and the specifications and drawings for right-of-way preparation, construction, structure specifications and locations, cleanup, and restoration for the Transmission Facility. The documentation shall

include maps depicting the plan and profile including the right-of-way, alignment, and structures in relation to the route and alignment approved by this route permit.

The Permittee may not commence construction until the earlier of (i) 30 days after the pre-construction meeting or (ii) until the Commission staff has notified the Permittee in writing that it has completed its review of the documents and determined that the planned construction is consistent with this route permit.

If the Commission notifies the Permittee in writing within 30 days after the pre-construction meeting that it has completed its review of the documents and planned construction, and finds that the planned construction is not consistent with this route permit, the Permittee may submit additional and/or revised documentation and may not commence construction until the Commission has notified the Permittee in writing that it has determined that the planned construction is consistent with this route permit.

If the Permittee intends to make any significant changes in its plan and profile or the specifications and drawings after submission to the Commission, the Permittee shall notify the Commission and county staff at least five days before implementing the changes. No changes shall be made that would be in violation of any of the terms of this route permit.

8.3 Status Reports

The Permittee shall file with the Commission monthly Construction Status Reports beginning with the pre-construction meeting and until completion of restoration. Construction Status Reports shall describe construction activities and progress, activities undertaken in compliance with this route permit, and shall include text and photographs.

If the Permittee does not commence construction of the Transmission Facility within six months of this route permit issuance, the Permittee shall file with the Commission Pre-Construction Status Reports on the anticipated timing of construction every six months beginning with the issuance of this route permit until the pre-construction meeting. The Status Reports shall include information on the Project's Midcontinent Independent System Operator (MISO) interconnection process, if applicable.

8.4 Labor Statistic Reporting

The Permittee shall file quarterly Labor Statistic Reports with the Commission within 45 days of the end of the quarter regarding construction workers that participated in the construction of the Project. The Labor Statistic Reports shall:

A. detail the Permittee's efforts and the site contractor's efforts to hire Minnesota workers; and

B. provide an account of:

1) the gross number of hours worked by or full-time equivalent workers who are Minnesota residents, as defined in Minn. Stat. § 290.01, subd. 7;
2) the gross number of hours worked by or full-time equivalent workers who are residents of other states, but maintain a permanent residence within 150 miles of the Project; and
3) the total gross hours worked or total full-time equivalent workers.

The Permittee shall work with its contractor to determine the suitable reporting metric. The report may not include personally identifiable data.

8.5 Prevailing Wage

The Permittee, its contractors, and subcontractors shall (1) pay no less than the prevailing wage rate as defined in Minn. Stat. § 177.42; and (2) shall be subject to the requirements and enforcement provisions under Minn. Stat. §§ 177.27, 177.30, 177.32, 177.41 to 177.435, and 177.45. The Permittee shall keep records of contractor and subcontractor pay and provide them at the request of Commission staff.

8.6 In-Service Date

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

8.7 As-Builts

Within 90 days after completion of construction, the Permittee shall submit to the Commission copies of all final as-built plans and specifications developed during the Transmission Facility construction.

8.8 GPS Data

Within 90 days after completion of construction, the Permittee shall submit to the Commission, in the format requested by the Commission, geo-spatial information (*e.g.*, ArcGIS compatible

map files, GPS coordinates, associated database of characteristics) for all structures associated with the Transmission Facility and each substation connected.

8.9 Right of Entry

The Permittee shall allow Commission designated representatives to perform the following, upon reasonable notice, upon presentation of credentials and at all times in compliance with the Permittee's site safety standards:

A. To enter upon the facilities easement of the property for the purpose of obtaining information, examining records, and conducting surveys or investigations.

B. To bring such equipment upon the facilities easement of the property as is necessary to conduct such surveys and investigations.

C. To sample and monitor upon the facilities easement of the property.

D. To examine and copy any documents pertaining to compliance with the conditions of this route permit.

9 ROUTE PERMIT AMENDMENT

The Commission has the authority to modify this route permit at any time. The Permittee may request an amendment of the conditions of this route permit by submitting a request to the Commission in writing describing the amendment sought and the reasons for the amendment. The Commission may amend the conditions after affording the Permittee and interested persons such process as is required under Minn. R. 7850.4900.

10 TRANSFER OF ROUTE PERMIT

The Permittee may request at any time that the Commission transfer this route permit to another person or entity (transferee). In its request, the Permittee must provide the Commission with:

A. the name and description of the transferee;
B. the reasons for the transfer;
C. a description of the facilities affected; and
D. the proposed effective date of the transfer.

The transferee must provide the Commission with a certification that it has read, understands and is able to comply with the plans and procedures filed for the Transmission Facility and all

conditions of this route permit. The Commission may authorize transfer of the route permit after affording the Permittee, the transferee, and interested persons such process as is required under Minn. R. 7850.5000.

11 REVOCATION OR SUSPENSION OF ROUTE PERMIT

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

Appendix H

Protected Species

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Minnesota-Wisconsin Ecological Services Field Office
3815 American Blvd East
Bloomington, MN 55425-1659
Phone: (952) 858-0793

In Reply Refer To: 09/26/2025 15:19:59 UTC
Project Code: 2025-0155237
Project Name: Lyon County Generation Station Project

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

This response has been generated by the Information, Planning, and Conservation (IPaC) system to provide information on natural resources that could be affected by your project. The U.S. Fish and Wildlife Service (Service) provides this response under the authority of the Endangered Species Act of 1973 (16 U.S.C. 1531-1543), the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d), the Migratory Bird Treaty Act (16 U.S.C. 703-712), and the Fish and Wildlife Coordination Act (16 U.S.C. 661 *et seq.*).

Threatened and Endangered Species
The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and may be affected by your proposed project. The species list fulfills the requirement for obtaining a Technical Assistance Letter from the U.S. Fish and Wildlife Service under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. The Service recommends that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the IPaC system by completing the same process used to receive the enclosed list.

Consultation Technical Assistance
Please refer to refer to our Section 7 website for guidance and technical assistance, including step-by-step instructions for making effects determinations for each species that might be present and for specific guidance on the following types of projects: projects in developed areas, HUD, CDBG, EDA, USDA Rural Development projects, pipelines, buried utilities, telecommunications, and requests for a Conditional Letter of Map Revision (CLOMR) from FEMA.

We recommend running the project (if it qualifies) through our **Minnesota-Wisconsin Federal Endangered Species Determination Key (Minnesota-Wisconsin ("D-key"))**. A demonstration video showing how-to access and use the determination key is available. Please note that the Minnesota-Wisconsin D-key is the third option of 3 available d-keys. D-keys are tools to help Federal agencies and other project proponents determine if their proposed action has the potential to adversely affect federally listed species and designated critical habitat. The Minnesota-Wisconsin D-key includes a structured set of questions that assists a project proponent in determining whether a proposed project qualifies for a certain predetermined consultation outcome for all federally listed species found in Minnesota and Wisconsin (except for the northern long-eared bat- see below), which includes determinations of “no effect” or “may affect, not likely to adversely affect." In each case, the Service has compiled and analyzed the best available information on the species’ biology and the impacts of certain activities to support these determinations.

If your completed d-key output letter shows a "No Effect" (NE) determination for all listed species, print your IPaC output letter for your files to document your compliance with the Endangered Species Act.

For Federal projects with a “Not Likely to Adversely Affect” (NLAA) determination, our concurrence becomes valid if you do not hear otherwise from us after a 30-day review period, as indicated in your letter.

If your d-key output letter indicates additional coordination with the Minnesota-Wisconsin Ecological Services Field Office is necessary (i.e., you get a “May Affect” determination), you will be provided additional guidance on contacting the Service to continue ESA coordination outside of the key; ESA compliance cannot be concluded using the key for “May Affect” determinations unless otherwise indicated in your output letter.

Note: Once you obtain your official species list, you are not required to continue in IPaC with d-keys, although in most cases these tools should expedite your review. If you choose to make an effects determination on your own, you may do so. If the project is a Federal Action, you may want to review our section 7 step-by-step instructions before making your determinations.

Using the IPaC Official Species List to Make No Effect and May Affect Determinations for Listed Species

1. If IPaC returns a result of “There are no listed species found within the vicinity of the project,” then project proponents can conclude the proposed activities will have **no effect** on any federally listed species under Service jurisdiction. Concurrence from the Service is not required for **no effect** determinations. No further consultation or coordination is required. Attach this letter to the dated IPaC species list report for your records.
2. If IPaC returns one or more federally listed, proposed, or candidate species as potentially present in the action area of the proposed project – other than bats (see below) – then project proponents must determine if proposed activities will have **no effect** on or **may affect** those species. For assistance in determining if suitable habitat for listed, candidate, or proposed species occurs within your project area or if species may be affected by project activities, you can obtain Life History Information for Listed and Candidate Species on our office website. If no impacts will occur to a species on the IPaC species list (e.g., there is no habitat present in the project area), the appropriate determination is **no effect**. No further consultation or coordination is required. Attach this letter to the dated IPaC species list report for your records.

3. Should you determine that project activities **may affect** any federally listed, please contact our office for further coordination. Letters with requests for consultation or correspondence about your project should include the Consultation Tracking Number in the header. Electronic submission is preferred.

Northern Long-Eared Bats
Northern long-eared bats occur throughout Minnesota and Wisconsin and the information below may help in determining if your project may affect these species.

Suitable summer habitat for northern long-eared bats consists of a wide variety of forested/wooded habitats where they roost, forage, and travel and may also include some adjacent and interspersed non-forested habitats such as emergent wetlands and adjacent edges of agricultural fields, old fields and pastures. This includes forests and woodlots containing potential roosts (i.e., live trees and/or snags ≥3 inches dbh for northern long-eared bat that have exfoliating bark, cracks, crevices, and/or hollows), as well as linear features such as fencerows, riparian forests, and other wooded corridors. These wooded areas may be dense or loose aggregates of trees with variable amounts of canopy closure. Individual trees may be considered suitable habitat when they exhibit the characteristics of a potential roost tree and are located within 1,000 feet (305 meters) of forested/wooded habitat. Northern long-eared bats have also been observed roosting in human-made structures, such as buildings, barns, bridges, and bat houses; therefore, these structures should also be considered potential summer habitat and evaluated for use by bats. If your project will impact caves or mines or will involve clearing forest or woodland habitat containing suitable roosting habitat, northern long-eared bats could be affected. For bat activity dates, please review Appendix L in the Range-wide Indiana Bat and Northern Long-Eared Bat Survey Guidelines.

Examples of unsuitable habitat include:
- Individual trees that are greater than 1,000 feet from forested or wooded areas,
- Trees found in highly developed urban areas (e.g., street trees, downtown areas),
- A pure stand of less than 3-inch dbh trees that are not mixed with larger trees, and
- A monoculture stand of shrubby vegetation with no potential roost trees.

If IPaC returns a result that northern long-eared bats are potentially present in the action area of the proposed project, project proponents can conclude the proposed activities **may affect** this species **IF** one or more of the following activities are proposed:
- Clearing or disturbing suitable roosting habitat, as defined above, at any time of year,
- Any activity in or near the entrance to a cave or mine,
- Mining, deep excavation, or underground work within 0.25 miles of a cave or mine,
- Construction of one or more wind turbines, or
- Demolition or reconstruction of human-made structures that are known to be used by bats based on observations of roosting bats, bats emerging at dusk, or guano deposits or stains.

If none of the above activities are proposed, project proponents can conclude the proposed activities will have **no effect** on the northern long-eared bat. Concurrence from the Service is not required for **No Effect** determinations. No further consultation or coordination is required. Attach this letter to the dated IPaC

species list report for your records.

If any of the above activities are proposed, and the northern long-eared bat appears on the user's species list, the federal project user will be directed to either the northern long-eared bat and tricolored bat range-wide D-key or the Federal Highways Administration, Federal Railways Administration, and Federal Transit Administration Indiana bat/Northern long-eared bat D-key, depending on the type of project and federal agency involvement. Similar to the Minnesota-Wisconsin D-key, these d-keys helps to determine if prohibited take might occur and, if not, will generate an automated verification letter. Additional information about available tools can be found on the Service's northern long-eared bat website.

Whooping Crane
Whooping crane is designated as a non-essential experimental population in Wisconsin and consultation under Section 7(a)(2) of the Endangered Species Act is only required if project activities will occur within a National Wildlife Refuge or National Park. If project activities are proposed on lands outside of a National Wildlife Refuge or National Park, then you are not required to consult. For additional information on this designation and consultation requirements, please review "Establishment of a Nonessential Experimental Population of Whooping Cranes in the Eastern United States."

Other Trust Resources and Activities
Bald and Golden Eagles - Although the bald eagle has been removed from the endangered species list, this species and the golden eagle are protected by the Bald and Golden Eagle Act and the Migratory Bird Treaty Act. It is the responsibility of the project proponent to survey the area for any migratory bird nests. If there is an eagle nest on-site while work is on-going, eagles may be disturbed. We recommend avoiding and minimizing disturbance to eagles whenever practicable. If you cannot avoid eagle disturbance, you may seek a permit. A nest take permit is always required for removal, relocation, or obstruction of an eagle nest. For communication and wind energy projects, please refer to additional guidelines below.

Migratory Birds - The Migratory Bird Treaty Act (MBTA) prohibits the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests, except when specifically authorized by the Service. The Service has the responsibility under the MBTA to proactively prevent the mortality of migratory birds whenever possible and we encourage implementation of recommendations that minimize potential impacts to migratory birds. Such measures include clearing forested habitat outside the nesting season (generally March 1 to August 31) or conducting nest surveys prior to clearing to avoid injury to eggs or nestlings.

Communication Towers - Construction of new communications towers (including radio, television, cellular, and microwave) creates a potentially significant impact on migratory birds, especially some 350 species of night-migrating birds. However, the Service has developed voluntary guidelines for minimizing impacts.

Transmission Lines - Migratory birds, especially large species with long wingspans, heavy bodies, and poor maneuverability can also collide with power lines. In addition, mortality can occur when birds, particularly hawks, eagles, kites, falcons, and owls, attempt to perch on uninsulated or unguarded power poles. To minimize these risks, please refer to guidelines developed by the Avian Power Line Interaction Committee and the Service. Implementation of these measures is especially important along sections of lines adjacent to wetlands or other areas that support large numbers of raptors and migratory birds.

Wind Energy - To minimize impacts to migratory birds and bats, wind energy projects should follow the Service's Wind Energy Guidelines. In addition, please refer to the Service's Eagle Conservation Plan Guidance, which provides guidance for conserving bald and golden eagles in the course of siting, constructing, and operating wind energy facilities.

