ENVIRONMENTAL ASSESSMENT

In the Matter of the Great River Energy and Itasca-Mantrap Cooperative Electrical Association Application for a Route Permit for the RDO Project Transmission Line and Substation in Hubbard County

PUC Docket Number: ET2/TL-06-468

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List of Acronyms and Abbreviations Used in this Document

BMP	best management practice
CON	Certificate of Need
dB	Decibels
dBA	A-weighted sound level recorded in units of decibels
DNR	Minnesota Department of Natural Resources
EA	Environmental Assessment
EMF	electromagnetic field
EFP	Energy Facility Permitting
EQB	Minnesota Environmental Quality Board
FAA	Federal Aviation Administration
GRE	Great River Energy
HVTL	high voltage transmission line
Hz	Hertz
kV	Kilovolt
MDH	Minnesota Department of Health
DOC	Minnesota Department of Commerce
DOT	Minnesota Department of Transportation
PCA	Minnesota Pollution Control Agency
MW	megawatt
NAC	noise area classification
NESC	National Electrical Safety Code
NIEHS	National Institute of Environmental Health Sciences
NPDES	National Pollution Discharge Elimination System
NWI	National Wetlands Inventory
ppm	parts per million
PUC	Minnesota Public Utilities Commission
ROW	Right-of-Way
RUS	Rural Utilities Service
SHPO	State Historic Preservation Office
TH	Trunk Highway
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey

1.0 Introduction

On April 6, 2006, Great River Energy (GRE) and Itasca-Mantrap Cooperative Electrical Association (Itasca-Mantrap) submitted a transmission line route permit application under the alternative permitting process to the Public Utilities Commission (PUC). On April 21, 2006, the PUC issued an order accepting the GRE RDO Project application as complete, appointed a public advisor, and initiated public review procedures.

This Environmental Assessment (EA) provides information about and analysis of the potential human, environmental and economic impacts of the proposed project. Minnesota's permitting rules require an EA be completed for projects of this size and made available to the public.

1.1 Project Description

GRE and Itasca-Mantrap propose to upgrade approximately 2.5 miles of existing 34.5 kilovolt (kV) transmission line to a 115 kV High Voltage Transmission Line (HVTL) within or near existing transmission right-of-way (ROW) or alternative between the Itasca-Mantrap RDO Substation near Park Rapids, Minn. and the GRE "HP" 115 kV HVTL. A portion of the proposed upgraded transmission line will include approximately one (1) mile of double circuit 115/34.5 kV line along Minnesota Trunk Highway (TH) 87. The Applicants propose to upgrade the Itasca-Mantrap RDO substation to allow a 115 kV electrical supply source. See Figure 2.

1.2 Project Location

The RDO Project is located in Hubbard County in Sections 12 and 13 of Straight River Township and Section 18 of Hubbard Township. See the project vicinity map in Figure 1 and the project location map in Figure 2.

Figure 1. Project Vicinity Map

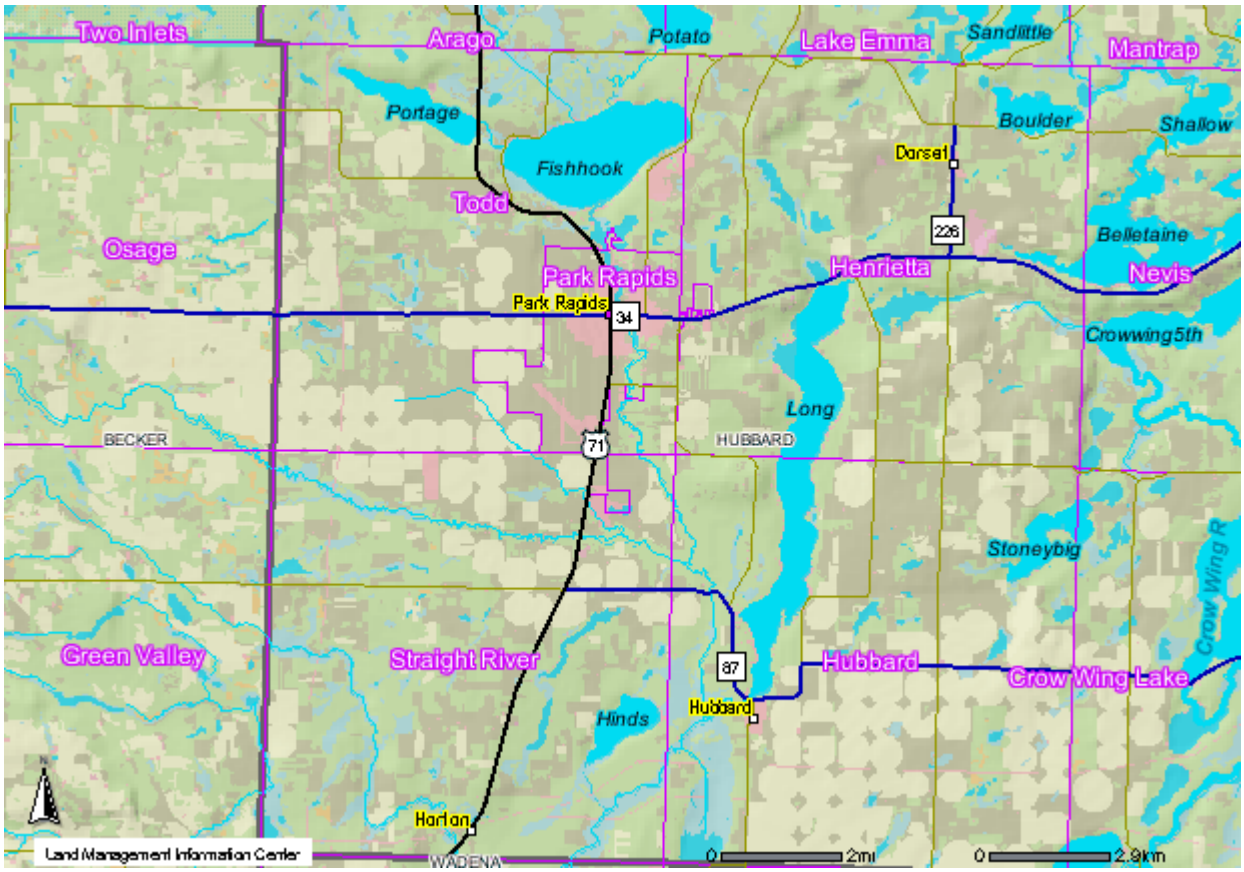

Figure 2. Project Location Map with Proposed Alternative
Courtesy Great River Energy

