Nashwauk Public Utilities Commission • Minnesota Power

Electric Power Delivery Project

Route Permit Application
June 2009

Docket # E280/TL-09-512

Prepared by

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Nashwauk Public Utilities Commission • Minnesota Power

Electric Power Delivery Project

June 1, 2009

VIA EFILING

Dr. Burl W. Haar
Executive Secretary
Minnesota Public Utilities Commission
121 7th Place East, Suite 350
St. Paul, MN 55101

Re: Application for a Route Permit for the Essar Steel Minnesota Project 230 kV Transmission Line Project (Essar Project)
Docket No. E280/TL-09-512

Dear Dr. Haar:

Nashwauk Public Utilities Commission (Applicant) and Minnesota Power (co-applicant) hereby submit via eFiling an application for a Route Permit to construct four 230 kV transmission lines and two 230 kV substations to supply electric power to the Essar Steel Minnesota Project (the Essar Project). The Route Permit application is being filed pursuant to Minn. Stat. Ch. 216E and Minn. Rules Ch. 7849.

The proposed Essar Project includes 37 miles of new transmission line construction and would have the Boswell, Shannon, and Blackberry substations as the power sources for the four transmissions lines. The purpose of the Essar Project is to supply reliable electric power to a single source entity - Essar Steel Minnesota. Essar Steel has obtained state approvals to reactivate the former Butler Taconite mine by developing new facilities, including a taconite pellet plant and steel production plant. The proposed transmission lines will accommodate the additional demand from Essar Steel.

Notice of the application filing will be made pursuant to Minn. Stat. § 216E.03, subd. 4 and Minn. Rules 7849.5240. The initial permit application fee payment required under Minn. Stat. § 216E.18, subd. 2a and Minn. Rules 7849.5210 has been delivered to the Office of Energy Security.

Please direct any questions you may have with respect to this filing to Bob Lindholm at Minnesota Power at (218-355-3342) or Bryan Adams at Nashwauk Public Utilities Commission at (218-885-1210).

Sincerely,

Bryan Adams
Nashwauk Public Utilities Commission

Bob Lindholm
Minnesota Power

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List of Acronyms

Acronym	Meaning
28 Line	Minnesota Power's 115 kV Boswell to Nashwauk 28 Line
62 Line	Minnesota Power's 115 kV Blackberry to Nashwauk 62 Line
63 Line	Minnesota Power's 115 kV Blackberry to Nashwauk 63 Line
94 Line	Minnesota Power's Boswell to Shannon 230 kV 94 Line
AADT	Average Annual Daily Traffic
ACSR	aluminum conductor steel reinforced
AIMD	active implantable medical devices
BMP	Best Management Practice
CR	county road
CSAH	county-state aid highway
dBA	A-weighted decibel
DNR	Minnesota Department of Natural Resources
DOC	Department of Commerce
EAF	electric arc furnace
EHS	extra high strength steel
EMF	electric and magnetic fields
EPA	Environmental Protection Agency
EQB	Minnesota Environmental Quality Board
ESM	Essar Steel Minnesota
FEMA	Federal Emergency Management Agency
GIA	grant-in-aid
GIS	geographic information system
HVTL	high-voltage transmission line
Hz	Hertz
ICD	implantable cardioverter defibrillator
kcmil	thousand circular mil
kV	kilovolt
kV/m	kilovolts per meter
mA	milliAmperes
MAAQS	Minnesota Ambient Air Quality Standards
mG	milliGauss
MHz	megahertz
MnDOT	Minnesota Department of Transportation
MP	Minnesota Power
MPCA	Minnesota Pollution Control Agency
NAAQS	National Ambient Air Quality Standards
NAC	Noise Area Classification
NERC	North American Electric Reliability Corporation
NESC	National Electrical Safety Code
NHIS	National Heritage Information System

Acronym	Meaning
NIEHS	National Institute of Environmental Health Sciences
NPDES	National Pollutant Discharge Elimination System
NPUC	Nashwauk Public Utilities Commission
NRCS	Natural Resource Conservation Service
OES	Office of Energy Security
OPGW	optical ground wire (fiber)
OSHA	Occupational Safety and Health Act
ppb	parts per billion
ppm	parts per million
MPUC	Minnesota Public Utilities Commission
PWI	Public Water Inventory
RF	radio frequency
ROC	region of comparison
SGCN	Species in Greatest Conservation Need
SGR	State Game Refuge
SHPO	Minnesota Historical Society - State Historic Preservation Office
SNA	Scientific and Natural Area
subd	Minnesota Statutes subdivision
Subp	Minnesota Statutes Subpart
SWPPP	Stormwater Pollution Prevention Plan
TH	trunk highway
USACE	U.S. Army Corps of Engineers
USDA	United States Department of Agriculture
WMA	Wildlife Management Area

1.0 EXECUTIVE SUMMARY

Nashwauk Public Utilities Commission (Applicant) and Minnesota Power (co-applicant) are applying for a Route Permit to construct four 230 kV transmission lines and two 230 kV substations to supply electric power to the Essar Steel Minnesota Project (the Project). The Boswell, Shannon, and Blackberry substations would be power sources for the four transmissions lines. The proposal includes 37 miles of new transmission line construction.