State Department of Natural Resources Coordination
While it is not required for your Federal section 7 consultation, please note that additional state endangered or threatened species may also have the potential to be impacted. **Please contact the Minnesota or Wisconsin Department of Natural Resources for information on state listed species that may be present in your proposed project area.**

Minnesota
Minnesota Department of Natural Resources - Endangered Resources Review Homepage
Email: Review.NHIS@state.mn.us

Wisconsin
Wisconsin Department of Natural Resources - Endangered Resources Review Homepage
Email: DNRERReview@wi.gov

We appreciate your concern for threatened and endangered species. Please feel free to contact our office with questions or for additional information.

Attachment(s):

- Official Species List
- Bald & Golden Eagles
- Migratory Birds

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

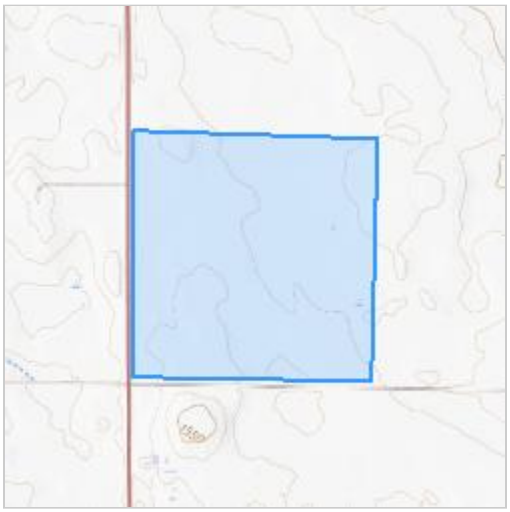
Minnesota-Wisconsin Ecological Services Field Office
3815 American Blvd East
Bloomington, MN 55425-1659
(952) 858-0793

PROJECT SUMMARY

Project Code: 2025-0155237
Project Name: Lyon County Generation Station Project
Project Type: Power Gen - Other
Project Description: Northern States Power Company, a Minnesota corporation, doing business as Xcel Energy is proposing to construct the Lyon County Generating Station Project, which would provide firm dispatchable generation to ensure reliable service to Xcel Energy's customers. The project includes two 210 MW combustion turbines and associated facilities, including on-site operation facilities, water bath heater, emergency diesel fire pump, and emergency diesel generators and two short transmission line connections. The project also includes an approximately 965-foot natural gas pipeline, consisting of approximately 700 feet of 12-inch diameter pipe and two "branches" of eight-inch diameter pipe, each connecting to a Generator, and associated facilities.

Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@44.228918300000004,-95.74987119811708,14z



Counties: Lyon County, Minnesota

ENDANGERED SPECIES ACT SPECIES

There is a total of 2 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus* There is **proposed** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/9743	Proposed Threatened
Suckley's Cuckoo Bumble Bee *Bombus suckleyi* Population: No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/10885	Proposed Endangered

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

BALD & GOLDEN EAGLES

Bald and Golden Eagles are protected under the Bald and Golden Eagle Protection Act [2] and the Migratory Bird Treaty Act (MBTA) [1]. Any person or organization who plans or conducts activities that may result in impacts to Bald or Golden Eagles, or their habitats, should follow appropriate regulations and consider implementing appropriate avoidance and minimization measures, as described in the various links on this page.

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1. The Bald and Golden Eagle Protection Act of 1940.
2. The Migratory Birds Treaty Act of 1918.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

There are Bald Eagles and/or Golden Eagles in your project area.

Measures for Proactively Minimizing Eagle Impacts
For information on how to best avoid and minimize disturbance to nesting bald eagles, please review the National Bald Eagle Management Guidelines. You may employ the timing and activity-specific distance recommendations in this document when designing your project/ activity to avoid and minimize eagle impacts. For bald eagle information specific to Alaska, please refer to Bald Eagle Nesting and Sensitivity to Human Activity.

The FWS does not currently have guidelines for avoiding and minimizing disturbance to nesting Golden Eagles. For site-specific recommendations regarding nesting Golden Eagles, please consult with the appropriate Regional Migratory Bird Office or Ecological Services Field Office.

If disturbance or take of eagles cannot be avoided, an incidental take permit may be available to authorize any take that results from, but is not the purpose of, an otherwise lawful activity. For assistance making this determination for Bald Eagles, visit the Do I Need A Permit Tool. For assistance making this determination for golden eagles, please consult with the appropriate Regional Migratory Bird Office or Ecological Services Field Office.

Ensure Your Eagle List is Accurate and Complete
If your project area is in a poorly surveyed area in IPaC, your list may not be complete and you may need to rely on other resources to determine what species may be present (e.g. your local FWS field office, state surveys, your own surveys). Please review the Supplemental Information on Migratory Birds and Eagles, to help you properly interpret the report for your specified location, including determining if there is sufficient data to ensure your list is accurate.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to bald or golden eagles on your list, see the "Probability of Presence Summary" below to see when these bald or golden eagles are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Dec 1 to Aug 31

PROBABILITY OF PRESENCE SUMMARY

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

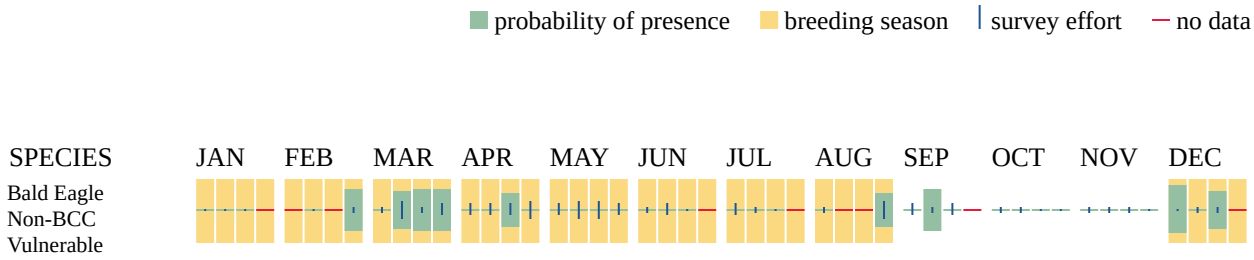
Probability of Presence (■)

Green bars; the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during that week of the year.

Breeding Season (■)
Yellow bars; liberal estimate of the timeframe inside which the bird breeds across its entire range.

Survey Effort (|)
Vertical black lines; the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data (–)
A week is marked as having no data if there were no survey events for that week.



Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide avoidance and minimization measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

MIGRATORY BIRDS

The Migratory Bird Treaty Act (MBTA) [1] prohibits the take (including killing, capturing, selling, trading, and transport) of protected migratory bird species without prior authorization by the Department of Interior U.S. Fish and Wildlife Service (Service).

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the "Probability of Presence Summary" below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
American Golden-plover *Pluvialis dominica* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/10561	Breeds elsewhere

NAME	BREEDING SEASON
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Dec 1 to Aug 31
Black Tern *Chlidonias niger surinamenisis* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3093	Breeds May 15 to Aug 20
Bobolink *Dolichonyx oryzivorus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9454	Breeds May 20 to Jul 31
Eastern Whip-poor-will *Antrostomus vociferus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/10678	Breeds May 1 to Aug 20
Franklin's Gull *Leucophaeus pipixcan* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/10567	Breeds May 1 to Jul 31
Golden-winged Warbler *Vermivora chrysoptera* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8745	Breeds May 1 to Jul 20
Grasshopper Sparrow *Ammodramus savannarum perpallidus* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/8329	Breeds Jun 1 to Aug 20
Henslow's Sparrow *Centronyx henslowii* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3941	Breeds May 1 to Aug 31
Hudsonian Godwit *Limosa haemastica* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9482	Breeds elsewhere
Lesser Yellowlegs *Tringa flavipes* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9679	Breeds elsewhere

NAME	BREEDING SEASON
Northern Harrier *Circus hudsonius* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/8350	Breeds Apr 1 to Sep 15
Pectoral Sandpiper *Calidris melanotos* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9561	Breeds elsewhere
Red-headed Woodpecker *Melanerpes erythrocephalus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9398	Breeds May 10 to Sep 10
Short-billed Dowitcher *Limnodromus griseus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9480	Breeds elsewhere
Willet *Tringa semipalmata* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/10669	Breeds Apr 20 to Aug 5

PROBABILITY OF PRESENCE SUMMARY

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

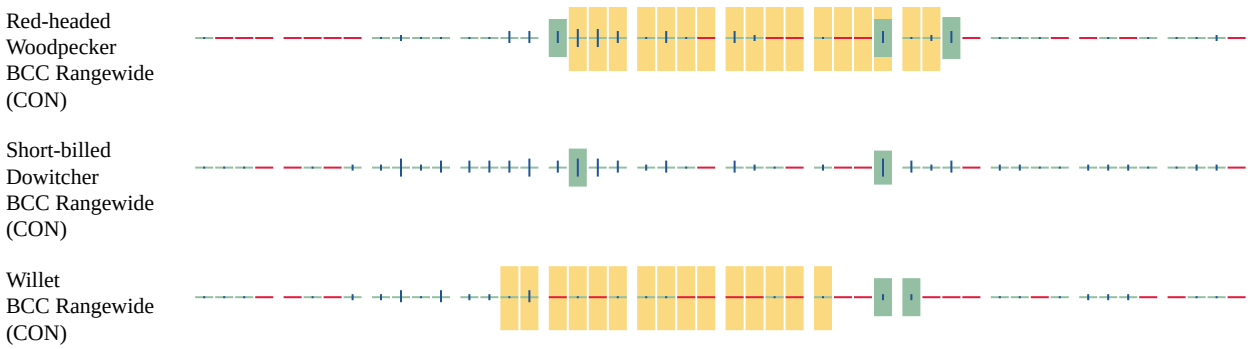
Green bars; the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during that week of the year.

Breeding Season (■)
Yellow bars; liberal estimate of the timeframe inside which the bird breeds across its entire range.

Survey Effort (|)
Vertical black lines; the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data (–)
A week is marked as having no data if there were no survey events for that week.


probability of presence
breeding season
survey effort
no data
SPECIES
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC
American Golden-plover BCC Rangewide (CON)
Bald Eagle Non-BCC Vulnerable
Black Tern BCC Rangewide (CON)
Bobolink BCC Rangewide (CON)
Eastern Whip-poor-will BCC Rangewide (CON)
Franklin's Gull BCC Rangewide (CON)
Golden-winged Warbler BCC Rangewide (CON)
Grasshopper Sparrow BCC - BCR
Henslow's Sparrow BCC Rangewide (CON)
Hudsonian Godwit BCC Rangewide (CON)
Lesser Yellowlegs BCC Rangewide (CON)
Northern Harrier BCC - BCR
SPECIES
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC
Pectoral Sandpiper BCC Rangewide (CON)



Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide avoidance and minimization measures for birds
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

IPAC USER CONTACT INFORMATION

Agency:	Barr Engineering
Name:	Jess Butler
Address:	4300 MarketPointe Drive
Address Line 2:	Suite 200
City:	Minneapolis
State:	MN
Zip:	55435
Email	jbutler@barr.com
Phone:	9528322694

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Minnesota-Wisconsin Ecological Services Field Office
3815 American Blvd East
Bloomington, MN 55425-1659
Phone: (952) 858-0793

In Reply Refer To: 10/16/2025 19:46:58 UTC
Project code: 2025-0155237
Project Name: Lyon County Generation Station Project

Subject: Technical Assistance letter for 'Lyon County Generation Station Project' for specified threatened and endangered species that may occur in your proposed project location consistent with the Minnesota-Wisconsin Endangered Species Determination Key (Minnesota-Wisconsin DKey).

Dear Jess Butler:

The U.S. Fish and Wildlife Service (Service) received on **October 16, 2025** your effect determination(s) for the 'Lyon County Generation Station Project' (Action) using the Minnesota-Wisconsin DKey within the Service's Information for Planning and Consultation (IPaC) system. The Service developed this system in accordance with the Endangered Species Act of 1973 (ESA) (87 Stat. 884, as amended; 16 U.S.C 1531 et seq.).

Based on your responses to the Service's Minnesota-Wisconsin DKey, you made the following effect determination(s) for the proposed Action:

Species	Listing Status	Determination
Monarch Butterfly (*Danaus plexippus*)	Proposed Threatened	No effect

Determination Information

Thank you for informing the Service of your "No Effect" determination(s). No further coordination is necessary for the species you determined will not be affected by the Action.

Additional Information

Sufficient project details: Please provide sufficient project details on your project homepage in IPaC (Define Project, Project Description) to support your conclusions. Failure to disclose important aspects of your project that would influence the outcome of your effects determinations may negate your determinations and invalidate this letter. If you have site-specific information that leads you to believe a different determination is more appropriate for your project than what the Dkey concludes, you can and should proceed based on the best available information.

Future project changes: The Service recommends that you contact the Minnesota-Wisconsin Ecological Services Field Office or re-evaluate the project in IPaC if: 1) the scope or location of the proposed Action is changed; 2) new information reveals that the action may affect federally listed species or federally designated critical habitat in a manner or to an extent not previously considered; 3) the Action is modified in a manner that causes effects to listed species or designated critical habitat; or 4) a new species is listed or critical habitat designated. If any of the above conditions occurs, additional consultation with the Service should take place before project changes are final or resources committed.

For projects that intersect with or are adjacent to Tribal lands: The Service has federal Trust responsibilities and a strong commitment to working with Tribal governments to help sustain fish and wildlife resources for future generations. Tribal governments should be provided with sufficient opportunity to express their perspectives and/or concerns for proposed projects. If your project intersects with Tribal lands or impacts culturally sensitive resources, please engage with the federally recognized Tribe to ensure they have an opportunity to provide input on this project.

Species-specific information

Bald and Golden Eagles: Bald eagles, golden eagles, and their nests are protected under the Bald and Golden Eagle Protection Act (54 Stat. 250, as amended, 16 U.S.C. 668a-d) (Eagle Act). The Eagle Act prohibits, except when authorized by an Eagle Act permit, the “taking” of bald and golden eagles and defines “take” as “pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb.” The Eagle Act’s implementing regulations define disturb as “… to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, (1) injury to an eagle, (2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or (3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior.”

Additional Species Requiring Review

In addition to the species described above, the following species or critical habitats may also occur in your project area and are not covered by this conclusion:

- Suckley's Cuckoo Bumble Bee *Bombus suckleyi* Proposed Endangered

Coordination with the Service is not complete if additional coordination is advised above for any species.

Action Description
You provided to IPaC the following name and description for the subject Action.