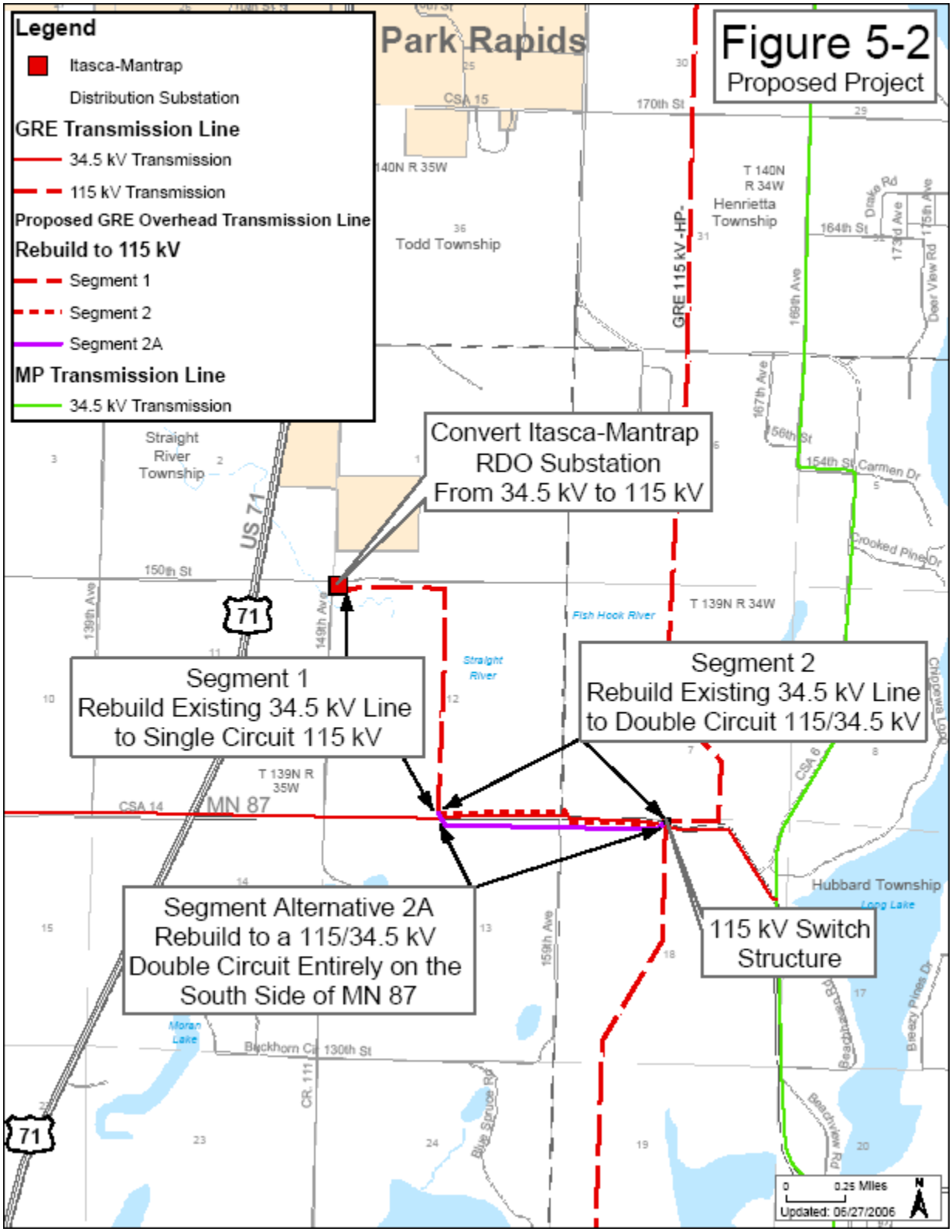

Table 1. Current and Proposed Structures and Right-of-Way Requirements

Project Component	Length	Structure Type	Average Structure Height	Average Span Length	ROW
Segment 1 – Single Circuit 115 kV	1.5 miles	Single Pole, Wood, Horizontal Post Structures	60-75 ft..	350-400 ft.	70-100 ft.
Segment 2 and 2A (Alternative) – Double Circuit 115/34.5 kV	1.0 mile	Singel Pole, Wood, Double Circuit, Horizontal Post Structures	70-85 ft.	300-350 ft.	70-100 ft.
Existing GRE 34.5 kV line	2.5 miles	Single pole, wood, horizontal cross arm	35-40 ft.	Approx 450 ft.	70 --100 ft.

1.3 Project Purpose

The Park Rapids area served by Itasca-Mantrap is facing problems maintaining minimum voltage levels under certain system conditions. The entire Park Rapids area, including the RDO Substation, is served by a radial 34.5 kV circuit. The RDO Substation serves the Lamb-Weston-RDO (RDO plant) potato processing plant, which has a peak load of approximately 10 MW. When the RDO plant is at its peak load it will draw down or pull down voltage levels on the surrounding 34.5 kV system served by the radial 115 kV circuit. This may result in brownouts or rolling blackouts under certain system conditions such as unplanned or planned transmission outages, especially on loss of the larger radial transmission 115 kV circuit.

The Applicants indicate that the RDO Project is one step in alleviating reliability issues in the Park Rapids area. Voltage support will improve in the Park Rapids area served by the 34.5 kV circuit by switching the RDO Substation to a 115 kV source. The proposed project will also provide greater voltage stability for the RDO potato processing plant.

