

0160-4

Thank you for your comment. Your concerns are addressed throughout Chapter 6 of the EIS. No changes are made to the EIS in response to this comment.

March 10, 2014

Re: PUC Docket Number E-015/CN-12-1163

Bill Storm, Environmental Review Manager
Minnesota Department of Commerce
85 7th Place East, Suite 500
St. Paul, MN 55101
Duluth, MN 55802

Dear Mr. Storm:

On behalf of The Nature Conservancy, thank you for the opportunity to submit comments for the Great Northern Transmission Line (GNTL). We are pleased to provide these comments as part of the public record.

The mission of The Nature Conservancy is to conserve the lands and waters on which all life depends. Our comments are therefore focused on maintaining critical habitats for plants, animals, and natural communities while also accommodating the energy needs that the GNTL helps our region to address.

The Nature Conservancy acknowledges that addressing the energy needs of northern Minnesota and Manitoba will call for an “all of the above” solution, and the GNTL project may have a role to play in such a strategy.

The GNTL environmental report should pay particular attention to selecting a route alternative that avoids adverse and unnecessary impacts to critical habitats for plants, animals, and natural communities. The Nature Conservancy has provided detailed comments and data layers on the proposed routing alternatives, and proposed a route that meets both energy and habitat conservation needs (see attached letter and maps dated 6/17/2013 and attached e-mail to Jim Atkinson dated 2/28/2014). We request that the environmental report carefully analyze the ability of the GNTL to: 1) Follow existing major roads and transmission corridors (Map 1); 2) Avoid Conservancy Ownerships and Easements (Map 2); 3) Avoid Areas of Outstanding and High Biodiversity Significance (Map 2); 4) Minimize use of Conservancy conservation portfolio sites; where portfolio sites cannot be avoided, direct the new transmission line to existing major roads and transmission corridors (Maps 1 & 2).

Again, The Nature Conservancy believes that the proposed GNTL can be part of a total energy solution for the region. **The proposed project is not a stand-alone, nor should it be; GNTL is but one of many sources that can contribute to the region’s energy needs.** As society moves away from our reliance on coal and fossil fuels and embraces conservation measures as well as a greater number of sources for clean, sustainable energy, projects like the GNTL can help with the transition. However, it is critical to conserve the area’s unique natural resources wherever possible; the Conservancy is pleased to offer guidance on how to accomplish both objectives.

We coordinate closely with the Minnesota Department of Natural Resources and with the Nature Conservancy of Canada (NCC). Both partners are therefore copied on this letter. NCC is working with

0160-4

Manitoba Hydro regarding similar criteria and considerations for routing. We will continue to share and exchange information with the MN DNR and NCC over the course of the project.

Sincerely,



Douglas T. Shaw, Ph.D.
Assistant Chapter Director

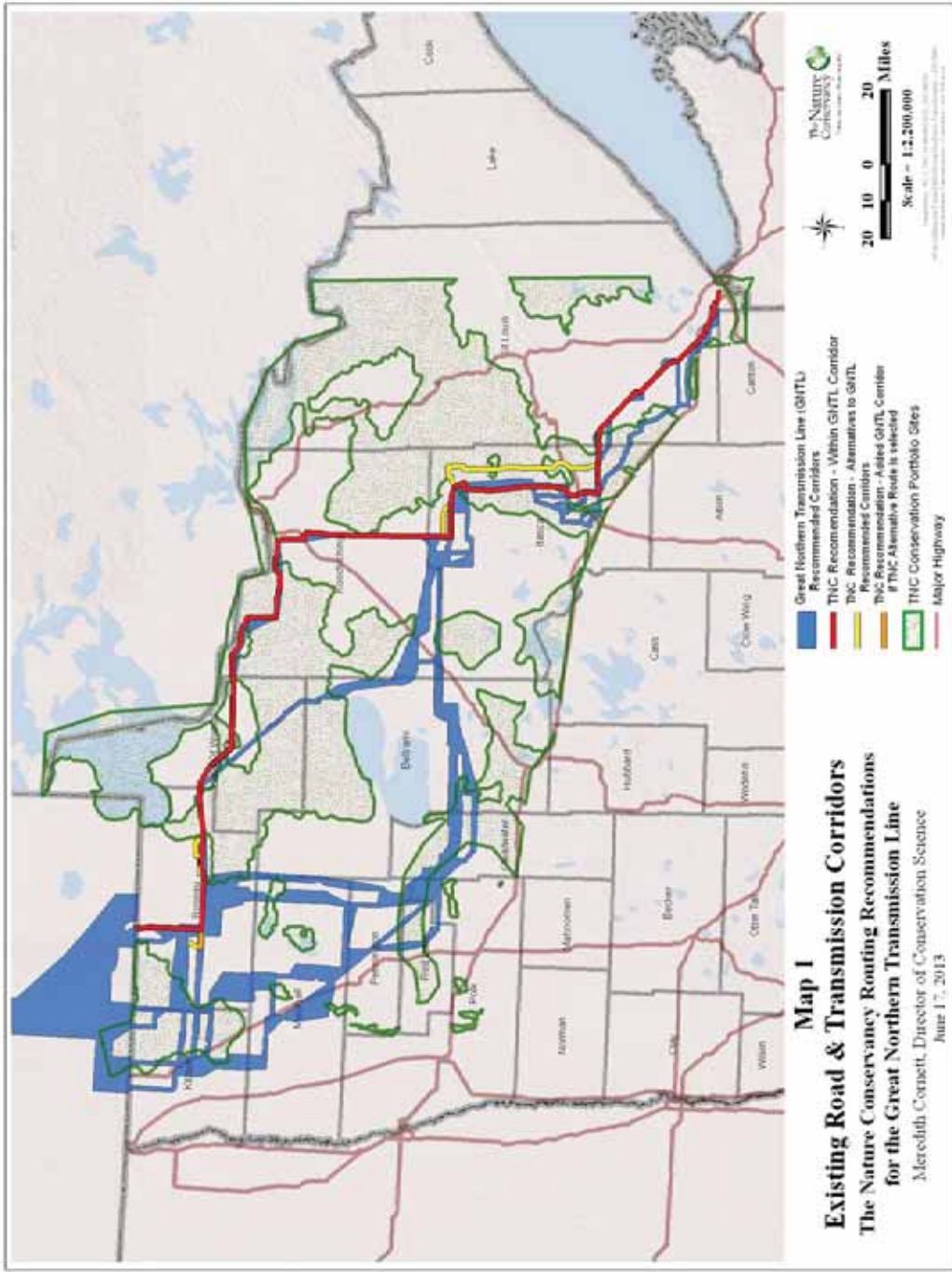
C: Peggy Ladner (TNC), Gail Lewellan (TNC), Meredith Cornett (TNC), Cary Hamel (NCC), Jamie Schrenzel (MN DNR), Christina Roffes (HDR Engineering, Inc.), Jim Atkinson (ALLETE, Inc.)

Attachments:

Copy of signed letter from The Nature Conservancy to ALLETE (dated June 17, 2014)

Copies of Map 1, Map 2, shape file for TNC-preferred routing

Copy of e-mail update from The Nature Conservancy to ALLETE (dated February 28, 2014)



0161-1
Thank you for your comment. No changes are made to the EIS in response to this comment.

0161-2
Section 2.9 discusses the process the applicant would follow to acquire easements for the ROW including compensation.

No changes are made to the EIS in response to this comment.

From: Carol
To: Storm Bill (COMM)
Subject: Great Northern Transmission Line
Date: Thursday, July 16, 2015 11:15:52 AM

It appears from the map that the proposed route that passes through Koochiching County near Northome will go right through my gravel pit near Battle Lake. This is a commercial operation on private property. I object to the route.

Will property owners be compensated?

Carol Avelsgaard
Northome, Mn

0161-1

0161-2

0162-1

Map S-100 is updated in the EIS to correctly identify your structure as a residence.

0162-2

Potential impacts to forests and wildlife are discussed in Chapters 5 and 6 of the EIS.

No changes are made to the EIS in response to this comment.

Dr. Julie Ann Smith, Electricity Policy Analyst
DOE NEPA Document Manager
National Electricity Delivery Division (OE-20)
U.S. Department of Energy
1000 Independence Avenue SW
Washington, DC 20585

10 August 2015

Re: PUC docket number TL-14-21; DOE number EIS-0499

Dear Dr. Smith:

To put it bluntly: Nobody wants a transmission line corridor near them.

I am an owner of 40.27 acres of land that lies near the proposed Great Northern Transmission Line corridor. My location is T61N R23W S32 NWSW, Property ID: 54-032-3200. This parcel has been owned by our family since 1933— 80+ years — and we have accordingly paid all of our property taxes. It is not lake property and, in fact, it is mostly wetland. It is remote and quite secluded relative to even today's standards. It has always been a focus where annually our family gathers for reunions as well as multiple skiing and hunting trips during the year. Appendix S - Map 100 has my cabin listed as "Commercial or Non-Residential Structure". I am sorry, but that is wrong. I pay Itasca County taxes for my seasonal residential cabin on my 40.27 acres of land. A review of the maps show numerous errors in improperly identifying existing structures. One can then surmise how many other errors are in these documents.

0162-1

Northern Minnesota has a strong history in managing its forest resource base for economic well-being of its people and communities. Its boreal forest zone is a southern limit of the great North American boreal forest. The continuity and health of Minnesota's boreal forest zone and associated wildlife is constantly being threatened by development activities. We are proud to have confirmed sightings of mink, otter, weasel, fisher, martin, wolverine, timber wolves, black bear, bobcats, cougar, moose, and other species over the years. The wildlife populations fluctuate with the characteristics of the forest cover which regenerates after intermittent harvests.

0162-2

Power transmission corridors lay waste to vast areas slashing across and destroying the continuity of the boreal habitat. Power transmission corridors do not allow forests to regenerate and remove the area from our renewable resource base. Future right-of-way management activities require constant intervention by mechanical or chemical actions. The boreal forest does not need more physical and chemical impacts.

To reduce the fractionalization of property ownership as well as maintaining continuity of managed forest areas, Minnesota has the Sustainable Forest Incentive Act and a strong forest stewardship program to help, in part, small woodland owners. My forty acres are entered into the SFIA program and I am doing my best to pursue the goals of my forest management plan developed by a consultant forester. I value the extent of our boreal

forest and appreciate the renewable forest resource. I expect corporate entities to likewise respect and do their best to protect the resource.

It is imperative that these new transmission corridors follow existing power line or highway right-of-ways to preserve the continuity of our forest resource base and it is imperative that the project demonstrates that it has done its absolute best to minimize the need for new corridors -- minor cost savings are not an acceptable excuse.

I do have a couple of additional questions:

1. Has Minnesota Power & Light proven that they have made every effort to incorporate alternative energy sources so they can minimize the magnitude of the transmission lines and corridor?
2. When lakes and large open water wetlands partially or totally fall within the right of way of the project, is all vegetation removed or will there be a riparian zone left intact as is done with responsible logging operations? After all, protection of our water resources has recently been highlighted as an urgent need in Minnesota's natural resource management.

Thank you for considering my concerns.

Sincerely yours,

Dr. Erwin R. Berglund
 6565 Pierce Street N.E.
 Fridley, MN 55432
 763-571-0293
erv.berglund@gmail.com

e-CC: juliea.smith@hg.doe.gov
bill.storm@state.mn.us
overland@legalelectric.org

CC: Ron Berglund
 Sven Berglund
 Ingrid Berglund
 Emilie Berglund

0162-3

Thank you for your comment. No changes are made to the EIS in response to this comment.

0162-3

0162-4

Utilities are required to consider all their different options for generation, including renewables, as part of developing their integrated resource plan as part of developing the Certificate of Need application (see MN PUC eDocket #12-1163).

0162-4

No changes are made to the EIS in response to this comment.

0162-5

0162-5

Details of vegetation clearing would likely be documented in a Vegetation Management Plan; however, this document is not available at this time. Once DOE and MN PUC issue permits for the Project, this document would likely be developed by the Applicant, in coordination with the MnDNR and other appropriate agencies, as part of the environmental permitting process.

No changes are made to the EIS in response to this comment.

Please provide your contact information. This information and your comments will be publicly available.

Name: DAVID S. CHRISTENSON Phone: 218-743-3128
Street Address: 24641 NORTH DEER LAKE ROAD
City: EFFIE State: MN ZIP: 56639
Email: CREATIVE @ BigFork.NET

Share your comments on the Draft EIS regarding the Great Northern Transmission Line project. Be as specific as possible.

- What information or analysis needs to be clarified?
- What information or analysis is missing or incomplete?
- Are any specific edits needed to make the document complete and accurate?

Draft EIS section or page number: 5.2.1.4 GREEN LAKE Information to be corrected or new information needed:

The proposed blue route that would run along the west shoreline through its entire length of DEER LAKE would lower property values in the view waterbed along with perceived risks associated with EMF will hurt property values! Along with the destruction of natural habitat the entire length of DEER LAKE west shoreline plus noise - transmission lines across the whole lake area!

Draft EIS section or page number: 5.0 page 19 Information to be corrected or new information needed:

A FEW EMISSIONS + POTENTIAL IMPACTS OF THE PROPOSED BLUE ROUTE ALONG THE WEST SHORELINE OF DEER LAKE WILL NEGATIVELY IMPACT BUTLER DIVERS AIRCRAFT THAT USE DEER LAKE AS A SEA PLANE TRAINING AREA. THE HIGH TRANSMISSION LINE WOULD BE A HAZARD FOR FLIGHT OPERATIONS WHICH USE DEER LAKE AS A WATER GATHERING DECK FOR FIGHTING WILD FIRES WITH THE AERIAL DUSTER BOMBERS.

Draft EIS section or page number: 5.0 page 130 Information to be corrected or new information needed:

The general impact on taxes and county revenue would be negative for the property values if the proposed blue route is used across the entire length of DEER LAKE WEST SHORE. THE NEGATIVE IMPACT OF LOWER PROPERTY VALUES DUE TO THE POWER LINE WOULD GREATLY IMPACT CARPENTER TUSP AS 70% OF THE TUSP REVENUE IS DIRECTLY DERIVED FROM THE DEER LAKE RESIDENTS. USE THE ESTIMATION ROUTE!

Attach additional comments as necessary using the format above. If attaching additional comments, please number the page(s) and tell us how many pages you are including: _____ page(s).

0163-1
Thank you for your comment. Property value impacts from the proposed Project are discussed in Section 5.2.1.4 of the EIS. Impacts to biological resources, including natural habitat, are discussed in Chapters 5 and 6 of the EIS. Section 5.2.1.2 of the EIS addresses potential noise impacts from the proposed Project. The impact of the proposed Project on airports and air traffic are described in Section 5.2.1.6 while socioeconomic impacts from the proposed Project, including impacts on tax revenue, are discussed in Section 5.2.1.8.

No changes are made to the EIS in response to this comment.

Energy Environmental Review and Analysis
MN Department of Commerce
85 7th Place East, Suite 500
Saint Paul, MN 55101-2198

RECEIVED
AUG 07 2015
MAILROOM

WILLIAM COLE STORM
MN DEPARTMENT OF COMMERCE
85 7TH PLACE EAST STE 500
SAINT PAUL MN 55101-2198



Comment Period: Draft Environmental Impact Statement

Great Northern Transmission Line
Docket Nos. E-015/TL-14-21

An environmental impact statement (EIS) evaluates the potential human and environmental impacts and possible mitigation measures associated with a proposed project. The EIS is issued as a draft so that it can be improved through public comment. The purpose of this comment period is to gather feedback about specific, factual information that needs to be clarified or included in the final EIS. Comments regarding new route alternatives are not considered.

After reading the Draft EIS, you might have developed a preference for a specific route alternative. This will be considered, but preferences are best expressed to an administrative law judge through the public hearing portion of the permitting process, currently scheduled for August 5, 6, 12 and 13, 2015.

Direct your questions regarding commenting or submitting your comments to the Environmental Review Manager, Bill Storm, at: bill.storm@state.mn.us or (651) 539-1844. Information regarding the proposed project is available at: <http://mn.gov/commerce/energyfacilities/Docket.html?id=33847>. For information regarding the public hearing contact the public advisor at consumer.puc@state.mn.us.

Public Comment Period Closes Monday, August 10, 2015

Comments must be post-marked or received electronically by the comment deadline.

How to comment:

- Submit this form to the Environmental Review Manager at a public meeting
- Mail this form remembering to affix appropriate postage
- Mail comments in a separate envelope using the mailing address on this form
- Fax comments to the Environmental Review Manager: (651) 539-0109
- Email comments to the Environmental Review Manager: bill.storm@state.mn.us
- Use the online comment form at: <http://mn.gov/commerce/energyfacilities/#comment>

Comments do not need to be on this form to be accepted. We encourage you to provide comments in whatever way is most convenient for you. If commenting by email or fax use "Public Comment: Great Northern Transmission Line DEIS (E-015/TL-14-21)" in the subject line.

THANK YOU for commenting on the Draft EIS!

0165-1

The MN PUC determined that the proposed Project and its 250 MW capacity is needed by the Applicant in eDocket #12-1163 (Certificate of Need).

No changes are made to the EIS in response to this comment.

0165-2

Thank you for your comment. Section 5.2.1.2 and 5.2.1.5 of the EIS discuss the noise and electronic interference impacts from the proposed Project. Property values are discussed in Section 5.2.1.4 and EMF is discussed in Section 5.2.2.1. Aesthetic impacts from the proposed Project are discussed throughout Sections 5 and 6 of the EIS and visual simulations, provided in Appendix N, Photo Simulations, of the EIS, were prepared for seven viewpoints within the study area to represent typical views of the proposed project.

No changes are made to the EIS in response to this comment.

0165-3

A discussion about the potential effects of transmission lines on property values is included in the EIS in Section 5.2.1.4. This includes a summary of the potential range of property value effects attributed to transmission lines. Further, Appendix J, Property Values Supplement provides a summary of the literature regarding the relationship between transmission lines and property values used to develop the property values analysis in Section 5.2.1.4.

No changes are made to the EIS in response to this comment.

0165-4

Map S-30 in Appendix S in the EIS is updated to show your home as a residence.

From: apache@web.lmtc.state.nm.us
To: Storm, Bill (COMMA)
Subject: Fahman Mon Aug 10 10:56:35 2015 14-21
Date: Monday, August 10, 2015 10:56:36 AM

This public comment has been sent via the form at: mn.gov/commerce/energyfacilities/publicComments.html

You are receiving it because you are listed as the contact for this project.

Project Name: Minnesota Power Great Northern Transmission Line Project (Routing)

Docket number: 14-21

User Name: S Fahman

County:

City: Sandstone

Email: 10000reasonswhy@gmail.com

Phone:

Impact: As a United States citizen, a resident of Minnesota and a property owner within the corridor of the Scoping Decision Route (Detail Map Page 23 of 153), I have concerns of the Great Northern Transmission Line project. First, it seems crazy that we as a nation keep adding to an already frail electrical grid. Major power lines such as this 500kv are certainly subject to failure from climatical events or an act of terrorism, resulting in large populations without the electrical power we rely on so greatly. Proceeding with this project seems similar to building a house on a flood plain. Maybe the river hasn't flooded in 50 years and yes, the transmission line towers are designed and built well but, one might learn from history and world events. Would we not be better to focus our time, energy and money on smaller and local energy production and therefore reducing our massive electrical grid? If an electric power company placed solar panels on each residential roof top as well as on business roof tops, enough electricity could be produced for the community. Maybe it is not quite that simple, but large transmission lines are not either.

As a long time Minnesota resident and rural property owner, I value our rural public and private lands and try to be a good steward of our natural environment. Construction of a high voltage power line obviously has an impact on the environment wherever it is located. Once constructed, they are an eye sore to the landscape and they are noisy with buzzing, banging and clanking under different weather conditions. There is also the concern of the electromagnetic forces surrounding the high voltage lines. We know they distort radio waves, affecting communication devices and public broadcasting but, I am not convinced we have thorough knowledge on the effects of human life. I also believe high voltage power lines have a negative effect on property values with the previously listed concerns as many people do not want to and will not live next to them. It can be difficult to sell property with a high voltage power line on or in the vicinity of.

As a property owner within a corridor as stated above, I was disappointed to find my residence was listed as a structure and not a residence in the initial scoping research. And it is still listed that way on the current maps. I used to live at this residence and continue to use it as a seasonal residence. I have kept this property as an investment as well as a possible permanent residence when I retire in a few years. If this high voltage line follows this route, I would not want to live there and I am concerned about being able to sell the property as well as getting a return on my investment.

In closing, I believe it is a poor decision for this project as a whole and I am not in favor of following the Scoping Decision route.

0165-1

0165-2

0165-3

0165-4

Mitigation:

Submission date: Mon Aug 10 10:56:35 2015

This information has also been entered into a centralized database for future analysis.

For questions about the database or the functioning of this tool, contact:

Andrew Koebrick
andrew.koebrick@state.mn.us

0167-1

A discussion about the potential effects of transmission lines on property values is included in the EIS in Section 5.2.1.4. Further, Appendix J, Property Values Supplement provides a summary of the literature regarding the relationship between transmission lines and property values used to develop the property values analysis in Section 5.2.1.4. These studies included properties in a variety of settings and are not just limited to properties in urban settings where a transmission line would be less noticeable.

No changes are made to the EIS in response to this comment.

0167-1

0167-2

Impacts to forests and wildlife are discussed in Chapters 5 and 6 of the EIS. As discussed in Section 1.3.1.4 of the EIS, once a route is selected and a permit is issued, the Applicant would contact landowners to gather information about their property and their concerns and discuss how the ROW would best proceed across the property.

No changes are made to the EIS in response to this comment.

0167-3

Impacts to wildlife are discussed in Chapters 5 and 6 of the EIS. Impacts to federally-listed species (i.e. wolf) and designated critical habitat are discussed in the Biological Assessment in Appendix R.

No changes are made to the EIS in response to this comment.

0167-3

From: kepeters
 To: Storm, Bill (COM.MD); juliea.smith@hwdoe.gov
 Cc: Anne,Marquerite,Coyle; Don,Peterson; Jason,Peterson
 Subject: DEIS comments
 Date: Sunday, August 09, 2015 2:12:28 PM

Hello Mr. Storm and Dr. Smith,

In reference to Docket number TL-14-21 and DOE number EIS-0499.

I have reviewed the DEIS for the Great Northern Transmission Line and offer the following comments:

On Summary page 15- There's a statement that says the line is not expected to affect property values and cites a couple of references. I wonder if these studies included recreational property? From my perspective, the value of my property will be greatly diminished if this power line is constructed on or near my property. Things such as solitude and views unobscured by power lines may be hard to put a value on, but affect the things I value about my property nonetheless. I'd like to see more discussion and recognition of the impacts of the proposed power line on these types of values.

I am most familiar with the area near my property (T. 63 N. R. 27 W, S. 35, SE of SE) as I have recreated in this area for 20 years. A lot of timber has been harvested in this area in the past 15 years, resulting in large blocks of younger aged forest. Much of the remainder is old-growth cedar which provides thermal protection for deer in the winter and moose in the summer. The proposed route (Orange) goes right through one of the largest such stands of cedar in the area. This stand provided critical habitat for deer during the recent harsh winters, in fact was the only place you could find a deer track during the winter months. The Cutoff variation would save one of these stands, but would impact another equally important stand located just to the south. The statement in S.10.2.8 "....proposed orange route has less potential impact on critical habitat designated for grey wolf " seems based solely on the fact that the Cutoff variation is slightly longer. Instead, the amount of critical habitat affected by both routes should be measured (quantified) so that a meaningful comparison between the two routes can be made. Taking this a step further, I'd like to see a similar comparison between the Orange and Blue routes (i.e. which route will have more or less impact on old growth cedar stands which provide critical habitat for many species of wildlife including grey wolf.

On summary page 55 S.11.2.4 Natural Resources: In my opinion, the summary understates the localized impacts to wildlife. If critical habitat is lost (e.g. old-growth cedar stands are converted to open right-of-ways which fragment the forest and provide no thermal cover the wildlife that lives there will be negatively impacted. Fewer deer will survive the harsh winters, ultimately resulting in fewer wolves. I'd like more discussion of these potential impacts in the DEIS.

Thank you for the opportunity to comment.

Regards,
 Kevin



Comment Form: Draft EIS
Energy Environmental Review and Analysis

0168-1
Map 6-61 in the EIS is updated to show your home as a residence.

Please provide your contact information. This information and your comments will be publicly available.

Name: Shelley Krook Phone: 218-398-7529
Street Address: 2302 Stone Ln State: MIN ZIP: 55744
City: Grand Rapids
Email: wallyk337@usn.com

Share your comments on the Draft EIS regarding the Great Northern Transmission Line project. Be as specific as possible.

- What information or analysis needs to be clarified?
- What information or analysis is missing or incomplete?
- Are any specific edits needed to make the document complete and accurate?

Draft EIS section or page number: Map 105 Information to be corrected or new information needed:

Balsam variation: green route
Cabin on north side of Snaptail Lake (parcel # 04-127-4200) is
listed as non-residential. This cabin is utilized 52 weeks of the
year - summer cabin/deer shack/ XC ski warming house. Please make this
correction to the Environmental Impact Statement.