1. Name

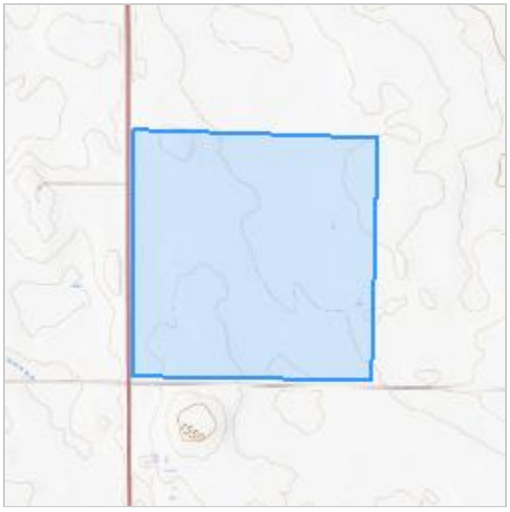
Lyon County Generation Station Project

2. Description

The following description was provided for the project 'Lyon County Generation Station Project':

> Northern States Power Company, a Minnesota corporation, doing business as Xcel Energy is proposing to construct the Lyon County Generating Station Project, which would provide firm dispatchable generation to ensure reliable service to Xcel Energy’s customers. The project includes two 210 MW combustion turbines and associated facilities, including on-site operation facilities, water bath heater, emergency diesel fire pump, and emergency diesel generators and two short transmission line connections. The project also includes an approximately 965-foot natural gas pipeline, consisting of approximately 700 feet of 12-inch diameter pipe and two “branches” of eight-inch diameter pipe, each connecting to a Generator, and associated facilities.

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@44.228918300000004,-95.74987119811708,14z



QUALIFICATION INTERVIEW

1. This determination key is intended to assist the user in evaluating the effects of their actions on Federally listed species in Minnesota and Wisconsin. It does not cover other prohibited activities under the Endangered Species Act (e.g., for wildlife: import/export, Interstate or foreign commerce, possession of illegally taken wildlife, etc.; for plants: import/export, reduce to possession, malicious destruction on Federal lands, commercial sale, etc.) or other statutes. Additionally, this key DOES NOT cover wind development, purposeful take (e.g., for research or surveys), communication towers that have guy wires or are over 450 feet in height, aerial or other large-scale application of any chemical (such as insecticide or herbicide), and approval of long-term permits or plans (e.g., FERC licenses, HCP's).

   Click **YES** to acknowledge that you must consider other prohibitions of the ESA or other statutes outside of this determination key.

   Yes
2. Is the action being funded, authorized, or carried out by a Federal agency?

   No
3. Does the action involve the installation or operation of wind turbines?

   No
4. Does the action involve purposeful take of a listed animal?

   No
5. Does the action involve a new communications tower?

   No
6. Does the activity involve aerial or other large-scale application of ANY chemical, including pesticides (insecticide, herbicide, fungicide, rodenticide, etc)?

   No
7. Will your action permanently affect local hydrology?

   No
8. Will your action temporarily affect local hydrology?

   No
9. Will your project have any direct impacts to a stream or river (e.g., Horizontal Directional Drilling (HDD), hydrostatic testing, stream/road crossings, new stormwater outfall discharge, dams, other in-stream work, etc.)?

   No

10. Does your project have the potential to impact the riparian zone or indirectly impact a stream/river (e.g., cut and fill; horizontal directional drilling; construction; vegetation removal; pesticide or fertilizer application; discharge; runoff of sediment or pollutants; increase in erosion, etc.)?

    Note: Consider all potential effects of the action, including those that may happen later in time and outside and downstream of the immediate area involved in the action.

    Endangered Species Act regulation defines "effects of the action" to include all consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action. (50 CFR 402.02).

    No

11. Will your action disturb the ground or existing vegetation?

    Note: This includes any off-road vehicle access, soil compaction (enough to collapse a rodent burrow), digging, seismic survey, directional drilling, heavy equipment, grading, trenching, placement of fill, pesticide application (herbicide, fungicide), vegetation management (including removal or maintenance using equipment or prescribed fire), cultivation, development, etc.

    Yes

12. Will your action include spraying insecticides?

    No

13. Does your action area occur entirely within an already developed area?

    Note: Already developed areas are already paved, covered by existing structures, manicured lawns, industrial sites, or cultivated cropland, AND do not contain trees that could be roosting habitat. Be aware that listed species may occur in areas with natural, or semi-natural, vegetation immediately adjacent to existing utilities (e.g. roadways, railways) or within utility rights-of-way such as overhead transmission line corridors, and can utilize suitable trees, bridges, or culverts for roosting even in urban dominated landscapes (so these are not considered "already developed areas" for the purposes of this question). If unsure, select NO..

    Yes

14. Does the action have potential indirect effects to listed species or the habitats they depend on (e.g., water discharge into adjacent habitat or waterbody, changes in groundwater elevation, introduction of an exotic plant species)?

    No

15. [Hidden Semantic] Does the action area intersect the monarch butterfly species list area?

    Automatically answered

    Yes

IPAC USER CONTACT INFORMATION

Agency: Barr Engineering
Name: Jess Butler
Address: 4300 MarketPointe Drive
Address Line 2: Suite 200
City: Minneapolis
State: MN
Zip: 55435
Email jbutler@barr.com
Phone: 9528322694

LEAD AGENCY CONTACT INFORMATION

Lead Agency: Minnesota Department of Commerce Public Utilities

DEPARTMENT OF NATURAL RESOURCES

Formal Natural Heritage Review - Cover Page

See next page for results of review. A draft watermark means the project details have not been finalized and the results are not official.

Project Name: Lyon County Generating Station Project

Project Proposer: Xcel Energy

Project Type: Power, Other

Project Type Activities: Other

TRS: T109 R41 S23

County(s): Lyon

DNR Admin Region(s): South

Reason Requested: PUC Site or Route Application

Project Description: Northern States Power Company, d/b/a Xcel Energy (Xcel Energy) is proposing to construct the Lyon County Generating Station in Lyon County, Minnesota (Project). ...

Existing Land Uses:

Landcover / Habitat Impacted:

Waterbodies Affected:

Groundwater Resources Affected:

Previous Natural Heritage Review: Yes, ERDB#: 2025-00144

Previous Habitat Assessments / Surveys: No

SUMMARY OF AUTOMATED RESULTS

Category	Results	Response By Category
Project Details	No Comments	No Further Review Required
Ecologically Significant Area	No Comments	No Further Review Required
State-Listed Endangered or Threatened Species	No Comments	No Further Review Required
State-Listed Species of Special Concern	No Comments	No Further Review Required
Federally Listed Species	No Records	Visit IPaC For Federal Review

DEPARTMENT OF NATURAL RESOURCES

Minnesota Department of Natural Resources
Division of Ecological & Water Resources
500 Lafayette Road, Box 25
St. Paul, MN 55155-4025

March 16, 2025

Project ID: MCE #2025-00277

Tyler Beemer
Burns & McDonnell
8201 Norman Center Drive, Suite 500
Bloomington, MN 55437

RE: Automated Natural Heritage Review of the proposed Lyon County Generating Station Project
See Cover Page for location and project details.

Dear Tyler Beemer,

As requested, the above project has been reviewed for potential effects to rare features. Given the project details provided on the cover page, I do not believe the proposed project will negatively affect any known occurrences of rare features. To ensure compliance with federal law, conduct a federal regulatory review using the U.S. Fish and Wildlife Service's (USFWS) online Information for Planning and Consultation (IPaC) tool.

The Natural Heritage Information System (NHIS), a collection of databases that contains information about Minnesota's rare natural features, is maintained by the Division of Ecological and Water Resources, Department of Natural Resources. The NHIS is continually updated as new information becomes available, and is the most complete source of data on Minnesota's rare or otherwise significant species, native plant communities, and other natural features. However, the NHIS is not an exhaustive inventory and thus does not represent all of the occurrences of rare features within the state. Therefore, ecologically significant features for which we have no records may exist within the project area. If additional information becomes available regarding rare features in the vicinity of the project, further review may be necessary.

For environmental review purposes, the results of this Natural Heritage Review are valid for one year; the results are only valid for the project location and the project description provided on the cover page. If project details change or construction has not occurred within one year, please resubmit the project for review before initiating project activities.

The Natural Heritage Review does not constitute project approval by the Department of Natural Resources. Instead, it identifies issues regarding known occurrences of rare features and potential impacts to these rare features. For information on the environmental review process or other natural resource concerns, you may contact your DNR Regional Environmental Assessment Ecologist.

Thank you for consulting us on this matter, and for your interest in preserving Minnesota's rare natural resources.

Sincerely, *The Natural Heritage Review Team* Natural Heritage Review Program
Review.NHIS@state.mn.us

Links: USFWS Information for Planning and Consultation (IPaC) tool
Information for Planning and Consultation (IPaC) tool
DNR Regional Environmental Assessment Ecologist Contact Info
https://www.dnr.state.mn.us/eco/ereview/erp_regioncontacts.html

Lyon County Generating Station Project

Aerial Imagery With Locator Map

N
W E
S

0 0.15 0.3 0.6 0.9 1.2
Miles

Project Boundary

Project Type: Power, Other

Project Size (acres): 152.20

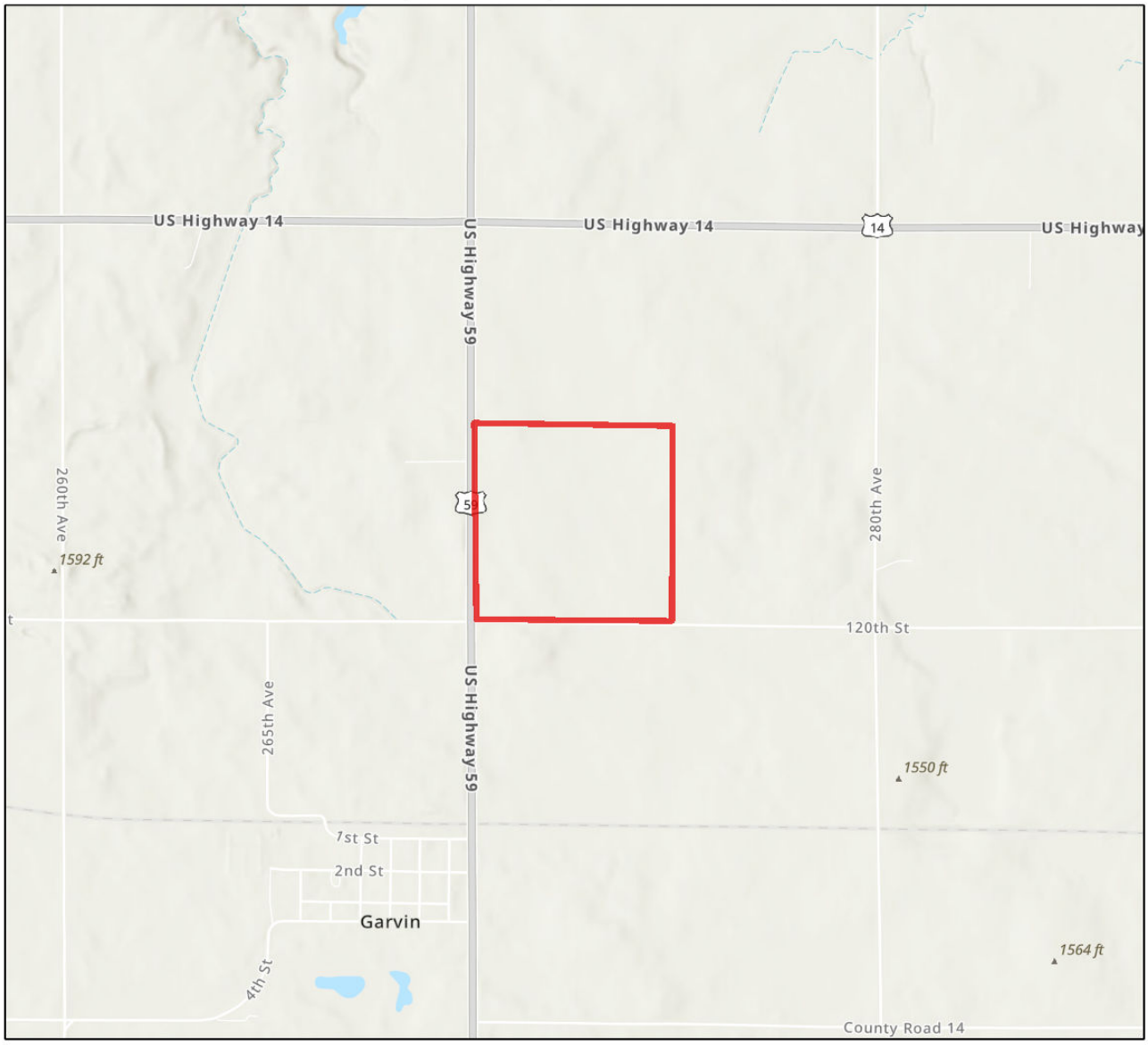
County(s): Lyon

TRS: T109 R41 S23

Esri, TomTom, Garmin, FAO, NOAA, USGS, EPA, USFWS
Maxar
Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS,

Lyon County Generating Station Project

USA Topo Basemap With Locator Map



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Project Type: Power, Other

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Esri, NASA, NGA, USGS, FEMA
Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS,

Appendix I

GHG Calculations

Table 1 Construction Greenhouse Gas Emissions Summary

Emission Source	CO_2 (metric tons)	CH_4 (metric tons)	N_2O (metric tons)	CO_2e (metric tons)[1]
Construction Equipment	14,242	0.58	0.12	14,289
TOTAL	**14,242**	**0.58**	**0.12**	**14,289**

[1] CO2e calculated by multiplying the Global Warming Potential (GWP) for each pollutant by the potential pollutant emissions. GWPs (100-Year Time Horizon) are from Table A-1 to Subpart A of Part 98, Title 40.

Table 2 Operation Greenhouse Gas Emissions Summary

Emission Source	CO_2 (metric tons/yr)	CH_4 (metric tons/yr)	N_2O (metric tons/yr)	SF_6 (metric tons/yr)	CO_2e (metric tons/yr)[1]
Generation Station Operation	772,686	13.47	1.35	-	773,421
Transmission Lines Operation	-	-	-	0.03	685
Pipeline Operation	-	34.84	-	-	976
TOTAL	**772,686**	**48.32**	**1.35**	**0.03**	**775,082**

[1] CO2e calculated by multiplying the Global Warming Potential (GWP) for each pollutant by the potential pollutant emissions. GWPs (100-Year Time Horizon) are from Table A-1 to Subpart A of Part 98, Title 40.