The Applicants indicate that the proposed Long Lake-Badoura 115 kV transmission project will be the second step in alleviating reliability problems in the Park Rapids area. The Long Lake-Badoura project received a Certificate of Need and designation as a priority electric transmission project by the PUC on May 25, 2006, under the Biennial Transmission Planning process. See PUC Docket ET2, E015/TL-05-867. The Long Lake-Badoura project is expected to enter the transmission line routing process by the end of 2006.

If a transmission route permit is issued to GRE for the project, GRE will own the proposed upgraded 115 kV and 34.5 kV transmission lines. Itasca-Mantrap will continue to own the RDO

Substation, as well as the proposed substation upgrades. The Applicants indicate the desire to begin construction of the proposed RDO Project as soon as late summer or autumn 2006.

1.4 Project Alternatives

Pursuant to Minnesota Rule 4400.2750, the only project alternatives considered in this EA are those specifically identified in the June 14 EA Scoping Decision issued by DOC.

On May 23, 2006, the GRE filed public comments with the Department proposing a route alternative. The route alternative proposed would use the south side (rather than the north side) of TH 87 for approximately one mile to the proposed tap at the GRE HP HVTL for the double circuit portion of the transmission line. Evaluation of this alternative is included in the EA.

GRE initially proposed routing the upgraded lines exclusively within the existing 345 kv line alignment and ROW. During the scoping period, GRE proposed a route alternative using the south side rather than the north side of TH 87 for the double circuit portion of the line between the line's intersection with TH 87 to 159th Avenue. East of 159th Avenue the proposed alternative route would follow the existing ROW on the south side of TH 87 until the line terminates at a proposed junction switch at the GRE "HP" line immediately west of the Straight River in Hubbard Township Section 18. The alternative route (Segment 2A) would require GRE to the acquisition of about one half to three quarters of a mile of transmission easement on the south side of TH 87 and may allow the abandonment of the same amount of ROW on the north side of TH 87.

The EA will consider impacts of routing the proposed line on the north and/or south side of TH 87.

No additional alternatives were suggested by the Applicants or any other party, except for expressing preferences for the route on a particular side of the road or that the project be sited elsewhere. The public comments can be reviewed at:

http://energyfacilities.puc.state.mn.us/Docket.html?Id=18517

1.5 Sources of Information

Much of the information contained within this document was provided by the Applicants in the ***"Great River Energy and Itasca-Mantrap Cooperative Electrical Association Application for a Route Permit for the RDO Project Transmission Line and Substation in Hubbard County"*** (Application). First hand information was gathered by site visits along the route. Additional sources of information are listed below:

- Minnesota Pollution Control Agency (http://www.pca.state.mn.us/)
- Minnesota Department of Natural Resources (http://www.dnr.state.mn.us/index.html)
- Minnesota Department of Health (http://www.health.state.mn.us/)
- Minnesota Department of Administration, State Demographic Center (http://www.demography.state.mn.us/)
- PUC Docket E002/TR-05-1192 - Xcel Energy Application for a Route Permit for the Eastwood Transmission Line Project

2.0 Regulatory Requirements

The authority for high voltage transmission line permits was transferred from the Environmental Quality Board (EQB) to the PUC by the Minnesota Legislature on July 1, 2005 (see S.F. 1368). The DOC Energy Facility Permitting (EFP) staff coordinates the routing process on behalf of the PUC, which makes decisions on issue route permits.

2.1 PUC Permit Requirement

No person may construct or upgrade a high voltage transmission line without a route permit from the PUC, and a high voltage transmission line (HVTL) may be constructed only along a route approved by the PUC (Minnesota Statutes 116C.57 Subd. 2). An HVTL is defined as any electric transmission line capable of operating at a voltage of 100 kV or greater. (Minnesota Statutes 116C.52 Subd. 4)

2.2 Environmental Assessment Requirement

The DOC is required to prepare an EA on the proposed project. The EA is intended to contain information on the human and environmental impacts of the proposed route and address any mitigation measures of any impacts of the proposed HVTL. According to Minnesota Statutes 116C.576 Subd. 5, the EA is the only state environmental review document required to be prepared on the proposed project.

2.3 Scoping Environmental Impacts and Alternative Routes

Pursuant to Minnesota Rule 4400.2750 Subp. 2, the DOC EFP unit held a public information meeting on May 15, 2005, at the Straight River Township Hall near Park Rapids, Minnesota, to discuss the proposed RDO Project with the public and to solicit input into the scope of the EA to be prepared. The public was given until June 2, 2006, to submit written comments regarding the scope of the EA and to propose alternative routes.

GRE proposed a route alternative during the scoping period; it is included in this EA.

DOC Commissioner Glenn Wilson issued the Scoping Decision for this project on June 14, 2006 (see Appendix A), and the decision was mailed to persons on the project mailing list on the same day.

No member of the public raised additional environmental concerns in their comments or recommended alternatives not already proposed in the Application. The issues addressed in the EA are based on research by the Applicants and on the research and field observations of EFP staff.

2.4 Certificate of Need

A Certificate of Need is not required for this project. The RDO Project is greater than 100 kV and under ten miles in length. The project is exempt under Minnesota Statute 216B.2421 Subd. 2 (3).

3.0 Assessment of Impacts and Mitigation

Regardless of the route, there are a number of potential impacts associated with an HVTL that must be taken into account on any project. Minnesota Rule 4400.3150 designates certain factors that must always be considered when examining a high voltage transmission line. These and other factors are addressed below.

3.1 Description of Environmental Setting

The proposed GRE RDO Project is located immediately south of Park Rapids, Minnesota. The area between the RDO Substation and the GRE HP 115 kV HVTL line is a mixture of irrigated agricultural land, mixed conifer and deciduous wood lots, and the Lamb Weston RDO Potato processing facility and landfill, which is an industrial land use. The general area contains active farmsteads, rural residential homes, and seasonal recreational homes. The general area has many lakes, rivers and streams supporting a vibrant regional tourism industry, including the Straight River, a designated trout stream. The Park Rapids municipal airport is approximately one mile northwest of the RDO Substation site and the Park Rapids city limits is approximately 2-3 miles directly north of the project route. The area contains several 34.5 kV electrical lines, including the line proposed in the Application for upgrade, as well as, one major 115 kV transmission line. United States Highway 71 runs generally north-south approximately one half to two miles west of the proposed project route.