0168-1

Draft EIS section or page number: _____ Information to be corrected or new information needed:

Draft EIS section or page number: _____ Information to be corrected or new information needed:

Attach additional comments as necessary using the format above. If attaching additional comments, please number the page(s) and tell us how many pages you are including: _____ page(s).

Energy Environmental Review and Analysis
MN Department of Commerce
85 7th Place East, Suite 500
Saint Paul, MN 55101-2198

SAINT PAUL, MN 55101
AUG 10 2015 4:01 PM



WILLIAM COLE STORM
MN DEPARTMENT OF COMMERCE
85 7TH PLACE EAST STE 500
SAINT PAUL MN 55101-2198

55101601399

Comment Period: Draft Environmental Impact Statement
Great Northern Transmission Line
Docket Nos. E-015/TL-14-21

An environmental impact statement (EIS) evaluates the potential human and environmental impacts and possible mitigation measures associated with a proposed project. The EIS is issued as a draft so that it can be improved through public comment. The purpose of this comment period is to gather feedback about specific, factual information that needs to be clarified or included in the final EIS. Comments regarding new route alternatives are not considered.

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Comments do not need to be on this form to be accepted. We encourage you to provide comments in whatever way is most convenient for you, if commenting by email or fax use "Public Comment: Great Northern Transmission Line DEIS (E-015/TL-14-21)" in the subject line.

THANK YOU for commenting on the Draft EIS!

0169-1

Section 5.3.7.2 of the Draft EIS describes the weather studies that the Applicant would conduct a weather study to address unexpected transmission line outages due to extreme weather events and equipment failures. Based on the results of the weather study, the design criteria for the proposed Project may be adjusted to increase the robustness of the 500 kV transmission line design.

No changes are made to the EIS in response to this comment.

0169-1

From: Rich Libbey
To: Kaluzniak, Mike (PUC)
Cc: Rich Libbey; Storm, Bill (COMMM)
Subject: Tornado History Project: Minnesota
Date: Monday, August 10, 2015 2:29:05 AM

<http://www.tornadohistoryproject.com/tornado/Minnesota>

Hi Mike We discussed the web site for tornados history in Minnesota in Grand Rapids last month. I apologize for not sending it earlier. The link above is the interactive web site for all tornados recorded in Minnesota for the last 50 years. It appears there have been none near the Effie Alternative Route for the GNTL. Rich

0170-1

Section 5.2.1.6 Transportation and Public Services discusses airstrips and potential impacts. Please note that the C2 Segment Option Variation Area includes the Airstrip Alignment Modification that was developed in an attempt to minimize impacts to the airstrip (see Section 4.3.2.5 for a description of this alignment modification).

No changes are made to the EIS in response to this comment.

0170-1

From: [Mark Meester](#)
To: [Sturm, Bill \(COMM\)](#)
Subject: Great Northern Transmission Line Route Selection
Date: Monday, August 10, 2015 10:59:47 AM

Sir:

I was unable to make the website comment form work. Hopefully this gets to the proper recipient(s) to be considered:

Several private aircraft operators in the local area regularly utilize the private airstrip located approximately 5 miles south of Littlefork and a 1 mile west of Highway 65. The easternmost proposed routing of the transmission line appears to put the line directly under a standard traffic pattern to the North-South runway. As such that routing would appear to be an unnecessary hazard to normal-unobstructed approaches to the airstrip.

Mark L. Meester, P.E.
President, Bartlett & Associates, Inc
501 Third Street
International Falls, MN 56649
218 244 1159

0171-1
Minnesota Biological Survey Sites of Biodiversity Significance are discussed in Section 5.3.5 of the EIS.
No changes are made to the EIS in response to this comment.

0171-2
Thank you for your comment. No changes are made to the EIS in response to this comment.

0171-1

0171-2

From: [Norm Storm](#)
To: [Bill \(COMMA\)](#)
Subject: Great Northern Transmission Line EIS
Date: Sunday, August 09, 2015 12:26:38 PM

Dear Mr. Storm,

I am a homeowner on Wasson Lake in northeast Itasca County in the East Section of the EIS. My concern is the impact of the Great Northern Transmission Line (the blue line route) on the large area noted in the EIS as "High Significance", which is adjoining and east of Wasson Lake. I am not sure what the difference is between a high significance and an outstanding significance area. However, I am sure that this wetlands area has and will in the future greatly impact the water quality of the lake that I live on and other lakes in the surrounding area, not to mention the overall environmental impact on the area itself. My concern is that the construction and maintenance of the 200' corridor will have a detrimental impact on this area.

It appears that this detrimental impact could be in large part mitigated by selecting the orange line alternative route in the east section at a rather modest cost differential, while still being a meaningful distance away from the existing transmission lines.

Thank You for your consideration.

Norman Nystrom
51876 North Wasson Lake Road
Bigfork, MN 56628



The Biolare Company

William Cole Storm, Environmental Review Manager
Minnesota Department of Commerce
85 7th Place East, Suite 500
St. Paul, Minnesota 55101

Blandin Paper Company
August 4, 2015

0173

0173-1
The EIS is updated with information provided by the MnDNR that shows the location of the conservation easement parcels referenced in your letter. Maps 5-16, 5-23, 6-29, 6-49, 6-54, and 6-64 in the EIS are updated.

Tables 6-100 and 6-117 do not show conservation easement land, they only report state forest land, while Table 6-161 discusses land cover vegetation. Tables 6-162 and 6-185 show conservation easement land and the associated text acknowledges impacts on conservation easement land.

In Section 1.3.3 of the EIS, text is added to explain the purpose and requirements of state conservation easement agreements per your comment.

0173-1

Dear Mr. Storm:

After reviewing the DEIS (PUC Docket# ET015/TL-14-21 & DOE # EIS-0499) for the Great Northern transmission line, several items need to be addressed.

1. Maps showing State Conservation Easements are not complete; Molpus' easement shows on the map and the Blandin Paper Company easement does not.
2. On numerous pages (246, 272, 291, 311, 401, 403, 441, 459, 474, 484, 555, 588, 599) a statement is made: "No impacts to county lands, state conservation easements, or USFWS Interest lands would result from any of the alternatives considered". This is not correct. Page 537 and Tables 6-100, 6-117, 6-162, & 6-185 do mention some state conservation easements being affected by the transmission line but the impression is given that state conservation easements are minimally affected. The DEIS understates the effect of the transmission line on conservation easements.
3. In general, state conservation easements are not adequately addressed. There are many different conservation easements as they are individually negotiated between the landowner and the eventual easement holder (in this case, the State). The encumbrances on the land are different in each easement.

Blandin's conservation easement is a legally binding contract between the State of Minnesota and Blandin Paper Company. It is an encumbrance on the deed of every forest land parcel that Blandin owns. As stated in the easement Section 2.2.1: "[The purpose is] to continue management of the Protected Property [Blandin forest land] as a sustainable working forest in a manner that will protect in perpetuity the Conservation Values and to prevent any use of the Protected Property that will significantly impair or interfere with the Conservation Values including conversion of the Protected Property to non-forest uses".

The easement is to prevent fragmentation and provide economic value to the region through the use of forest management to maintain and improve the timber resource for multiple markets and provide wildlife habitat for the public's enjoyment. Non-forested uses, such as this transmission line, do not meet the requirements of the easement or the economic needs of the Paper Company. The transmission line routes will significantly affect Blandin's ability to manage the forest resource and, therefore, Blandin is not in favor of the proposed route locations.

Sincerely,

Cheryl J. Adams

Cheryl J. Adams, Forest Resources Manager

UPM-Kymmene Corporation

Blandin Paper Company-Forestry
114 SW First Street
Grand Rapids, MN 55744-3099
USA

Telephone: 218-327-6182
Fax: 218-327-6387

RECEIVED

AUG 07 2015

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Date: 8/9/2015

To:
 Julie Ann Smith, PhD, Electricity Policy Analyst
 DOE NEPA Document Manager
 National Electricity Delivery Division (OE-20)
 U.S. Department of Energy
 1000 Independence Avenue SW
 Washington, DC 20585
 JulieA.Smith@hq.doe.gov

William Cole Storm, Environmental Review Manager
 Energy Environmental Review and Analysis
 85 7th Place East, Suite 500
 Saint Paul, Minnesota 55101
 bill.storm@state.mn.us

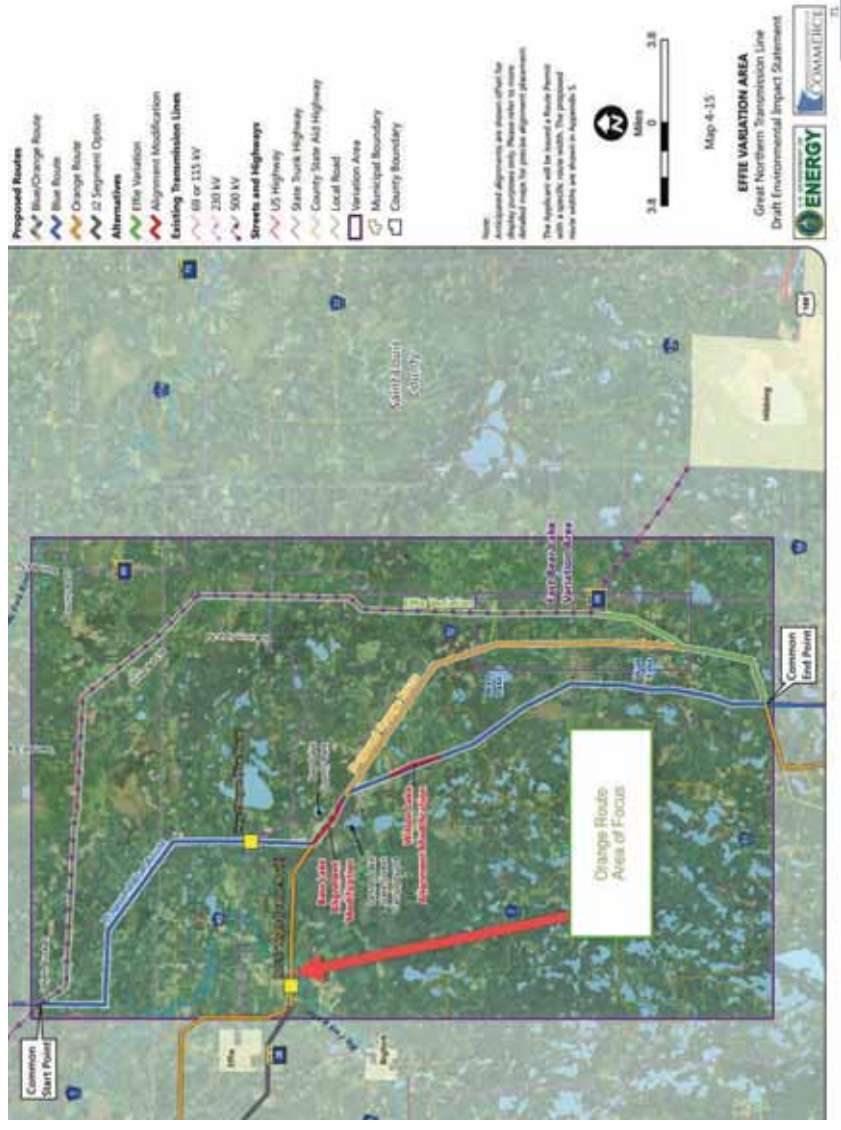
From:
 Chris Viere
 6765 Black Duck Drive
 Lino Lakes, MN 55014
Chris.Viere@gmail.com
 651-253-6507

Regarding: Great Northern Transmission Line Project Draft Environmental Impact Statement (DEIS).

Comment on Effie Variation

The Effie Variation, using an existing corridor, would protect a legacy of cultural and environmental resources by preventing an entirely new utility corridor through a wilderness area which has received significant state, county and environmental organization's resource investment to protect. The comments provided here are intended to add depth to the impacts of constructing a new utility corridor through a section of the proposed orange route. This orange route area of focus is shown in the diagram below and was taken from page 71 of the DEIS. In the next section, I will discuss the impacts should a utility corridor be constructed in this section of the proposed orange route through this area of focus.

0174-1



0174-2

The MnDNR provided updated shapefiles that identify conservation easement land in the Project area - including this property. This information is updated on Maps 5-16, 5-23, 6-29, 6-49, 6-54, and 6-64 in the EIS.

0174-2

Orange Route Impacts

The diagram below will be used to illustrate impacts should the proposed orange route be used.

1. **Cultural Impact:** The residents of the Effie and Bigfork area and beyond are familiar the legacy of the Knight family who originally homesteaded on the proposed Orange Route and this is a proud part of their scenic and historic wilderness heritage. The book *We Homesteaded* by James Knight describes this history along with the history of Chief Busticoggan (Bois Forte Band of Chippewa) who lived nearby and whom was a friend of the Knights. The diagram below shows 1. The Original Knight Homestead and 2. The James Knight homestead. Both homesteads are still owned by the Knight family and a rustic log cabin still sits on the original Knight homestead. The proposed orange route would pass through the historical Knight area and would diminish this regional cultural heritage.

Additional Information see: Knight, J. (1975). *We Homesteaded: A First-Hand Account of Pioneer Life in Minnesota's Bigfork River Country*. Grand Rapids: Rapids Publishing.

2. **Environmental Impact:** As the proposed Orange route crosses the Bigfork River on the James Knight homestead, it enters a larger forested area that remains mostly intact as result of one of the largest and most successful land conservation efforts in the country. Prior to this utility corridor, the threat to this forest was a mass self-off of Timber Company owned property. Fortunately state, county, and conservation groups worked together to create a remarkable success story that protected what remains in this forest. For example on the diagram below, Reference point 3 shows a large parcel purchased by the Nature Conservancy in approximately 2007 from Forest Capital Partners. The Nature Conservancy then held the property until Itasca County could fund the purchase of this property. The Nature Conservancy's move protected this forest segment which would have otherwise been sold to private interests and likely divided. The larger surrounding contiguous forest (Item 4 on the diagram) was the recipient in 2010 of \$36M in public investment to prevent fragmentation of 187,876 acres and curtailed the impact of this sell-off. This remains one of the largest investments from the Clean Water Land and Legacy Amendment. The proposed Orange route would contradict this significant investment by fragmenting this forest and opening up a utility corridor.

Additional Information: <http://www.legacy.leg.mn/projects/mn-forests-future-upper-mississippi-project>.

0174-3

A draft Programmatic Agreement (PA) is developed for the proposed Project in accordance with Section 106 of the National Historic Preservation Act (36 CFR 800.4(b)(2)). The draft PA developed for the proposed Project is included in Appendix V of the EIS. The PA will:

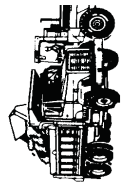
Allow for the adjustment of the APE to ensure that direct and indirect effects on the National Register of Historic Places (NRHP)-listed or -eligible cultural resources are properly considered. NRHP-listed or -eligible resources may include, but would not necessarily be limited to, archaeological resources; architectural, built, or aboveground resources; properties of traditional religious and cultural importance to a federally recognized Indian tribe; and/or TCPs. Stipulate the need for additional cultural resources investigations within the APE to identify and evaluate resources for NRHP-eligibility. Such investigations would address the identification of archaeological and architectural, built, or aboveground resources within the APE and evaluate these resources for NRHP-eligibility by qualified consultants. Address the identification and evaluation of TCPs by qualified consultants to identify TCPs, which may include properties of properties of traditional religious and cultural importance to a federally recognized Indian tribe, and evaluate these properties for NRHP-eligibility; Include obtaining background information from written and oral sources on the prehistory and history of the area, such as the accounts of the Knight Family and indigenous Native Americans such as Chief Busticoggan of the Bois Forte Band of Chippewa from such sources as *We Homesteaded*: A first-hand account of pioneer life in Minnesota's Bigfork River country, written by James K. Knight in 1975.

0174-3



0175-1

Thank you for your comment. No changes are made to the EIS in response to this comment. Potential issues associated with mining in this region are discussed in Sections 5.5.2, 6.4.1.2, 6.4.2.2, 6.4.3.2, 6.4.4.2, and 6.4.5.2.



Western Mesabi Mine Planning Board



P.O. Box 166
Bovey, MN 55709

August 6, 2015

Minnesota Department of Commerce
Mr. Bill Storm, Environmental Review Manager
85 7th Place East, Suite 500
St. Paul, Minnesota 55101

Re: Comment on Draft EIS, Great Northern Transmission Line, Docket TL-14-21

Dear Mr. Storm:

The Western Mesabi Mine Planning Board (WMMPB) is a Minnesota joint powers board comprised of most local government units from Keewatin to Cohasset, including Itasca County. Among WMMPB's purposes are formulating a management plan and developing strategies for environmental protection and orderly development of public and private lands; protecting those lands from uncontrolled and unplanned development, pollution or degradation through the preparation and adoption of comprehensive local plans and ordinances; and identifying areas of high future mining potential and preserving these lands for future mining opportunities. The proposed Great Northern Transmission Line is projected to cross the Mesabi Iron Range between Taconite and Marble, Minnesota, an area within the Mesabi corridor which constitutes WMMPB's member focus area.

Upon review of the maps provided with the draft EIS, especially Map 108 which includes the area of primary interest and concern to WMMPB and its objectives, WMMPB feels that the preferred alignment would be the blue-orange route. Major reasons include:

1. The blue-orange route closely follows county road 7, which in addition to being a highway is informally already a well established primary utility and infrastructure corridor crossing the Biwabik Iron Formation. The iron formation is of major current and future economic importance to the region and to Minnesota, comprising an estimated 30% of the entire economy of northeastern Minnesota, according to third party studies. Good engineering and public planning, municipal and rural, generally prefers that utilities and infrastructure such as highways/roadways, utility pipelines, electric transmission lines, and other utilities be co-located within corridors so as not to be dispersed over

0175-1

A Joint Powers Board

	Officers:	Staff:
Arbo Township	Leo Trunt, Chair	R.D. Learmont, Coordinator
City of Bovey	Edward Bolf, Vice Chair	Deborah Rantala,
City of Calumet	Carter Pettersen,	Recording Secr/Treasurer
City of Cohasset	Secretary/Treasurer	e-mail to: dlearmont@2z.net
City of Coleraine		
City of Grand Rapids		
Greenway Township		
Itasca County		
City of Nashauk		
Trout Lake Township		
Lone Pine Township		
City of Marble		
City of Nashauk		
Trout Lake Township		

Thank you for your comment. No changes are made to the EIS in response to this comment.

- large areas, which leads to greater disturbances with potential relatively negative environmental and social impacts;
- WMMPB suggests not adopting that part of the Balsam Variation as it is shown traversing sections 15, 16 and 17 of T 56 N R 24 W. As shown on map 108 there are indications of substantial iron resources immediately to the south; the three land referred to would be critical ancillary lands needed for future iron ore mining in the area and should not be encumbered by construction of a major and expensive electric power line (Great Northern Transmission) that could more efficiently and less burdensomely be located elsewhere when it is first constructed and would thereby create more efficiencies for the project proponent and its ratepayers and less long term social disturbance and negative economic impact in the area. Map 108 shows numerous drill hole locations immediately south of the Balsam Variation, tending to confirm that substantial iron resources exist in that area, and there are technical reasons to expect that significant iron resources also exist north, west, and east of the mapped drill hole area. These are natural resources that should not be encumbered, hindered, or prevented from development by poor location of the proposed power line when the blue-orange route, a preferred route with less medium and long term negative economic impact, provides a better location along with the other utilities in the same corridor.
 - The blue-orange routing also better fits the Itasca County iron mining overlay zone, a part of the county's long term comprehensive plan and zoning ordinance, the reasons for such overlay zone being established being similar to the reasons provided in points 1 and 2 preceding.

In summary, WMMPB believes that the blue-orange routing would be the preferred routing for crossing of the Mesabi Range by the Great Northern Transmission Line if such line is constructed. It is recommended that the southernmost several miles of the Balsam Variation not be used for this major power line due to encumbrances that would be placed by it upon the iron ore resource and ancillary lands needed for future development of the iron resource and the unnecessary and avoidable related costs and impacts - financial, social, and environmental - that would be created by locating the power line outside of the existing county highway 7 utility corridor as it crosses the iron formation and for several miles both north and south of the known iron formation.

Thank you for providing the opportunity for comment.

Sincerely,

/s/ R. D. Learmont

R. D. Learmont, Coordinator

A Joint Powers Board		Officers:	Staff:
Arbo Township	Lone Pine Township	Leo Trunt, Chair	R. D. Learmont, Coordinator
City of Bovey	City of Marble	Edward Bolf, Vice Chair	Deborah Rantala,
City of Calumet	City of Nashwaak	Carter Pettersen,	Recording Secr/Treasurer
City of Cohasset	Trout Lake Township	Secretary/Treasurer	e-mail to: dlearmont@2z.net
City of Coleraine			

0177-1

Electrical system reliability and weather events are discussed in Chapter 5 of the EIS.

No changes are made to the EIS in response to this comment.

0177-1

From: Rich Libbey
To: Storm_Bill (COMM)
Cc: Kaluzniak, Mike (PUC); Rich Libbey
Subject: Comments on DEIS-PUC Docket # TL-14-21 ---DOE # EIS-0499
Date: Monday, August 10, 2015 4:23:40 PM

Dear Mr. Storm I would like to submit the Minnesota Tornado History Project for consideration in the Final Draft Environmental Impact Statement for the Great Northern Transmission Line to aid in assessing the potential risk or lack there of to the Effie Alternative corridor sharing .

<http://www.tornadohistoryproject.com/tornado/Minnesota>

Grand Rapids Mn. 55744

Rich Libbey 18603 Hale Lake Drive,

0178-1

Thank you for your comment. No changes are made to the EIS in response to this comment.

From: Rich Libbey
To: Storm, Bill (COMM)
Cc: Kaluzniak, Mike (PUC); Rich Libbey
Subject: Fw: Comments on DEIS-PUC Docket # TL-14-21---DOE # EIS-0499
Date: Monday, August 10, 2015 4:30:46 PM

Dear Mr. Storm

Subject: Comments on DEIS-PUC Docket # TL-14-21---DOE # EIS-0499

Rich-----during my entire career, I knew of three tiny moose clusters (not really populations) that have persisted. One is in the Bear Lake area (just N of Buck Lake), another in the Moose - Willow WMA (S part N of Co. 18), and another in the Moose Wallow WMA SW of Reservoir Lake NE of Outing.

Bill Berg-retired wildlife biologist-MN DNR

Mr. Berg is commenting on known moose clusters in Itasca County. One of which is in the area of the proposed routes in N E Itasca County by the Bear Lake Wasson Lake Bog.

Drive, Grand Rapids, MN 55744

Walton League

Rich Libbey—18603 Hale Lake

Grand Rapids Chapter of the Izaak

0178-1

0179-1

Electrical system reliability and weather events are discussed in Chapter 5 of the EIS.

No changes are made to the EIS in response to this comment.

0179-2

Viewshed maps for specific areas have not been prepared as part of the EIS. The assessment of visual impacts relies on the idea stated in Section 5.3.1.1 that, "The 1,500 foot ROI for aesthetic resources was identified because the proposed Project is most likely to be visible within this near-foreground distance zone and views of the proposed Project from aesthetic resources within this distance zone have the greatest potential to result in visual impacts for sensitive viewers." Visual simulations, provided in Appendix N, Photo Simulations, of the EIS, were prepared for seven viewpoints within the study area to represent typical views of the proposed project. These simulations are intended to provide reviewers with a sense of what the transmission line would look like from various distances and in various landscape settings within the study area.

Bass Lake Park and Larson Lake Campground are located more than 1,500 feet from the proposed Blue and Orange routes.

Although the transmission line may be visible from these locations and surrounding areas, there is less potential for the proposed Project to result in visual impacts for sensitive viewers beyond the near-foreground distance zone.

No changes are made to the EIS in response to this comment.

0179-3

The percentage of cost sharing between Manitoba Hydro and the Applicant and the impact on energy costs is outside of the scope of this EIS. The MN PUC certificate of need process is the appropriate permit mechanism for evaluating and addressing these issues.

No changes are made to the EIS in response to this comment.

0179-4

Comment response 0195-2 discusses visual impacts.

Wolf Lake (at least 3,000 feet) and Wasson Lake (more than 2 miles) are located beyond the near-foreground from the proposed Blue and Orange routes. Although the transmission line may be visible from these locations and surrounding areas, there is less

0179-1

Mr. Storm-- Thank you for this opportunity to make some additional comments on the completeness of the Draft EIS-PUC Docket # TL-14-21 and DOE # EIS-0499.

My comments will generally be directed toward the Effie Alternative Route in NE Itasca County and SE Koochiching County.

* It would be useful to know the past history of the existing 230KW and 500KW lines that the Effie Alternative would parallel. How often if ever have the lines been out of service for weather related events and were both lines affected simultaneously? If there have been outages were they mechanical failures or weather related? When did these events occur? Where did they occur?