1.1 Project Description

As required by Minnesota law, the Applicants have identified a preferred and alternate route for each of the four transmission lines (Map 1-1). Study Area 1 includes Route 1 and Route 1A. This line would tap into the existing Minnesota Power 94 Line (on the Shannon end) and would run south for seven to nine miles into the proposed Essar Steel Plant Substation.

Study Area 2 includes Route 2 and Route 2A. Route 2 taps into the existing Minnesota Power 94 Line (at the Boswell end) and would run south for less than two miles, then east along Minnesota Power's existing 28 Line for approximately eight miles, where it would terminate at the Essar Mine Substation. Route 2A would tap into the existing Minnesota Power 94 Line (on the Boswell end) and would parallel CSAH 60 for approximately four miles. The route would continue through on a new greenfield area for approximately four miles and then would turn south for approximately 1.5 mile into the Essar Mine Substation.

Study Area 3 includes Route 3 and Route 3A. Route 3 would run less than a mile north and then turn northeast and parallel existing Minnesota Power 115 kV 63 Line from the Blackberry Substation (62 Line would be dismantled to provide a right-of-way for Route 3) for approximately 10 miles, then turn northwest for approximately two miles, then west for less than a mile before terminating at the Essar Steel Plant Substation. Route 3A would run a mile west, then would turn north for approximately eight miles, then east along Minnesota Power's 115 kV 28 Line for approximately four miles, it would then bypass the proposed Essar's Mine Substation run 2.8 miles where it would terminate at the Essar Steel Plant Substation.

Study Area 4 includes Route 4 and Route 4A. This study area is located entirely within Essar property; the new transmission line would connect the new substations. The Essar plant utility right-of-way, including a new railroad and several secondary roads, are located within the study area. The transmission line routes within this study area would be two to three miles long. This 230kV transmission line effectively connects both Essar substations to the three sources of power.

The Essar Mine Substation would occupy 1.4 acres of land. This substation would be on the western side of the Essar property. The substation would be connected to the Boswell end of the 94 Line and the Essar Steel Plant Substation.

The Essar Steel Plant Substation would occupy 4.5 acres of land. This substation would be located on the northern portion of the Essar property. The substation would be connected to the Shannon end of the 94 line, the Blackberry Substation and the Essar Mine Substation.

Final transmission line engineering and design have not been completed; however, the proposed design is two-pole H-frame structures for the majority of the Project. Each H-frame structure would range in height from 60 to 90 feet and would be placed 600 to 1,000 feet apart. The right-of-way width would be 130 feet.

Placing any two of the 230 kV circuits serving Essar Steel within the same right-of-way increases the probability that a single event, could result in a simultaneous outage of two of the three 230 kV circuits serving the ESM Project. Studies have indicated that a disturbance resulting in the simultaneous loss of two of the 230 kV circuits supplying Essar Steel would result in outages to the steel plant. Because of this impact on the reliability and security of the electric supply to Essar Steel, the Applicants prefer route alternatives that do not result in placement of the 230 kV lines on common rights-of-way.

The proposed route widths vary throughout each of the study areas depending on existing infrastructure. Generally, the route width is 500 feet wide where the route includes existing transmission line(s) rights-of-way. In locations where there is no existing infrastructure, the route width would be either 1,500 feet or 3,500 feet. The right-of-way within the routes would be 130 feet.

1.2 Project Purpose

The purpose of the Project is to supply reliable electric power to a single source entity - Essar Steel Minnesota (ESM). ESM has obtained state approvals to reactivate the former Butler Taconite mine by developing new facilities, including a taconite pellet plant and steel production plant (Minnesota Steel Environmental Impact Statement and Record of Decision, August 10, 2007). There are three committed phases to the ESM Project, which would require increases in the power demand as follows:

- Phase I includes construction of the taconite production facility scheduled to be operational in early 2011, and would have a requirement of 95 megawatts (MW) of electric power
- Phase II includes the Direct Reduced Iron (DRI) facility scheduled to be operational in fall 2012, and would have an additional power demand of approximately 50 MW, and;
- Phase III includes the first Steel Slab plant melt line scheduled to be operational in fall 2013, and would have an additional power demand of 155 MW

When the three phases are operational, the plant would require approximately 300 MW of electric power. At least two of the 230 kV source lines must be in service to provide adequate electric supply to the EMS Project and provide required system short circuit capability for the proper operation of the Steel Slab plant's large electric arc furnace (EAF). Although not committed to, the ESM site permit allows for a second steel slab melt line, which would add an additional 200-220 MW of electric demand.