3.2 Potential Impacts on Human Settlement

3.2.1 Socioeconomic

Hubbard County is a rapidly growing area.

According to the 2005 Hubbard County Land Use Plan (CITE), the county's population increased 23 percent between 1990 and 2000. Population is expected to grow by approximately 28 percent by the year 2020. Table 2, taken from the Application, references county population statistics and is reproduced below.

Table 2. Population and Income

Location	Population 1990	Population 2000	Change 1990-2000
Minnesota	4,375,099	4,919,479	12.4 %
Hubbard County	14,939	18,376	23.0%
Park Rapids	2,863	3,276	14.4 %
Straight River Township	481	662	24.6 %
Hubbard Township	631	786	37.6 %

Sources: Hubbard County Land Use Plan, 2005.

According to US Census data, Hubbard County's 2003 median household income was $36, 438 compared with the Minnesota median of $50,750. Hubbard County in 2003 had 10.4 percent of its persons living in poverty which is a slightly higher percentage than the Minnesota median at 8 percent. Hubbard County also has a greater proportion of white non - Hispanic persons than the statewide average (95.8% vs. 86.7% respectively). (Hubbard County QuickFacts. US Census Bureau. http://quickfacts.census.gov/qfd/states/27/27057.html).

The economy of Hubbard County is dominated by three industries: manufacturing, retail trade, and health care. The table below summarizes the 2002 Census Data on these industries.

Table 2. Leading Hubbard County Industries

Sector	2002 Sales	2002 Payroll	Employees
Manufacturing	$202,789,000	$27,001,000	1026
Retail Trade	$158,444,000	$15,720,000	878
Health Care and Social Assistance	$52,240,000	$23,059,000	844

U.S. Census, 2002 Economic Census, Hubbard County

The Lamb–Weston RDO potato processing plant is a large manufacturer of frozen potato products such as hash browns and French fries. The company is one of the largest employers in Hubbard County and is the leading company in the manufacturing sector. The proposed RDO Project seeks to provide additional reliability, resulting in fewer unplanned electrical outages to the RDO facility and others in the community. The proposed transmission project may have substantial impacts on the county economy.

If the RDO Project is permitted and provides the electrical system benefits that the Applicants suggest, electric customers in the area will enjoy a more reliable electrical system. Enhanced reliability may prevent economic losses at area residences, public services, and businesses due to unplanned disruptions or outages on the 34.5 kV system.

3.2.2 Displacement

The GRE RDO Project and the route alternative will not displace any residential homes or businesses.

3.2.3 Noise

Transmission lines, conductors and transformers produce noise under certain meteorological and transmission system conditions. The level of noise or its loudness depends on conductor conditions, voltage level, and weather conditions. In foggy, damp, or rainy weather conditions, power lines can create a subtle crackling sound due to the small amount of the electricity ionizing the moist air near the wires. During heavy rain the general background noise level is usually greater than the noise from a transmission line. During light rain, dense fog, snow, and other times when there is moisture in the air, the proposed transmission lines may produce audible noise higher than rural background levels but similar to household background levels. During dry weather, audible noise from transmission lines is a nearly imperceptible, sporadic crackling sound.

The Minnesota Pollution Control Agency noise regulations (Minnesota Rule 7030.0050) list various activity categories by Noise Area Classification (NAC). The table below identifies the established noise standards for daytime and nighttime by NAC. The standards are expressed as a range of dBA within a one hour period; L_{50} is the dBA that is exceeded 50 percent of the time within an hour, while L_{10} is the dBA that is exceeded ten percent of the time within the hour.

Table 3. MPCA Noise Standards

Noise Area Classification	Daytime		Nighttime	
	L_{50}	L_{10}	L_{50}	L_{10}
1	60	65	50	55
2	65	70	65	70
3	75	80	75	80

Residences fall within NAC 1. Based on estimates provided by GRE audible noise generated from the transmission line is not expected to exceed the Minnesota noise standards even at the homes closest to the proposed line segments.

The existing RDO Substation will continue to create a small amount of noise if a transformer capable of handling a 115 kV supply is added. GRE reports in its Application that the nearest home is one-quarter (1/4) of a mile from the substation. Substation noise is not expected to be audible at that distance. The RDO Substation also abuts the RDO Plant, which is a large industrial facility, and will not affect the operation of the factory.

Another source of noise associated with transmission lines is an electromagnetic generated noise termed Corona. Corona on transmission line conductors can cause interference with radio waves, primarily with AM radio stations and the video portion of TV signals, depending on the frequency and strength of the radio and television signal.

Interference with communications equipment is also caused by loose or damaged hardware on the transmission line itself and can be remedied by repairing equipment.

Radio and television interference occasionally occurs. GRE will investigate all such problems and correct any communications problems caused by or located near GRE facilities. Mitigation or correction may include repairing transmission line equipment, modification or movement of communications antennas.

3.2.4 Aesthetics

The existing 34.5 kV line and ROW have a visual impact on surrounding areas. Since the RDO Project is a transmission line upgrade along or near existing ROW, the proposed project will incrementally change visual impacts. Such incremental change is often subjective. No adverse impact is expected for the proposed RDO Project.

Presently, the 34.5 kV line runs along Segment 1 and Segment 2, as well as westerly along TH 87 beyond the proposed route. The existing 34.5 kV line is a wood pole, single circuit 34.5 kV line and is approximately 35 - 40 feet in height and approximately 450 feet in span length. The current line utilizes a wood cross arm type of structure. The GRE HP, 115 kV transmission line runs generally north-south along the eastern end of the proposed project area and is visible to persons using TH 87 and other area roads.