*What are the design options that can mitigate the effects of weather events? Building more robust towers and using non-cascading towers were mentioned. How does tower height and structure spacing affect line integrity?

*What is the historical record of severe storm events in the area that might affect the system reliability?

* <http://www.tornadohistoryproject.com/tornado/Minnesota> This link to The Minnesota Tornado History Project has a record of all recorded tornados in Minnesota in the past 50 years.

*What is the view shed of the proposed Blue and Orange Routes between Bass Lake Park and Larson Lake Camp Ground at various tower heights and spacing?

*What is the percentage of cost sharing between Manitoba Hydro and Minnesota Power relative to ownership, line construction and line maintenance. This information was provided in the Certificate of Need but I didn't see it in the Draft EIS. It would be useful in calculating the financial impact for Minnesota Rate payers.

*What is the view shed of the lines as they cross the Wolf Lake- Wasson Lake Bog site of high biological diversity and an existing snowmobile trail?

*What are the anticipated affects to tourism and the resort business of the three routes as they affect aesthetics and enjoyment of the north woods?

*Are there Goshawk Nesting sites along the proposed routes? They are a species of special concern and very sensitive to territorial disturbance and forest fragmentation and power line collisions.

* A small resident population of moose are in the Wolf Lake --Buck lake area. How could this population be affected?

*How will the spread of earthworms and exotics along the route be minimized?

From: Rich Libbey
To: Storm, Bill (COMMA)
Cc: Kaluzniak, Mike (PUC); Rich Libbey
Subject: Comments on DEIS-PUC Docket # TL-14-21---DOE # EIS-0499
Date: Monday, August 10, 2015 4:10:08 PM

0179

potential for the proposed Project to result in significant visual impacts for sensitive viewers beyond the near-foreground distance zone. Visual impacts are likely to be significant for snowmobile trails and other visually sensitive resources occurring within the near-foreground distance zone.

No changes are made to the EIS in response to this comment.

0179-5

Recreation and tourism impacts from the proposed Project are discussed in Section 5.2.1.9 of the EIS.

No changes are made to the EIS in response to this comment.

0179-6

Potential impacts to wildlife, including rare species and/or migratory birds are discussed in Chapters 5 and 6 of the EIS.

The invasion of earthworms into forests occurs primarily through dumping of fishing bait. While it is possible construction equipment could transport seeds of invasive plant species, it is unlikely that construction equipment would transport living earthworms along the construction site.

No changes are made to the EIS in response to this comment.

to comment, Rich Libbey –18603 Hale Lake Drive—Grand Rapids, Minnesota 55744

Grand Rapids Wes Libbey Chapter of the Izaak Walton League of America

0180-1

Thank you for your comment. No changes are made to the EIS in response to this comment.

Archived: Tuesday, August 11, 2015 9:30:02 AM
From: Cheryl D. Feigum
Sent: Tuesday, August 11, 2015 9:26:29 AM
To: Wu, Charlene
Cc: Dohoney, Courtney; Jessica L. Butler
Subject: FW: Manitoba Hydro / Minnesota "Not So Great" Transmission Line
Importance: Normal

Cheryl D. Feigum, PhD

Vice President
 Senior Environmental Scientist
 Minneapolis office: 952.832.2680
 cell: 701.412.1301
cfeigum@barr.com
www.barr.com



From: Smith, Julie A (OE) [<mailto:JulieA.Smith@hq.doe.gov>]
Sent: Tuesday, August 11, 2015 8:24 AM
To: Cheryl D. Feigum <cfeigum@barr.com>; John N. Wachtler <JWachtler@barr.com>; Mike B. Strong <MStrong@barr.com>; Courtney Dohoney (CDohoney@ene.com) <CDohoney@ene.com>; Belin, Daniel <DBelin@ene.com>; Bill Storm (bill.storm@state.mn.us) <bill.storm@state.mn.us>
Subject: FW: Manitoba Hydro / Minnesota "Not So Great" Transmission Line

Comment in email below. Please add to record. J

From: Ron Berglund [<mailto:rberglund@gmail.com>]
Sent: Monday, August 10, 2015 11:33 PM
To: Smith, Julie A (OE) <JulieA.Smith@hq.doe.gov>
Subject: Manitoba Hydro / Minnesota "Not So Great" Transmission Line

Dear Ms. Smith,

As an outdoor recreation enthusiast in Manitoba and North Central Minnesota, I want to voice my opposition to this plan. The destruction and severe environmental impact on rivers, boreal forests and wetlands is terrible beyond words and the future generations have to endure this impact.

Ron Berglund
 41 Magellan Bay
 Winnipeg, Manitoba Canada
 R3K 0P7

0180-1

[204.889.2900](#)

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Comment on the
Great Northern Transmission Line
Docket Number TL-14-21

Connecting Manitoba and Minnesota

0181-1
Thank you for your comment. No changes are made to the EIS in response to this comment.

Name: JAMES & PATRICIA SCHAFFRAN

Organization (if any):

Mailing Address: 56196 HORSEHEAD LK RD

City: BIGFORK

State: MN

Zip: 56428

Email: patschaffran@gmail.com

Comment: See attached

0181-1

Multiple horizontal lines for additional comments or signatures.

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0181-1
Continued

Bill Storm
Environmental Review Manager
MN Department of Commerce
85 7th Place East, Suite 500
St. Paul, MN 55101

Re: Great Northern Transmission Line: TL-14-21

August 4, 2015

Dear Bill Storm,

Our names are James and Patricia Schaffran. We are landowners located within the Wilson Lake Alignment Modification. This modification would impact the following residential lakes-Wilson Lake, Blind Pete Lake, Horsehead Lake, Wasson Lake, Scooty Lake, Hartley Lake and Wolf Lake. Besides impacting the residential population in this area, the line would also impact the moose population northwest and north of Horsehead Lake and the wolf population north of Horsehead Lake. This area is critical habitat for these animals, as well as, deer and small game animals.

The route that would have the least impact on residential home owners, the surrounding lakes and wildlife is the Effie variation. The advisory taskforce appointed for this Project has indicated a willingness to minimize the line's impact on residential, lake and wildlife areas. The Wilson Lake Alignment Modification does not satisfy this recommendation.

Please remove the Wilson Lake Alignment Modification from consideration.

Sincerely,

James and Patricia Schaffran
56196 Horsehead Lake Road
Bigfork, MN 56628

From: Yufna Soldier Wolf [<mailto:yufnanathpo@gmail.com>]
Sent: Thursday, July 09, 2015 1:15 PM
To: Storm, Bill (COMM)
Subject: courteous email

Bill,
I am emailing in regards to this project. Please know I am reviewing your letter and location's significance to my tribe the Northern Arapaho. I will follow up with a letter in the next week.

Thanks!

--
Yufna Soldier Wolf
NATHPO-Director
307-840-0837 call or text Cell
307-856-1628 Office call or lv msg

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Minnesota Pollution Control Agency

520 Lafayette Road North | St. Paul, Minnesota 55155-4194 | 651-206-6300
800-657-3864 | 651-202-5332 TTY | www.pca.state.mn.us | Equal Opportunity Employer

August 10, 2015

Ms. Julie Ann Smith, PhD, Federal Document Manager
DOE Office of Electricity Delivery and Energy Reliability
1000 Independence Avenue SW
Washington, DC 20585

Mr. William Cole Storm, Environmental Review Manager
Minnesota Department of Commerce
85 7th Place East, Suite 500
St. Paul, MN 55101

RE: Great Northern Transmission Line Project, Draft Environmental Impact Statement
DOE Number EIS-0499 and MPUC Docket Number TL-14-21

Dear Ms. Smith and Mr. Cole Storm:

Thank you for the opportunity to review and comment on the Draft Environmental Impact Statement (DEIS) for the Great Northern Transmission Line Project (Project). The Project is proposed to be located in Minnesota beginning at the Canadian/United States international border at the Province of Manitoba and Roseau County in Minnesota, extending across the northern portion of Minnesota to the existing Blackberry Substation near Grand Rapids, Minnesota. Regarding matters for which the Minnesota Pollution Control Agency (MPCA) has regulatory responsibility and other interests, the MPCA has the following comments for your consideration.

Construction Stormwater:

The DEIS acknowledges the need to obtain a National Pollutant Discharge Elimination System/State Disposal System (NPDES/SDS) Construction Stormwater Permit prior to beginning construction and outlines the development of a Stormwater Pollution Prevention Plan (SWPPP) to address stormwater erosion and sediment concerns. As with other transmission line projects of this scope, however, there is a potential for disturbing greater than 50 acres of land and triggering an MPCA staff review. The DEIS does not appear to evaluate the potential for meeting this criteria for triggering an MPCA staff review of the SWPPP. There also did not appear to be an evaluation whether the Project was located within one mile of an impaired water or special waters as identified in the NPDES/SDS Construction Stormwater Permit. Information regarding the MPCA's Construction Stormwater Program can be found on the MPCA's website at: <http://www.pca.state.mn.us/water/stormwater/stormwater-c.html>. Questions regarding Construction Stormwater Permit Requirements should be directed to Scott Fox at 651-757-2368.

Wetlands:

In the discussion of needed permits and authorizations, the DEIS discusses the U.S. Army Corps of Engineers Section 404 permit, but does not mention the MPCA's Section 401 Certification Program. The DEIS must also include the Section 401 Certification as a necessary authorization.

0183-1

Sections 1.3.3 and 5.3.4.1 of the EIS are updated to include discussion that disturbance of more than 50 acres of land will trigger a MPCA staff review of the project SWPPP.

Several of the proposed routes and alternatives would require crossing impaired waters and special waters (i.e. trout streams, SNAs), as discussed in Chapters 5 and 6 of the document.

0183-2

The EIS states that the project will require Section 401 Water Quality Certification from the MPCA in Section 1.3.3. Text about this approval is added to Section 5.3.4.1 of the EIS.

Specific wetland impacts will be quantified upon selection of a project alignment and project design. A mitigation plan for unavoidable wetland impacts is not available at this time. Once DOE and MN PUC issue permits for the Project, a wetland mitigation plan will be developed by the Applicant in coordination with USACE, BWSR, and appropriate local units of government as part of the environmental permitting process.

0183-1

0183-2

Ms. Julie Ann Smith, Mr. William Cole Storm
Page 2
August 10, 2015

0183-2 cont'd

0183-3

Section 5.2.2.7 of the EIS describes the immediate actions that the Applicant will implement in the event contamination is identified unexpectedly during construction activities. The Applicant will immediately report the presence of contamination to the property owner so the owner can make an evaluation as to whether the contamination must be reported to the Minnesota Duty Officer per Minnesota Statute, section 115.061.

0183-2
Continued

In addition, the Applicant would develop and implement a SPCC Plan and a SWPPP in compliance with state and federal regulations. The spill and contaminated soils would be collected, treated, and disposed of in accordance with all applicable federal, state, and local requirements.

0183-3

Section 5.2.2.7 identifies the presence of one contaminated site within the proposed routes and variations. To fully address the potential contamination issues that may be encountered during construction of the proposed Project, Section 5.2.2.7 of the EIS will include MPCA's recommendation to conduct a Phase I Environmental Site Assessment once the final route is chosen.

No changes are made to the EIS in response to this comment.

The DEIS lists the National Wetlands Inventory wetlands located within the West, Central, and East Section right-of-ways. However, it is not clear if the DEIS lists the total number of wetlands or the actual acreage of wetland impact in each Section. The DEIS should more clearly describe the total wetland impacts that are likely to occur from the Project, both temporary and permanent impacts.

Project applicants are required to first avoid and minimize their wetland impacts, and then mitigate for any wetlands that are lost due to the Project. Although mitigation sites and ratios are determined during permitting, it would be helpful if the DEIS provided available information about both how impacts will be avoided during construction and about possible options for mitigation of wetland impacts.

Minnesota Duty to Report:
Minnesota Statute 115.061 states: "(a) Except as provided in paragraph (b), it is the duty of every person to notify the agency immediately of the discharge, accidental or otherwise, of any substance or material under its control which, if not recovered, may cause pollution of waters of the state, and the responsible person shall recover as rapidly and as thoroughly as possible such substance or material and take immediately such other action as may be reasonably possible to minimize or abate pollution of waters of the state caused thereby. (b) Notification is not required under paragraph (a) for a discharge of five gallons or less of petroleum, as defined in section 115C.02, subdivision 10. This paragraph does not affect the other requirements of paragraph (a)."

The Project Proposer is required to notify the Minnesota Duty Officer in the event of a release to the environment of hazardous substances or more than five gallons of petroleum, and it is the Project Proposer's responsibility to handle solid wastes and contaminated soil and groundwater that may be encountered in accordance with the SWPPP as appropriate, or with a MPCA approved Remedial Action Plan. Once the final route is chosen, MPCA recommends that the Proposer conduct a Phase I Environmental Site Assessment to determine to an extent ahead of time, what kinds of potential contamination issues may be encountered during construction of the Project.

Again, the MPCA appreciates the opportunity to review this project. Please be aware that this letter does not constitute approval by the MPCA of any or all elements of the Project for the purpose of pending or future permit action(s) by the MPCA. Ultimately, it is the responsibility of the Project proposer to secure any required permits and to comply with any requisite permit conditions. If you have any questions concerning MPCA's review of this DEIS, please contact me at 651-757-2465 or by email at Patrice.jensen@state.mn.us.

Sincerely,

Patrice Jensen

Planner Principal
Environmental Review Unit
Resource Management and Assistance Division

PJ:pj
cc: Dan Card, MPCA
William Wilde, MPCA
Scott Fox, MPCA



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

AUG 10 2015

REPLY TO THE ATTENTION OF:

E-19J

Julie Ann Smith, Ph.D.
Office of Electricity Delivery and Energy (OE-20)
U.S. Department of Energy
1000 Independence Avenue SW
Washington, DC 20585

Re: Great Northern Transmission Line Project, U.S. - Canada Border, Northern Minnesota,
Draft Environmental Impact Statement (DEIS).
CEQ No.: 20150178

Dear Dr. Smith:

The United States Environmental Protection Agency (EPA), Region 5 reviewed the Draft Environmental Impact Statement (DEIS) prepared by the U.S. Department of Energy (DOE) and Minnesota Department of Commerce - Energy Environmental Review and Analysis (DOE-EERA) for the Great Northern Transmission Line Project (GNTL), pursuant to Section 309 of the Clean Air Act (CAA), Section 102(2)(C) of the National Environmental Policy Act (NEPA), and Council on Environmental Quality regulations (40 CFR Parts 1500-1508). This letter provides our comments.

Minnesota Power (Project Proponent, Applicant), an operating division of ALLETE, Inc., is seeking: 1) a Presidential permit from DOE to construct, operate, maintain and connect a new high voltage electric transmission line across the U.S.-Canada (Manitoba) border in northern Minnesota, and 2) a Route Permit under the Minnesota Power Plant Siting Act from the Minnesota Public Utility Commission. The joint Federal/State DEIS was prepared to avoid duplication in environmental review procedures.

GNTL is proposed as an approximately 220-mile long, 500-kilovolt (kV) overhead, single-circuit, alternating current (AC) electric transmission system in Minnesota, from the Canadian Province of Manitoba to the existing Blackberry Substation near Grand Rapids, Itasca County, Minnesota. The GNTL proposal also includes expansion of the existing Blackberry Substation to accommodate the required 500-kV interconnection and construction of a new 500-kV series compensation station, regeneration stations, permanent access roads, temporary access roads, laydown areas, and fly-in sites. GNTL would carry electricity generated in Canada by hydroelectric facilities operated by Manitoba Hydro, a Canadian electric utility, and would support the regional electric grid, including transmitting approximately 883 megawatt (MW) of additional power in Minnesota.

The DEIS presents a range of issues and analysis of potential impacts associated with two alternative transmission line routes (Blue route and Orange route) in Minnesota, their associated potential variations/local route alternatives and modifications, and five potential international border crossing locations. A DOE and Minnesota Power preferred alternative for the international crossing location at latitude 49 00 00.00 N and longitude 95 54 50.49 W is identified, roughly 2.9 miles east of Highway 89 in Roseau County, Minnesota. The DEIS also identifies the Blue Route as Minnesota Power's preferred alternative route.

Based on EPA's review of the project, we rate the DEIS Preferred Alternative as Environmental Concerns - Insufficient Information (EC-2). The EC-2 rating indicates that we have concerns that the document does not contain enough information to fully assess the environmental impacts that should be avoided in order to fully protect the environment. See the enclosed Summary of Rating Definitions for a detailed explanation of EPA's ratings.

EPA concerns regard potential impacts to wetlands, upland forest and associated wildlife habitat, federal and state listed species, cultural resources and identification/disclosure of mitigation measures. Enclosed are our detailed comments. We make recommendations for additional information to include in the Final EIS (FEIS).

EPA requests DOE provide two hard copies and three CDs of the FEIS for our review and comment. If you would like to discuss the content of this letter and enclosure in more detail, please contact Virginia Laszewski of my staff at 312/886-7501 or at laszewski.virginia@epa.gov.

Sincerely,



Kenneth A. Westlake,
Chief, NEPA Implementation
Office of Enforcement and Compliance Assurance

Enclosures (2): EPA's DEIS comments, and Summary of Rating Definitions

Cc (email): Bill Storm, Environmental Review Manager, Minnesota Department of Commerce, bill.storm@state.mn.us
 Tamara Cameron, Chief Regulatory, U.S. Army Corps of Engineers - St. Paul District, Tamara.E.Cameron@mvp02.usace.army.mil
 Bill Baer, U.S. Army Corps of Engineers, William.A.Baer@usace.army.mil
 Andrew Horton, U.S. Fish and Wildlife Service, Twin Cities Field Office, Horton.andrew@usfws.gov

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As discussed in Section 2.9.7 of the EIS, once a route is selected, the Applicant will identify the locations for all permanent and temporary access roads, laydown areas, stringing areas, fly-in sites, and structure locations. They will work with the appropriate federal and state agencies to develop survey plans, conduct fieldwork, and determine the wetland and other resource impacts for the project in order to complete federal and state permitting processes. Until a route is selected, the exact locations of these project components cannot be known.

No changes are made to the EIS in response to this comment.

3

**EPA Comments on Great Northern Transmission Line (GNTL) Project
Draft Environmental Impact Statement (DEIS)**

[U.S. Department of Energy (DOE/EIS-0499) / Minnesota Department of Commerce (E015/TL-14-21)]
(CEQ No.: 20150178)

Alternatives - Preferred Border Crossing Location and Preferred Alternative Route
The DEIS identifies and assesses impacts associated with 5 potential border crossing alternative locations and variations, and identifies a DOE and Minnesota Power preferred alternative for the international crossing location (Proposed Border Crossing-Blue/Orange Route) at latitude 49 00 00.00 N and longitude 95 54 50.49 W, roughly 2.9 miles east of Highway 89 in Roseau County, Minnesota.

In addition, the DEIS identifies and assesses impacts associated with two major alternative routes (Blue Route and Orange Route), segment options and variations thereof from potential border crossing locations to the Blackberry Substation. The DEIS identifies the Blue Route as Minnesota Power's preferred alternative route. The Blue Route originates at the DOE/Minnesota Power DEIS identified preferred international border crossing location.

The DEIS also identifies and discusses proposed locations and potential impacts associated with the compensation station, regeneration stations and expansion area for the Blackberry Substation. However, the DEIS has minimal to no specific information regarding the proposed locations, and type and estimated amount of resources impacted by the proposed permanent access roads, temporary access roads, laydown areas, stringing areas, and fly-in sites.

More than half the length of the GNTL Blue Route utilizes new terrain that is largely wetlands and forest land in a substantially rural area with limited roads. For the Blue Route, the data tables in DEIS *Appendix E* identify 1,976 acres of forested wetland and 2,265 acres of upland forest within the 200-foot ROW. To establish and maintain this ROW, trees in the ROW will need to be cut and prevented from growing in perpetuity. Due to the remote nature of the ROW, there may be additional impacts that have not yet been accounted for in the DEIS.

Recommendations: EPA recommends the FEIS identify Minnesota Power's proposed locations for permanent and temporary access roads, laydown areas, stringing areas and fly-in sites. We recommend these facility locations along with potential pole locations be identified on all FEIS resources maps/figures depicting the preferred alternative route. In addition, the FEIS should identify the amount and type of each resource impacted by these facilities for each proposed facility location and disclose this information in an FEIS Preferred Alternative Impacts Summary Table. (See additional EPA comments and recommendations later in this enclosure regarding wetland impacts under the headings "Wetlands and Clean Water Act Section 404," and for *Appendices E, F and G* under the heading "*Appendices*.")

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0184-2

The EIS states that the project will require Section 401 Water Quality Certification from the MPCA in Section 1.3.3. Text about this approval is added to Section 5.3.4.1 of the EIS.

At this time, specific quantities of wetland impact for all alternatives cannot be calculated as there is no associated detailed project design. As such, a mitigation plan for unavoidable wetland impacts is not currently available. Once a project alignment is selected and DOE and MN PUC issue permits for the Project, detailed project design will begin. Wetland impacts will be quantified and an associated mitigation plan will be developed by the Applicant in coordination with USACE, BWSR, and appropriate local units of government as part of the environmental permitting process.

0184-3

The Applicant will work with appropriate state and federal agencies to comply with requirements in their permits, including using an environmental inspector. The Applicant will select an environmental inspector after the Route Permit has been issued. No changes are made to the EIS in response to this comment.

0184-4

Criteria Pollutant and CO2 emissions from construction of the project are estimated and are provided in Section 5.2.1.3 of the EIS.

0184-5

Employment of additional emission reduction strategies during construction of the proposed Project will be dependent on the Applicant to implement as the proposed Project is not expected to result in long-term adverse criteria pollutant or climate change and GHG emissions which would allow for regulatory agency enforcement of emission reduction strategies.

No changes are made to the EIS in response to this comment.

Wetlands and Clean Water Act Section 404

The DEIS identifies avoidance and minimization efforts made, to date, for locating the Blackberry Substation expansion, new compensation station and regeneration sites. However, there is minimal to no information in the DEIS to substantiate that pole placement and other associated GNTL facilities (i.e., permanent and temporary access roads, laydown areas, stringing areas and fly-in sites) would have minimal to no direct wetland impacts.

Recommendations: The FEIS should specifically identify how many acres of wetland will be directly affected by the discharge of fill material, as well as how many acres will be converted from one wetland type to another. The FEIS should also include specifically what the project proponent proposes as compensatory mitigation to offset wetland losses. We recommend the FEIS include a Wetland Mitigation Plan.

2.0 Proposed Project

2.11 Construction Procedures (page 34) *"The Applicant has indicated that they would retain an environmental inspector during project construction, responsible for understanding all of the conditions of the proposed Project's environmental permits and ensuring that contractors abide by these conditions. These Applicant proposed measures are potential MN PUC Route Permit conditions."*

Recommendations: We recommend that a third party independent inspector, such as the Minnesota Department of Natural Resources (MnDNR), be utilized as recommended by MnDNR in their August 15, 2014 letter (page 8 of 26), Third Party Independent Monitors, that was addressed to DOC regarding the GNTL Route Permit application. We recommend the FEIS disclose whether or not MnDNR or some other third party independent environmental inspector will be used for GNTL construction.

5.0 Affected Environment and Potential Impacts
Air Quality

Page 106, *Air Quality in the ROI* - The DEIS correctly identifies that all counties in the region of influence (ROI) are in attainment or unclassifiable (to be considered in attainment) for all National Ambient Air Quality Standards (EPA 2015). Therefore, DOE's proposed action is exempt from applicability of the General Conformity Rule requirements of the Clean Air Act.

Construction Impacts

Page 110 - *The Criteria Pollutants* section indicates that the total emissions of criteria pollutants from construction of the proposed Project cannot currently be quantified.

Recommendation: We recommend the FEIS include an estimate of the total emissions of criteria pollutants from construction of the proposed Project.

Page 109 - *General Impacts* section identifies best management practices (BMPs) which could be included as MN PUC Route Permit conditions, such as: minimizing idling of construction vehicles; utilizing existing power sources or clean fuel generators rather than diesel-powered

0184-2

0184-3

0184-4

0184-5

generators, ensuring that construction equipment is properly tuned and maintained prior to and during on-site operation; and developing a project-specific dust control plan. Page 110 – *The Criteria Pollutants* section refers the reader to Table 2-2 for the project proponent’s proposed mitigation measures to reduce construction emissions. However, Table 2-2 (pages 41- 42) identifies only one proposed measure to address air quality during construction: “Regular, frequent cleaning of construction equipment and vehicles on the ROW.”

Recommendation: We recommend Minnesota Power pursue opportunities to use clean diesel equipment, vehicles, fuels and other emission reduction strategies during project construction. The FEIS should identify additional air quality measures that Minnesota Power proposes to utilize and/or MN PUC intends to include as conditions in the MN PUC Route Permit.

Page 111- *The Climate Change and GHG Emissions* section discusses the 12.01 million metric tons of CO₂ equivalent representing the loss of carbon sink for the Proposed Orange Route.

Recommendation: Please site a reference for this calculation and clarify if the timeframe is for one or four years.