1.3 Regulatory Requirements

Under the Minnesota Power Plant and Siting Act (Minn. Stat. Ch. 216E), the Minnesota Public Utilities Commission (PUC) regulates transmission line construction in Minnesota. In addition, this Project meets the definition of a Large Energy Facility under Minn. Stat. § 216B.2421, subd. 2(2) and meets the requirements for a Certificate of Need under Minn. Stat. § 216B.243. However, this Project meets the Minn. Stat. § 216B.243, subd. 8(2) exemption criteria for construction of a high voltage transmission line that serves the demand of a single customer at a single location. The single customer for this proposed Project would be ESM. All four proposed 230 kV transmission lines would terminate at the two proposed 230 kV substations located at the ESM site. Because this project will be serving a single customer, a CON would not be required. The PUC determines the route and any conditions on the construction, operation, and maintenance of the transmission line through its route permitting process.

Minn. Stat. § 216E.03, subd. 2, provides that "[n]o person may construct a high voltage transmission line without a Route Permit from the commission. A high voltage transmission line may be constructed only along a route approved by the Commission." A high voltage transmission line is any transmission line "designed for and capable of operation at a nominal voltage of 100 kilovolts or more…" (Minn. Stat.

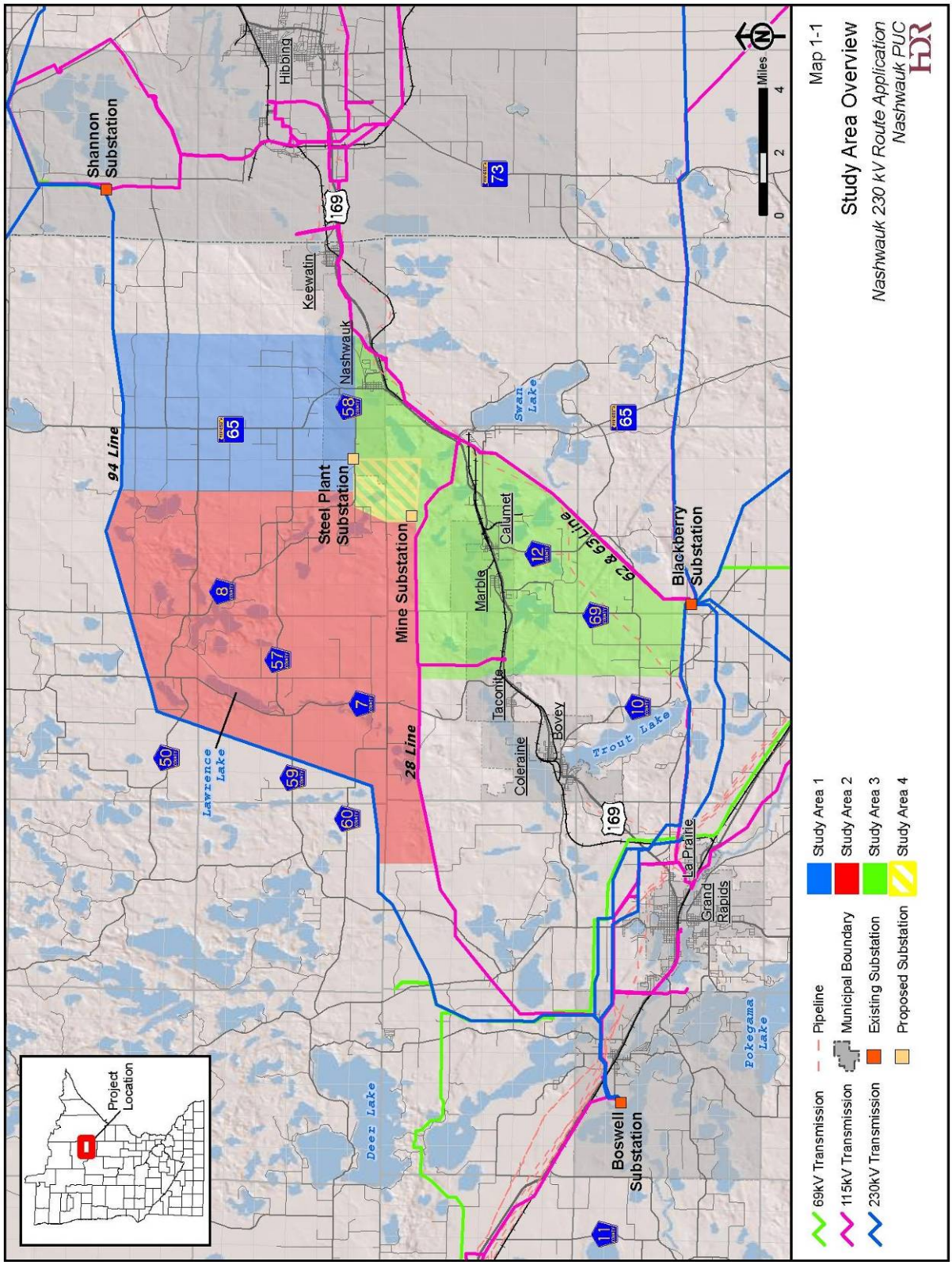
§ 216E.01, subd. 4; Minn. Rules 7849.5010, Subp. 9). A Route Permit from the PUC is required for this Project.