Lyon County Generating Station Project
Northern States Power Company (Xcel Energy)
Greenhouse Gas Inventory

Table 3 Land Use Greenhouse Gas Emissions Summary

Emission Source	CO_2 (metric tons)	CO_2e (metric tons)[1]
Construction Land Use Change	188	188
Operation Land Use Change	1,883	1,883
TOTAL	**2,071**	**2,071**

[1] CO2e calculated by multiplying the Global Warming Potential (GWP) for each pollutant by the potential pollutant emissions. GWPs (100-Year Time Horizon) are from Table A-1 to Subpart A of Part 98, Title 40.

Table 4 Conversions

Unit	Amount	Unit
ton =	2000	lbs
ton =	0.907185	metric tons
ton =	907.185	kg
ton =	907185	grams
lb =	0.453592	kg
lb =	453.592	grams
MWh =	1000	kWh
hectare =	2.47105	acres
hp-hr =	7000	Btu Diesel
hp-hr =	7000	Btu Gasoline
US gallon	3.785	L
US gallon (diesel)	53.9929	hp-h
US gallon (gasoline)[1]	126.833	MJ
US gallon (gasoline)	47.24606	hp-h

[1] US Energy Information Administration, 2024.
https://www.eia.gov/energyexplained/units-and-calculators/energy-conversion-calculators.php

Table 5 Global Warming Potentials

Greenhouse Gas Name	CAS Number	Chemical Formula	Global Warming Potential (100-yr.) [1]
Carbon dioxide	124–38–9	CO2	1
Methane	74–82–8	CH4	28
Nitrous oxide	10024–97–2	N2O	265
Sulfur hexafluoride	2551-62-4	SF6	23500

[1] Global Warming Potentials, 100-Year Time Horizon, Table A-1 to Subpart A of Part 98, Title 40.

Table 6 Construction Greenhouse Gas Emissions

Equipment[1]	Fuel Type[1]	Number of Units[1]	Total Construction Hours/Unit[1]	Capacity Factor (%) [1]	Anticipated Horsepower [1]	CO2 Emissions (metric tons)[2]	CH4 Emissions (metric tons)[2]	N2O Emissions (metric tons)[2]	CO2e Emissions (metric tons)[3]
Vibratory Compactor	Diesel	4	1,750	75	175	475.66	1.93E-02	3.86E-03	477.22
Motor Grader	Diesel	2	3,575	75	175	485.85	1.97E-02	3.94E-03	487.44
Dump Truck	Diesel	6	1,250	75	400	1164.87	4.73E-02	9.45E-03	1168.70
Wheel Loader	Diesel	2	2,000	75	600	931.90	3.78E-02	7.56E-03	934.96
Dozer	Diesel	2	1,250	75	350	339.75	1.38E-02	2.76E-03	340.87
Excavator	Diesel	4	2,000	75	350	1087.21	4.41E-02	8.82E-03	1090.78
Scraper	Diesel	2	1,250	75	300	291.22	1.18E-02	2.36E-03	292.17
Pavers	Diesel	1	500	75	125	24.27	9.84E-04	1.97E-04	24.35
Trencher	Diesel	2	2,000	50	50	51.77	2.10E-03	4.20E-04	51.94
Skid Steer	Diesel	6	3,500	50	100	543.61	2.21E-02	4.41E-03	545.39
Concrete Truck	Diesel	6	2,500	50	350	1359.02	5.51E-02	1.10E-02	1363.48
Concrete Pump Truck	Gasoline	2	2,250	50	300	331.79	1.42E-02	2.84E-03	332.94
Flat Bed Truck	Diesel	1	2,438	50	300	189.29	7.68E-03	1.54E-03	189.91
Water Truck	Diesel	1	4,500	25	200	116.49	4.73E-03	9.45E-04	116.87
Forklift 5 Ton	Diesel	5	5,000	50	75	485.36	1.97E-02	3.94E-03	486.96
Generators/Compressors	Diesel	10	5,000	40	50	517.72	2.10E-02	4.20E-03	519.42
Manlift	Diesel	16	2,500	50	75	776.58	3.15E-02	6.30E-03	779.13
Crawler Cranes <200T	Diesel	2	4,500	75	250	873.65	3.54E-02	7.09E-03	876.52
Crawler Cranes <200T	Diesel	2	4,000	75	400	1242.53	5.04E-02	1.01E-02	1246.61
RT Cranes	Diesel	4	5,000	50	250	1294.30	5.25E-02	1.05E-02	1298.55
Pick-up Truck	Gasoline	14	5,000	15	300	1548.35	6.62E-02	1.32E-02	1553.71
ATV/Mule	Gasoline	12	5,000	15	25	110.60	4.73E-03	9.45E-04	110.98
Total	-	-	-		-	**14,241.78**	**0.58**	**0.12**	**14,288.92**

[1] Equipment and operating data obtained from GHG calculations used for Rout Permit Application, "Lyon County Construction GHG Emissions 09 22 25.xlsx"

[2] GHG Emission factors from 40 CFR Part 98 Subpart C Tables C-1 and C-2. Using a conversion of 7,000 btu gasoline/hp-hr.

	Diesel		Gasoline	
Pollutant	Emission Factor (kg/mmbtu)	Emission Factor (lb/hp-hr)	Emission Factor (kg/mmbtu)	Emission Factor (lb/hp-hr)
CO2	73.96	1.141	70.22	1.084
CH4	3.00E-03	4.63E-05	3.00E-03	4.63E-05
N2O	6.00E-04	9.26E-06	6.00E-04	9.26E-06

[3] CO2e calculated by multiplying the Global Warming Potential (GWP) for each pollutant by the potential pollutant emissions. GWPs (100-Year Time Horizon) are from Table A-1 to Subpart A of Part 98, Title 40.

Table 7 Operation Greenhouse Gas Emissions

Equipment[1]	Fuel Type [1]	Quantity[1]	Equipment Size (MMBtu/hr) [1]	Annual Operating Hours[1]	CO2 Emissions (metric tons/yr)[2][3]	CH4 Emissions (metric tons/yr)[3][4]	N2O Emissions (metric tons/yr)[3]	SF6 Emissions (metric tons/yr)[5]	CO2e Emissions (metric tons/yr)[6]
Two Combustion Turbines	Natural Gas	2	2187	3050	766536.44	13.34	1.33	--	767263.57
Emergency Diesel Generator	Diesel	1	16.3093	500	603.12	2.45E-02	4.89E-03	--	605.10
Emergency Diesel Fire Pump	Diesel	1	2.604	500	96.30	3.91E-03	7.81E-04	--	96.61
Water Bath Heater	Natural Gas	1	9.9	8760	4601.58	8.67E-02	8.67E-03	--	4606.30
Building Heaters	Natural Gas	1	1.825	8760	848.27	1.60E-02	1.60E-03	--	849.14
Piping Fugitives - Connectors	Natural Gas	250	--	8760	0	4.25E-01	0	--	11.90
Piping Fugitives -Flanges	Natural Gas	450	--	8760	0	1.49E+00	0	--	41.76
Piping Fugitives - Open ended lines	Natural Gas	25	--	8760	0	4.25E-01	0	--	11.90
Piping Fugitives - Valves	Natural Gas	850	--	8760	0	3.25E+01	0	--	910.05
Circuit Breakers - Turbines	--	4	--	--	--	--	--	3.63E-03	85.28
Circuit Breakers - Substation	--	28	--	--	--	--	--	2.55E-02	599.91
Total	--	--	--	--	**772685.70**	**48.32**	**1.35**	--	**775081.51**

[1] Equipment data obtained from the project Air Quality Dispersion Modeling (AQDM) protocol spreadsheet (AQDM-02_Lyon County Generating Station.xlsx). Data may not align with Route Permit Application due to modeling updates.

[2] C02 emission factor for combustion turbines obtained from Air Quality Dispersion Modeling (AQDM) protocol spreadsheet for the project (AQDM-02_Lyon County Generating Station.xlsx).

Pollutant	Emission Factor (lb/hr)
CO2	277037

[3] GHG Emission factors from 40 CFR Part 98 Subpart C Tables C-1 and C-2. Using a conversion of 7,000 btu diesel/hp-hr.

	Diesel		Natural Gas	
Pollutant	Emission Factor (kg/mmbtu)	Emission Factor (lb/mmbtu)	Emission Factor (kg/mmbtu)	Emission Factor (lb/mmbtu)
CO2	73.96	163.054	53.06	116.977
CH4	3.00E-03	6.61E-03	1.00E-03	2.20E-03
N2O	6.00E-04	1.32E-03	1.00E-04	2.20E-04

[4] Fugitive methane emission factors from 1995 Protocol for Equipment Leak Emission Estimates- EPA-453/R-95-017. Assumed maximum methane content of 97%.

Table 7 Operation Greenhouse Gas Emissions

Piping Fugitive Equipment Type	Service	Emission Factor (kg/hr/source)	Methane Content (%)	Methane Emission Factor (lb/hr/source)
Connectors	Natural Gas	0.0002	97%	4.277E-04
Flanges	Natural Gas	0.00039	97%	8.340E-04
Open Ended Lines	Natural Gas	0.002	97%	4.277E-03
Valves	Natural Gas	0.0045	97%	9.623E-03

[5] Emissions from circuit breakers were calculated with the assumption of a 0.5% leakage rate of the sulfur hexafluoride (SF_6).

Equipment	Quantity of SF_6 per Breaker (lbs)	Emissions of SF_6 Per Breaker (lbs/yr)
Circuit Breakers - Turbines	400	2
Circuit Breakers - Substation	402	2.01

[6] CO2e calculated by multiplying the Global Warming Potential (GWP) for each pollutant by the potential pollutant emissions. GWPs (100-Year Time Horizon) are from Table A-1 to Subpart A of Part 98, Title 40.

Table 8 Construction Land Use Change Greenhouse Gas Emissions

Existing Land Type[1]	Carbon Stock (metric tons CO2/acre)[2]	Estimated Disturbance (acres)[1]	Estimated CO2 Emissions (metric tons)[3]
Wetlands, not forested	776.23	0.00	0.00
Forest	363.00	0.00	0.00
Rivers and streams	0.00	0.00	0.00
Brush and grassland	149.60	0.00	0.00
Cropland	119.17	15.80	188.28
Livestock rangeland/pastureland	149.60	0.00	0.00
Impervious	0.00	0.00	0.00
Total	**-**	**15.80**	**188.28**

[1] Existing land type obtained from National Land Cover Database (NLCD) 2023 landcover data. Only cropland will be disturbed.

[2] Equation 8. Net Change in Carbon Stock from Construction , Minnesota Climate Calculator, Final Report, May 2025, Version 1.1, Minnesota Environmental Quality Board
https://www.eqb.state.mn.us/sites/eqb/files/climate_calculator_final_report.pdf

Conversion of 44/12 was applied to convert from carbon to CO_2.

[3] Emission factors assumes full realization of the land transition over 30 years. Therefore, emissions have been pro-rated to temporary construction disturbance.

Construction timeframe estimated as 36 months, based on GHG calculations used for Rout Permit Application, "Lyon County Construction GHG Emissions 09 22 25.xlsx"

Estimated construction duration = 3.00 years

Table 9 Operation Land Use Change Greenhouse Gas Emissions

Existing Land Type --> Reclaimed Land Type [1]	Carbon Stock (metric tons CO2/acre)[2]	Estimated Reclaimed Area (acres)[1]	Estimated CO2 Emissions (metric tons)[3]
Cropland --> Stormwater pond (wet sedimentation basin)	119.17	1.80	214.50
Cropland --> impervious	119.17	14.00	1,668.33
Total	**-**	**15.80**	**1,882.83**

[1] Existing land type obtained from National Land Cover Database (NLCD) 2023 landcover data.

[2] Equation 8. Net Change in Carbon Stock from Construction , Minnesota Climate Calculator, Final Report, May 2025, Version 1.1, Minnesota Environmental Quality Board https://www.eqb.state.mn.us/sites/eqb/files/climate_calculator_final_report.pdf

Conversion of 44/12 was applied to convert from carbon to CO_2.

[3] Emission factors assumes full realization of the land transition over 30 years.

Appendix J

Phase I Cultural Resource Survey Report

XCEL ENERGY

A PHASE I CULTURAL RESOURCE SURVEY OF THE PROPOSED LYON COUNTY GENERATING STATION SITE

LYON COUNTY GENERATING STATION

PROJECT NO. 170541

REPORT AUTHORS: CHRISTINA HULING, MELINDA MCCARTHY, & THANE REID

PRINCIPAL INVESTIGATOR: MELINDA MCCARTHY

MAY 2024

CONTENTS

FIGURES

TABLES

List of Abbreviations

Abbreviation	Term/Phrase/Name
ac	acre(s)
AD	Anno Domini
BC	Before Christ
BLM	Bureau of Land Management
Burns & McDonnell	Burns & McDonnell Engineering Company, Inc.
CT	combustion turbine generator
Construction Easement	Temporary or permanent ground disturbance related to the Project
F.	Feature
GLO	General Land Office
GPS	Global Positioning System
ha	hectare(s)
m	meter(s)
MNDOA	Minnesota Department of Agriculture
MHD	Minnesota Highway Department
MN OSA	Minnesota Office of the State Archaeologist
MN PUC	Minnesota Public Utilities Commission
MNSHIP	Minnesota State Historic Inventory Portal
MN SHPO	Minnesota State Historic Preservation Office
MW	megawatts
N	North
No.	Number(s)
NRHP	National Register of Historic Places
Project	Lyon County Generating Station
SITS	Smithsonian Institution Trinomial System
Survey Corridor	312.2 ac block area containing any temporary or permanent ground disturbance related to the Project
Study Area	One-mile buffer around the Survey Corridor
USDA	U.S. Department of Agriculture
USGS	U.S. Geographic Survey
UTM	Universal Transverse Mercator
W	West
Xcel	Xcel Energy

Management Summary

Burns & McDonnell Engineering Company, Inc. (Burns & McDonnell) was hired by Northern States Power Minnesota d/b/a Xcel Energy (Xcel) to complete a Phase I Cultural Resource Survey of the proposed Lyon County Generating Station site (Project). The proposed Project would provide 420 megawatts of combustion turbine generator capacity and include associated facilities, at an approximately 312.2-acre (ac) greenfield generating station located in Lyon County, Minnesota, approximately 1 mile north of the town of Garvin. At the request of Xcel, Burns & McDonnell conducted cultural resource investigation for siting and design purposes.