Two types of structures are proposed for the RDO Project. In Segment 1, wood pole, single circuit 115 kV structures will be utilized (see Figure 3). Segments 2 and 2A along TH 87 will use wood pole, double circuit 115 kV/34.5 kV structures (see Figure 4). The expected height and length of spans between poles is represented the Table 1. GRE indicates that the design of the proposed “horizontal post” 115kV structures will minimize ROW width and visual impact by utilizing the shortest possible arms extending from the structures.

The proposed 115 kV and 115/34.5 kV lines will be nearly twice the height of the current line and have a similar or slightly shorter span length. Segment 2A would move the proposed line farther away from three homes within approximately 110 feet of the existing line and potentially closer to one home. However, the proposed line utilizing either route will not pose a significant new visual impact on the surrounding areas.

If the proposed RDO Project is permitted and built, the existing 34.5 kV lines, structures and associated facilities will be removed and land restored.

Some additional tree clearing may be required in existing ROW in Segments 1 and 2 to safely accommodate the taller transmission line and wider span. Some new tree clearing may be required along Segment 2A if selected.

GRE has proposed the RDO Project within or along existing electrical ROW and along existing road ROW. This practice helps to reduce impacts on all types of resources and is consistent with state policy to minimize expansion of transmission line ROW.

Figure 3. Typical GRE 115 kV/34.5 kV Double-Circuit Structure

Figure 4. Typical GRE 115 kV Single-Circuit Structure

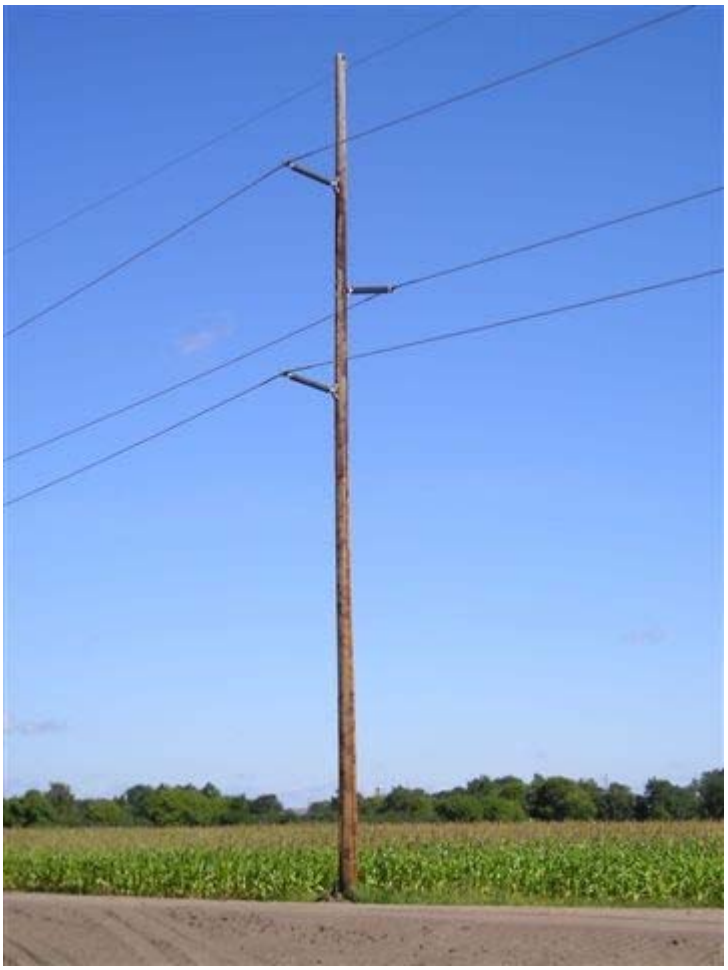

Figure 5 Typical GRE 115 3-Way Switch Structure

3.2.5 Human Health and Safety

The RDO Project will be designed in compliance with local, state, National Electrical Safety Code (NESC), Rural Utilities Service (RUS), and GRE standards regarding clearance to ground, clearance to crossing utilities, clearance to buildings, strength of materials, and ROW widths. GRE construction crews and/or contract crews will comply with local, state, NESC, RUS, and GRE standards regarding installation of facilities and standard construction practices. Established company and industry safety procedures will be followed during and after installation of the transmission line. This will include clear signage during all construction activities.

The proposed transmission line will be equipped with protective devices to safeguard the public from the transmission line if an accident occurs, such as if a structure or conductor falls to the ground. The protective devices are breakers and relays located where the line connects to the substation. The protective equipment will de-energize the line should such an event occur. In addition, the RDO Substation is and will continue to be fenced and access limited to authorized personnel. The proposed tap and switch structure at the GRE HP 115 kV HVTL will be constructed more than 35 feet above the ground on a transmission switch structure similar to, but stronger than a typical transmission pole (See Figure 5). Utility personnel will be able to access and operate the switch manually from the ground. Proper signage will be posted warning the public of the risk of coming into contact with the energized equipment.

All electrical wires and electric appliances, including such items as electric blankets, hair dryers, microwave ovens, and distribution and transmission lines, create varying levels of electric and magnetic fields (EMF). EMF arises from the flow of electricity and the voltage of an electrical line or device. The intensity of the electric field is related to the voltage of the line and the intensity of the magnetic field is related to the current flow through the conductors.

Many years of research on the biological effects of electromagnetic fields have been conducted on animals and humans, and no association has been found between exposure to EMF and human disease. While the consensus is that EMF poses no risk to humans, the question of whether exposure to EMF can cause biological responses or even health effects continues to be the subject of medical research and public debate.

In 2002, Minnesota formed an Interagency Working Group to evaluate the body of research and develop policy recommendations to protect the public health from any potential problems resulting from HVTL EMF effects. The Working Group consisted of staff from the Minnesota Department of Health, the Minnesota Department of Commerce, the Minnesota Public Utilities Commission, the Minnesota Pollution Control Agency, and the Minnesota Environmental Quality Board. The MDH coordinated the activities of the Working Group and found in its final report:

> The Minnesota Department of Health concludes that the current body of evidence is insufficient to establish a cause and effect relationship between EMF and adverse health effects. However, as with many other environmental health issues, the possibility of a health risk from EMF cannot be completely dismissed. The uncertainty surrounding EMF health effects presents a difficult context in which to make regulatory decisions. This approach suggests that one should avoid any activity or exposure about which there are questions of safety or health, at least to the extent that an activity can be avoided easily or cheaply.