Operation, Maintenance, and Emergency Repair Impacts

Page 111-*The Criteria Pollutants* section states, “*These potential operational emissions are expected to be small and would result in limited impacts to air quality and would not affect the attainment status in the regions*”.

Recommendation: The document should provide an estimated range of emissions.

Forests and Wildlife Habitat, Forest Fragmentation and Invasive/Noxious Species

Wetland and upland forests play an important role in protecting water quality in the immediate watershed, providing wildlife habitat, and acting as a carbon sink. The proposed Blue Route would require the removal of approximately 4,829 acres of forest in the 200-foot ROW (*Air Quality in the ROI, Construction Impacts, Climate Change and GHG Emissions, page 110*), fragmenting existing forestland and providing an opportunity for the introduction and spread of invasive/noxious species. In addition, there may likely be additional wetland and upland forest lost due to construction of GNTL-associated facilities that have not been adequately identified and accounted for in the DEIS.

Recommendations: For forest impacts that do not require compensation under existing federal and/or state regulations, we recommend the project proponent undertake voluntary forest compensation for permanent and temporary tree losses due to construction and operation of the preferred alternative. Mitigation might include, but not be limited to, helping to finance forest restoration projects by local, state and/or federal natural resource agencies.

0184-5 cont'd

Employment of additional emission reduction strategies during construction of the proposed Project will be dependent on the Applicant to implement as the proposed Project is not expected to result in long-term adverse criteria pollutant or climate change and GHG emissions.

0184-5 Continued

No changes are made to the EIS in response to this comment.

0184-6

As described earlier in the section regarding Construction Impacts on Climate Change and GHG Emissions, the estimates of carbon sink losses are calculated using the following reference:

Methods for Calculating Forest Ecosystem and Harvested Carbon with Standard Estimates for Forest Types of the United States. United States Department of Agriculture, Forest Service, Northeastern Research Station. General Technical Report NE-343. Smith, James E., Linda S. Heath, Kenneth E. Skog, and Richard A. Birdsey. 2006.

0184-6

0184-7

The EIS text in Section 5.2.1.3 regarding Construction Impacts on Climate Change and GHG Emissions is revised to state that the total loss of sink for the four years of construction is attributed to the final year of the proposed Project.

0184-7

Criteria pollutant and CO₂ emissions from construction of the proposed Project are estimated and provided in Section 5.2.1.3 of the EIS. Since maintenance emissions would be considerably less than construction related emissions, there would be no expected impact to air quality from on-going maintenance activities.

0184-8

The concerns of this comment relate to voluntary recommendations the applicant can take, which is outside of DOE's scope of authority. At the federal level, mitigation discussions related to forest resources will fall under USFWS's authority pursuant to the MBTA.

0184-8

No changes are made to the EIS in response to this comment.

0184-9

Chapter 6 of the EIS identifies that the MN PUC Route Permit could also require the development of a Vegetation Management Plan as a permit condition, which could include plant surveys along the permitted ROW, incorporate vegetation clearing, and management of invasive species. The MN PUC typically requires the Applicant to prepare a plan in coordination with the MnDNR as a condition of the Route Permit.

No changes are made to the EIS in response to this comment.

0184-10

A draft Section 106 Programmatic Agreement (PA) is included in Appendix V of the EIS. DOE is conducting its NEPA analysis in coordination with its Section 106 consultation requirements of the NHPA. Once a final PA for the proposed Project is executed, it will be posted on DOE's EIS website (<http://www.greatnorthernneis.org>). The executed PA will be incorporated by reference into DOE's Record of Decision for the proposed Project.

0184-10

EPA also recommends the project proponent prepare, in coordination with MnDNR and the U.S. Fish and Wildlife Service (USFWS), a vegetation management plan to address control of invasive/noxious species plant intrusions. The plan should list the noxious weeds and exotic plants that occur in the resource area. In cases where noxious weeds are a threat, the plan should detail a strategy for prevention, early detection of invasion, and control procedures for each species. We recommend the vegetation management plan be included in the FEIS. (This recommendation is reiterated later in this enclosure for *Appendix B*, under the heading "Appendices.")

Cultural Resources/Tribal Interests and National Historic Preservation Act, Section 106

7.3.4 Archaeology and Historic Resources (page 666) "As discussed in Section 5.3.3.2, transmission line construction can result in damage, destruction, or alteration of historic buildings and buried archaeological resources. A Programmatic Agreement (PA) is under development by Department of Energy (DOE), Tribes, Minnesota State Historical and Preservation Office (SHPO), Advisory Council on Historic Preservation (ACHP), the Applicant, and other consulting parties to avoid and minimize impacts to cultural resources."

5.3.3.3 General Impacts to Cultural Resources (page 175) "The PA that DOE intends to execute for the proposed Project will include stipulated measures to address the potential operation, maintenance, and emergency repair impacts on cultural resources and historic properties. Stipulations would be developed to identify cultural resources and historic properties, determine the effects of the proposed Project on historic properties, and determine measures that would be implemented to avoid, minimize, and mitigate adverse effects on historic properties."

Recommendation: We recommend that the signed/dated PA be included in the FEIS, if feasible. If not feasible, we recommend a draft of the PA be included in the FEIS and the final PA included as part of DOE's Record of Decision (ROD) for GNTL. (See our recommendation for *Appendix F* later in this enclosure under "Appendices.")

Listed Species, Candidate Species, and Species of Concern/Rare Species

1.2.4.2 Section 7 of the Endangered Species Act (page 6) "The USFWS oversees compliance with the ESA (16U.S.C. Section 1536), which requires that federal agencies 'insure that any action authorized, funded, or carried out by such agency is not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of critical habitat of such species.' DOE, as the lead federal agency for the proposed Project, prepared a Biological Assessment in accordance with the ESA to analyze potential Project related impacts on federally-listed threatened and endangered species, candidate species, and species proposed for listing, and their designated critical habitats. Consultation under Section 7 of ESA is on-going. USFWS will issue a Biological Opinion and Incidental Taking Permit statement if necessary."

Recommendation: We recommend the FEIS update the status of DOE's Section 7 consultation with USFWS since the DEIS. Include DOE / USFWS communication/correspondence in FEIS Appendix Q.

5.3.5.2 General Impacts (page 192) – *“The proposed Project may affect, but is not likely to adversely affect these federally-listed species or designated critical habitat; the draft Biological Assessment (Appendix R) provides discussion on potential impacts of the proposed Project on Federally-listed species and designated critical habitat.”*

DEIS Appendix R does not contain a draft Biological Opinion. (See additional EPA comments regarding DEIS Appendix R later in this enclosure under the heading “Appendices.”)

Recommendation: We recommend the final Biological Assessment (BA) and the USFWS Biological Opinion (BO) be included in the FEIS. (This recommendation is reiterated later in this enclosure for Appendix R under the heading “Appendices.”)

6.2.1.4 Natural Environment, Wildlife (page 262) – *“The Applicant’s proposed measures to avoid, minimize, or mitigate impacts on wildlife resources are summarized in Section 2.13 and in the Applicant’s Route Permit Application. These measures, are primarily focused on birds (Minnesota Power 2014, reference (1)). Additional measures should include development of an Avian Protection Plan (APP), which would include an avian impact risk mitigation strategy, as suggested by the MnDNR (MnDNR 2014, reference (110)). The MN PUC Route Permit could require that an APP be developed and implemented as a permit condition. The Applicant should also work with the USFWS and MnDNR to include broader measures to avoid, minimize, or mitigate potential impacts to all wildlife species and associated habitats.”*

Recommendation: We recommend the FEIS include Minnesota Power’s GNTL Avian Protection Plan (APP). (Also see EPA recommendation for Appendix B, later in this enclosure under the heading “Appendices.”)

8.0 List of Preparers
8.1 Federal and State Agencies

Page 673 - Table 8-1 List of Preparers – Federal and State Organization. The title of Table 8-1 and presentation of the information in this table implies that the Federal cooperating agencies along with DOE and DOC-EERA prepared the DOE/DOC-ERRA DEIS.

Recommendation: To accurately reflect the roles of DOE and DOC-ERRA as lead federal and state agencies, respectively; and, EPA as a cooperating federal agency in DOE’s EIS process, we recommend that Table 8-1 be re-titled: *“Table 8-1 List of the Lead Federal and State Agencies, and Federal Cooperating Agencies.”*

0184-11

The Biological Assessment in Appendix R provides an update of DOE’s Section 7 of the ESA consultation with USFWS. Section 1.1.4.2 of the EIS is updated with a sentence indicating that a BA is included in the Appendices of the EIS, as well as a statement of the status of DOE’s Section 7 consultations for the proposed Project.

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0184-12

The Biological Assessment is included in Appendix R of the EIS.

0184-13

Thank you for your comment. As discussed in Section 6.2.1.4 of the EIS, an Avian Protection Plan (APP) may be a special condition of the Route Permit and would be developed in coordination with USFWS and MnDNR, as required. No changes are made to the EIS in response to this comment.

0184-12

0184-14

The title of Table 8-1 is updated in the Final EIS.

0184-13

0184-14

0184-15

As recommended, the Appendix A, Tribal Consultation, the EIS includes any additional documentation of conversations between DOE and the tribes that occurred after publication of the Draft EIS.

Appendices
Appendix A
Tribal Consultations

Recommendation: We recommend the FEIS include additional correspondence/communications between DOE and the tribes since the DEIS.

Appendix B

Route Permit Generic Template and Example – The generic Route Permit Section 4.10 Special Conditions states: “The Permittee shall provide a report to the Commission as part of the plan and profile submission that describes the actions taken and mitigative measures developed regarding the project and the following special conditions.”

[Describe any special conditions]

Examples of special conditions included in permits:

- Avian Mitigation Plan
- Environmental Control Plan
- Agriculture Mitigation Plan
- Vegetation Management Plan
- Property Restrictions
- Minnesota Department of Natural Resources Requirements
- Minnesota Pollution Control Requirements
- Minnesota State Historical Preservation Office Requirements
- Minnesota Department of Transportation Requirements”

Recommendations: EPA recommends the FEIS include the draft version of MN PUC Route Permit for GNTL, if available. We also recommend the FEIS include, but need not be limited to, an Aviation Mitigation Plan, Vegetation Management Plan, Erosion and Sediment Control Plan, and Stormwater Pollution Prevention Plan (SWPPP), Minnesota Department of Natural Resources Requirements, Minnesota Pollution Control Requirements, and Minnesota State Historical Preservation Office Requirements.

Appendix E - Route Analysis Data Tables, Appendix F – Rare Species Data Tables, and Appendix G – Rare Communities Data Tables. EPA appreciates the inclusion of these data tables in the DEIS.

Recommendations: We recommend these DEIS data tables be updated for the FEIS with any new information identified/developed since the DEIS. In addition, the FEIS should include a **Preferred Alternative Impacts Summary Table** with updated

0184-15

0184-16
Once the MN PUC issues the Route Permit, the Applicant will need to work with the appropriate agencies to develop the plans required as permit conditions. An example of a MN PUC Route Permit is provided in Appendix B.

No changes are made to the EIS in response to this comment.

0184-17

Chapters 5 and 6 (Rare and Unique Natural Resources) and Appendix F of the Final EIS are updated with the most current information available (MnDNR NHIS database) to assess presence and potential impacts on rare species.

0184-16

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0184-18

An Agricultural Impact Mitigation Plan (AIMP) specific to this project is not available at this time. The MN PUC permit conditions will require the Applicant to coordinate with the MnDNR and other applicable agencies to develop an AIMP.

No changes are made to the EIS in response to this comment.

0184-18

**Appendix O
Agricultural Impact Mitigation Plan (AIMP) Example**

Recommendation: We recommend the specific Agricultural Impact Mitigation Plan for GNTL be included in the FEIS.

**Appendix P
Cultural Resources Report**

Recommendation: We recommend that the signed/dated Programmatic Agreement (PA) be included in the FEIS, if available. If not available, we recommend a draft of the PA be included in the FEIS and the final PA included as part of DOE's EIS Record of Decision (ROD) for GNTL.

**Appendix Q
USFWS and DOE Section 7 Consultation**

Recommendation: We recommend the FEIS update the status of the USFWS-DOE Section 7 consultation. DOE / USFWS communication/correspondence should be included in FEIS Appendix Q since the DEIS.

**Appendix R
Biological Assessment**

The only information included in DEIS Appendix R is following statement: *"The preparation of the draft Biological Assessment (BA) is underway, however it is not available for this EIS. The draft BA is being prepared in order to determine the impacts of the proposed Project on federally-listed species and to facilitate ESA Section 7 consultation."*

Recommendation: The FEIS should include the final Biological Assessment (BA) and the USFWS Biological Opinion (BO) or most recent documentation updating the status of coordination with the USFWS regarding the GNTL proposal.

**Appendix S
Detailed Map Books**

Recommendation: We recommend the DEIS maps/figures that pertain to the preferred border crossing location and preferred alternative route be updated for the FEIS, to depict Minnesota Power's proposed locations for GNTL permanent and temporary access roads, laydown areas, fly-in sites, stringing areas, and pole locations.

0184-19

A draft Section 106 Programmatic Agreement (PA) is included in Appendix V of the EIS. DOE is conducting its NEPA analysis in coordination with its Section 106 consultation requirements of the NHPA. Once a final PA for the proposed Project is executed, it will be made public on DOE's EIS website (<http://www.greatnortherneis.org>). The executed PA will be incorporated by reference into DOE's Record of Decision for the proposed Project.

0184-20

The Biological Assessment in Appendix R provides an update of DOE's Section 7 consultation with USFWS.

0184-21

The Biological Assessment is included in Appendix R of the Final EIS.

0184-21

0184-22

As discussed in Section 2.9.7 of the EIS, once a route is selected the Applicant will identify the locations for all permanent and temporary access roads, laydown areas, stringing areas, fly-in sites, and structure locations. They will work with the federal and state agencies to develop survey plans, conduct fieldwork, and determine the wetland and other resource impacts for the project. This information will be needed in order to complete the federal and state permitting processes. Until a route is selected, the exact locations of these project components cannot be known.

No changes are made to the EIS in response to this comment.

0184-22

SUMMARY OF RATING DEFINITIONS AND FOLLOWUP ACTIONS*

ENVIRONMENTAL IMPACT OF THE ACTION

LO—Lack of Objections

The EPA review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

EC—Environmental Concerns

The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce the environmental impact. EPA would like to work with the lead agency to reduce these impacts.

EO—Environmental Objections

The EPA review has identified significant environmental impacts that must be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

EU—Environmentally Unsatisfactory

The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potential unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the CEQ.

ADEQUACY OF THE IMPACT STATEMENT

Category 1—Adequate

EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis or data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

Category 2—Insufficient Information

The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analyzed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses, or discussion should be included in the final EIS.

Category 3—Inadequate

EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analyzed in the draft EIS, which should be analyzed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the NEPA and/or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

*From EPA Manual 1640 Policy and Procedures for the Review of Federal Actions Impacting the Environment.

Laura Imax

1418 Como Avenue, St. Paul, MN 55101

Date: August 6, 2015

William Cole Storm

Environmental Review Manager Minnesota Department of Commerce
85 7th Place East, Suite 500
St. Paul, Minnesota, 55101

bill.storm@state.mn.us

PUC Docket TL-14-21 and DOE number EIS-0499

Dear Mr. Storm

I have attached a letter I submitted on the certificate of need for this project that makes an argument that the Environmental Report in that process was inadequate for the reasons stated. I now attach that letter as a comment on this docket. Please simply replace the term "Environmental Report" with "EIS." I maintain that the EIS is inadequate on its face on both the federal and state level for the reasons stated in my earlier letter, comments which were never addressed by the ALJ or the PUC in the certificate of need. Apparently, the ALJ and the PUC are not familiar with basic MERA, MEPA, and NEPA case law that supports my assertion of inadequacy. The scope of route alternatives simply does not cover a range of reasonable alternatives and therefore the EIS is inadequate. I am baffled as to why environmental groups, the Minnesota DNR and the federal EPA wish to move forward allowing this precedent, which will come to haunt them in the future.

Sincerely,

Sincerely once again

L

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0185-1

0185-1

The alternatives analyzed in the EIS represent what DOE determines to be a reasonable range of alternatives based on comments received during scoping and comment periods. Additional routes presented in these comments have been considered and eliminated from detailed analysis because they do not present a resource issue significant enough to warrant a complete alternative.

No changes are made to the EIS in response to this comment.



January 19, 2105

The Honorable Ann O'Reilly
 OAH
 P.O. Box 64620
 600 North Robert Street,
 St. Paul, MN 55164-0620

RECEIVED
 2015 JAN 20 AM 7: 39
 ADMINISTRATIVE
 HEARINGS

RE:
 Great Northern Transmission Line Certificate of Need and Route Permit
 PUC Decker E-015/CN-12-1163
 OAH 65-2500-31196 and E-015/TL-14-21

Dear Judge O'Reilly:

I provided earlier (November 24 or so) comments regarding the *inadequacy* of the environmental report for this project-- comments which no one seems to have paid any attention to--based on my review of briefs and proposed findings today.

I am an older person, a now rusty environmental activist who grew up in the Roseau area. I write for environmental groups like MCEA that don't seem to be paying any attention, either. The issue you're faced with is simple. Not easy to resolve perhaps, but simple to understand.

This is about **trees and wetlands versus farms and homes**.

Therefore, I will try again. You will have to deal with it one-way or the other, and I'm thinking you would be better dealing with it earlier rather than later. The issue will almost certainly come up again later, particularly if the Minnesota DNR (and the Corps of Engineers) wakes up at some point.

Minnesota Power in their route permit shows that they evaluated potential routes from Canada to their substation near Grand Rapids in a large study area (good), but then they chose two routes that both go through wooded, pristine natural areas instead of along roads through the farming areas to the west. *According to their application, they did this primarily because they had more opposition from farmers and people along roads than from the trees and birds.* I'm glad they held a lot of open houses to figure that out.

Plus, they state that it would take too long to route through this farming area because the route would create so much more opposition and require dealing with many more different landowners such that they would never meet their contract deadlines. That may be true, but it is largely irrelevant given the legal framework for state decisions summarized below.

As the utility points out, it is true that there are more opportunities to parallel existing transmission lines along their proposed routes that in the farming areas, and their proposed routes are shorter. However, paralleling these existing lines actually reduces impacts very little, since their routes seem to share very little actual right of way with the existing transmission lines, and don't parallel them all that much (30% or so). As a result, their proposed routes require cutting down about 2000 acres of trees and converting these forested wetlands into less valuable wetland.

Apparently, the utility is claiming that this public opposition to the routes in the farming area to the west (which are along roads; also a form of right-of-way sharing) is so strong, and the difficulty and time involved would be so great that not only are these routes bad, but so bad they are not feasible--and therefore, these routes do not meet their underlying "purpose and need." Route permit application in Section 4.11.4, page 4-24. Thus, the utility opens this odd route-related "need" issue for you to resolve in findings in the certificate of need then, I assume.

0185-2
 Thank you for your comment. No changes are made to the EIS in response to this comment.

0185-3
 No alternatives are proposed by the Applicant in Western Minnesota and nor were any proposed during scoping, therefore no western alternatives are included and/or analyzed in the EIS.
 No changes are made to the EIS in response to this comment.

0185-4
 Thank you for your comment. No changes are made to the EIS in response to this comment.

0185-2

0185-3

0185-4

0185-5

The alternatives analyzed in the EIS represent what DOE determines to be a reasonable range of alternatives based on comments received during scoping and comment periods. Additional routes presented in these comments have been considered and eliminated from detailed analysis because they do not present a resource issue significant enough to warrant a complete alternative.

No changes are made to the EIS in response to this comment.

Page 2

Although apparently no person put forward a specific enough route in the primarily farming area to the west during route permit scoping, there were plenty of hints. For example, the Minnesota DNR scoping letter on page 7: "Alternatives Screening" states that Minn. Stat. 116D.04(6) in effect means that neither the PUC nor the DNR can issue a permit that allows these trees to be cleared if there is a feasible and prudent alternative.

The DNR letter specifically quotes Minn. Stat. 116D.04(6): *"No state action significantly affecting the quality of the environment shall be allowed, nor shall any permit for natural resources management or development be granted, where such action or permit has caused or is likely to cause pollution, impairment, or destruction of the air, water, land or other natural resources located within the state, so long as there is a feasible and prudent alternative consistent with the reasonable requirements of the public health, safety, and welfare and the state's paramount concern for the protection of its air, water, land and other natural resources from pollution, impairment, or destruction. Economic considerations alone shall not justify such conduct."*

The EPA says something similar in their comments regarding wetlands and federal law.

These is of course a prudent and feasible alternative shown on the attached map. Claiming that such an alternative route along roads in the primarily farming areas is not a "feasible and prudent alternative consistent with reasonable requirements, etc." is preposterous on its face. A quick review of the PUC website reveals that at least four major transmission lines have been permitted through largely farming areas along roadway right-of-way in Minnesota over the last five or so years. The route through the farming areas certainly would meet more public opposition and take more time, but it is certainly and obviously feasible (and I think more prudent) route.

Next, the Minnesota Supreme Court agrees. The old *PEER* case clearly holds that 116D.04 applies to transmission lines, and that farmland is generally compensable. *PEER* says that the point of 116D is to protect natural resources that can't speak for themselves and to protect that shrinking resource. Here, the utility weighed its options and found trees and birds of less value than farmland along roads. I understand its no fun to deal with angry people, but the law is the law (unless that statute is changed, or the Supreme Court changes its mind.) Until then, the State of Minnesota values protection of natural resources more than compensable damage to private landowners including farms, unless there is some very good reason not to do so. Routing a high-voltage transmission line through natural areas to avoid angry farmers is not a good enough reason to do so under the law. Even if a route through the farming areas wasn't proposed yet, without closer examination of the issue and an open, reasoned analysis you will end up with a legally flawed process.

The environmental report for this docket does not, I don't think, even mention this issue or the farmland alternatives rejected by the utility, including the obvious one on the attached map. Therefore, the environmental report is an inadequate document on its face. I am wound up about this not just because of this project but also because of the precedent it would set, and environmental groups who care about natural resources should be concerned, too.

Therefore, I encourage you to make a finding in this docket or the route permit docket that the route shown on the attached map is a reasonable alternative that must be included in the environmental report before for it to be adequate, and a detailed review of this route must be included in the EIS or the ER so this issue can at least be brought to light.

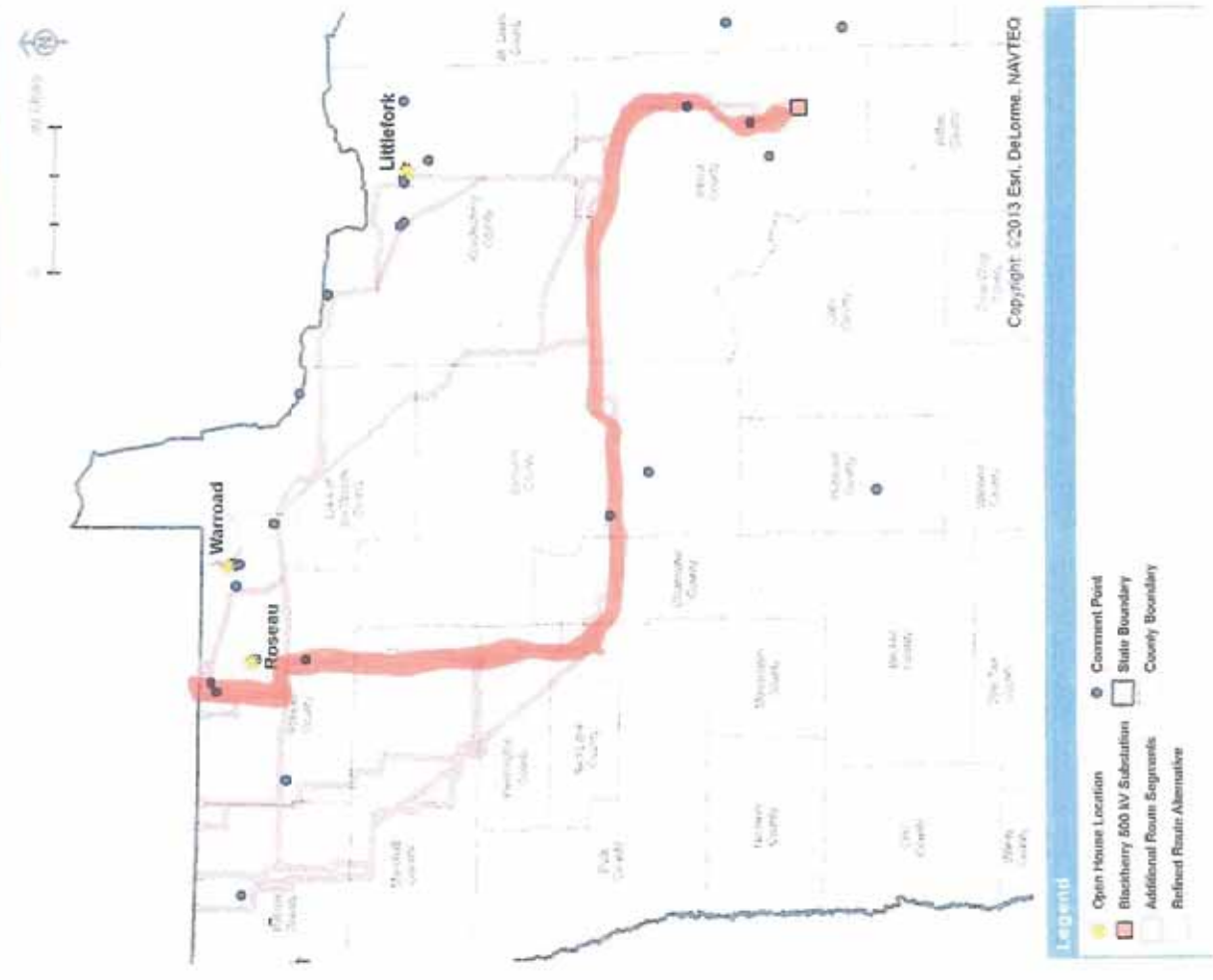
Also, and finally, I would like to request a chance to address the issue in person at the PUC if not addressed in your recommendations.