The Project is located on private property and will require a Certificate of Need and a Site Permit from the Minnesota Public Utilities Commission; therefore, the Project is subject to review by the Minnesota Office of the State Archaeologist (MN OSA) and State Historic Preservation Office (MN SHPO). The purpose of this investigation is to provide the necessary information to these agencies for review by confirming the presence or absence of cultural resources within the Project's Survey Corridor.

As the Project's Construction Easement has not been finalized at this time, a block Survey Corridor of 312.2 ac (126.34 hectares) was covered by Burns & McDonnell during Phase I cultural resource surveys. This Survey Corridor includes all areas within the potential Construction Easement that may be permanently or temporarily affected during Project work. The Survey Corridor is a rectangular area located in the west ½ of Section 23, Township 109 North, Range 41 West. The Survey Corridor is bounded to the north by U.S. Highway 14, to the west by U.S. Highway 59, and to the south by 120th St. The Project is in the Prairie Lakes South Archaeological Region.

A Literature Review was conducted for the Project in April 2024 by Christina Huling, a Burns & McDonnell archaeologist, using MN OSA and MN SHPO records, and using publicly available, assessor records, historic plats, aerials, maps, and U.S. Geological Survey topographical maps. Fieldwork for the Project was conducted between April 15 and April 18, 2024, and consisted of pedestrian survey led by Secretary of Interior-qualified Principal Investigator and Architectural Historian, Melinda McCarthy. Christina Huling assisted in the completion of fieldwork.

The investigations resulted in the identification of one historic-age historic resource within the northwestern corner of the Survey Corridor. The Garvin Corner Store (LY-CUS-00053) is a circa 1967 cinder block building which has been shuttered and currently serves as a trash dump. The resource features poor integrity and lacks historic significance. It is recommended not eligible for the National Register of Historic Places.

No eligible resources were identified during the course of survey. Therefore, Burns & McDonnell recommends a determination of *No Historic Sites Affected* as documented and mapped herein. If areas beyond the Survey Corridor are to be used during construction, Burns & McDonnell recommends completion of an addendum Phase I cultural resource surveys to determine the presence or absence of cultural resources within these areas.

1.0 Introduction

Burns & McDonnell Engineering Company, Inc. (Burns & McDonnell) was hired by Northern States Power Minnesota d/b/a Xcel Energy (Xcel) to complete a Phase I Cultural Resource Survey of the proposed Lyon County Generating Station (Project). The proposed Project would provide 420 megawatts (MW) of combustion turbine generator (CT) capacity and include associated facilities at an approximately 312.2-acre (ac) greenfield generating station located in Lyon County, Minnesota, approximately 1 mile north of the town of Garvin. At the request of Xcel, Burns & McDonnell conducted cultural resource investigation for siting and design purposes.

The Project is located on private property and will require a Certificate of Need and a Site Permit from the Minnesota Public Utilities Commission (MN PUC); therefore, the Project is subject to review by the Minnesota Office of the State Archaeologist (MN OSA) and State Historic Preservation Office (MN SHPO). The purpose of this investigation is to provide the necessary information to these agencies for review by confirming the presence or absence of cultural resources within the Project's Survey Corridor.

1.1 Project Details

The Project would provide firm dispatchable generation to provide capacity needed to ensure reliable service to customers. To meet a portion of the need for firm dispatchable electrical generation, Xcel proposes two natural gas-fired CTs, totaling approximately 420 MW. The Project also includes the following associated facilities:

- On-site operation facilities (control room, offices, warehouse, etc.).
- A twelve-inch natural gas supply from the Northern Border Pipeline, which routes through the southwestern corner of the Lyon County Station property. Northern Border will perform the tie-in to the main pipeline and construct a metering and pressure regulating station on the site. At that point, Xcel Energy will continue the piping to the CTs.
- Three 750-kilowatt emergency diesel generators to provide emergency power.

1.2 Survey Corridor

As the Project's Construction Easement has not been finalized at this time, a block Survey Corridor of 312.2 ac (126.34 hectares [ha]) was covered by Burns & McDonnell during Phase I cultural resource surveys. This Survey Corridor includes all areas within the potential Construction Easement that may be permanently or temporarily affected during Project work. The Survey Corridor is a rectangular area located in the west ½ of Section 23, Township 109 North (N), Range 41 West (W) (**Figure 1-1**). The Survey Corridor is bounded to the north by U.S. Highway 14, to the west by U.S. Highway 59, and to the south by 120th St (**Figure 1-2**). The Survey Corridor is located in the Balaton and Tracy West 7.5-minute U.S. Geological Survey (USGS) quadrangles. See **Table 1-1** for the Universal Transverse Mercator (UTM) description of the Survey Corridor.

Table 1-1: UTM Description of the Survey Corridor

UTM Zone	UTM Northing	UTM Easting	Point Description
15N	4902181	280019	Northwestern corner of Survey Corridor
	4902141	280812	Northeastern corner of Survey Corridor

	4900545	280751	Southeastern corner of Survey Corridor
	4900581	279966	Southwestern corner of Survey Corridor

1.3 Project Personnel

Fieldwork for the Project was conducted between April 15 and April 18, 2024, and consisted of pedestrian survey led by Secretary of Interior-qualified Principal Investigator and Architectural Historian, Melinda McCarthy. Christina Huling, a Burns & McDonnell archaeologist, assisted in the completion of fieldwork.

Figure 1-1: Project Survey Corridor (Topographical)

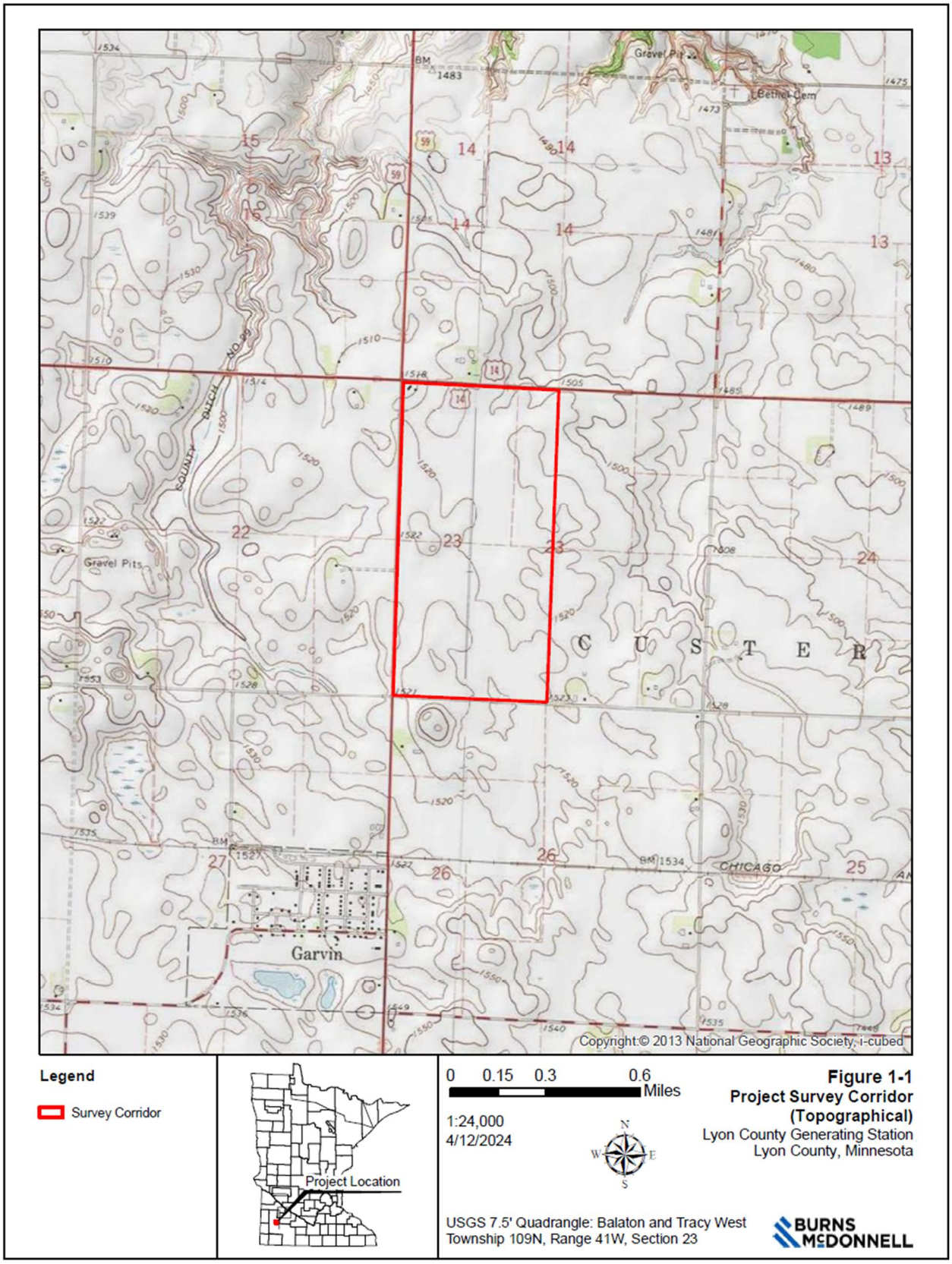

Figure 1-2: Project Survey Corridor (Aerial)

2.0 Literature Review

A Literature Review or file search was conducted for the Project and a one-mile Study Area in April 2024 by Christina Huling using MN OSA and MN SHPO records and publicly available archival materials.

2.1 Methods

The MN OSA online portal was used to identify any archaeological resources within the Study Area, as well as site probability modeling made available by MN OSA. The MN SHPO online portal was also consulted to identify any previously documented aboveground resources in the Survey Corridor and Study Area.

Historic plat maps, topographic maps, and historical aerial imagery for the Survey Corridor and a one-mile Study Area surrounding the Survey Corridor were reviewed to identify any historic farmsteads, roads, or trails in the vicinity of the Project. Archival sources consulted prior to fieldwork included the original Bureau of Land Management (BLM) General Land Office (GLO) survey map of Township 109 N, Range 41 W and NRHP listings for Lyon County. While the Find-A-Grave's cemetery search was consulted to determine the presence or absence of historic period cemeteries in the Study Area.

The United States Department of Agriculture (USDA) web soil survey was also consulted to assess the depositional environment and potential for precontact site preservation within the Survey Corridor.

2.2 MN OSA Records

Site records for archaeological resources within the Survey Corridor and a one-mile Study Area surrounding the Survey Corridor were examined using the MN OSA online portal.

No previously documented resources were identified within the Survey Corridor. A total of four archaeological resources were identified within the one-mile Study Area. Two of these resources are precontact lithic scatters, one is a historical archaeological artifact scatter, and one is a historical archaeological site associated with railroad development. Of these resources, one precontact archaeology site has been previously recommended not eligible for NRHP inclusion, while the remaining three resources are unevaluated for NRHP eligibility. See **Table 3-1** for a summary of these resources, their Smithsonian Institution Trinomial System (SITS) numbers (No.), and their previous National Register of Historic Places (NRHP) recommendations.

Table 2-1: Previously Documented Archaeological Resources in the Study Area

SITS No.	Resource Type	Cultural Affiliation	NRHP Recommendation
21LY44	Archaeological Site: Lithic Scatter	Unspecified	Unevaluated
21LY79	Archaeological Site: Lithic Scatter	Unspecified	Not Eligible
21LY123	Historical Archaeological Site: Garvin Whistle Stop	Euro-American	Unevaluated
21LY153	Historical Archaeological Site: Artifact Scatter	Euro-American	Unevaluated

2.3 MN SHPO Records

Records for aboveground resources within the Survey Corridor and Study Area were examined using the MN SHPO online portal.

No previously documented resources were identified within the Survey Corridor. A total of fourteen aboveground resources were identified in the one-mile Study Area, including 12 buildings and two linear resources. Two of these buildings, LY-GVC-00004 and LY-GVC-00006, are noted to be duplicate records for the same building, the Garvin First Congregational Church. Six resources have been previously recommended not eligible for NRHP inclusion, while the remaining seven are unevaluated for NRHP inclusion. See **Table 3-2** for a summary of these resources and their NRHP eligibility recommendations.

Table 2-2: Previously Documented Aboveground Resources in the Study Area

Resource Number	Resource Type	Resource Name	NRHP Recommendation
LY-CUS-00004	Building	Julien Farmstead	Not Eligible
LY-CUS-00005	Building	John S. Owens Farmstead	Not Eligible
LY-GVC-00001	Building	Grain Elevator	Unevaluated
LV-GVC-00002	Building	Post Office	Unevaluated
LY-GVC-00003	Building	District School No. 47	Unevaluated
LY-GVC-00004/ LY-GVC-00006	Building	First Congregational Church	Unevaluated
LY-GVC-00005	Building	Hoiland Lutheran Chapel	Unevaluated
LY-GVC-00008	Building	Bank	Unevaluated
LY-GVC-00009	Building	Commercial Building	Unevaluated
LY-GVC-00011	Building	Lake Sarah Lutheran Church	Not Eligible
LY-GVC-00012	Building	House	Not Eligible
XX-ROD-00016	Structure	Trunk Highway/U.S. Highway 14 (formerly Trunk Highway 7)	Not Eligible
XX-ROD-00168	Structure	Trunk Highway 59	Not Eligible

2.4 Previous Inventory Reports

Survey reports for archaeological resources were disconnected from Geographic Information System positioning, and subsequently previous cultural resource inventory reports were evaluated by proximity to Custer Township and the village of Garvin, in addition to association to the adjacent context of U.S. Highway 59 and U.S. Highway 14, the crossroads of which borders the northwest corner of the Survey Corridor.