(Report p. 36)

The Minnesota State Interagency Working Group report on EMF issues is available at http://www.health.state.mn.us/divs/eh/radiation/emf/emfrept.pdf

Additional discussion of EMF can be found in the MDH White Paper and in other environmental reviews prepared by the EQB and PUC on proposed transmission lines. The MDH web site listed below contains a Frequently Asked Questions section about EMF and the amounts of EMF from common household and business equipment.

http://www.health.state.mn.us/divs/eh/radiation/emf/

The Environmental Protection Agency (EPA) found in its study "EMF in Your Environment" that common household and workplace equipment can create EMF levels even greater than some transmission lines. At issue is not only the maximum measured level of EMF, but also the duration of exposure.

The EPA notes that some hairdryers and vacuum cleaners can emit magnetic field strength exceeding the largest electric transmission lines (500 kV) during peak usage. EPA concludes that:

> However, the duration of exposure to EMFs from power lines near a home is typically much longer than the duration of exposure to EMFs from most appliances. Is this an important distinction? We just don't know yet.
>
> (EPA. EMF in Your Environment, p. 23)

There are no Minnesota or federal standards for transmission line electric fields. However, in previous transmission line permits, the EQB and PUC have imposed a maximum electric field limit of eight (8) kV per meter measured one meter above the ground. The restriction was designed to prevent serious hazard from shocks when touching large objects like a bus or combine parked under high voltage transmission lines.

GRE indicates in its Application that the proposed line will have a maximum magnitude of electrical field density of approximately 1.6 kV per meter directly underneath the conductors at one meter above ground level, well below the 8 kV per meter allowance. Such electrical fields dissipate quickly with distance from transmission line.

The EQB and PUC have recognized in other transmission line proceedings that other states have established standards for magnetic fields, e.g., Florida (150 milligauss limit) and New York (200 milligauss limit). GRE indicates that the maximum magnetic fields associated with the RDO Project will be approximately 25.2 milligauss measured directly below the double circuit line segment under emergency conditions. (See Table 4.)

The GRE RDO Project EMF levels fall well below the limits that previous EQB and PUC permits have required. The primary mitigation measure for minimizing prolonged human exposure to EMF is to provide adequate distance from the proposed lines to locations of homes and businesses.

Table 4. Calculated Magnetic Field (milligauss) at One Meter above Ground

Type	Condition	Distance in Feet		
		-100'	0'	+100'
115/34.5 kV Double Circuit Horizontal Post	Normal/Max	1.5/2.2	17.4/25.2	1.5/2.2
115 kV Single Circuit Horizontal Post	Normal/Max	0.4/.08	5.6-9.5	0.4/.08

Table 5. Measured Magnetic Field (milligauss) From Common Home and Business Appliances

Type	Distance From Source in Feet			
	.5	1	2	4
Hairdryer	30	1	0	0
Computer Display	14	5	2	-
Vacuum Cleaners	300	60	10	1
Conventional Electric Blanket	39.4 peak 21.8 average			
Low EMF Electric Blanket	2.7 peak .09 average			

(Source: EPA. EMF in Your Environment, p. 23)

3.3 Potential Impacts on Land-based Economics

Because the GRE RDO Project is an upgrade of existing facilities, little additional impact is expected on land-based businesses. Impacts to specific land-based activity are detailed below.

3.3.1 Potential Impacts on Recreation

Recreational opportunities near the site include lakes, rivers, streams, golf courses, seasonal residences, summer and winter trails. No state parks, wildlife management areas, or scientific and natural areas are present near the project route. The upgrade and continued operation of the proposed lines and or the alternative route at a higher voltage will not directly impact these recreational resources.

The new transmission line structures along the route will not cause recreational impacts. Guy wires will be equipped with safety shields to prevent snowmobiles or off-highway vehicles from coming into contact with them. However, there will be no direct impacts to the recreational resources in the area, nor will the proposed project reduce the number of and quality of recreational opportunities in the area.

3.3.2 Potential Impacts on Prime Farmland

The existing 34.5 kV line in the area currently has no or very small impact on agricultural lands. The proposed RDO Project will disturb a small amount of agricultural land which will be permanently impacted by the proposed project, however much of this land is currently disturbed by the existing line. Permanent impacts will occur due to the placement (or replacement) of the transmission line structures. Temporary impacts may include soil compaction and crop damages within the ROW during the construction period.

The route alternative may have an impact on two center pivot irrigated fields owned by the RDO Company on the south side of TH 87. If the route alternative is selected, GRE will work with the RDO Company or other landowners to avoid or mitigate impacts to center pivot or other farm irrigation operations.

To minimize loss of farmland and to ensure reasonable access to the land near the poles, in Segment 2A GRE intends to place the poles on private property approximately two to three feet outside of the highway ROW. When possible, GRE will attempt to construct the transmission line before crops are planted or following harvest. GRE will compensate landowners for crop damage and soil compaction that occurs as a result of the construction or operation of the RDO Project. Soil compaction will be addressed by compensating the landowner to repair the ground or by using contractors to chisel plow the site.

3.3.3 Potential Impacts on Transportation

The Park Rapids Municipal Airport is located approximately one mile northwest of the RDO Substation and the western terminus of the proposed project. GRE has consulted with the Minnesota Department of Transportation (DOT), Office of Aeronautics requesting information on the proposed project's potential effect on airports or airstrips in the project area. The DOT Regional Airport Engineer indicated that the proposed RDO project would not have an impact on area airports and indicated that the Office did not have any objection to the RDO Project.

The existing and proposed lines parallel public roadways for approximately two (2) miles. However, the proposed line will not affect road transportation systems except for possible minor and temporary impacts during the construction period. GRE will be required to obtain a license

or amend its current license to cross TH 87 from DOT and may need a similar permit from the city, respective township or Hubbard County for other road crossings.