Sincerely again,

L

0185-5

Additional Route Segments Figure 4-13

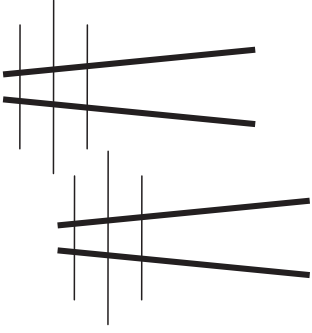


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0186-1

Anticipated schedules for all DOE Key EISs are publicly available on DOE's Office of NEPA Policy and Compliance website at: <http://energy.gov/nepa/office-nepa-policy-and-compliance>. The future milestones represent anticipated activity and not commitments. Once a schedule for a ROD is developed for the Great Northern Transmission Line project it will be made available to the public via this website.

No changes are made to the EIS in response to this comment.



Legalelectric, Inc.
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August 9, 2015

Via email: Juliea.Smith@hq.doe.gov

Dr. Julie Ann Smith
Office of Electricity Delivery and Energy Reliability
U.S. Department of Energy
1000 Independence Avenue S.W., Room 8E-032
Washington, DC 20585

Via email: bill.storm@state.mn.us

Bill Storm
Environmental Review Manager
Department of Commerce
85 – 7th Place East, Suite 500
St. Paul, MN 55101-2198

RE: Comment regarding Draft Environmental Impact Statement
Not-so-Great Northern Transmission Line
DOE Docket No. EIS-0499; MN PUC Docket No. TL-14-21

Dear Dr. Smith and Mr. Storm:

Thank you for the opportunity to comment on the DEIS in the above-entitled matter. I am filing these Comments as an individual, and not in the course of representation of any party.

PROCEDURAL MATTERS

- **ROD Schedule:** The DOE Key EIS Schedule dated July 15, 2015, when hearings were held in Littlefork and International Falls, Minnesota, notes that the FEIS is due out in October, yet the ROD schedule is “uncertain.”¹
 - o Has this changed?
 - o When is ROD scheduled?
 - o Why is this “uncertain” when Plains & Eastern Clean Line, with FEIS due out a month later than Great Northern Transmission Line, shows ROD in January?
- **NEPA review:** NEPA review is one of the topics taken on by the Council for Environmental Quality. [NEPA](#) (selected sections more relevant to transmission):

0186-1

¹ See [KeyEISSchedule_July2015.pdf](#).

0186-2

In accordance with 40 CFR §1506.5(c), a disclosure statement to avoid conflict of interest was executed by Ms. Azar and is available in Appendix T of the EIS. No changes have been made to the EIS in response to this comment.

- [Steps to Modernize and Reinstantiate NEPA](#)
 - [Guidance for Programmatic NEPA Reviews](#)
 - [Guidance for Mitigation and Monitoring](#)
 - [NEPA Handbooks](#)
 - [NEPA Pilot Program](#)
- [Retrospective Regulatory Review Plan](#)

0186-2

- **Consultant – Lauren Azar, Azar Law, LLC:** Lauren Azar, as “NEPA Advisor, is a primary contractor for this DEIS. DEIS, §8.2 EIS Preparation Team, p. 673, Table 8-2 p. 674. Upon information and belief, Azar executed a conflict of interest statement attesting that they did not have a conflict of interest in this matter. Id. In 1999, Ms. Azar represented utilities, and also American Transmission Company, as it became the first transmission-only company in the Midwest. The focus of her work was to **advocate for the transmission company and transmission projects**. Ms. Azar was appointed to the Wisconsin Public Service Commission in 2007, and approved many transmission projects in Wisconsin. She served until May, 2011, when she resigned to join the Department of Energy, initially as senior adviser to U.S. Energy Secretary Steven Chu. In October, 2011, Ms. Azar was chosen to co-lead the Rapid Response Team for Transmission (RRTT) to oversee transmission projects nationally, establish schedules for permitting, and monitor and promote swift permitting of the projects. Azar is again in private practice. Her career has been one of promotion and permitting transmission and other utility infrastructure projects. In her words:

I bring to this panel three perspectives: state, federal and the private sector. From 2007 to 2011, I was a Commissioner at the PSC of Wisconsin. While a state commissioner, I chaired both the state and RTO processes for cost-allocation over MISO’s MVPs. I also co-founded and was the first President of the Eastern Interconnection States Planning Council (EISPC). Through that endeavor, we represented most of the states and Canadian provinces east of the Rockies in the interconnection-wide transmission planning. From 2011 to 2013, I was senior advisor to U.S. DOE Secretary Chu focusing on, among other things, transmission infrastructure. While at DOE, I co-lead the RRTT and was the DOE’s representative to the President’s steering committee on streamlining federal permitting.

I have returned to the private sector, which is where I started my 21-year career. I am currently representing utilities, including transmission companies, both incumbent and merchants. Not only am I working on permitting new transmission infrastructure, but I am also assisting utilities in how to address the challenges created by new emerging technologies and low natural gas prices. I am also co-leading a non-profit initiative aimed at required changes in our regulatory frameworks.

Comments of Azar to FERC.²

² www.ferc.gov/CalendarFiles/20150327132712-Azar.%2520Azar%25201.aw.pdf;&cd=1&hl=en&ct=clnk&gl=us

0186-2 cont'd

Continued

0186-3

The EIS analyzes potential impacts to land use and land ownership for each alternative. DOE and DOC-EERA determined that the DEIS covered a range of reasonable alternatives and none of the alternatives presented warranted expanding that range. Non-transmission alternatives were considered but eliminated from detailed analysis because they are outside the scope of the purpose of and need for DOE's federal action, which is to decide whether to issue a Presidential permit. Non-transmission alternatives that are out of scope for this EIS were handled under the state's certificate of need process.

o EISPC was a DOE funded program to facilitate transmission planning and expansion – the presumption was that transmission infrastructure should be built. See **Transmission Planning for the Future & More** L. Mansueti (May 18, 2012).³

• **Azar's promotional focus:** From a March 2015 statement, where she referred to this Great Northern project as a great example of transmission development, presumes a need for "significant infrastructure buildout," and did not disclose her involvement with this Great Northern Transmission Line project:

For example, DOE is currently preparing a joint EIS with the State of Minnesota and is piloting a pre-application process that is expected to result in dramatically shorter permitting times. DOE and Minnesota are on track to publish the Final EIS for the Great Northern Transmission Line – a 220-mile 500 kV line – within 16 months of the issuance of DOE's Notice of Intent. This pilot project is not only proving that NEPA and infrastructure development can co-exist, it demonstrates that electric transmission can be used as a compliance tool for § 111(d).

Comments of Azar to FERC.⁴ Unless Azar is revealing something not publicly declared or disclosed, this GNTL EIS and transmission line have zero relation to use "as a compliance tool for § 111(d)."

• **Great Northern Transmission Line and §111(d).** As an aside to the above, based on Azar's comments, the EIS should clearly state if and how this project would or could be directly used as a compliance tool for §111(d), and identify coal plants or other burning technology shuttered as a direct result of this project.

• **Azar's Promotional Focus:**

Fourth, as part of the RRTT, agencies' "front offices" convened weekly conference calls with its project managers for transmission projects, which sent a strong signal to field staff about the need to streamline. FERC "front office" staff could participate in these calls.

Id., p. 5.

• **Alternatives considered:** The alternatives considered by the DOE was not sufficiently robust in range or depth.

0186-3

³ www.ncsl.org/documents/Energy/LMansueti052012.pdf;&cd=1&hl=en&ct=clink&gl=us

⁴ www.ferc.gov/CalendarFiles/20150327132712-Azar.%2520Azar%25201.aw.pdf;&cd=1&hl=en&ct=clink&gl=us

0186-4

The No Action Alternative is discussed in full in Chapter 3 of the EIS. Chapter 3 is revised with "Under the No Action Alternative, DOE would not issue a Presidential permit and the proposed Project would not be built.". The No Action Alternative is consistent with DOE's Purpose and Need for agency action and proposed Federal action. DOE's Federal Action is to determine whether to permit the international border crossing that is a part of the proposed Project. DOE does not assess the entire realm of potential alternatives to a proposed transmission line and international border crossing, rather DOE's responsibility is to consider the alternative(s) put forth by an Applicant for a Presidential permit. DOE does not have a role in reviewing an applicant utility's resource planning process.

0186-4

- **No Action Alternative:** The request for action is a Presidential Permit The "No Action Alternative" in this EIS should logically focus on the DOE not taking the action requested, which is, simply, not granting the Presidential Permit request.
- **No Action Alternative:** The "No Action Alternative" can make no presumptions about whether the project would be built or not, although that could be presented as one option under the "No Action Alternative."
- **No Action Alternative:** The treatment of the "no action alternative" stated several conclusory reasons why the authors believed the "no action alternative" should be rejected. These conclusory statements require support and explanation.
- **No Action Alternative:** The "No Action Alternative" analysis consists of just six paragraphs and less than one page of narrative. This is inadequate on its face.
- **No Action Alternative:** The "No Action Alternative" was rejected based on three conclusory presumptions and a flawed interpretation of Minnesota law.
 - The first reason the "no build alternative" is rejected is that "not constructing the proposed Project would inhibit the Applicant's ability to connect Manitoba Hydro energy to Minnesota Power consumers and force the Applicant to obtain other energy and capacity purchases to meet the region's long term energy needs.
 - There are no citations provided for the assertions in this paragraph.
 - There is no substantiation of the assumption that if the DOE did not take action the project would not go forward, nor is there discussion of the role of the DOE and impact of not taking the action requested.
 - There is no discussion of the nominal nature of the PPA, at 250 MW, nor its relation or comparison to the capacity of the project that explains or supports the statements in this 3rd paragraph on p. 45.
 - The EIS should contain discussion of the 250 MW options available to Minnesota Power and whether this project is a cost effective means of addressing a 250 MW need.
- The Second reason the "no build alternative" is rejected is a claim that to not build the project "would leave the existing 500 kV transmission tie line from Manitoba to Forbes as the second largest contingency in the entire Midcontinent Independent System Operator (MISO) footprint." So what...
 - There are no citations provided for the assertions in this paragraph.

- NERC standards, adopted by FERC, require that the system be reliable in the event of contingencies.
- This is not a reliability project as defined by NERC, FERC, or even MISO.
- This project is not required for system reliability, whether defined as system security or system adequacy.
- “Therefore, not building the proposed Project would result in less-than-optimal transmission reliability” is a false statement. Transmission reliability in the project area is sufficient under NERC standards.
- The statement that “Therefore, not building the proposed Project would result in less-than-optimal transmission reliability” should be deleted.
- This paragraph should be deleted, it is mischaracterizing system reliability.
- The third reason given for rejection of the “No Action Alternative” is the most bizarre. It states that to not build the project “would negatively affect future North Dakota wind generation options because there would not be enough transmission capacity, and wind farms would continue to be required to shut down their turbines when the wind energy produced exceeds the transmission capacity.”
 - There are no citations provided for the assertions in this paragraph. The EIS must provide citations for such a statement.
 - For at least a decade, wind generation from Buffalo Ridge has done a “frolic and detour” from Buffalo Ridge north through the Dorsey substation. Attachment, NM SPG presentation 9/28/2005. The EIS must address the presence of wind energy in the area and the impact of this existing wind generation on the GNTL project, and vice versa, the impact of the GNTL project on wind generation outlet.
 - Nothing in the electrical system and/or contracts prohibits transmission of fossil generated energy – in fact, FERC rules prohibit discrimination among generation.

The final paragraph on p. 45 misinterprets Minnesota statute regarding “need” and consideration of need in routing permit.

- The EIS, p. 45, states that “Under the Minnesota Power Plant Siting Act (PPSA), the determination of need, including size, type, timing and other considerations are statutorily prohibited” and the foot note references Minn. Stat. §216E.02, Subd. 2, which states:

0186-5

Thank you for your comment. DOE's decision-making authority, Purpose and Need for agency action, proposed Federal action and Presidential permit program authority are discussed in Section 1.2 of the EIS. The issue of need for the proposed transmission line in the state of Minnesota has been determined by the MN PUC in the associated certificate of need process for the proposed Project (MN PUC e-Docket 12-1163).

No changes are made to the EIS in response to this comment.

0186-5

Minn. Stat. 216E.02, Subd. 2. Jurisdiction.

The commission is hereby given the authority to provide for site and route selection for large electric power facilities. The commission shall issue permits for large electric power facilities in a timely fashion and in a manner consistent with the overall determination of need for the project under section [216B.243](#) or [216B.2425](#). **Questions of need, including size, type, and timing; alternative system configurations; and voltage must not be included in the scope of environmental review conducted under this chapter.**

Minn. Stat. §216E.02, Subd. 2 (emphasis added).

- o The DOE's environmental review is NOT environmental review conducted under this chapter. It is NEPA environmental review, parallel tracks, but something very different from PPSA Environmental Review.
- o The state has no jurisdiction to limit the scope of the DOE's NEPA review.

- That paragraph goes on to say that "... and "need" is not to be evaluated in the Environmental Impact Statement (EIS)., and the footnote references Minn. Stat. §216E.03, Subd. 5, which states:

Minn. Stat. §216E.03, Subd. 5. Environmental review.

The commissioner of the Department of Commerce shall prepare for the commission an environmental impact statement on each proposed large electric generating plant or high-voltage transmission line for which a complete application has been submitted. **The commissioner shall not consider whether or not the project is needed.** No other state environmental review documents shall be required. The commissioner shall study and evaluate any site or route proposed by an applicant and any other site or route the commission deems necessary that was proposed in a manner consistent with rules concerning the form, content, and timeliness of proposals for alternate sites or routes.

Minn. Stat. §216E.03, Subd. 5 (emphasis added). The DOE's environmental review is NOT consideration by the Commissioner.

- o This is a limitation on the commissioner of the Department of Commerce.
- o The state has no jurisdiction to limit the scope of the DOE's NEPA review.
- In the footnotes accompanying the text of the last paragraph on p. 45 regarding the Power Plant Siting Act, the footnotes should state the text referenced.
- In the text in the last paragraph of p. 45, the text should be rewritten to reflect the meaning and limitations conveyed in the statute.

0186-6

The EIS presents several public data sources, such as the County Well Index (CWI) data layer. This data sources contains different categories of wells. Many of the CWI wells present in the Taconite area are classified as exploratory drill holes (mining).

Below are substantive issues regarding the DEIS in no particular order:

Obvious Errors Easily Corrected

- The DEIS shows many wells in the Taconite area (and perhaps others). These don't seem to be wells, and perhaps are drilling sites for mineral exploration? This was brought to the attention of Barr Engineering representatives, and should be corrected.
- Homes, particularly lake cabins, are represented as commercial and/or non-residential structure. In my experience with transmission EIS labeling, this is often wrong, and the EIS should review all "commercial" and "non-residential structure" claims for accuracy.

Need

- **Need:** Need for the project is raised in Section 2.2.2 Northeast Minnesota and Regional Energy Demand. The EIS should address the need claim of 883 MW compared with the cost and capacity of this project.
- **Need:** The EIS should consider whether the benefits of this project, primarily the ability of the Applicant to meet its contractual obligations to purchase power, is sufficient to justify the costs and impacts.
- **Need:** The DEIS, p. 19, Section 2.2.2 states that "Both MISO and the Applicant believe that a new 500 kV transmission line – which can carry a total of up to 883 MW of electric power – is needed to meet long-term regional needs, especially as industrial load in Minnesota's Iron Range continues to increase."
 - **Multiple** mines on the range have closed since this application was provided. The statements should be removed:
 - "is needed to meet long-term regional needs;" and
 - "especially as industrial load in Minnesota's Iron Range continues to increase."
 - The FEIS should address historical demand, current demand, and updated projections.
 - MISO has not addressed need for the project, and this project was only added to the MTEP report because of a financing agreement.
 - MISO is not a regulator and has no regulatory authority in a need determination.

0186-7

A couple of commenters expressed concern about their cabins not being represented as residences in the Draft EIS. The Final EIS is updated to indicate that those cabins are residences and not commercial or non-residential structures.

0186-6

0186-7

0186-8

The proposed Project is designed to be able to transmit enough capacity to meet the Applicant's 383 MW requirements as well as an additional 500 MW - up to a total of 883 MW - in order to accommodate the Applicant's agreements with Manitoba Hydro and other projected requirements in the MISO region. The capacity was approved by the MN PUC in the certificate of need process, with the determination provided on June 30, 2015 to the Applicant. The MVA rating is a transmission line capacity estimate that is used for planning and other purposes but it is not relevant to a Presidential permit or route permit decision.

0186-8

No changes are made to the EIS in response to this comment.

- o MISO reviewed this project in the Northern Area Study which was to extend over the UP into Michigan, and not terminate at Blackberry. See GNTL Application.

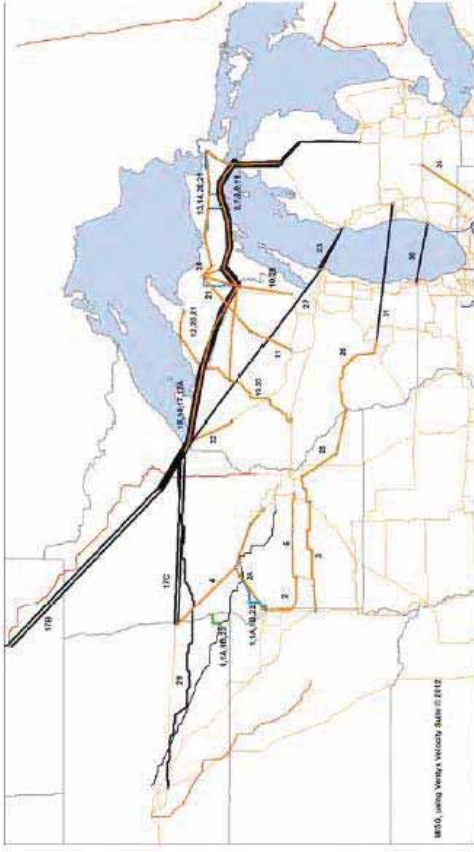


Figure E-2: Northern Area Study Transmission Options

- o A statement that this project has anything to do with regional need is false as the line as proposed in the application terminates in Blackberry, Minnesota, and any reference to regional need should be removed.
- o The project is listed in MISO MTEP Appendix A as project 3831, and that includes extension to the Arrowhead substation. The EIS should explain this discrepancy between the Application and the MISO Appendix A listed project 3831. Attached MISO Appendix A 3831 line items.
- o The 883MW number used repeatedly in the DEIS should not be used as it is a paper number only, representing a 250 MW PPA, a 133 MW transfer of energy agreement that is not electrically related to this line, only to the parties, and 500 MW of planned, but not yet contracted, Manitoba Hydro sales.
- o The 883 MW number used repeatedly in the DEIS should be used only with the explanatory words "883MW as requested for authorization by the Presidential Permit" or similar description of the origin and limitations of the Presidential Permit.
- o The MTEP Appendix A list this project as a 1732 MVA project, not 883MW, and the FEIS should reflect this 1732 MVA rather than the 883 MW.
- o The DEIS states this would help meet long-term reliability needs, but it is not needed – the system as it is must comply with NERC/FERC reliability issues or it

cannot be built – the system as it is IS in compliance with NERC/FERC reliability rules. This is NOT a reliability project.

Bees

- **Bees:** On the way to the hearing in International Falls from the Big Bog campground, I saw at least 12 bee colonies alongside the road, plainly visible, most hives of the Wilmer Honey Farm. I'd guess that there were also hives that were not directly adjacent to the roadway. Bees are dying off everywhere. A search of the DEIS does not reveal any instances of “bee” or “bee keeping” or “honey” in the narrative, nor is there any analysis of impacts of transmission on bee populations. Transmission lines have an impact on bees, for example, “[e]xposure of bees in conductive (e.g., wet) tunnels produces bee disturbance, increased mortality, abnormal propolization, and possible impairment of colony growth.”⁵

- **Impact of electric fields on bees:** Dr. Peter Valberg, paid mouthpiece for utilities, states that electric fields have no impact on bees, yet recommends Faraday cages for bees under transmission lines to avoid adverse effects of electric fields:

At elevated ELF electric field levels, adverse effects can be avoided by either keeping surfaces dry or by shielding the hives from the ELF electric field with an open-mesh conductive screen, i.e., a screen having a mesh size large enough not to hinder the flight of bees to and from the hive. Moreover, honeybee colonies not located directly underneath a high transmission power-line are not expected to be impacted, because the electric-field strength drops off rapidly as one moves laterally away from the right-of-way (ROW) location directly below the maximum sag point of the conductors.

Summary of Potential Effects of 345-kV Power-Line Electric and Magnetic Fields (EMFs) on Honeybee Hives and Honeybee Behavior, p. 4.⁶

- **Impact of magnetic fields on bees:** Dr. Valberg also notes potential impacts on bees of magnetic fields, and again recommends simple faraday cage to minimize impacts:

The sensitivity of bees to changes in steady magnetic fields appears to be at about a level that is one percent of the earth's field, and honeybees may use a memorized “map” of the geomagnetic field to assist in foraging activities (Walker and Bitterman, 1989; Hon *et al.*, 2007). The magnetic component of power-line ELF-EMF could potentially exert some torque on tiny ferromagnetic particles contained within honeybees or single-molecule magnetic moments (e.g. “free-radical” molecules). Although magnetic particles in living organisms are plausible geomagnetic field sensors (Adair 1994; Kirischuk *et al.*, 1992, 2001), functional biogenic ferromagnetic material has been established only in a limited number of organisms (for example, magnetotactic bacteria), although suspected in a variety of species (e.g., honeybees). In these organisms, the magnetic interaction is believed to provide sensory guidance, and is not likely to lead to physiological malfunction or disease.

Summary of Potential Effects of 345-kV Power-Line Electric and Magnetic Fields (EMFs) on Honeybee Hives and Honeybee Behavior, p. 5.

⁵ See e.g., Mechanism of biological effects observed in honey bees (*Apis mellifera*, L.) hived under extra-high-voltage transmission lines: implications derived from bee exposure to simulated intense electric fields and shocks (www.ncbi.nlm.nih.gov/pubmed/3178903).

⁶ Online at www.nocapx2020.info/wp-content/uploads/2010/02/attachment5.pdf

0186-9
Section 5.3.2.1 of the EIS now includes a discussion of potential impact to bees from the proposed Project.

0186-8
As discussed in Section 1.3.1.4 of the EIS, once a route is selected and a permit is issued, the Applicant would contact landowners to gather information about their property and their concerns and discuss how the ROW would best proceed across the property.

0186-10

The Applicant's EnergyForward plan (discussed in Section 2.2) is designed to reduce greenhouse gas and criteria pollutant emissions through the reduction in the use of coal and the increase in the use of renewable energy. The Applicant has stated that the proposed Project is part of that plan, for that purpose. The addition of 250 megawatts of capacity from renewable sources will reduce the average emissions per megawatt-hour generated in the region. The exact value by which emissions would be reduced from this 250 MW of renewable energy would depend on many variables, from growth in demand to the addition or closure of other new sources to the implementation of state and federal greenhouse gas emission restrictions. Therefore, it was determined that a qualitative discussion was adequate for this analysis in Section 5.2.1.3.

No changes are made to the EIS in response to this comment.

0186-11

The EIS does not provide a cost/benefit analysis. The estimated jobs and economic benefits, both direct and indirect, are specified in the Socioeconomics discussion (Section 5.2.1.8) under subheadings related to Employment and Taxes and Revenues. Benefits in this context are defined as jobs generated locally and taxes and revenues that would accrue to the local and state jurisdictions during construction and operation. No changes are made to the EIS in response to this comment.

0186-12

DOE and DOC-EERA determined that the DEIS covered a range of reasonable alternatives and none of the alternatives presented warranted expanding that range. Non-transmission alternatives were considered but eliminated from detailed analysis because they are outside the scope of the purpose of and need for DOE's federal action, which is to decide whether to issue a Presidential permit. Non-transmission alternatives that are out of scope for this EIS were handled under the state's certificate of need process.