Table 2-3: Previous Cultural Resource Inventory Reports in the Study Area

SHPO File No.	Report Name	Sites Recorded	Author(s)	Date
LY-1977-01	An Archaeological Survey at Garvin Park, Lyon County, Minnesota	Sites Numbers Absent from Report	Strachan, R. A.	1977
LY-1978-01	Archaeological Reconnaissance Survey within Garvin Park, Lyon County, Minnesota	Negative Survey Report	Hudak, G.J.	1978
LY-1980-01	An Archaeological Reconnaissance Survey of 80 Acres within Garvin Park, Lyon County, Minnesota	Sites Numbers Absent from Report	Hudak, G.J.	1980

SHPO File No.	Report Name	Sites Recorded	Author(s)	Date
LY-1982-01	An Archaeological Reconnaissance Survey of the 588 Remaining Acres in Garvin Park, Lyon County, Minnesota	Sites Numbers Absent from Report	Hudak, G.J. & H.C. Pedersen	1982
LY-1984-02	Further Construction within Garvin Park, Lyon County, Minnesota (Addendum)	Sites Numbers Absent from Report	G.J. Hudak	1983
LY-1984-03	Archaeological Monitoring of Further Construction within Garvin Park, Lyon County, Minnesota (Letter Only)	Sites Numbers Absent from Report	Hudak, G.J.	1984
MULT-1989-01	A Phase One Archaeological Survey of the Cottonwood, Redwood, and Yellow Medicine Drainages in Southwestern Minnesota	BW61,BW62,BW63,BW64,BW65,BW66,BW67,BW88; LN16; RW51; YM1,YM3,YM38,YM39,YM40,YM41,YM42,YM43,YM44	Dobbs, C.A.	1989
LY-1992-01	A Phase I Archaeological Survey of the Darrell Wendorff Farm, Custer Township, Lyon County, Minnesota	21LY0001, 21LY0002	Johnson, C.M.	1992
LY-1993-01	Final Cultural Resource Survey and Site Evaluation Report: Proposed MNDOT SP4208-29 & SP4208-31 for the Reconstruction of TH 59, Lyon County	Sites Numbers Absent from Report	Gonsior, L., M. Justin, & P. Nunally	1993
MULT-1994-18	Cultural Resource Survey and Property Evaluation Final Report, MNDOT SP4208-31/36 & 5105-12/15 for Reconstruction of TH 59 from TH 30 North of Slayton to TH 14, Murray and Lyon Counties	MU39	Sluss, J. & L. Gonsior	1994
MCH-1984-01	Minnesota Municipal-County Highway Archaeological Reconnaissance Study, 1983 Annual Report	21DL0068; 21FA0072; 21FE0028, 21HB0006, 21HB0019, 21NL0047, 21WB0050, 21CA0154, 21CA0155, 21CA0156, 21HE0261, 21MO0054	Anfinson, S.	1984
MCH-1989-01	Minnesota Municipal-County Highway Archaeological	21BK0032, 21BK0033, 21BK0035, 21BK0036, 21BL0051, 21BL0052,	Anfinson, S. & R.J. Peterson	1989

SHPO File No.	Report Name	Sites Recorded	Author(s)	Date
	Reconnaissance Study, 1988 Annual Report	21BL0053, 21BL0090, 21BL0091, 21BL0092, 21BL0093, BL94, BL95, BL96, BL97, BL98; BW54; CY48; IA19, IA44, IA45; KH98; MA26, MA45; MR29, MR31; NO3, NO40, NO41; SB6; WD6; WE8, WE15, WE16, WE17, WE18, WE19, WE20, WE27; WL3; HE74, HE82, HE191		
MCH-1991-01	Minnesota Municipal-County Highway Archaeological Reconnaissance Study, 1990 Annual Report	AN129; BE125, BE126, BE127, BE128, BE129; BK35, BK36; BL54, BL55, BL58, BL59, BL60, BL62, BL105; CH23; CY10, CY12, CY60; DK46; DL1, DL68, DL83, DL98, DL99, DL101, DL102; HB12, HB22, HB23, HB24; KH106; KT4; LE44, LE46, LE47, LE48, LE50, LE51, LE52, LE58; MC5, MC6; ME16; MH8; NL62, NL63; WD11, WD12; WR5	Peterson, R.J., M.A. Magner, & B.A. Koenen	1991
MCH-1992-01	Minnesota Municipal-County Highway Archaeological Reconnaissance Study, 1991 Annual Report	BL52, BL61, BL63; BN10, BN11; BW75, BW76; CY19, CY20, CY26, CY31; DL68, DL83; HU26, HU39, HU150, HU151; HB12, HB23, HB24; LE44, LE46, LE48; ME11, ME12; MH8; NL62, NL63; NR51, NR52; SB16, SB17; TO2, TO12, TO13, TO14, TO15; WL6, HE143 ;MO57-64; CE36	Peterson, R.J., M.A. Magner, & B.A. Koenen	1992
MCH-1993-01	Minnesota County and Municipal Highway Archaeological Reconnaissance Study, 1992 Annual Report	BL67, BL74; BN10, BN11; BW81; CW86, CW97; CY4, CY18, CY21, CY26, CY31; DL68, DL103, DL104; FL59; HB12, HB23, HB24; KT13; LE46, LE48; ME11, ME12; MR26; PL16, PL19; PN4, PN5, PN8, PN9, PN10, PN12, PN13, PN14, PN15, PN20, PN21, PN25, PN38, PN46; SH26; TO2, TO12, TO13, TO14, TO15; WA73; WL20; WR54, WR55, WR5	Peterson, R.J., M.A. Magner, & B.A. Koenen	1993

2.5 Archival Research

BLM GLO patent records, USGS topographical maps, plat maps, and aerials of the Survey Corridor were examined to identify areas of potential undocumented historic sites, including roads, trails, farmsteads, cabins, mines, and townsites.

No roads, trails, or other cultural features are indicated on the original 1867 BLM GLO survey map of Township 109 N, Range 41 W (BLM 1867). A small area of swampland is indicated along the southern edge of the Survey Corridor on the 1867 survey map; however, the area is otherwise devoid of mapped features.

A land patent search for Section 23, Township 109 N, Range 41 W returned no results, and the original platted owner(s) of the Survey Corridor are unknown. Plat maps from 1902 and 1914 indicate a farmstead to the east of the southern end of the Survey Corridor, a farmstead to the north of the Survey Corridor, and two farmsteads to the west of the Survey Corridor (Northwest 1902; Webb 1914). No farmsteads are depicted within the Survey Corridor on the 1902 or 1914 maps. Further, no farmsteads are depicted near the Survey Corridor on a 1929 plat map; however, farmsteads appear to be excluded from the entirety of the 1929 map (FSH 1929).

A 1938 aerial photograph shows at least three buildings in the northwestern corner of the Survey Corridor, near the intersection of U.S. Highways 14 and 59 (University of Minnesota 2024). Aerial imagery shows that the previously extant buildings were removed between 1966 and 1984, and a one-story, side-gabled building had been constructed in their place (NETR 2024). A building with a similar plan shape and orientation is depicted on a 1967 topographic map (USGS 1967a, 1967b). A second building is also depicted immediately southwest larger structure on the topographic map. The larger building remains on site and was documented by the current inventory.

A 1961 plat map indicates that at that time, a 1 ac parcel in the northwestern corner of the section was owned by Earl and Gladys Kompelien (Nelson 1961). Earl and Gladys Kompelien's obituaries note that they lived near Garvin beginning in the 1950s and owned and operated the Garvin Corner Store for "several years" (Houseman 2007, 2011). Based on archival research it is assumed the building currently on site previously served as this corner store. By 1985, the entire northern half of the Survey Corridor was owned by Dennis Peterson, and the building in the northwest corner is indicated as unoccupied (DSC 1985).

No historic or modern cemeteries or NRHP listed properties were identified in the Survey Corridor or Study Area (Find-A-Grave 2024; NPS 2024a).

3.0 Environmental Setting

This section discusses the physiography, geology, vegetation, fauna, and previous ground disturbances in the Survey Corridor and the surrounding region.

3.1 Geology and Physiography

The Survey Corridor is located in the Prairie Coteau subregion of the Northern Glaciated Plains, which consists of a gently rolling landscape (White 2020). The Survey Corridor also lies within the Prairie Pothole region of the Great Plains, characterized by the presence of wetlands formed by Pleistocene glacier scraping (Natureserve 2014).

During the Pleistocene, the Survey Corridor was overrun by the Des Moines Lobe of the continental ice sheet, which reached its maximum southward extent about 14,000 years ago (Anfinson 1997). The Des Moines Lobe melted relatively rapidly, so that the area was ice-free by 12,500 years ago. As the ice mass melted back in a series of recessional stages, it deposited several large moraines in the process. While the glacier retreated, it left stagnant ice buried in the drift for up to several thousands of years.

During this time, slowly melting ice affected the climate and topographical stability of the Prairie Lake Region (Anfinson 1997). Prior to Euro-American settlement of the region, the Prairie Coteau was characterized by tallgrass prairie vegetation, with numerous seasonal wetlands (White 2020).

3.2 Hydrology

The Survey Corridor lies within the Redwood River Watershed of the Minnesota River Basin, and the closest water source is the Cottonwood River which runs 1.5 miles to the north. The Redwood River Watershed drainage patterns are the aftereffect of glacial meltwater, and the watershed is characterized in part by the presence of end moraines (MNDNR 2024a). Streams and groundwater within the Redwood River Watershed typically possess substrates of silt and sand, with low clay content (MNDNR 2017).

3.3 Soils

Within the Survey Corridor, the USDA has mapped 11 soil map units (NRCS 2024). These include Fulda silty clay, 0 to 2 percent slopes (30.0 percent); Highpoint Lake silty clay, 0 to 2 percent slopes (16.6 percent); Hokans-Svea complex, 1 to 4 percent slopes (14.2 percent); Parnell silty clay loam, depressional, 0 to 1 percent slopes (9.8 percent); Poinsett-Waubay silty clay loams, 1 to 6 percent slopes (9.1 percent); Svea loam, 1 to 3 percent slopes (8.2 percent); Lakepark-Roliss-Parnell, depressional, complex, 0 to 3 percent slopes (6.3 percent); Barnes, occasional saturation-Buse-Svea complex, 1 to 6 percent slopes (4.2 percent); Vallers clay loam, 0 to 2 percent slopes (0.9 percent); Renshaw-Fordville loams, coteau, 2 to 6 percent slopes (0.7 percent); and Barnes-Buse complex, 6 to 12 percent slopes, moderately eroded (0.1 percent).

Four of these soil map units, encompassing 146.8 ac (59.41 ha) of the Survey Corridor, are indicated to be hydric soils, indicating that these areas were likely previously inundated/saturated (NRCS 2024).

3.4 Flora

In the millennia following the retreat of the continental ice sheet, a series of vegetation changes swept across southwestern Minnesota. These changes have been deduced through the study of pollen cores collected from lakes and bogs in the larger region (Anfinson 1997). Closed boreal forest comprised of

spruce, larch, black ash, birch, and alder colonized the formerly glaciated landscape. Over time, as the climate warmed, the coniferous component of this forest dwindled, and the deciduous component, with the addition of willow, oak, elm, ironwood, and hazel, expanded. Eventually, oak and elm came to dominate, and prairie openings began to develop. This sort of prairie-forest mosaic persisted in the region until about 7,000 years ago.

After that time, warmer and drier climatic conditions peaked, forcing major vegetation changes (Anfinson 1997). By 6,000 years ago, many shallower lakes had dried up completely. Wildfires increased in frequency, and forest was almost completely replaced by prairie. Fringes of forest persisted near streams and lake shores, but otherwise the uplands were dominated by prairie.

These conditions persisted through the early years of historic settlement. The Survey Corridor is situated within what has been identified as the Southern Wet Prairie delineation of the Prairie Zone of Minnesota. Historically, big bluestem and Indian grasses existed in the moist uplands, while prairie cordgrasses and bluejoint dominated the wet lowlands. Through time, the tallgrass prairie, which once covered the southern one-third of the state, has been diminished and replaced by cropland and scattered islands of forest and forested riparian strip.

Current vegetation cover across much of the Survey Corridor has been substantially altered from its historical condition. What was formerly prairie land is now tilled and cultivated for the production of row crops, and especially corn and soybeans. Some farm fields are maintained as pastureland. Fallow fields, fence rows, and rural roadsides contain remnants of native prairie plants along with Eurasian invasive grasses.

Prior to cultivation, common flora to the Southern Wet Prairie included the wildflowers Canada goldenrod (*Solidago canadensis)*, Sawtooth sunflower (*Helianthus giganeus*), tall meadow-rue (*Thalictrum dasycarpum*), and grasses including prairie cordgrass (*Spartina pectinata*), big bluestem (*Andropogon gerardii*), and Indian grass (*Sorgahstrum nutans*) (MNDNR 2024a).

3.5 Fauna

As vegetation changed over time following the last glaciation, so did the fauna dependent upon the flora (Anfinson 1997). Late Pleistocene megafauna, such as woolly mammoth and musk ox, roamed the deglaciated landscape subsequent to glacial retreat. As boreal forest developed, giant beaver and mastodon may have entered the region.

As megafauna died out, they were replaced by more familiar woodland species, such as white-tailed deer (*Odocoileus virginianus*), elk (*Cervus canadensis*), cottontail rabbit (genus *Sylvilagus*), woodchuck (*Marmota monax*), beaver (*Castor canadensi*s), muskrat (*Ondatra zibethicus*), raccoon (*Procyon lotor*), and grizzly bear (*Ursus arctos horribilis*). With the growth of prairie, species such as white-tailed jackrabbit (*Lepus townsendii*), sharp-tailed grouse (*Tympanuchus phasianellus*), and bison (*Bison bison*) became important (Anfinson 1997). Bison herds in southern Minnesota were not as large as those found further west, but their numbers may have varied due to seasonal migration. The last bison was hunted out of the region in 1879. In the region, aquatic animals are present, including various species of fish, turtles, crayfish, and mussels.

The Prairie Pothole region is a significant destination for over half of North American migratory waterfowl, including the redhead duck (*Aythya americana*), the pintail (*Anas acuta*), and the shoveler (*Spatula clypeata*). In addition, the Prairie Pothole provides habitats for birds such as the piping plover (*Charadrius melodus*), the white-rumped sandpiper (*Calidris fuscicollis*), herons (*Ardea herodias*), and American white pelicans (*Pelecanus erythrorhynchos*) (NWF 2024). Other avian fauna present in the region include red-tailed hawks (*Buteo jamaicensis*), mourning doves (*Zenaida macroura*), a variety of owls including great

horned owls (*Bubo virginianus*) and barn owls (*Tyto alba*), ring-necked pheasants (*Phasianus colchicus*), and bald eagles (*Haliaeetus leucocephalus*).

In addition to the significance of the Prairie Pothole region to avian fauna, it currently is serves as a habitat for opossums (*Didelphis virginiana*), white-tailed deer (*Odocoileus virginianus*), gray squirrels (*Sciuris carolinensis*), thirteen-lined ground squirrels (*Ictidomys tridecemlineatus*), muskrats (*Ondata zibethicus*), coyotes (*Canis latrans*) (MNDNR 2024b). Reptiles and amphibians common to the region include bullfrogs (*Lithobates catesbeianus*), painted turtles (*Chrysemus picta*), and Great Plains toads (*Anaxyrus cognatus*). Piscine fauna native to the region includes several species of catfish (order *Siluriformes*), smallmouth bass (*Micropterus dolomieu*), and yellow perch (*Perca flavescens*).