3.3.4 Potential Impacts on Mining and Forestry

There are no active mining operations within the project area.

The forested areas within the project area are mostly riparian zones along the Straight River. Little additional tree clearing is expected along the ROW near the Straight River. The area has several woodlots and vegetated buffer strips along fields. Impacts at woodlots are expected to be limited to clearing a 35 - 50 foot zone on both sides of the line. For additional potential vegetation impacts, see 3.4.5 below.

3.3.5 Potential Impacts on Economic Development

The RDO Project will utilize existing ROW or new easements on private property directly adjacent to TH 87 easements. As such, no impacts are expected on economic development opportunities from the construction of the proposed RDO Project under the two route scenarios.

3.3.6 Archeological and Historic Resources

GRE contacted the State Historical Preservation Office (SHPO) to determine if the area contains properties listed on the National or State Registers of Historic Places and/or contains known or suspected archaeological sites that could be affected by the project. (See Application, Appendix B.) The SHPO concluded that no properties eligible for listing on the National Register of Historic Places will be affected by the RDO Project. The SHPO did not indicate if previously unidentified historic properties are likely to be found in the project area. If any archeological resource is discovered, construction would stop in that area pending an investigation.

3.4 Impacts on Natural Environment

3.4.1 Air Quality

During project construction, emissions will be released from vehicles and construction equipment and fugitive dust may be released from ROW clearing. Temporary, localized and short duration air quality impacts caused by construction-related emissions may occur. The magnitude of these emissions is influenced heavily by weather conditions and the specific construction activity taking place. Exhaust emissions from diesel equipment will vary during construction, but will be minimal and temporary.

The only potential air emissions from a 115 kV transmission line result from corona and are limited and minor. Corona can produce ozone and oxides of nitrogen in the air surrounding the conductor, especially in humid conditions. Corona consists of the ionization of air within a few centimeters immediately surrounding conductors. Ozone is a reactive form of oxygen and combines readily with other elements and compounds in the atmosphere. Because of its reactivity, it is relatively short-lived.

3.4.2 Water Quality, Soils and Geology

During construction there is the possibility of sediment reaching surface waters as the ground is disturbed by transmission structure construction and removal, ROW clearing and construction traffic. No infill of wetlands or public waters is proposed for the RDO Project. The surface water resource that could be affected by construction of the transmission line is the Straight River, which is a DNR Public Water stream and also a DNR designated trout stream.

Because the current line crosses the Straight River, little additional or incremental impact is expected from the proposed RDO Project. Minimal additional ROW clearing is expected near the Straight River crossing.

GRE will follow standard erosion control measures such as using silt fencing to prevent impacts to adjacent water resources. In addition, GRE will follow any mitigation measures that DNR requires as part of the License to Cross the Straight River. Once the project is complete it will have no impact on surface water quality.

3.4.3 Groundwater and Wetlands

GRE does not anticipate placing transmission structures in wetlands for this project, nor are wetlands present along the existing ROW or proposed route alternative. The proposed project is not expected to affect ground water.

3.4.4 Fish and Wildlife Resources

There is a potential for temporary displacement of wildlife during construction and a small incremental loss of habitat from the proposed RDO Project. Wildlife that inhabits the trees that will be removed for the transmission lines will likely be displaced to comparable habitat adjacent to the route.

Raptors, waterfowl and other bird species may also be affected by the construction, removal and placement of the transmission lines. Avian collisions are currently and will continue to be a possible impact. Waterfowl are typically more susceptible to transmission line collision, especially if the line is placed between agricultural fields that serve as feeding areas, or between wetlands and open water, which serve as resting areas. No such areas nearby have been identified by the Applicants nor agencies to date in this proceeding.

Electrocution of large birds, such as raptors, is a concern related to transmission and distribution lines generally. Electrocution occurs when birds with large wingspans come in contact with either two conductors or a conductor and a grounding device. RUS and GRE design standards will ensure that adequate conductor spacing is provided to eliminate the risk of raptor electrocution and the company may implement specific raptor protection measures as necessary. As such, electrocution should not be a concern related to the proposed Project.

In addition, the proposed RDO Project may reduce the opportunity for avian electrocution compared to the existing structure. The proposed design will increase the spacing between the conductors (wires) on each pole and align conductors vertically, thus reducing the opportunity for avian electrocution.

3.4.5 Vegetation

Incremental impacts to trees and vegetation may occur where the upgraded transmission line parallels either side of TH 87 and as the line follows existing ROW north-south across the Straight River. A width of 70 – 100 feet (35 – 50 feet each side of the center line) along the existing line currently is cleared of trees for the existing 34.5 kV line. If Segment 2A is selected, some additional tree clearing will be required, although most of the land along the south side of TH 87 is cultivated farm land without trees.

The National Electrical Safety Code and RUS standards may recommend that additional trees outside of the ROW are trimmed or removed to prevent tall trees (called hazard or danger trees) from falling into or touching the transmission line under windy (called blowout) conditions. GRE will negotiate tree removal and trimming needs with each landowner along the ROW and beyond the ROW if necessary.

For a discussion on impacts to agriculture, please see Section 3.3.2.

3.5 Rare and Unique Natural Resources

GRE contacted the DNR and Fish and Wildlife Service (FWS) to determine if the proposed project would affect any endangered species or native plant communities. Both agencies indicated that the proposed project would not impact on such species.

4.0 Feasibility of Segment 2A Alternative

South of Trunk Highway 87

GRE proposed a route alternative (Segment 2A) during the EA scoping period. Segment 2A would use the south side of TH 87 rather than the north side of TH 87. At this time, GRE has not

expressed a preference for the north or south side of TH 87, nor a combination there of. The impact of moving Segment 2 from the north to the south side of TH 87 would minimal and may be positive in some respects.

Segment 2A would move the proposed line further away from three homes within approximately 110 feet of the existing line. By increasing the distance between homes and the proposed line, Segment 2A would reduce the following impacts: noise, visual intrusion, EMF exposure, tree clearing on residential lands and the inconvenience of having a transmission line in one's front yard. Segment 2A would reduce the number of landowners with transmission ROW easements to one along this segment. According to the Hubbard County land records web site all of the private property along Segment 2A is owned by the RDO Company.