No changes are made to the EIS in response to this comment.

0186-10

- **Reduction of Greenhouse Gas Emissions:** Implied that this project would reduce GHG emissions by enabling use of less fossil fuel, but there weren't even any rough numbers to substantiate that. The EIS must provide specifics and citations for these claims.

0186-11

Cost/Benefit Analysis

- **Cost/benefit analysis must be more specific and cite to support in the record:** In light of Michigan v. EPA decided earlier this month, any agency doing analysis that includes benefit claims, and where a cost/benefit analysis is part of the analysis, the cost and benefit claims must be sufficiently specific. These "benefit" claims are not benefits.

0186-12

Capacity

- **Capacity of the project as designed:** This is a 500 kV triple bundled transmission line, the largest configuration in the state. MISO lists the rating of this line as 1732 MVA. See Attached (selected) MISO Appendix A. The range of capacity should be reported.
- **Capacity of a triple-bundled 500 kV transmission line:** It is not clear that at 1732 MVA the MISO rating addresses the triple-bundled configuration of the project. The EIS should verify and state the capacity of the line as designed, and identify normal and emergency rating for single, double and triple bundled configurations.
- **Capacity of a triple-bundled 500 kV transmission line:** The capacity of a triple-bundled 500 kV transmission line is not accurately represented in this proceeding. For example, in the Susquehanna-Roseland transmission proceeding before the New Jersey Board of Public Utilities (BPU), the project proposed, and permitted, was initially a quad-bundled 500 kV transmission line, later reduced to a triple-bundled transmission line. From the Stop the Lines brief in that docket, the thermal limit of that 500kV line, the ampereage and capacity for that line if there were no other limiting factors is 1838 amps per wire, in the quad-bundled configuration, a total of 7,532 amps, and in the tri-bundled configuration, 5,414 amps and 4,795MVA, essentially 4,795 MW. Attachment, Susquehanna-Roseland Transcript (selected), Testimony of Couch, Tr. p. 318; Testimony of King, Tr. p. 1254-1255.
- **Quantification of planned use of capacity:** It is unclear what the rating of the line is, which sets the capacity limits of the project. Various numbers appear in the DEIS (see e.g., § S.3 883 MW; § 2.2.2 383 MW + 500 MW = 883 MW; § 2.2.3 250 MW PPA + 133 MW Optimization Agreement"). The EIS should specifically note the normal and emergency rating of the line, the Presidential Permit MWs, and the expected capacity of the line. Impacts, including transmission system impacts, should be reviewed for all these MW levels, EMF calculations be performed for all these levels, and cost/benefit analysis for the various MW levels.
- **Capacity of project:** DEIS "capacity" is not consistent with MISO MTEP, which shows a rating of 1732 MVA, far less than potential of a tri-bundled 500 kV line, but far more than the PPA levels or that requested for the Presidential permit.

0186-12 cont'd

0186-12
Continued

- **Capacity of project:** If the DOE is defining the capacity of project as the Presidential Permit level of MW, without respect to the potential capacity of the project as expressed in normal and emergency ratings, the DOE should 1) state the normal and emergency ratings in MVA; and then 2) state expressly that the DOE is defining the capacity of project as the Presidential Permit level of MW and identify that level of MW.

Public Interest

- **Public Interest:** The EIS should set forth the criteria that serves as the basis for a public interest determination.
- **Public Interest:** The EIS should address whether a project with a predominantly private purpose of importing and selling power, far beyond the 250 MW PPA, can be in the public interest.
- **Public Interest:** The EIS should address the scope of Section 1222 and whether it is in the scope of Section 1222 for the DOE to participate in a private interest project.
- **Public Interest:** The EIS should address the purpose of a Presidential Permit for 883 MW in light of the 250 MW PPA from Manitoba Hydro to Minnesota Power, the 133 MW agreement sending energy in the other direction, and analyze whether building this large transmission line for that small amount of energy is in the public interest.
- **Public Interest:** The EIS should address whether a project with a predominantly private purpose of importing and selling power, far beyond the 250 MW PPA, can be in the public interest.

Alternatives Analysis

- **Alternatives:** The only alternatives considered, other than the non-substantive consideration of “no action,” were ones that required granting a Presidential Permit. A wider range of alternatives must be considered.
- **Alternatives:** Any alternative would have to focus on failure to grant a Presidential Permit, to mirror the request for approval of a Presidential Permit.
- **Alternatives:** Alternatives considered were not sufficient – only the “preferred alternative” of granting of the permit, four alternative border crossings, 22 route segment alternatives, and nine alignment modifications were considered. These are not alternatives to the project, but are a number of different ways to move the project forward. This is inadequate on its face.
- **Alternatives:** There were no system alternatives considered, such as cogeneration at a large customer location. The EIS should include system alternatives.

0186-12
Continued

Section 1.2.1.1 of the EIS discusses what factors and elements DOE considers in determining consistency with the public interest in accordance with DOE's Presidential permit implementing regulations at 10 CFR Part 205.

0186-13

Section 1.2 discusses DOE's Presidential permit authority and program. As discussed in the EIS, DOE is responding to an application for a Presidential permit that would allow a transmission line project to cross the international border between the U.S. and Canada. DOE and DOC-EERA determined that the DEIS covered a range of reasonable alternatives and none of the alternatives presented warranted expanding that range. Non-transmission alternatives were considered but eliminated from detailed analysis because they are outside the scope of the purpose of and need for DOE's federal action, which is to decide whether to issue a Presidential permit. Non-transmission alternatives that are out of scope for this EIS were handled under the state's certificate of Need process.

No changes are made to the EIS in response to this comment.

0186-14

The Mesaba Project has an existing MN PUC site permit transmission line route permit and pipeline route permit. This project is unrelated to the proposed Project and does not address DOE's purpose and need.

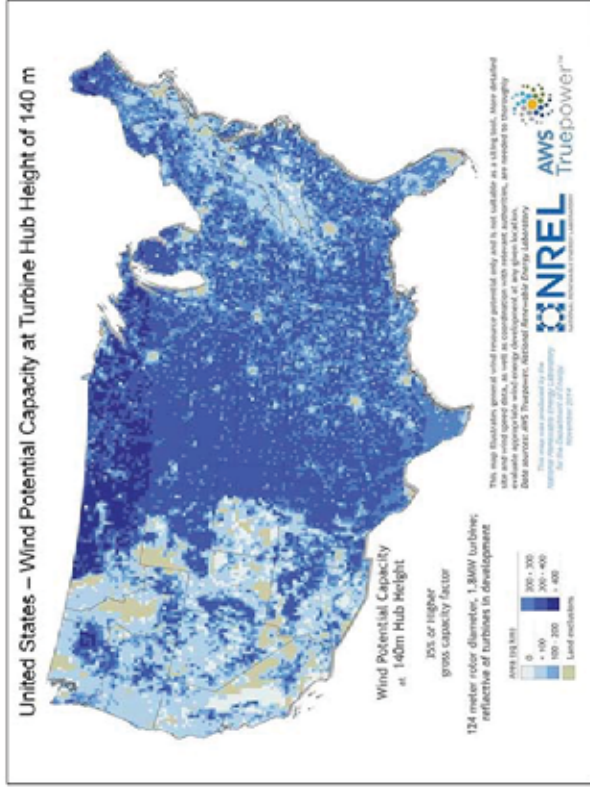
Please refer to Section S.7 which explains that NEPA does not require an analysis of environmental impacts that occur within another sovereign nation that result from actions approved by that sovereign nation. For that reason, potential environmental impacts in Canada are not address in this EIS.

No changes are made to the EIS in response to this comment.

0186-14

- **Alternatives:** There were no non-transmission alternatives considered. The EIS should include non-transmission alternatives.
- **Alternatives:** There were no financial or contractual alternatives considered, such as Power Purchase Agreements from other more local sources, distributed generation, or purchasing the power on the open market. The EIS should include financial and contractual alternatives to this financial/contractual project.
- **Alternatives:** The only alternatives were various border crossings, and route segment and alignment alternatives, all transmission alternatives to build and operate the project.
- **Alternatives:** The alternatives should include consideration of a Presidential Permit for the full normal and emergency rating of the transmission line.
- **Alternatives:** The alternatives should include consideration of selling energy and capacity, beyond the PPA 250 MW, up to the full normal and emergency rating of the transmission line on the energy market.
- **Alternatives:** Because the transmission project is designed with greater normal and emergency rating than will be used, the alternatives should consider building a smaller capacity line, including lower voltage, different conductor and transformers, that would limit the capacity of the transmission line to 1) the PPA amount, and 2) the Presidential Permit request amount.
- **Alternatives:** As a reasonable alternative, The EIS should consider amendment of the Mesaba Project siting permit.
- **Alternatives:** The EIS should evaluate use of the Mesaba Project site permit, which would inject up to 600 MW at the Blackberry substation. (this is in no way an endorsement for Mesaba Project or generation under a PPA with Excelsior Energy).
- **Alternatives:** As a reasonable alternative, the EIS should consider use of a PPA for Mesaba Project generation to meet their projected need for power (this is in no way an endorsement for Mesaba Project or generation under a PPA with Excelsior Energy).
- **Alternatives:** As a reasonable alternative, the EIS should consider use of the Mesaba Project site Hoyt Lakes site for a generation site:
 - Hoyt Lakes is closer to projected load.
 - Mesaba permit could likely be amended without much difficulty.
 - Hoyt Lakes use of Mesaba Permit would not require transmission.
 - Hoyt Lakes site for generation would create jobs on Range.
- **Alternatives:** Energy efficiency and conservation could easily meet their projected need for 250 MW.

- **Alternatives:** Minnesota Power can generate its own renewable energy. NREL’s current wind resource maps show increased potential in the Minnesota Power service territory.⁷



- **Alternatives:** These suggestions of use of Mesaba site permit is in no way an endorsement for Mesaba Project or generation under a PPA with Excelsior Energy.
- **Alternatives:** The only alternatives considered were those of the DOE-EERA scoping document. This is not a broad enough range of alternatives to comply with NEPA.⁸
- **Alternatives:** The DEIS notes that “[t]he purpose and need for DOE action is to decide whether to or not to grant the Applicant a Presidential permit.” DEIS, p. S-3. As a “connected action” the DEIS analyzes “the proposed construction, operation, maintenance, and connection of the portion of the transmission line within the United States.” Because the transmission line facilitates both construction of a new hydro dam and transmission from that dam to the U.S./Canada border, these are also connected actions and their impacts should be analyzed in the EIS.
- **Alternatives:** In section S.2.1 and 1.2.2 the DEIS states that the “DOE’s Purpose and Need for Agency Action” includes to “connect” – as above, due to the stated purpose, the DEIS should consider the full extent of the connected actions.

⁷ Enabling Windpower Nationwide, NREL: <http://energy.gov/eere/wind/wind-resource-assessment-and-characterization>

⁸ 40 CFR 1502.14.

0186-15

The Mesaba Project has not been formally withdrawn and it has an existing MN PUC site permit, transmission line route permit and a pipeline route permit.

No changes are made to the EIS in response to this comment.

0186-16

An analysis of the impact of a series compensation station to system reliability is outside the scope of the EIS.

No changes are made to the EIS on this issue.

0186-17

Noise levels for the 500 kV series compensation station cannot be determined for the proposed Project as the location and equipment necessary for the 500 kV series compensation station are dependent on the length of the transmission line and final location. As stated in Section 5.2.1.2 of the EIS, regardless of the equipment and location of the 500 kV series compensation station, noise levels will be below that of the proposed Iron Range 500 kV Substation. The EIS analysis shows that operation of the Iron Range 500 kV Substation will be below Minnesota noise standards, therefore so will the 500 kV series compensation station.

0186-17

Minnesota noise standards do not include standards for infrasound (low-frequency noise) but do include impulsive sounds for certain businesses and industries such as shooting ranges (Minnesota rule 7030 - Noise Pollution Control). A-weighted sound levels are typically used for assessing community noise impacts, as they mimic the sensitivity of the human ear and are the most applicable measurement to capture the noise emissions from the proposed Project.

0186-18

No changes are made to the EIS in response to this comment.

0186-18

The carbon sink values conservatively assume that all carbon is released by decomposition or burning.

The total carbon sink within 1,500 feet of the anticipated alignment is used as a reasonably scaled reference to demonstrate that only

All 22 Mesaba Energy Project references that presume it will be built should be removed from the DEIS

- The Mesaba Project is NOT moving forward. Statements that it is moving forward, that it is expected to be built, whether express or implied, should be deleted.
- The Mesaba Project Generation Interconnection Request, MISO G-519, has been withdrawn. See MISO Active Queue.
- The Mesaba Project EIS has not been and is not planned to be completed. For years release of the ROD was “uncertain” and some time ago, it disappeared from DOE “Key EIS Schedule” releases. Attachment, August 15, 2011 Key EIS Schedule and July 15, 2015 Key EIS Schedule.

Inherent inefficiency of transmission

- Transmission lines are more unstable the longer they are. This project is 220 miles, and requires series compensation,⁹ which is necessary to assure stability of the line.
- This line is in need of a separate “structure which will house the 500 kV series capacitor banks necessary for reliable operation and performance of the proposed transmission line.” The EIS should address the impact of a project on the grid where performance and reliable operation is so compromised that it requires a separate series compensation site.
- Noise is typically expected for series compensation equipment.¹⁰ The EIS should specify both the range of noise levels expected by the equipment at various locations and specify in the narrative and cite the Minnesota noise standards.
- The EIS should specify whether the Minnesota noise standards cover the range and character of noises expected at series compensation, regeneration, substation and line noise (i.e., MPCA’s noise standards do not cover infra-sound, or most impulsive sounds), and whether B weighted or other weighted modeling is necessary.

Carbon Dioxide and Carbon Sink

- **Carbon Sink:** The DEIS raises “loss of carbon sink” due to clearing and removal of forested areas in the ROW as an issue. DEIS, p. 1.10. The EIS should address what will occur after these trees are removed, i.e., whether left to rot, burned, etc., and carbon impact of that treatment.
- **Mitigation of Carbon Sink:** The DEIS should address various means of mitigation of loss of carbon sink through clearing RoW, and the cost of mitigation.

⁹ DEIS, p. CSA-1 Abstract, and noted 129 additional times in DEIS.

¹⁰ DEIS, p. S-15, §§8.1.

0186

a small percentage of the carbon sink is being removed from the region. Therefore, no mitigation is recommended.

No changes are made to the EIS in response to this comment.

0186-19

As explained in the EIS, an environmental review of potential impacts from the portion of the proposed Project in Manitoba (the dam) will be developed and submitted as part of Canada's authorization process. NEPA does not require an analysis of environmental impacts that occur within another sovereign nation that result from actions approved by that sovereign nation.

Although the comment is correct that there is not necessarily a direct, verifiable link between increased hydropower due to the proposed Project and a reduction in coal use in Minnesota, as Section 5.2.1.3 generally states, the proposed Project could allow the reduction of coal-fired electricity in Minnesota.

No changes are made to the EIS in response to this comment.

0186-20

The MN PUC Certificate of Need docket for this project, which is available at

<http://mn.gov/commerce/energyfacilities/Docket.html?id=33608#edocketFiles>, contains extensive testimony regarding the Renewable Optimization agreement and its relationship to this project as well as maps of the transmission system in the area. The same docket contains an extensive explanation of how the proposed Project would reduce the "Loop Flow" problem referred to in the comment.

The power flow issue raised in the comment will be considered as part of the DOE reliability determination, which is part of the Presidential permit process. However, the DOE reliability decision is separate from DOE's NEPA responsibilities. Since these power flow issues are not relevant to the DOE Presidential permit or the MN PUC route permit, no changes are made to the EIS in response to this comment.

0186-21

The statements pertaining to property values in Section 5.2.1.4 are supported by the documentation provided in Appendix J, Property Values Supplement. The range of property value changes cited in the EIS (e.g. 0-20% decrease on ag lands; 0-14% on properties in general; etc.) reflect the variation of effects that are recorded from actual sales transactions and from individuals' perceptions.

Compensation for individually condemned properties will be valued on a case-by-case basis during final route alignment after the overall route corridor has been approved. At this stage, estimating payments on condemned lands is not possible. Minnesota's Power

0186-19

• **Carbon Impacts:** The DEIS should evaluate impacts of carbon emissions due to clearing trees for the dam at the source of this project, and emissions if they are left in the water or if burned.

• **Carbon Impacts:** The DEIS gives a hat tip to historical generation via coal on p. 20, but does not address whether coal generation will be reduced as a result of this project. If the EIS links this transmission project to decrease of coal generation by Minnesota Power, the EIS must document specifics and timeline of decreased coal generation. Increase of non-coal generation does not necessarily equal decrease of coal generation – there is no direct link.

North Dakota Wind Energy Renewable Optimization Opportunity

• **Renewable Optimization:** Renewable Optimization is not physically related to this project. The EIS should include a map of the transmission system in the area.

• **Renewable Optimization:** The EIS should show expected power flows for the North Dakota wind, whether it would flow over Minnesota Power's DC line from Fargo, or whether it would use the same route to Manitoba as Buffalo Ridge wind in its "Loop Flow" problem where Buffalo Ridge wind frolics and detours through the Dorsey substation on its way to Forbes substation and further south. Attached \$9.10, p. 5, NMSPG Meeting Minutes, 9/28/2005.¹¹

Property Values

- Conclusions on DEIS p. 113 are not reasonable:
 - "Proximity to a transmission line does not always cause property values to go down." This is misleading, and should be removed. The EIS should be objective and consistent.
 - Impact on property values should address compensation for land condemned for transmission line.
 - Impact on property values should address compensation for decreased value of remaining land in parcel where land is condemned for transmission line.
 - Impact on property values should address compensation for decreased value of land in proximity to transmission line.
 - If property values go down, potential reduction is in range of 1 to 14%. This is misleading, a wide range and should be narrowed down. A cited study on same

¹¹ See also post about Buffalo Ridge to Manitoba Loop Flow: <http://legalelectric.org/weblog/194/>

Plant Siting Act "Buy the Farm" Provision gives property owners the option of requiring the utility to condemn a fee interest in land contiguous to a proposed high voltage transmission line easement. See Section 2.9.2 for more information. The Applicant will work with individual land owners to determine the appropriate compensation.

No changes are made to the EIS in response to this comment.

0186-21 cont'd

0186-21
Continued

0186-22

0186-22 Section 5.2.2.1 and Appendix I of the EIS are revised to contain information regarding the proposed line specifications and distance from centerline used to model EMF.

0186-23 Potential impacts on forestry, such as state and federal programs, Tree Farm Association, and sustainable forest initiatives would be comparable to the potential forestry impacts discussed in the EIS. Current forestry practices and potential impacts on forestry as result of the proposed Project are discussed in Section 5.3.2, "Land-Based Economies," and 5.3.2.2, "Forestry."

0186-23 No changes are made to the EIS in response to this comment.

pages says 0-20% for ag land based on disruption of farm operation. The EIS should be objective and consistent.

Electric Fields and Magnetic Fields

- The section on electric and magnetic fields should calculate the full range of potential levels based on the line specifications. The line specifications should be disclosed.
- The tables for electric fields do not state the current used for the calculations.
- The tables for magnetic fields do not state the current used for the calculations.
- The tables for magnetic fields should also include a column for "Distance from Centerline at which mG level is 2 mG" and disclose that distance.

Forestry

- Impacts on forestry and state and federally sanctioned forestry programs should be addressed in EIS.
- Identification of and impacts on land in forestry programs such as Tree Farm Association or Sustainable Forest initiatives must be disclosed in EIS.

Thank you for your consideration of these Comments. Please let me know if you have any questions or require anything further.

Very truly yours,



Carol A. Overland
Attorney at Law

Enclosures

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Eric Swanson, Winthrop & Weinstein eswanson@winthrop.com

**Written Comments of Lauren Azar
Attorney and Advisor, Azar Law LLC
Former Public Service Commissioner of Wisconsin
Former Senior Advisor to the Secretary of U.S. DOE**

FERC Docket No. AD15-4-000

Technical Conference on Environmental Regulations and Electric
Reliability, Wholesale Electricity Markets
and Energy Infrastructure

St. Louis, Missouri, March 31, 2015

Thank you for the opportunity to speak on the infrastructure needs to
comply with the Clean Power Plan (CPP)

Regional Planning for the Necessary Infrastructure:

While the final § 111(d) rule is not yet released, we know that states
will be well positioned to comply if they bolster energy efficiency and
increase the generation of low- and no-carbon electricity. Not
surprisingly, several studies have shown that regional approaches will
be the most cost-effective method of compliance.

As is apparent from the draft rule, some states are closer to
compliance than other states. The rule's differential impact on states
must be addressed if states are to pursue regional compliance.
States have successfully navigated regional approaches in the past,
even when the states were not similarly situated. The Mid-continental
Independent System Operator's (MISO) Multi-Value Projects (MVPs)

are a perfect example.

The states in the upper Midwest were faced with renewable portfolio standards or goals (RPS) and realized that a regional approach to compliance would be most cost-effective. Those states identified geographic areas where they wanted to develop renewable generation and asked MISO to develop a transmission plan around those areas. The remaining states in MISO replicated this process.

In the end, MISO developed a number of MVPs that allowed all of the states within the MISO footprint to comply with their respective RPSs. The states and MISO stakeholders then developed a cost-allocation proposal that shared the costs of the MVPs.

The MISO MVP process succeeded because of the following three factors:

- (1) Legal mandates or goals – the states were required to comply with their own various RPSs;
- (2) MISO developed a portfolio of transmission projects that allowed all of the states to benefit. Even though some states benefited more than others, all of the states were able to comply with their legal mandates; and
- (3) The transmission owners coalesced around the final product, both the transmission plan and cost allocation, because their state commissioners were not only supportive of the effort, but leading it.

The similarities between complying with § 111(d) and the RPSs are striking. The MISO states have already demonstrated the ability to comply with legal mandates through regional cooperation. It can be done again.

FERC's Role in Interregional Planning

The United States has a plethora of low- and no-carbon fuels to generate electricity. But those fuels are not evenly distributed throughout the states. To fully utilize all of our low- and no-carbon fuels, the RTOs must conduct meaningful interregional planning.

As we discovered during the Eastern Interconnection Planning effort, the planning authorities and RTOs use different metrics and different planning assumptions. Consequently, it is difficult to identify where interregional transmission projects would be most beneficial.

FERC can solve this problem by requiring adjacent planning authorities and RTOs to use the same metrics and planning assumptions when conducting interregional planning. Only by comparing apples-to-apples, will we be able to identify infrastructure needed at the seams, which will result in the most cost-effective compliance of § 111(d).

Building Infrastructure Quickly Enough to Aid Compliance

The United States needs new infrastructure for many reasons: to remain globally competitive; to address aging infrastructure; to meet public policy goals; and to respond to changes in the generation fleet prompted by emerging technologies, low natural gas prices and struggling nuclear plants. Both the electric industries and natural gas industries are already responding to this call to action. The nation's transmission and natural gas industries have been in build cycles for years. To comply with § 111(d), these build cycles must and can continue.

While federal and state permitting has improved during the current build cycle, we can do better. While at the DOE, I worked with nine federal agencies, including FERC, on the Rapid Response Team for Transmission (RRTT). The Secretaries of Interior, Agriculture, and Energy along with the Chairs of FERC and Council on Environmental Quality (collectively the Transmission Cabinet) held quarterly meetings on the federal permitting process. Streamlining efforts continue to this day.

For example, DOE is currently preparing a joint EIS with the State of Minnesota and is piloting a pre-application process that is expected to result in dramatically shorter permitting times. DOE and Minnesota are on track to publish the Final EIS for the Great Northern Transmission Line – a 220-mile 500 kV line – within 16 months of the issuance of DOE's Notice of Intent. This pilot project is not only proving that NEPA and infrastructure development can co-exist, it demonstrates that electric transmission can be used as a compliance tool for § 111(d).

Federal and state agencies are not the only ones working on shorter development timelines. The private sector is as well. For example, a class one railway is currently working on a project to install a high capacity HVDC line underground on its railroad right-of-way (ROW). The developer does not anticipate needing eminent domain since it already owns the ROW. Of course, already owning the ROW, not needing eminent domain and having lines underground will help to speed the federal and state approval processes. Projects like this could certainly be used as a compliance tool for § 111(d).

In sum, while the permitting time for transmission remains a challenge, at least one federal agency and one state are proving that it can be done quickly. The private sector is also developing creative solutions to simplify and shorten the permitting process. Though both of these efforts are encouraging, more must be done to ensure transmission is permitted in a timely manner.

FERC's Role in Transmission Permitting:

FERC can play a role in streamlining the federal permitting. First, the Chair of FERC could convene quarterly meetings with the Transmission Cabinet to discuss the progress in evaluating applications for transmission lines that are required for compliance with the CPP ("Compliance Projects").