3.6 Previous Disturbance

Aerial photographs and imagery indicate that the area has been extensively cultivated since at least 1955 (NETR 2024), with little native vegetation remaining. Virtually the entire Survey Corridor was cleared when the area was initially put under cultivation. Historic aerials reveal that the east-central section of the Survey Corridor was drained between 1958 and 1965, possibly as a form of improving agricultural output of the acreage. Additionally, the northwestern corner of the Survey Corridor was the location of a 1930s building before being completely razed and a newer building constructed in 1966.

4.0 Cultural Context

The Survey Corridor is situated in the Prairie Lakes South Region (2S), a region extending from eastern South Dakota through southwestern Minnesota and into north-central Iowa and is defined by the presence of a significant tallgrass prairie vegetation and a large number of shallow lakes (Anfinson 1986). The Prairie Lakes South Archaeological Region consists of the southeastern extent of the Prairie Pothole region and is differentiated from its larger expanse by its characteristic large freshwater lakes and lack of mixed-grass prairie.

4.1 Cultural History

This section discusses our understanding of the history of human populations that have lived in the Prairie Lake Region of southern Minnesota. The section is divided into:

- Early Prehistoric (10,000 to 3000 Before Christ [BC])
- Middle Prehistoric (3000 BC to Anno Domini [AD] 900)
- Late Prehistoric (AD 900 to 1650)
- Contact (AD 1650 to 1837)
- Post-Contact (AD 1837 to 1940)

4.1.1 Early Prehistoric (10,000 to 3000 BC)

The Early Prehistoric period began with the retreat of the glaciers about 12,000 years ago and encompasses the Paleoindian and Early Archaic periods as defined elsewhere in central and eastern North American archaeological contexts (Anfinson 1997). The large glaciers to the north made the boreal forest environment during that time colder, wetter, and less seasonal. Melting ice under layers of glacially deposited till created dynamic river and lake systems that were resource hotspots for Early Prehistoric people. By 8000 BC, resource-poor boreal forests gave way to deciduous forests of birch and alder, succeeded by elm and oak, and temperatures became more seasonal. By 6000 BC, there were large expanses of prairie.

This period is the least understood in the prehistory of the region due to the weak Paleoindian and Early Archaic archaeological record consisting only of isolated projectile points and associated debitage. A few early fluted lanceolate projectile points have been found at surface sites, suggesting that the earliest known inhabitants of the region were nomadic megafauna hunters who did not inhabit any one place for long and left little behind (Anfinson 1986). The earliest Paleoindian sites have been found in upland locations, suggesting that the lowlands were too wet to occupy (Anfinson 1997; Gibbon et al. 2002).

More diverse, unfluted Late Paleoindian and Early Archaic stemmed, side-notched, and corner-notched points have also been found in the region (Anfinson 1986). Two Scottsbluff points and several lanceolate point bases were identified at the Goodrich site (21FA0036) on the bottom of a now-drained lake basin in Faribault County (Anfinson 1997). This suggests that the region had dry spells when receding lakes became important resource locations (Gibbon et al. 2002).

Sites from the Prairie Archaic period (5500 to 3000 BC) in the Prairie Lake Region are characterized by side-notched projectile points and ground stone tools suited to an increasingly diversified hunter-gatherer lifestyle (Gibbon et al. 2002). While bison appears to have been the main staple, varying projectile technologies and hafting techniques suggest that a variety of animals, such as rabbit and skunk, were being

hunted. The presence of ground stone tools suggests plant processing activities, such as seed grinding. Prairie Archaic sites are often associated with lakes.

4.1.2 Middle Prehistoric (3000 BC to AD 900)

By 3000 BC, a moister, cooler climate returned to the Prairie Lake Region, and the lakes dotting the landscape were generally full. The Mountain Lake Phase (3000 to 200 BC) is a terminal Archaic manifestation and is the first cultural period defined for the Middle Prehistoric in the region (Anfinson 1986). Mountain Lake Phase people appear to have been the first in the region to consistently practice lacustrine-based settlement. Most of the sites are found on what would have been islands, peninsulas, and isthmuses (Anfinson 1986, 1997). These sites would have been close to aquatic resources and protected from fires. However, they may have been difficult to access during freeze and thaw periods and may have been too exposed during the winter months.

Short lanceolate projectile points are the most common types associated with the Mountain Lake Phase, but a wide variety of stemmed and side-notched points also appear. Bison, muskrat, and fish were the dominant food sources (Anfinson 1997). Mountain Lake Phase people started utilizing aquatic resources more than the people before them. Unlike other Midwest Archaic cultures from this time period, it does not appear that these people procured and processed great quantities of seeds and nuts, nor did they practice horticulture (Anfinson 1986, 1997).

Fox Lake Phase (200 BC to AD 700) sites contain the earliest evidence of pottery in the region. While Fox Lake Phase sites are classified as Woodland, they do not always resemble other Midwest Woodland sites, which were influenced by contact with Hopewellian cultures of Illinois and Ohio (Anfinson 1997; Gibbon 2012). Fox Lake Phase sites have different styles of ceramics and lithics and are lacking evidence of horticulture. Ceramic vessels from this time period are generally sand-tempered, thick-walled, and conoidal-shaped with cord-marked and/or fingernail-impressed exteriors and smooth interiors (Gibbon 2012). The Fox Lake ceramic tradition maintained a consistent style for about 1,000 years. Projectile point manufacturing went through an experimentation phase during this time period, leading to a variety of sizes and forms as people adopted bow and arrow technology.

Other chipped stone tools include common Plains forms of scrapers, knives, drills, choppers, and flake tools. The types and quantity of chipped stone tools suggest an emphasis on animal capture and processing. The percentage of specialized tools used for drilling, punching, and engraving is low (Anfinson 1997; Gibbon 2012). Ground stone tools used for seed and nut processing suggest that people were introducing more plant materials into their diet. Bison, deer, dog/wolf, muskrat, and a number of other small mammals, reptiles, fish, and bird remains have been found at Fox Lake Phase sites. Most Fox Lake village sites are on lakes, but some have been recorded on the margins of rivers or streams (Anfinson 1997). While early Midwest Woodland groups are known for burial mound construction throughout the temporal period, Fox Lake people were late to build mounds, with the earliest known mound dating to AD 875.

Generally, in the Midwest and northern Plains, the start of the Late Woodland period is marked by the decline of Hopewell and the rise of more localized complexes and communities. These changes are muted in the Prairie Lake Region. More dramatic changes happened around AD 700, marking a shift from the Fox Lake Phase to the Lake Benton Phase (AD 700 to 1200). The main differences between the two periods are in ceramic technology and the more widespread construction of burial mounds during the Lake Benton Phase time period (Anfinson 1997).

The most common burial arrangement was that of multiple secondary burials in shallow pits (Anfinson 1997). One to a dozen individuals would be interred together, and there does not appear to have been discrimination regarding age or sex in terms of accompanying grave goods and the position of the interred.

Ceramic changes included thinner vessel walls, crushed rock temper, and more surface smoothing. Lake Benton projectile points are small, side-notched, and have slightly concave bases – commonly called Plains Side-Notched. Lake Benton sites show similar settlement and subsistence patterns as Fox Lake sites and, likewise, exhibit no evidence for widespread horticulture.

4.1.3 Late Prehistoric (AD 900 to 1650)

The Late Prehistoric period starts with dramatic changes in ceramic technologies and a reliance on horticulture for subsistence. The shift was gradual, and it is still unclear if existing inhabitants had adopted a new way of life, if new groups of people moved into the area, or if both occurred. Sites from this period are categorized as Plains Village and/or Oneota; however, Woodland sites persisted at least until AD 1200 in the Prairie Lake Region (Anfinson 1997). Great Oasis (AD 900 to 1200) sites are the earliest Plains Village sites in the region (Anfinson 1997; Holley and Michlovic 2013). These sites are concentrated along the western edge of the region.

Cambria Phase (AD 1000 to 1200) sites are more widespread throughout the region, but are less studied (Anfinson 1997; Holley and Michlovic 2013). The Prairie Lake Region may be a marginal zone for Cambria sites, especially in the west. Cambria ceramics are almost all grit-tempered, globular jars with constricted necks, pronounced shoulders, and smooth surfaces. Some grit-tempered sherds at Cambria sites, such as those found at the Fox Lake site, have Oneota-like geometric motifs, but they are not considered Oneota ceramics. This may indicate that people at Cambria sites were borrowing Oneota motifs but continuing to use grit temper instead of shell. Worked bone tools and decorative items are common. Subsistence relied on a wide variety of terrestrial and aquatic animals, maize, squash, sunflower, and wild plants. Cambria sites have bison processing areas and rock-lined hearth features. Cambria sites are divided into four different types: large villages on river terraces (usually the Minnesota River), small villages on river terraces, small habitations on lakes or interior rivers, and burial sites.

Initially, Oneota peoples occupied the region at the same time as Cambria Phase peoples (Anfinson 1986). Most Blue Earth Phase ceramic vessels are shell-tempered, round-bottomed, globular jars with rounded lips and straight to slightly outcurving rims that are slightly everted (Gibbon 1980). Vessel interiors and exteriors are typically smooth and not cord-marked. Vessel shoulders are usually decorated with lines, tool impressions, and sometimes punctates. Many vessels also have decorated strap handles. Common lithics include very small unnotched projectile points and end scrapers. Ground stone tools are abundant and varied. Catlinite pipes are occasionally found at Blue Earth sites. Bone tools, especially those associated with horticulture, are common (e.g., bison scapula hoes and antler picks). Bone decorative items are rare. A variety of terrestrial and aquatic animal bones have been found at Blue Earth sites as food remains. There is very little evidence of bison except in the form of bone tools. Maize, beans, and sunflower appear to be the cultivated plants of choice. Blue Earth habitation sites and cemeteries are generally on elevated outwash terraces on the Blue Earth River floodplain. Smaller habitation sites involved animal processing just outside the floodplain. Sites in the uplands were used for animal processing and lithic reduction. Commonly, large cemeteries were located across streams from large village sites (Anfinson 1986, 1997; Gibbon 2012).

The first Euro-Americans in the region were probably the French, but no French items have been found at sites in the Prairie Lake Region (Anfinson 1997). The end of the Late Prehistoric was a time of flux in the region. Tribes from the east were pressured to move west, territories were redefined, and intertribal warfare increased. By the time that the first Euro-American settlers came to the region, the Dakota or Sioux dominated the Prairie Lake Region (Anfinson 1986).

4.1.4 Contact (AD 1650 to 1837)

Early maps provide some indication of the Native American tribes that inhabited southwestern Minnesota prior to Euro-American settlement. Many of these maps were based on garbled accounts received from neighboring tribes and *coureurs de bois*, rather than first-hand accounts, which themselves were not always reliable (Holley and Michlovic 2013). The Mascoutin may have been living on the upper Des Moines River in the late 1600s. The Oto/Ioway and the Dakota Sioux were reported in southwest Minnesota in the 1700s. The Ioway, displaced by their enemies the Mascoutin, are known to have settled briefly at a trading post on the Blue Earth River in the early years of the sixteenth century (Forsberg 2003).

Both the Ioway and the Eastern Dakota resided in villages where they raised corn, but also engaged in seasonal bison hunts (Forsberg 2003). Accounts suggest that the Eastern Dakota were settled mostly along the Minnesota River, while the Ioway were settled to the south. To some extent, the prairie lands of southwest Minnesota appear to have been a contested hunting ground for both peoples through the 1700s.

By the 1800s, southern Minnesota was known as territory of the Eastern Dakota, including bands of the Santee and the Yankton (Holley and Michlovic 2013:161-179). These people differed from their relations who lived to the west on the Missouri River. In their villages, the Eastern Dakota built a variety of house types including earth lodges, pole-framed gabled houses, tipis, and wigwams. They practiced very little farming and engaged in a hunting and gathering lifestyle even while being semi-sedentary.

4.1.5 Post-Contact (AD 1837 to Present)

The area that would become Lyon County was largely unpopulated by Euro-American settlers prior to 1867, with only a few trappers operating in the region and a few sparse trading posts within its borders (Rose 1912). What few attempts at settlement in the region were met with resistance by the Sioux inhabitants of the region.

Immigration to Minnesota was initially spurred by passage of the Preemption Act of 1841. The act facilitated “the division of public lands into small farms of up to 160 acres,” which were then sold “at not less than $1.25 per acre” (BLM n.d.) Twenty years later, in 1862, Congress passed the Homestead Act, which contained provisions allowing settlers who had filed for homestead claims to retain preemption rights. As a result, they could opt to purchase their land rather than receive it for free after living there for the requisite amount of time and could thus “obtain it sooner” (BLM n.d.). These two acts prompted rapid settlement of the Midwest as a whole, though Lyon County would remain largely untouched by Euro-American settlement until after the conclusion of the Dakota War of 1862.

Permanent settlement only occurred after the conclusion of the Dakota War of 1862, wherein the Santee Sioux rebelled against the federal government after a long period of territorial reduction and secessions of land to state and federal governments and the failure of these institutions to provide the annuities promised to the Santee tribes for their lands (Clodfelter 1998). After the conclusion of the Dakota War the Santee were stripped of their remaining holdings in Minnesota, imprisoned in internment camps for a time, and forced onto the Crow Creek Reservation in South Dakota.

The settlement of Lyon County began in earnest after the conclusion of the Civil War, with the first settlers taking claims in Lynd township (Rose 1912). These homesteaders were followed by a steady stream of immigrants from the eastern and northern states who were followed by immigrants from Northern Europe and the British Isles, most of whom initially engaged in subsistence agriculture.

Lyon County itself was established formally in 1869 and began the process of township division between 1872 and 1883. The county was named after Union General Nathaniel Lyon, who performed tours in the Dakota Territories prior to the beginning of the Civil War (Rose 1912). Custer Township, the section of Lyon

County in which the Survey Corridor lies, was formed in 1876 and was named after General Custer, who died at the Battle of Little Big Horn.

The first railroad in Lyon County was constructed in 1872 and ran across the county from southeast to northwest and passed through Marshall (Rose 1912). The development of the Great Northern and Chicago and Northwestern railroads contributed to an increase in immigration across Lyon County as aspiring settlers took up residence in the county, built sod houses, and began planting crops to sell at market, not just what was needed to live on. These railroads dramatically shaped development in Lyon County, both by promoting community and municipal development and by facilitating the growth of some settlements and the decline of others (Rose 1912). While the region was consistently wracked by winter storms, grasshopper swarms, and wildfires following the establishment of the railroad, Lyon County continued to grow and attract settlers.