1.4 Costs

The Project's total transmission line cost estimate for single circuit H-frame construction would range from $28.3 million for the four preferred routes to $32 million for the alternate routes. Any steel single pole construction would add significantly to the base cost estimate.

The cost for construction of the proposed Essar Mine Substation is estimated to be $13.8 million and the cost for construction of the Essar Steel Plant Substation is estimated to be $31.4 million. The expansion at the Blackberry substation is estimated to be $1.1 million. The Project's total cost estimate (transmission lines and substations) ranges from $74.6 million to $78.3 million depending on route selection.

Map 1-1: Study Area Overview



1.5 Potential Environmental Impacts

The potential environmental impacts of the proposed Project are addressed in detail in chapters 6 through 10 in this Application. Some of the impacts, such as public health, safety, and noise, are essentially the same regardless of which route is selected. A summary of the potential impacts for each of the four transmission lines are presented below.

Routes 1 and 1A: Route 1 was selected as the Preferred Route because there would be less environmental impact, in general, there are two fewer homes within 500 feet of Route 1, fewer acres of forest impact, lower construction costs, and less direct impacts to land because of its shorter length. There are no existing transmission lines, pipelines, or railroads in the study area; however, Route 1A would follow a road right-of-way for under a mile.

Routes 2 and 2A: Route 2 was selected as the Preferred Route because it would parallel and utilize an existing transmission line right-of-way for nearly 80 percent of its length, would require fewer roadway crossings, and would be constructed in a more remote location away from residences and tourists.

Routes 3 and 3A: Route 3 was selected as the Preferred Route because it would follow an existing transmission line right-of-way for approximately 79 percent of its length, would impact fewer acres of forest and wetlands, and would be less costly because of its shorter length, and avoids placement of two of the 230 kV lines serving Essar within the same corridor.

Routes 4 and 4A: Route 4 was selected as the Preferred Alternative because it would impact less forest and wetland, there are five fewer homes within 500 feet of the route, and the route is approximately 0.2 mile shorter than Route 4A. Neither of the routes would follow existing transmission lines, however, Route 4 would follow an extensive new utility right-of-way (water and slurry pipeline, truck haul road, gas pipeline, railroad) on the ESM property for approximately 1.5 miles.

1.6 Mitigation

The Applicants would implement Best Management Practices (BMPs) to minimize impacts from construction of the transmission lines. Agricultural land that is crossed would be restored after construction is complete, work in wetland areas would be conducted in the wintertime to the extent possible and runoff to surface waters would be controlled to comply with State and federal permits.

In accordance with Minn. Stat. § 216 E. 10, subd. 3(b) the Applicants notified the Commissioner of the Department of Agriculture in a letter dated December 22, 2008 of the transmission line project. The applicant has not heard back from the Department of Agriculture at the time of filing this Application. If a request to implement an Agricultural Impacts Mitigation Plan is received the Applicant would work with the Department of Agriculture to develop the plan.

1.7 Conclusion

The data presented in this Route Application show that construction of the four new transmission lines along the routes preferred by the Applicants would comply with the applicable standards and criteria set out in Minn. Rules 7849.5900. The transmission lines are consistent with State of Minnesota goals to conserve resources; minimize environmental impacts, human settlement impacts, and land use conflicts; and ensure the State's electric energy security through efficient, cost-effective infrastructure.

The Applicants are requesting that the PUC issue a Route Permit for the four transmission line routes that are preferred by the Applicants—Route 1, Route 2, Route 3, and Route 4—as well as the associated facilities, Essar Mine Substation and Essar Steel Plant Substation.

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