Second the Transmission Cabinet could announce an "all hands on deck" approach to Compliance Projects. The Principals could ensure that pertinent field staff understands the importance of prompt evaluation of these applications. (DOE is demonstrating that the evaluation can be completed within a two-year period.) The call for "all hands on deck" should come from the Principals and should be repeated often.

Agency field staff is currently implementing rules and guidances that were created before the need for significant infrastructure build-out. Staff is making decisions today that are based on how things were done yesterday. But today differs from yesterday. Accordingly, the management of federal agencies, both career and political, must ensure that current policies are infused into the staff-level decisions. Equally importantly, agency management must create feedback loops to obtain confidence that field staff is implementing their duties in light of current policies.

Fourth, as part of the RRTT, agencies' "front offices" convened weekly conference calls with its project managers for transmission projects, which sent a strong signal to field staff about the need to streamline. FERC "front office" staff could participate in these calls.

Fifth, FERC could develop an informal appeal process for applicants of Compliance Projects who believe the vetting of their applications

are stalled or not being handled according to current policies. The appeals would be done within the confines of the Transmission Cabinet.

Sixth, during the Transmission Cabinet's quarterly meetings, FERC could ensure that Principals receive an accurate status report on how their agency staff is performing on the Compliance Projects. FERC, as an independent agency, could play an important role in providing this accurate assessment.

Where there is a Will, there is a Way

The federal government has an important role in assisting the states to comply with § 111(d), including FERC. Federal permitting of transmission need not be an impediment to § 111(d) compliance; indeed, with sufficient dedication, federal agencies can facilitate compliance.

Today, the states have all of the tools that they need to comply with § 111(d). My hope is that states invest significant resources to create State Implementation Plans (SIP) that adopt regional approaches. The current mantra in some corners of "just say no", will likely result in those states having insufficient time to develop a cost-effective SIP, i.e. those states are painting themselves into the proverbial corner. Instead, states can use the MISO MVP model to develop a plan where all states benefit.

Where there is a will, there is a way.

My background:

I bring to this panel three perspectives: state, federal and the private sector. From 2007 to 2011, I was a Commissioner at the PSC of Wisconsin. While a state commissioner, I chaired both the state and RTO processes for cost-allocation over MISO's MVPs. I also co-founded and was the first President of the Eastern Interconnection States Planning Council (EISPC). Through that endeavor, we represented most of the states and Canadian provinces east of the Rockies in the interconnection-wide transmission planning.

From 2011 to 2013, I was senior advisor to U.S. DOE Secretary Chu focusing on, among other things, transmission infrastructure. While at DOE, I co-lead the RRTT and was the DOE's representative to the President's steering committee on streamlining federal permitting.

I have returned to the private sector, which is where I started my 21-year career. I am currently representing utilities, including transmission companies, both incumbent and merchants. Not only am I working on permitting new transmission infrastructure, but I am also assisting utilities in how to address the challenges created by new emerging technologies and low natural gas prices. I am also co-leading a non-profit initiative aimed at required changes in our regulatory frameworks.

The Barrel

The essential perspective on global energy



Smart grid is all fine, but just get transmission built, group tells DOE

By Kathy Larsen | May 31, 2011 05:58 PM [Comments \(0\)](#)

A transmission-interest group lamented the other day that the Department of Energy didn't specifically put upgrading and expanding the high-voltage transmission grid in the Strategic Plan it released earlier this month.

True, expanding the grid is not in there. "Modernizing" the grid is, and unsurprisingly, DOE focuses on new technology to make what amounts to a "smarter grid," to integrate renewables better and get to a more "actively controlled distribution network" (must be longhand for "smart meters").

But to the group known as Wires, building more transmission is essential, and DOE's championing of "policies that remove barriers to grid expansion and upgrades" is critical. DOE's Strategic Plan may not say so, but maybe Energy Secretary Steven Chu's new hire, Wisconsin utility regulator Lauren Azar, will focus on that as well as on the technology and innovation.

Azar has made a name for herself in the transmission planning and policy arena. As president of the Organization of MISO States, she dealt with thorny fights among transmission owners and customer groups about where transmission should go and who should pay for it (not that these battles are necessarily resolved.) MISO is the Midwest Independent Transmission System Operator.

She was president of the Eastern Interconnection States' Planning Council, companion group to the Eastern Interconnection Planning Collaborative. She was engaged there in what could be the transmission planning challenge of the century: herding local, regional and commercial interests from everywhere roughly east of the Rockies to try getting some kind of coordination.

Before Azar was at the PSC, she did electricity law and, among other things, worked on creation of American Transmission Co., which put together various systems in Wisconsin to form the country's first stand-alone transmission company.

Announcing her appointment as senior adviser to Chu, the PSC said Azar would "work with industry, states and other federal agencies to facilitate the development of our nation's electrical infrastructure." Initial work would focus on "the transmission grid, transmission-related technologies (such as energy storage) and on the federal power marketing administrations."

Now, getting back to the Wires group, which calls itself "voice of the electric transmission industry" and whose full name used to be Working Group for Investment in Reliable and Economic Electric Systems. In a letter to Chu, President Jolly Hayden of NexEra Energy Resources says of the Strategic Plan that because doubling renewables deployment by next year is a DOE goal, "the absence of any mention of upgrading and expanding the high-voltage transmission system is inexplicable."

The industry and financiers are ready to put themselves into building transmission, Hayden says, and a Brattle Group study done earlier this month "confirms the tremendous potential that transmission manufacturing and construction hold for job creation and economic stimulus." DOE shouldn't take those benefits for granted, Wires says.

"Many barriers and challenges to future transmission improvements remain," the group says, and DOE must lead policy development to get rid of transmission-building barriers.

Transmission siting is a state issue, and Congress hasn't succeeded in making that any different. Transmission cost sharing is basically a federal issue (the Federal Energy Regulatory Commission) but given the power industry's structure — more state and local authorities than you can shake a stick at — DOE will have to get creative to get far on this one.

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<http://www.eenews.net/stories/1059992057>

DOE: Chu's grid guru came in 'like gangbusters,' left quietly

Hannah Northey, E&E reporter

Greenwire: Thursday, December 19, 2013

In 2011, then-Energy Secretary Steven Chu brought in an ambitious Wisconsin state utility commissioner to advance the Obama administration effort to site and build critical power lines and transmission technologies.

Lauren Azar was seen as the person who could help Chu's Department of Energy navigate a maze of local opposition, permitting delays and lengthy reviews to get transmission projects going.

But it's unclear whether Azar's two-year run that ended in September will bring about clear game-changing transmission breakthroughs.



Former Department of Energy senior adviser Lauren Azar. Photo courtesy of DOE.

That's not to say she didn't try. Saying she came in "like gangbusters," Azar focused on overhauling government-owned chunks of the power grid that outraged lawmakers, utility groups and four politically wired entities known as power marketing administrations, or PMAs.

Azar's time at DOE was marked by a big blowup over a [memo](#) that Chu sent last year to the PMAs, ordering them to leverage partnerships, rate-making power and financing to spur upgrades to their collective 33,700 miles of transmission and boost reliability and access for renewable energy sources.

While little known to the public at large, PMAs are a big deal. Their transmission overlaps power lines across almost half the country.

PMA customers that enjoy the country's cheapest electricity said they were blind-sided. Republicans flagging the cost of energy as a campaign issue attacked the memo as a "top-down" approach that favored renewables and threatened to disrupt the PMAs' statutory authority. Eventually, 166 House and Senate members from both parties expressed concern, and the House Natural Resources Committee, which oversees the PMAs, launched an investigation.

Fingers pointed to Azar. The American Public Power Association blamed the Chu adviser for failing to collaborate with industry in her pursuit of a pro-renewable energy agenda.

"The perception was that had she collaborated and consulted with folks more at the outset in developing the agenda she wanted to pursue, and then worked with customers to prioritize and implement those things, that would have been much more effective," said Joe Nipper, the trade group's senior vice president of government affairs.

The memo hit a nerve with members of Congress protecting regional PMA customers. Azar, one source said, was the latest in a line of DOE senior officials who have tried and failed to make similar reforms.

Azar, 52, who has moved back to her hometown of Madison, Wis., and launched a law firm, Azar Law LLC, maintains that her DOE stint was a success.

Given the short amount of time to make big changes at DOE -- Azar was, after all, picked by Chu, who himself resigned last February -- she said she mapped a timeline for tapping into existing transmission siting authorities and helping critical projects get started.

"I'm much more about where the rubber meets the road than high-level policy debates," Azar said.

She rejected the notion the controversial memo was all her doing or representative of a top-down approach. Both DOE and PMA officials, she said, helped implement the order. Chu asked the PMAs to take a leadership role, she added.

"Folks who were critical of the memo were pulling up very specific sentences or words ... which I understand if you didn't like the memo, that's exactly what you do to attack it," Azar said. "But if you do look at the overall thrust of the memo, it was quite simply, 'Let's ensure we have a robust, resilient, modern grid.'"

Others who fought strayed too close to the PMAs and faced similar problems.

Jimmy Glotfelty, founder of Clean Line Energy Partners and a former senior electricity adviser for President George W. Bush, said Azar should be remembered for trying to build infrastructure and integrate renewables in a thoughtful and cooperative manner.

"The customers of PMAs are pretty protective, and if you ask a lot of people who have been in her shoes -- including myself -- it's not uncommon to get into debates with customers of PMAs," he said. "They're tough negotiators."

'Visible transmission advocate'

Chu's selection of Azar was largely seen as a sign of the Obama administration's intense interest in expanding the grid to support renewables and tackle climate change, sources said.

"The DOE should always have a visible transmission advocate, and she served that role," said Rob Gramlich, the American Wind Energy Association's senior vice president of public policy.

Whether the department will take the same approach under Chu's successor, MIT nuclear physicist Ernest Moniz, remains unclear. Following Azar's departure, Skila Harris, who served as the Tennessee Valley Authority's first female director and as a special assistant to former Vice President Al Gore, began serving as senior adviser for the PMAs ([E&E Daily](#), Sept. 11).

Expanding transmission is seen as a difficult task considering the projects can intersect environmentally sensitive areas, require years of review and often face stiff opposition from landowners who don't want hulking infrastructure in their backyards or sightlines.

Transmission siting is also where federal and state interests often clash.

Azar was picked in no small part because of her extensive state-level experience.

Before joining DOE, she was a member of the Public Service Commission of Wisconsin, which is responsible for overseeing electricity, natural gas, telecommunications and water industries. Former Gov. Jim Doyle (D) appointed Azar to serve on the commission in March 2007 for a six-year term.

A law school graduate of the University of Wisconsin, Madison, Azar specialized in electric and water utility issues before joining the state agency. She also helped create the country's first stand-alone transmission company.

Azar also served as president of the Organization of Midwest Independent Transmission System Operator States, a nonprofit organization of 13 states and a Canadian province overseen by the Midwest grid operator.

She was also the first president and co-founder of the Eastern Interconnection States' Planning Council, where she co-lead efforts to organize states east of the Rockies in interconnectionwide planning.

Azar brought that same spirit to DOE. She helped bring together the "federal family" in 2011 -- nine agencies key to streamlining federal permitting of major new power lines that could have taken up to 15 years to garner approval ([Greenwire](#), Oct. 5, 2011). DOE already had existing authority to do so under 216(h) of the Energy Policy Act of 2005, language that allows the agency to coordinate federal and environmental reviews.

"DOE, until I got there, implemented [the rule] in somewhat of a tepid manner," she said. "I came in like gangbusters as I always do and not only helped to lead the rapid respond team for transmission but helped DOE draft some rules for 216(h), negotiate with the nine agencies."

PMA memo

As for the memo, Azar characterized her work as a "huge success" that complemented Chu's recognition of the PMAs' importance.

"As the Energy secretary, you're the CEO of the largest transmission utility in the United States," Azar said. "Secretary Chu, one of his primary priorities was to make sure we had a safe, reliable, resilient transmission grid. He took that quite seriously, and he asked the PMAs to take a leadership role in doing that."

She rejects assertions from lawmakers and industry groups that the memo was a Washington directive.

"I know part of the controversy was that this was a top-down approach," Azar said. "On the contrary, if you ask the [WAPA] staff, they'll tell you the recommendations came from them."

The endeavor started with the 15-state Western Area Power Administration, or WAPA.

Chu set out his goals in the memo and asked the PMAs to work with customers to lay out a plan. A joint team of WAPA and DOE officials -- after numerous meetings, workshops, webinars, telephone conferences and written comments -- crafted recommendations that Chu later adopted, she said.

"Indeed, I was told that the opportunity for feedback here far exceeded what WAPA normally uses for its normal initiatives," she said.

Azar noted the effort led to proposed changes to streamline WAPA's authority to borrow up to \$3.25 million from the U.S. Treasury to build critical transmission. As laid out in the memo, she also championed Texas-based Clean Line Energy's application to partner with DOE through its never-before-used authority under Section 1222 of the Energy Policy Act, which would allow a PMA with federal authority to site the line and overcome state opposition.

But sources said it's unclear whether other provisions in the memo will be implemented outside WAPA -- or even inside WAPA.

WAPA spokesman Randy Wilkerson said not all initiatives laid out in the original memo made it to the drawing board.

In the original memo, for example, Chu said WAPA had decided to take part in an "energy imbalance market," a tool that allows grid operators to balance load over a larger footprint while integrating wind and solar in real time.

But Wilkerson noted that the memo may have been misleading and WAPA is still considering such a move, one that's drawn concerns about cost from customers receiving historically cheap power. "I think that some people got the impression that ... we were doing more than we were at the time," he said.

WAPA also isn't implementing the memo's call for new rates to support the deployment of electric vehicles because such retail issues aren't handled by WAPA, Wilkerson noted.

Other sources said the kerfuffle fizzled as quickly as it began.

"[WAPA] is looking at it as an issue that we're moving on from," Wilkerson said.

http://www.theenergydaily.com/events/azar_bio/

Energy Daily – Lauren Azar Biography




Ms. Lauren Azar
Commissioner
Wisconsin Public Service Commission

Governor Jim Doyle appointed Lauren Azar Commissioner of the Public Service Commission (PSCW) in March 2007 for a term that expires in March 2013. Aside from her duties as a Wisconsin Commissioner, Azar is currently the President of the Organization of MISO states (OMS). The OMS is a non-profit organization of representatives from each state that is included in the Midwest Independent System Operator (Midwest ISO). As president of the OMS, Commissioner Azar is leading a regional planning and cost allocation effort for developing electric transmission over the Midwest ISO region, which includes 13 states and one Canadian province. Commissioner Azar also sits on the Electricity Committee and the Nuclear Issues – Waste Disposal Subcommittee of the National Association of Regulatory Utility Commissioners (NARUC). At the state level, Commissioner Azar led an initial investigation into the development of wind generation on Lakes Michigan and Superior resulting in an extensive report, which may be found at: <http://psc.wi.gov/globalWarming/05E1144/index-WindonWater.htm>.

Prior to her appointment to the PSCW, Commissioner Azar worked as an attorney and practiced extensively in the area of electric and water utilities, representing both ratepayers and utilities. As a representative for ratepayers, Commissioner Azar negotiated power purchase agreements and resolved disputes with utilities. While representing utilities, Commissioner Azar helped to create the nation's first stand-alone transmission company and helped to site a 210-mile extra-high voltage line in Wisconsin and Minnesota. In addition to public utility law, among others, she also practiced environmental law focusing on water law and on contaminated properties.

Commissioner Azar has been recognized by Madison Magazine as a leading lawyer in environmental law, and was also named as one of the Best Lawyers in America for 2007 in the area of energy law. Commissioner Azar has authored several articles for the National Business Institute. She co-edited and co-authored the Wisconsin Environmental Law Handbook, Fourth Edition, July 2007.

Commissioner Azar received her Bachelor of Arts Degree from Rutgers College and a Master of Arts in Philosophy from Northwestern University. She also has a Master of Science in Water Resources Management and a law degree from the University of Wisconsin-Madison.



Transmission Planning for the Future & *More*

NCSL Task Force on Energy Supply
May 18, 2012
Denver, CO

Larry Mansueti
Director, State & Regional Assistance
Office of Electricity Delivery and Energy Reliability
U.S. Department of Energy

Presentation Overview

- I. Overview of DOE Office of Electricity
- II. Interconnection-Wide Planning Efforts
- III. DOE Transmission Congestion Study
- IV. Federal Transmission Permitting Coordination
- V. And *More*



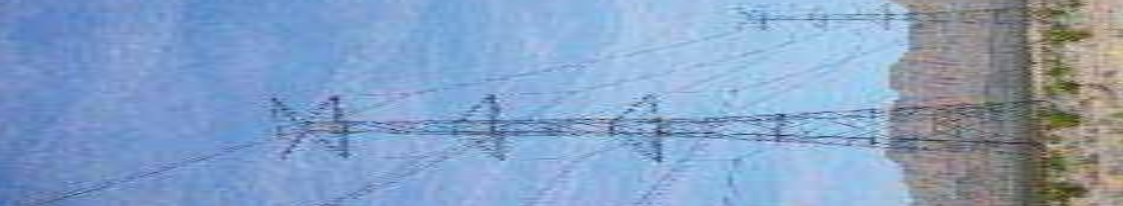
Office of Electricity Delivery and Energy Reliability



- Three Divisions
 - Permitting, Siting and Analysis
 - Infrastructure Security and Energy Restoration
 - Research and Development

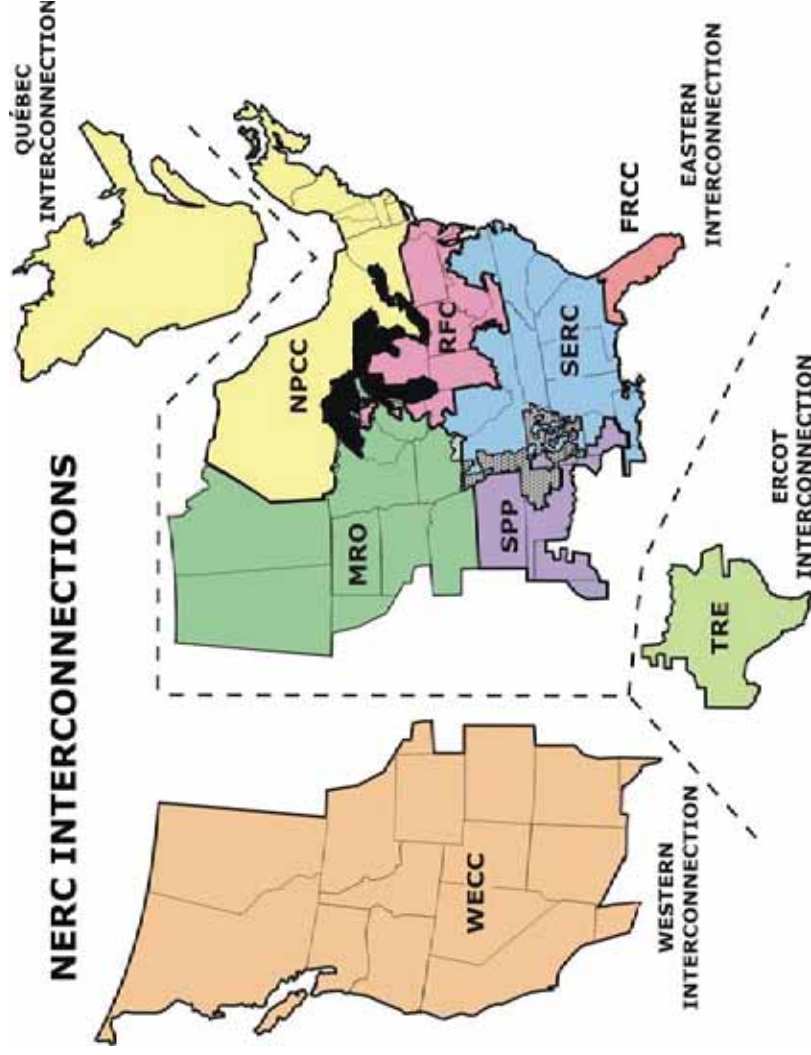
Permitting, Siting and Analysis Division

- Interconnection-Wide Transmission & Planning (& Related Resource Planning)
- National Transmission Congestion Study
- Cross-Border Transmission Line Permits and Electricity Exports Authorizations
- Required Coordination of Federal Transmission Permits & Authorizations
- State and Regional Policy Assistance



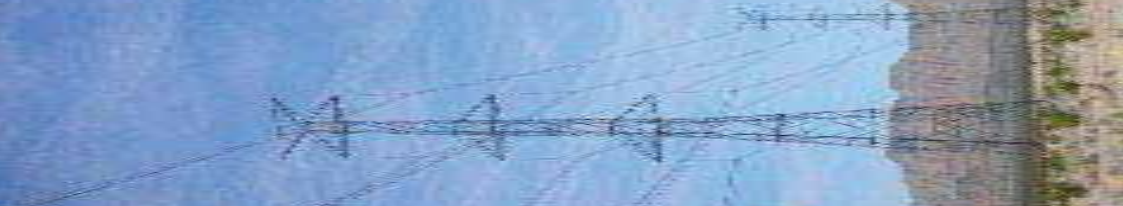
Three Electricity Interconnections

Serve the U.S.



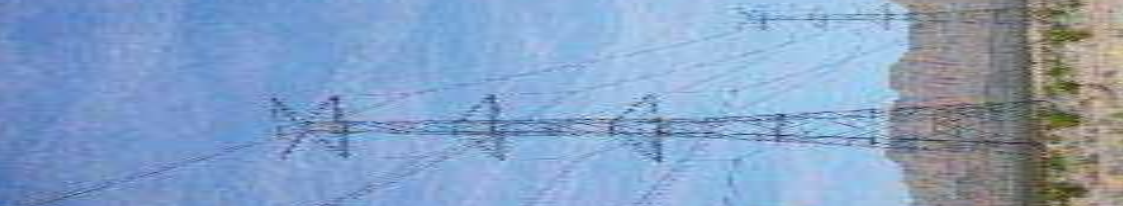
Interconnection-Wide Transmission Planning

- DOE called for open, transparent interconnection-level planning as early as 2006 (in its first *National Electric Transmission Congestion Study*)
- DOE has supported such work in the West for over 10 years
- The westerners and ERCOT had experience and relevant institutions to build on in responding to the initiative DOE launched in 2009. By comparison, the East faced a much greater challenge in responding to DOE.
- Broader than just “transmission planning”



Interconnection-Wide Transmission Planning

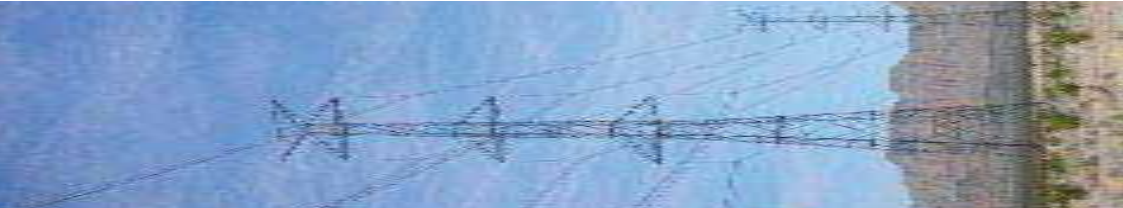
- Grants awarded under Recovery Act to planning entities in Eastern and Western Interconnections, and ERCOT
- Relevant organizations already existed in the West and ERCOT. No such organizations existed in the East, and had to be created.
- Major purpose was to aid the establishment of institutional capabilities to analyze long-term utility system expansion options at a large geographic scale.* Using alternative scenarios. Plus related “resource planning” -type work outside of transmission
- **The Real Benefit: new relationships & dialogues that did not exist before*





Total Funding: \$80M (Recovery Act)

- Eastern Interconnection Planning Collaborative - EIPC(industry experts) \$16 M
- Eastern Interconnection States Planning Council – EISPC (state officials) \$14 M
- Western Electricity Coordinating Council – WECC (industry experts) \$14.5 M
- Western Governors Association - WGA (state officials) \$12 M
- ERCOT A (industry experts) \$2.5 M
- ERCOT B (state officials) \$1.0 M
- National Labs (supporting all above) \$20 M



Eastern Interconnection – Accomplishments to Date

- Formation of the two eastern organizations – industry & states (not assured would happen)
- EIPC’s Phase I report delivered 12/16/11 – details eight 20-year macroeconomic futures (72 sensitivities)
- EIPC’s Phase II analysis launched – will develop 3 “bookend” 20-year transmission expansion scenarios (ie. BAU, medium, high buildouts)
- EISPC state participants have provided key leadership in EIPC work
- EISPC has initiated an eastern Clean Energy Zone study



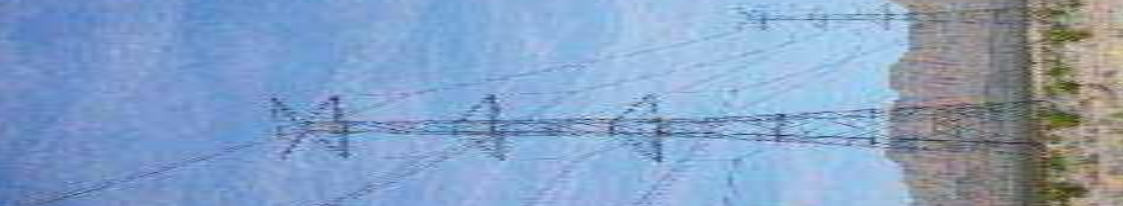
Eastern Interconnection

– Addt'l Supporting Work

- Future outlook of coal & other traditional resources over the next 25-30 years
- Review of nuclear resources
- Economic ramifications of resource adequacy requirements & an updated assessment of the “one-day-in-ten-year Loss of Load Probability” criterion that underlies current generation reserve margin requirements;
- An overview of state laws, regulations and rules and orders relevant to identification of energy zones in the Eastern Interconnection;
- Extensive review of co-optimizing methodology and techniques for the planning of both generation, in particular resources that are remote from load, and transmission
- Desire to look at electricity – natural gas interdependencies

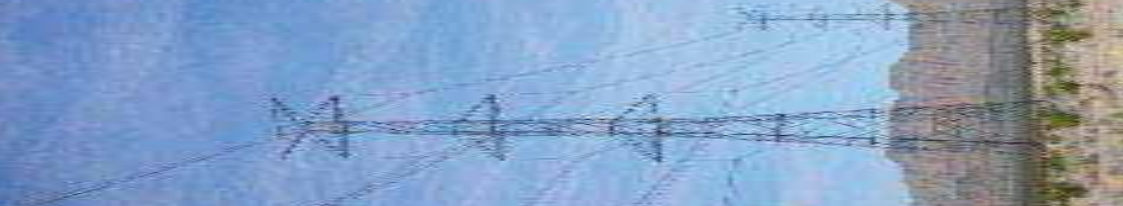
Western Interconnect – Accomplishments to Date

- WECC delivered 10-year Regional Transmission Expansion Plan on 9/30/11 – plan focuses on new lines and upgrades needed to meet state RPS requirements
- 20-year plan now being developed
- Development of new planning techniques and tools, including inclusion of environmental data and concerns in planning process
- Multiple insights on adequacy of transmission investments over next 10 yrs; lots more



Western Interconnects – Accomplishments to Date

- Input to WECC planning to ensure planning reflects state policies
 - Ex: Reduced WECC 2020 demand projections by 2,000 MW
- Sponsored several utility resource planners forum – “what are they planning to buy and build”
- Moving the west to better integrate growing variable generation (i.e wind and solar)
- State Wildlife Decision Support Tools
 - Ex: Southern Great Plains Crucial Habitat Assessment Tool





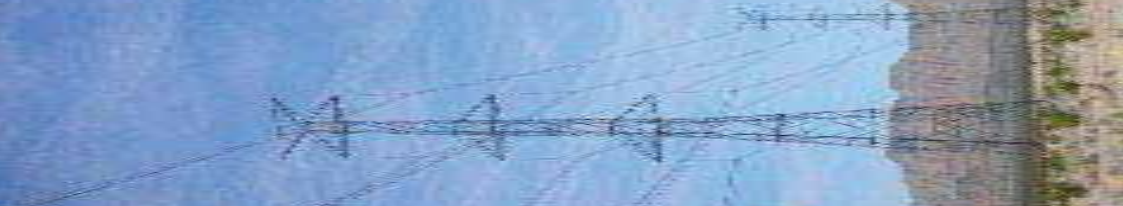
Western Interconnection – Analyses Gave Major Insight

“WECC’s first 10-year plan indicated that no new major transmission is needed by 2020 to meet demand and state policy objectives (e.g., Renewable Portfolio Standards) beyond the “foundational” projects already under development are [sic] energized by 2020, as expected.”