The period between 1872 and 1912 was one of concentrated growth marked by the transition from subsistence farming to commercial agriculture and by the arrival and expansion of the railroad, which provided an efficient means to get crops and livestock to market and to import other goods no longer produced on commercial farms. Wheat became the most important crop in Minnesota as large, modernized bonanza farms covered thousands of acres and shipped tons of wheat to flour mills in Minneapolis and on to markets on either coast. Eventually, bonanza farms proved to be economically and environmentally unfeasible with surplus wheat crops contributing to falling wheat prices and soil depletion in advance of the Great Depression and the Dust Bowl (MNDOA 2024).

Infrastructure and railroad development continued into the twentieth century, with the last railroad constructed in the county in 1901 (Rose 1912). As in many agricultural communities across the U.S., railroad construction provided local farmers with a broader demand pool for their goods and enabled communities along its length to benefit from the increased economic opportunities offered by the accessibility of the national market (Roth 1980). Additional historically important infrastructure included the conversion of Minnesota wagon trails to “car trails,” and later the development of county roads, a state-owned trunk highway system and the U.S. Highway System. The town of Marshall is the hub of several of these important regional highways which, in addition to the railroad contributed to settlement and commercial development (MHD 2024).

Today, the economy in Lyon County comprises the healthcare, manufacturing, utilities, and public administration industries in addition to education, construction, and sales. Farming is the leading industry with 93 percent of the county’s 462,000 acres in cropland or dedicated to livestock raising (USDA 2017).

5.0 Research Design and Methods

5.1 Objectives

At the request of Xcel, the primary goal of this investigation is to provide the necessary information to the MN OSA, MN SHPO, and MN PUC for review by confirming the presence or absence of cultural resources within the Project's Survey Corridor. The investigation was also designed to assess any documented resource's NRHP eligibility, or recommend additional work necessary to evaluate same, and evaluate any potentially adverse effects the proposed Project could have on those resources that are considered historic properties (i.e., eligible for listing in the NRHP).

The Phase I Cultural Resource Survey was completed to determine the number and extent of cultural resources present and their relationships to proposed Project features. The study was designed this way to provide the information required to make recommendations for additional testing and/or archival research of those resources that could provide important cultural and scientific data.

In general, cultural resources investigations are useful for identifying loci of human occupation across the landscape and through time. These data can be applied to investigate changes in habitation locations through time, delineating patterns of human habitation relative to other factors, such as population density, availability of local resources (e.g., food, water, and raw materials); the presence and exchange of non-local resources, such as lithic tool raw materials; precontact and historic site formation processes in the Project; and the nature and extent of natural and cultural impacts to sites in the Project.

5.2 Methods

Cultural resources can be defined as any resource that has cultural character (King 2012). Expanding upon this simple definition, "cultural resources" include all landscapes, buildings, sites, districts, structures, or objects that have been created by or associated with humans and are considered to have historical or cultural value. The term "historic property" includes only those cultural resources that are listed in or eligible for listing in the NRHP, which was established by the National Historic Preservation Act in 1966 (54 U.S. Code 300101 et seq., as amended through 2016). MN OSA defines archaeological sites as "any location containing evidence of past human activity that holds significance for most archaeologists" (Anfinson 2005).

5.2.1 NRHP Evaluation Criteria

The criteria for NRHP eligibility are set forth at 36 Code of Federal Regulations Part 60.4 as follows:

a) *The quality of significance in American history, architecture, archaeology, and culture is present in districts, sites, buildings, structures, and objects of state and local importance that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:*

b) *That are associated with events that have made a significant contribution to the broad patterns of our history; or*

c) *That are associated with the lives of persons significant in our past; or*

d) *That embody the distinctive characteristics of a type, period, or method of construction, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or*

e) That has yielded, or may be likely to yield, information important in prehistory or history.

All resources may be eligible under any one or more of these criteria. In many cases, however, historic resources within a given data set are typically eligible under criteria A, B, or C, while the majority of precontact resources are eligible under Criterion D. Guidelines for how to apply the criteria are provided in *How to Apply the National Register Criteria for Evaluation* (NPS 1997) and *Guidelines for Evaluating and Registering Archeological Properties* (NPS 2024b). These guidelines were used for evaluating the historic properties within the Project's Survey Corridor and are briefly summarized in the following paragraph.

For a resource to be eligible under Criterion A, it must be associated with a particular event or pattern of events that can be demonstrated through historic contexts, either regional or local, that document its significance within history (NPS 2024b).

For a resource to be eligible under Criterion B, it must be demonstrated that the associated person is "individually significant within a historic context" and "has made an important contribution to history" The association can be on a local, state, or national level and can usually be demonstrated through historic documents, accounts, or other resources (NPS 2024b).

For a resource to be eligible under Criterion C, the distinctive architectural characteristics of the resource must have importance within historic contexts that are relevant to its particular theme in history. In addition to contextual resources, a comparison of other related properties is usually necessary to evaluate how well it illustrates its distinctive characteristics (NPS 2024b).

Finally, for a resource to be eligible under Criterion D, it must contain or have the potential to contain important information that contributes to the understanding of human history (NPS 2024b).

5.2.2 Field Methods

The field methodology for this study was planned and conducted in consideration of and adherence to methods and techniques described in the MN SHPO's Manual for Archaeological Projects in Minnesota (MN SHPO 2017) and MN OSA's Manual for Archaeological Projects in Minnesota (Anfinson 2005). In cases when circumstances required departure from these general methods, such variation is explained.

A systematic pedestrian surface survey was conducted in the Survey Corridor to determine the presence or absence of artifacts or features on the surface. Where ground visibility was greater than 50 percent, 15-meter (m) interval transects were utilized, and where ground visibility was less than 50 percent, 10 m interval transects were utilized, as required. If the location was in an area of medium to high potential for an archaeological site, the transect interval was decreased to 5 m.

MN OSA requires shovel testing in areas of less than 25 percent ground surface visibility with good to moderate potential for archaeological sites (Anfinson 2005). Ground surface visibility within the Survey Corridor ranged from 40 to 80 percent. Further, soils mapped within the Survey Corridor are generally shallow and hydric, and there was judged to be little to no potential for intact A horizons below the plow zone (NRCS 2024). Therefore, no shovel testing was completed.

5.2.3 Data Collection

Historic-age non-archaeological resources (historic resources), such as buildings, structures, or objects within the Survey Corridor were assessed in the field by a Secretary of the Interior qualified Architectural Historian, photographed, and their locations recorded using a Trimble® Geo7X™ Global Positioning System (GPS) unit with sub-meter accuracy.

Once the extent of a site was determined, the boundary of the site was recorded using a Trimble® Geo7X™ GPS unit running TerraSync® software. Site mapping procedures followed standard archaeological techniques.

High-resolution digital photographs were taken of each feature and of facets of diagnostic or especially unique artifacts. Site overview photos were taken with the intention of representing pertinent elements of the natural and culturally modified landscape, as well as a given area's location relevant to the Survey Corridor.

Data pertaining to the necessary fields of the appropriate standardized Minnesota Archaeological Site Forms or Architectural Resource Form were collected during fieldwork. Preliminary assessments of NRHP eligibility were made based on the combined data presented on the site forms. Site forms were subsequently completed and submitted to MN SHPO for review. Original field forms, field notes, and associated digital files are housed at the Burns & McDonnell office in Bismarck, North Dakota.

5.2.4 Collection Policies

In accordance with Burns & McDonnell's policies for cultural resource investigations, artifacts were not collected from private land without permission from the landowner.

5.2.5 Laboratory Methods

Permission to collect artifacts was not obtained from the landowners within the Survey Corridor. No artifacts were collected in the course of fieldwork described herein, and preliminary artifact analysis (mapping, photography, measurement, and description) was performed in the field. Further research was completed based on the photographs and data recorded during fieldwork.

6.0 Results

Burns & McDonnell archaeologists completed the field survey of the Project over five days: April 15 to April 19, 2024. The effort was directed in the field by Principal Investigator Melinda McCarthy. The Phase I Cultural Resource Survey covered a 312.2 ac (126.34 ha block Survey Corridor.

The methods employed for archaeological survey were planned and conducted in consideration of the requirements described in the Minnesota Manual for Archaeological Projects in Minnesota (Anfinson 2005). Photographs were taken of the landscape and any noteworthy features or subjects throughout the Survey Corridor. At the time of survey, the Survey Corridor had been tilled and the ground-surface visibility ranged from 40 to 80 percent.

6.1 Results Summary

The Phase I Cultural Resource Survey resulted in the documention of one new historic resource, the Garvin Corner Store (field name LC1-001-Block). See **Table 6-1** for a summary of this site, Minnesota Statewide Historic Inventory Portal (MNSHIP) number (No.), and its NRHP recommendation.

Table 6-1: Previously Documented Aboveground Resources in the Study Area

MNSHIP No.	Landowner	Site Type	NRHP Recommendation
LY-CUS-00053	Private	Architectural Site: Garvin Corner Store	Not Eligible

6.2 Newly Recorded Site

6.2.1 LY-CUS-00053 (Garvin Corner Store)

Site LY-CUS-00053 is a historic-age building and a historic/modern dump on a 1-ac section of cleared land at the intersection of U.S. Highway 59 and U.S. Highway 14 in the northwest corner of the Survey Corridor.

Feature (F.)1. is a one-story, Utilitarian building featuring a shallow pitched side-gabled roof (**Photograph 5-1**). The building features a rectangular plan shape and is constructed of concrete blocks. The roof is clad in modern metal panels placed directly over older asphalt shingles. Sections of the modern panels are damaged or missing, exposing the former shingles. The roof features moderate closed eaves. The building features exposed cinderblock walls, painted white, with asbestos siding covering the gable peaks. Most windows on the building are wood-framed and boarded over; however, a single replacement modern aluminum sash window was noted on the northeastern elevation. The building has replacement modern doors, including an overhead aluminum garage door set in an altered opening. The building rests on a concrete slab foundation.

An exact date of construction was not determined for the building; however, the structure is not present on an aerial photograph from 1966 but is visible in aerial photographs from 1984 (NETR 2024); however, a building with a similar plan shape and orientation is depicted on a 1967 topographic map (USGS 1967a, 1967b). Based on these archival resources, as well as the feature's design and construction materials, the site has been assigned a construction date of ca. 1967.

F.2. is composed of a collection of modern and historic trash items piled on the perimeter behind and east of F.1 (**Photograph 5-2**).

Figure 6-1: Survey Results (Aerial)

Photograph 6-1. Overview of the front (northwest) façade and southwestern elevation of F.1, facing east.

Photograph 6-2. Overview of F.2, the trash pile and the rear (southeast) elevation of F.1, facing northeast.

F.2, the trash collection, is composed of a scatter of large, discarded bee boxes, sections of kitchen counter materials, metal wall-mounted shelves, numerous wooden chairs, an oven, two sofas, two 50-gallon drums, six five-gallon buckets, contact paper, and a large pile of mixed lumber. Although nothing in the trash scatter appears older than the ca. 1970 and a majority of the material in the trash pile is modern in nature, the scatter was recorded as a precaution due to its association with the standing structure.

Archival research into the site's background suggests the location was previously home to several ca. 1930 structures; however, these buildings appear to have been completely razed by 1966 (NETR 2024). At least

three buildings are visible in the northwestern corner of the Survey Corridor, near the intersection of U.S. Highways 14 and 59 on a 1938 aerial image (University of Minnesota 2024). The buildings visible on the 1938 imagery are no longer present on imagery by 1966 (NETR 2024).

While no early ownership records could be located for the site area, a 1961 plat map indicates the site was located on a 1 ac parcel owned by Earl and Gladys Kompelien (Nelson 1961). Earl and Gladys Kompelien's obituaries note that they lived near Garvin beginning in the 1950s and owned and operated the Garvin Corner Store for "several years" (Houseman 2007, 2011). Due to this research, the design and location of the building, and the presence of metal shelving resembling that noted in older grocery stores within F.2, the site is tentatively identified as the location of the former Garvin Corner Store.

By 1985, the entire northern half of the Survey Corridor was owned by Dennis Peterson, and the building in the northwest corner is indicated as unoccupied (DSC 1985). This indicates the store was likely in operation for less than 20 years.

The ca. 1967 building on site retains fair integrity. The façade of the building has been altered to expand and infill several original openings. One original single-person entrance doorway currently contains a modern metal garage door, and a new single-person entrance was created just east of the garage door. All but one of the building's windows are boarded over and the sole exposed window opening contains a replacement metal sash window. The roof of the building has been damaged by the wind and the entire building is slowly deteriorating due to neglect. However, the building remains structurally solid, and the interior is shielded from the elements by the window coverings.

The ground surface within the areas containing the previous ca. 1930 structures is currently covered by a modern concrete parking lot and the existing building on site. Further numerous small piles of dirt reveal the ground surface in the area has been extensively disturbed. No early historic artifacts were noted in the agricultural field surrounding the site and these areas had upwards of 75 percent visibility and had been freshly tilled and rained on at the time of survey allowing for excellent ground visibility conditions. Due to this, the earlier site is considered to have been destroyed by the construction of the current site features.

The site features fair to poor integrity of association, materials, workmanship, design, and feeling. Its integrity of setting and location remain intact. The site does not represent an outstanding example of architectural design or serve as an important example of commercial infrastructure. Preliminary research was unable to document an association with significant persons or events. Further, the ground surrounding the site is heavily disturbed and does not retain the potential to yield information important to the history of the area. Therefore, Burns & McDonnell recommends the is not eligible for the NRHP under criteria A, B, C, and D.

7.0 Conclusions and Recommendations

This document provides a summary of archival background research and field investigations within the Survey Corridor for the Lyon County Generating Station in Lyon County, Minnesota.

The Phase I Cultural Resource Survey of the Survey Corridor included a 312.2 ac (126.34 ha) block area. Burns & McDonnell completed the inventory between April 15 to April 19, 2024, and Principal Investigator and Architectural Historian, Melinda McCarthy, and archaeologist, Christina Huling, completed fieldwork for the Project.

No previously recorded sites were located within the Survey Corridor and a single new historic resource was identified within the Survey Corridor, LY-CUS-00053.

7.1 Newly Recorded Site

Site, LY-CUS-00053, is a historic grocery store and associated trash scatter, which has been recommended not eligible for the NRHP.

Burns & McDonnell therefore recommends a determination of *No Historic Properties Affected*, as documented herein and mapped. If areas beyond the current Survey Corridor are to be used during construction, Burns & McDonnell recommends completion of addendum Phase I Cultural Resource Survey to determine the presence or absence of any cultural resources within these areas.

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BURNS McDONNELL