Segment 2A may slightly increase impacts at one home. The existing line passes approximately 150 – 250 feet from this home where the line crosses from the north side to the south side of TH 87. Segment 2A would likely mean that a longer length of line may pass at the same approximate distance from this home. The Hubbard County land records web site indicates this property is owned by the RDO Company.

Segment 2A requires the same number of crossings of TH 87 and may cause a new impact on agricultural lands and irrigation systems owned by RDO Company. GRE has reported to DOC staff that the companies are working together to ensure that such impacts are minimized if Segment 2A is authorized.

The route alternative Segment 2A is feasible.

5.0 Permits and Approvals Required

Table 6. Federal and State Requirements

Permit	Jurisdiction
State of Minnesota Approvals	
Route Permit Application (Alternative Process)	PUC
Licence to Cross	DNR
Permit to Cross Public Roads	MDOT
Federal Approvals	
Approval for Project Financing	Rural Utilites Service

No known local approvals are required for the RDO Project.

Transmission or distribution line crossings of county, township or city roads sometimes require a permit issued by the local unit of government. If the GRE is issued a route permit for the RDO Project, GRE may be required to obtain a permit or amendment of GRE's existing permits to cross county and township roads along the route.

5.1 State Permits Required

The RDO Project requires a Route Permit (Alternative Process) from the PUC. A HVTL cannot be constructed in Minnesota without a route permit approved by the PUC. A route permit under the Alternative Process requires the Applicants to be eligible as outlined in Minnesota Rule 4400.2000.

A License to Cross a Public Waterway is required from the DNR. Each license is reviewed individually and the DNR may recommend or require that a specific set of Best Management Practices or mitigation measures be implemented.

Transmission line crossings of highways or highway ROW require a permit issued by the Minnesota DOT. If the GRE is issued a route permit for the RDO Project, GRE will be required to obtain a new permit or amend its existing permit to cross Minnesota TH 87.

5.2 Federal Approval Required

Federal review of the RDO Project will be conducted by the (RUS) which provides financing to Great River Energy. The RUS will review the EA to ensure that GRE is complying with environmental regulations.

Appendix

MINNESOTA
DEPARTMENT OF
COMMERCE

In the Matter of the Application of Great River Energy and Itasca-Mantrap Electrical Cooperative Association Application for a Route Permit for the RDO Project Transmission Line and Substation in Hubbard County

ENVIRONMENTAL ASSESSMENT SCOPING DECISION

PUC Docket No. ET2/TL-06-468

The above matter has come before the Commissioner of the Department of Commerce (the Department) for a decision on the Scope of the Environmental Assessment (EA) to be prepared on the proposed Great River Energy (GRE) RDO Project transmission line in Hubbard County.

The Department's Energy Facilities Permitting (EFP) Unit held a public information meeting on May 15, 2005, at the Straight River Township Hall near Park Rapids, Minnesota to discuss the proposed RDO Project with the public and to solicit input into the scope of the EA to be prepared. The public was given until June 2, 2006, to submit written comments regarding the scope of the EA.

During the scoping process, two public comment letters were received. GRE proposed an alternative be considered by the EA in this case.

Having reviewed the matter, and having consulted with the EFP staff, I hereby make the following Scoping Decision:

MATTERS TO BE ADDRESSED

The Environmental Assessment will address the following matters:

1.0 INTRODUCTION
- 1.1 Project Description
- 1.2 Project Location
- 1.3 Project Purpose
- 1.4 Project Alternatives
- 1.5 Sources of Information

2.0 REGULATORY FRAMEWORK
- 2.1 PUC Permit Requirements
- 2.2 Environmental Assessment Requirement

2.3 Scoping of Environmental Impacts and Alternative Routes
2.4 Certificate of Need

3.0 ASSESSMENT OF POTENTIAL IMPACTS AND MITIGATION

3.1 Description of Environmental Setting
3.2 Potential Impacts on Human Settlement
- 3.2.1 Socioeconomic
- 3.2.2 Displacement
- 3.2.3 Noise
- 3.2.4 Aesthetics
- 3.2.5 Human Health and Safety

3.3 Potential Impacts on Land-based Economics
- 3.3.1 Recreation
- 3.3.2 Prime Farmland
- 3.3.3 Transportation
- 3.3.4 Mining and Forestry
- 3.3.5 Economic Development
- 3.3.5 Archeological and Historic Resources

3.4 Potential Impacts on Natural Environment
- 3.4.1 Air Quality
- 3.4.2. Water Quality, Soils and Geology
- 3.4.3 Groundwater and Wetlands
- 3.4.4 Fish and Wildlife Resources
- 3.4.5 Vegetation

3.5 Rare and Unique Natural Resources

4.0 ROUTE ALTERNATIVES TO BE CONSIDERED

During the Scoping Process, GRE proposed a route alterative to consider in the EA. No other person or agency proposed a route alternative. The following route alternative will be evaluated in the EA:

- The route alterative proposed by GRE following the south side of Trunk Highway 87 for the double circuit portion of the proposed RDO transmission line rather than the north side of TH 87 as proposed by GRE in its Application.

The EA will evaluate the potential impacts, mitigation measures, and feasibility of the proposed route alterative. The EA will also evaluate the feasibility of the proposed route alternative.

5.0 PERMITS AND APPROVALS REQUIRED

The Environmental Assessment will include a list of permits that will be required for the route permit to construct this project.

ISSUES OUTSIDE THE SCOPE OF THE EA

The Environment Assessment will not consider the following matters:

1. Whether a different size, type or timing of transmission line should be built.
2. The no-build option.
3. Any alternative route(s) for the RDO Project or alternative site(s) for the Itasca-Mantrap substation not specifically Ordered above.

SCHEDULE

The EA shall be completed by July 15, 2006.

Signed this 14 day of June, 2006

STATE OF MINNESOTA
DEPARTMENT OF COMMERCE

Glenn Wilson, Commissioner