-- WA UTC Comm. Phil Jones, Oct. 12,
2011 Congressional Testimony

Coordination of Federal Transmission Permitting

- *Federal law requires: Section 216(h) of the Federal Power Act, created by EPACT 2005, designated DOE as the lead agency to coordinate transmission lines requiring multiple Federal permits*
- *MOUs signed by 9 Federal Agencies to execute section 216(h)*
- *State RPS's in West driving transmission buildout*



Rapid Response Team for Transmission

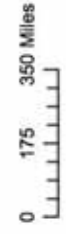


- Announced June 2011
- Builds off Energy Policy Act of 2005 requirements for better Federal coordination on transmission permitting
- Co-lead by CEQ and Depts of Energy & Interior

Rapid Response Team Pilot Projects

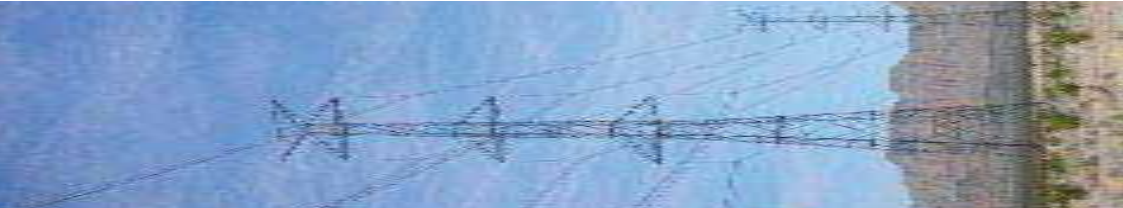
0186

- Transmission Lines Project Name**
- █ Boardman-Hemingway
 - █ CAPX 2020 Hampton-Lacrosse
 - █ Cascade Crossing
 - █ Gateway West
 - █ SunZia
 - █ Susquehanna-Roseland
 - █ TransWest Express



Last updated 9/20/2011.





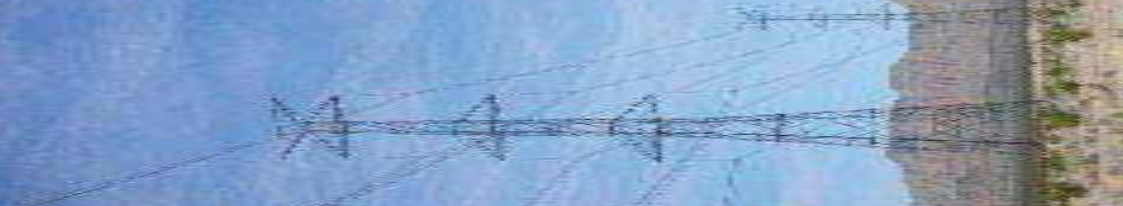
Tease Out Process Reforms

- RRTT has to date conducted a series of site visits for five of the seven RRTT pilot projects
- Site visit participants included Federal, state, and local agencies; Tribal representatives; project proponents and contractors
- During the site visits, participants identified project-specific challenges and potential solutions that could improve the agencies' processes

The And More

0186

- The game changer that shale gas is for the electric industry and the U.S.
 - Low prices, domestic jobs boom, foreign policy implications
- DOE's announcement of first-ever methane hydrate extraction
- DOE's Announcement of small modular nuclear support
- Watching reliability as EPA rules are rolled out (30-40 GW out of 310 GW coal retirement announcements so far)
- What is the post-2020 future?



**Draft Meeting Minutes
 Joint Meeting of
 Northern MAPP (NM-SPG) Sub Regional Planning Group
 And
 Missouri Basin (MB-SPG) Sub Regional Planning Group
 Missouri River Energy Services Office
 Sioux Falls, S.D.
 9:00 a.m., September 28, 2005**

1. Introductions

<u>COMPANY</u>	<u>ATTENDEE Name</u>	<u>COMPANY</u>	<u>ATTENDEE NAME</u>
BEPC	Del Galagher (phone)	SD PUC	Martin Beitman
DPC	Jerry Iverson (phone)	OTP	Jason Weiers
GRE	Mike Steckelberg	OTP	Michael Kawlewski
MHEB	Hilmi Turanli	WAPA	Ed Weber
MISO	Todd ?? (phone)	WAPA	Gayle Nansel
MISO	Yaming Zhu (phone)	Xcel	Angela Maiko
MN PUC	Ken Wolf	Xcel	Bill Raitihala
Excelstor	Steve Shermer (phone)	Xcel	Dean Schiro
MP	Mike Klopp	Xcel	Jason Standing
MRES	Brian Zavesky	Sharbakka Eng	Glen Sharbakka (phone)
MRES	John Weber	WAPA	Daniel Olson
MRES	Richard Dahl		
MP	Mike Klopp		

2. Assign Minute Taker: Hilmi T. volunteered to take the minutes.

3. Review Minutes

3.1 August 2, 2005 NM-SPG meeting minutes: Mike K. questioned the statement where it says "NW Exploratory Study was superseded by Cap X 20/20 Study" in the minutes. This will be discussed further in today's meeting. The minutes were approved.

3.2 August 3, 2005 MB-SPG meeting minutes: No Comments; Approved without opposition.

4. Review agenda

5. General NM/MB SPG Business

6. Transmission Planning:

6.1 Follow-up work on 2003 report-PUC order: Mike S. gave an update; Certificate of Need for the Mille Lacs project will be completed in first quarter of 2006.

MP is coordinating the Certificate of Need (CON). October 30 is the deadline for other updates.

Minnesota 2005 Biennial Transmission Planning Report: The report is being put together by Lindquist & Vennum Company. A draft will be issued by October 1, 2005. The complete report will be submitted by November 1, 2005. Ed W. suggested that SPG's should receive a draft copy of the report before submission so that others have a change to review and comment.

Mike S. stated that zone meetings have been ineffective and changes are being sought in the public participation process.

7. MAPP 10-Year Plan Update

7.1 TPSC 10 Year Report Updates (Forms 1-3): MISO is creating the database to help with the model building and study efforts. Dave Duebner (MISO) is leading the project and is populating the database with MTEP 06 information. The goal is to use this as the main list of planned and proposed projects. Dave has included this year a list of equipment already in service.

Del G. has sent the MB SPG portion of the MAPP 10 year plan update to the members for review. It will be sent to the TPSC in a week or two. Ed W. will contact MDU to check if they any projects that should be listed. Projects by MISO member companies will automatically be incorporated to Forms 1-3 by Dave D. Steve Sherner questioned if Mesaba project items have been listed in Forms 1-3. Mike S. will check into this. Mike will also e-mail the Forms 1-3 in Excel form rather than PDF. This year only the text part of 10 year plan updates or any recent changes to the 2004 plan would have to be submitted.

The TPSC will finalize the update to the 2004 10-year plan at their October 26, 2005 meeting and forward it to RTC before their December 1, 2005 meeting.

8. Transmission Project Updates:

8.1 Mille Lacs area transmission: The project was identified in MTEP 03 for voltage support and load serving. GRE will file a CON application by the first quarter of the 2006.

8.2 Lakefield—Wilmarth 345 kV series compensation: Angela M. reported that project is on schedule. The series compensation station will be about mid way on the line near Fieldon Township, with in-service in 2007.

8.3 SW Minnesota Wind: Angela M. reported that all of projects are on track.

8.4 Pequot Lakes – Badoura 115 kV line: Mike K. has presented the highlights of this project and also distributed a public information newsletter. This project

will upgrade the load served (growth 2.8%) in the area by construction of a 115 kV line.

- 8.5 Tower - Babbitt 115 kV line: Mike K. presented the highlights of this project and also distributed a public information newsletter. This project will upgrade the load served (growth 2.3%) in the area by construction of three sections of 115 kV lines. This project and the Pequot Lakes—Badoura project will both be in the Minnesota state plan to be submitted this year. Approval is sought by June 2006 with construction in 2007 and 2008.
- 8.6 Arrowhead – Weston 345 kV line: Mike K. reported that Minnesota portion of the line is built. Construction has started in the Wisconsin. The issues with all the counties have been resolved. A 800 MVA PST (phase-shifting-transformer) has been ordered from VA Tech (Siemens) to be delivered in fall of 2006 and to be moved to the site by winter 2006/07.
- 8.7 Watertown – Brookings 115 kV loop: Ed W. reported that there is significant load growth in the Brookings and Flandreau areas. Some of the crossarms and poles on the lines in this loop are in need of repairs. Western has considered rebuilding the entire line at 230 kV but, for now, they are replacing the damaged poles with 115 kV poles.
- 8.8 Chisago – Apple River 115/161 kV line: Angela M. reported that the certificate of need is to be submitted soon, possibly by the end of 2005.
- 8.9 North West Public Service: Ed W. reported that there is considerable load growth in the Mitchell area. One possibility is to tap into Ft. Thompson – Sioux Falls 230 kV lines. There is also potential wind development in this area only with an interconnection request so far.
- 8.10 Jackson Area Transmission: Brian Z. reported that the plan was for Jackson to be served from the new Xcel 161 kV line between Fox Lake and Lakefield Junction. This line would be owned by Xcel with both terminals owned by Alliant. Hence the Jackson load would switch to Xcel control area and Xcel pricing zone, but line would be operated by Alliant. However the change in control areas will require a transmission service request to be filed under MISO rules. In a letter sent to MISO, MRES made a formal request to address this issue urgently. SPG's resolve that MISO finalize this issue so that Jackson load could be served from 161 kV supply.
9. Transmission Studies
- 9.1 Iowa-Southern Minnesota Exploratory Study: Yaming Z. reported the results will be incorporated to the MTEP 06 report, plus it will be published as a separate report. A Lakefield Junction – Winnebago 345 kV line is one of the options being studied.

- 9.2 Northwest MAPP Exploratory: Mike S. reported that Glen Sharbakka gave a presentation to Upper Great Plains Group ?? (UGPTC). Walt Grivna also presented the results from this study to the same group. There are two proposed transmission routes. The first one is a Belfield—Fargo—St. Cloud 345 kV line and the second alternative is Belfield—Granite Falls—Twin Cities 345 kV line.
- The study team has concluded its efforts. The alternatives and economic studies will now be incorporated into the CapX2020 effort. Big Stone II development has also been incorporated into the CapX2020 study due to its location.
- 9.3 Coordinated Generator Studies (Group 4): There is no update on this study.
- 9.4 Buffalo City/Lake Pulaski: Low voltage at Buffalo (Minnesota) (20 MW load) has prompted the need for this study. Angela M. reported that there are two alternatives being considered: A new Buffalo—Dickinson line 115 kV line, initially operated at 69 kV, and a Buffalo—Lake Pulaski 115 kV line.
- 9.5 Worthington Load Serving Study: Study work is continuing.
- 9.6 Big Stone II generation: Jason W. gave an update. The interconnection and delivery studies have been on-going. Stability studies have just been completed. A certificate of need document is being drafted for the Big Canby – Granite falls (Hazel) 345 kV line which is the common component for two proposed alternatives. The interconnections facility study would be conducted next.
- 9.7 CapX2020 load serving: Mike K. gave a presentation on the study. His presentation, the Cap X2020 report and other relevant information are all posted at CapX2020 website. Within the next 15 years 8000 MW of new generation is needed to supply 6300 MW of new load growth. The CapX area is primarily in Minnesota and partially in Dakotas, northern Iowa and western Wisconsin. Transmission development to connect these generation resources to load centers are divided into scenarios; each scenario depending on a particular generation pattern. The total cost of transmission facilities by year 2020 amount to about \$2.3 billion. A first group of facilities, call Group 1 facilities, are planned to be completed by the year 2012 and are estimated to cost \$600 million. A memorandum of understanding is being prepared in between eight Transmission Development Partners to facilitate the financing and construction of the CapX2020 projects. MISO's tariffs for cost recovery for transmission services would be a back up plan. Ken W. stated that routing and siting, which used to be the responsibility of EQB, is now being transferred to MnPUC as part of June 2005 legislation.
- 9.8 Mesaba Generation: Steve S. reported that the last update on this project was given on May 5, 2005 meeting. The ad-hoc committee for the studies consists of AEP, MP, GRE, XEL and MH. For the first unit (MISO project no G477)

rated 530 MW located at Hoyt Lake (near LTD Taconite) the designated point of interconnection is Forbes 230 kV bus. The plant was designated as network resource. Last March, screening and stability results were completed. This project assumes that Arrowhead – Weston project is in place. Some 230 kV breakers at the Forbes bus would need to be replaced. The Phase II study, which is the system impact study, started on May 11, 2005 by PTI. It uses summer peak load flow cases. One 115 kV MP line is overloaded (including in the base case as well). MP is completing the short circuit studies. There were some problems with the 2005 stability model, as a result stability studies were delayed, but they are now under way. The results will be reviewed at an October 7, 2005 meeting.

For Unit 2, rated up to 600 MW (Project no G519), an alternate location north of the taconite plant was proposed. The in-service date is one year later at 2011. The point of interconnection is the Blackberry 230 kV bus. It is assumed that the Boswell – Wilson 230 kV (in-service 2010) will be built by this date, but the Maple River – Benton 345 kV line will not likely be completed (in-service 2012). This unit will require conversion of existing Blackberry – Benton and Blackberry – Arrowhead from 230 kV to 345 kV and construction of a new Blackberry – Riverton 230 kV line.

9.9 Buffalo Ridge Incremental Generator Outlet: *(This item was incorporated in the next agenda item)*

9.10 SW Minn-Twin Cities EHV Development: Mike S. reported that a study review meeting was held with Rick G. (Excel Engineering) yesterday (9/27/05) at the MRES offices. The base case plan proposes a 345 kV line from White (near Brookings) to Lyon County (near Marshall) to Franklin (near Redwood Falls) to Helena to Hampton (southeast TC metro). An alternate to this would be a 345 kV line from Hazel (near Granite Falls) to Blue Lake (southwest Metro). Both options assume a 345 kV line between Big Stone - Canby – Hazel – Lyon Co.

Construction of these west-east 345 KV corridors does not eliminate the loop flow north through Manitoba, however it does reduce the loop flow amounts from 8-10% to 3.6-4.0%. The analysis also included a double-circuit cost/benefit estimate.

Another study team meeting is scheduled for October 10, 2005, at the OTP offices in Fergus Falls.

9.11 C-BED Transmission Study for Distributed Generation: Jason W reported that a conference call was held with himself and George Crocker, Mike Michaud., and Mike K. It is proposed to develop transmission infrastructure for up to 2500 MW of distributed generation in Minnesota.

- 9.12 West Central Minnesota: GRE is completing a load serving study for near Willmar area with projects that have an in-service date of 2009.
- 9.13 MECA Load Serving Study: Jeremy S. of BEPC sent a draft report to MB and NM SPGs without the attachments. The study used 2004 MAPP series models for 2014 model. The base case has a number of impacted facilities. Comments should be sent to Jeremy S. A presentation o this study will be made at the next SPG meeting.
- 9.14 Rugby Wind Farm Study: Jason W. has sent the report to MISO. Steady state results appear to be acceptable, 500 kV line loop flow appears to be existing. However for dynamic performance a 5 Mvar capacitor bank needs to be added at Paynesville. Deliverability study will be completed by MISO. MISO assumes 20 % wind availability and system peak conditions, hence simultaneous transfer levels are not tested at their maximum levels.
10. Other
- 10.1 Next Meeting will be held on November 30, 2005, in Elk River at the GRE office starting at 9:00 am .
- Respectfully submitted
by H.M. Turanli, Manitoba Hydro.

¹ This meeting is now scheduled to take place at the MAPP/MISO St. Paul offices.

Target Appendix	App AB Region	Geographic Location by TO Member System	PriJID	Facility ID	Expected ISD	From Sub	To Sub	OKI	Max kV	Min kV	Facility Rating	Facility Description	State	Miles Upl.	Miles New	Plan Status	Estimated Cost	Cost Shared	Postage Stamp	MISO Facility
A in MTEP14	B-A West	MP, MH	3831	7201	6/12/2020	Dorsey	US/MB Border	1	500	500	1732	Dorsey US/Manitoba Border 500 kV Line	MN	160	0	Planned	\$57,320,000	N	N	Y
A in MTEP14	B-A West	MP, MH	3831	7201	6/12/2020	US/MB Border	Iron Range	1	500	500	1732	US/Manitoba Border-Iron Range 500 kV Line	MN	220	0	Planned	\$46,023,000	N	N	Y
A in MTEP14	B-A West	MP, MH	3831	7202	6/12/2020	Iron Range			500	230	1200	New Iron Range 500/230 kV Substation adjacent to existing Blackberry 230/115 kV Substation	MN		0	Planned	\$24,433,712	N	N	Y
A in MTEP14	B-A West	MP, MH	3831	7622	6/12/2020	Warroad River			500	500	1732	New midpoint series compensation station on Dorsey - Iron Range 500 kV Line	MN		0	Planned	\$3,891,711	N	N	Y
A in MTEP14	B-A West	MP, MH	3831	20289	6/12/2020	Iron Range	various		230	230		Modifications to and re-roles of existing 230 kV and 115 kV lines at Iron Range Substation site	MN		0	Planned	\$275,000	N	N	Y
A in MTEP14	B-A West	MP, MH	3831	20290	6/12/2020	Blackberry			230	230		Two 230 kV panel replacements at Blackberry to facilitate interconnection of Iron Range 500/230 kV Substation	MN		0	Planned	\$137,500	N	N	Y
A in MTEP14	B-A West	MP, MH	3831	20292	6/12/2020	Arrowhead			230	230		One 230 kV panel replacement at Arrowhead to facilitate interconnection of Iron Range 500/230 kV Substation	MN		0	Planned	\$137,500	N	N	Y
A in MTEP14	B-A West	MP, MH	3831	20291	6/12/2020	Forbes			230	230		One 230 kV panel replacement at Forbes to facilitate interconnection of Iron Range 500/230 kV Substation	MN		0	Planned	\$137,500	N	N	Y
A in MTEP14	B-A West	MP, MH	3831	20293	6/12/2020	Hilltop			230	230		One 230 kV panel replacement at Hilltop to facilitate interconnection of Iron Range 500/230 kV Substation	MN		0	Planned	\$137,500	N	N	Y

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14 COMMISSIONER FIORDALISO: All right, let's
15 continue.

16 MS. TAMASIC: May I make a statement on
17 the record?

18 COMMISSIONER FIORDALISO: Yes.

19 MS. TAMASIC: It is difficult enough for
20 parties here to deal with the myriads of discovery.
21 I just want to put on the record what I
22 said, what we all said, in our motion. This
23 petition is not ready for prime time, this petition
24 should be suspended until it is complete.
25 The notion that we are coming in with

03118
1 drawings six weeks from now, where is the public
2 interest and public notice on that? It is so
3 unfair.

4 COMMISSIONER FIORDALISO: Well taken.
5 Let's proceed at this point.

6 CROSS-EXAMINATION BY
7 MS. OVERLAND:

8 Q Mr. Crouch, there were some changes that I
9 would like to talk to you about. First there was a
10 change to the quad bundled 500 kv line. Can you
11 explain what that change is?

12 MR. CROUCH: We reduced bundle size from
13 quad-bundle to tri-bundle.

14 Q Why was that?

15 MR. CROUCH: We were pushing the
16 manufacturing limits of monopoles so it took those
17 out of consideration, and there was a very large
18 interest from the public about the use of monopoles
19 for aesthetic reasons, and in order to consider
20 those we took a look at whether or not we could
21 reduce the bundle size so that it would be less
22 impact on the structure and we could consider using
23 monopoles; that's why we did that.

24 Q How would that affect opacity?

25 MR. CROUCH: Since the quad bundle was
03119
1 not primarily being designed for opacity, it really
2 is not a change in the opacity of the line.

3 The line is designed to carry the same
4 amount it would have carried if it had four, it is
5 not an opacity issue.

6 Q What about the MVA issue?

7 MR. CROUCH: No, it's the same, the
8 amperage of the line actually feeds the A portion of
9 the MVA.

10 Q Megavolt amperes?

11 A Yes.

12 Q Since we're on that line, why don't you
13 explain what a megavolt ampere is?

14 MR. CROUCH: There are different ways to
15 categorize power, so two things that make up the
16 power happen to be voltage and amperage.

17 When you talk about overall power of the
18 circuit, what is it capable of carrying, you
19 essentially multiply the voltage times the amperage
20 and come up with the MVA rating.

21 Q And you are saying this is mostly a change
22 based on amperage, correct? I mean the change is --
23 let me--that the design of the line was based on
Page 10

amperage so that a change would not have an impact on that; is that correct?

MR. CROUCH: Not necessarily. One of the considerations in designing the line would be to carry a certain amount of power, in this particular case I believe it was 3,005 MVA. That would be the entire package of conductors that would carry 3,005 MVA?

A Correct.
Q And for the 280 line, what would that MVA be for that?

MR. JACOBBER: I think you meant 230.

Q I'm sorry, 230, thank you.
MR. JACOBBER: The single conductor I believe is designed to carry 730, approximately 734 MVA.

Q And as I understand, that would be reconducted and then bundled, but you are changing that.

MR. CROUCH: We are simply replacing the existing 230 kV in kind, except in a different configuration.

Q What are you replacing it with?
MR. CROUCH: The same, with a 1590 ACSR single conductor.

Q Are you familiar with ACSRs?
MR. CROUCH: Yes.

0321
Q What is it?

A It's a different type of conductor, it's an aluminum conductor steel supported as opposed to reinforced.

Q Why do you use ACSR instead of ACSS?
A In certain cases it has to do with braided breaking strength, and we do use in certain instance ACSS.

Q Is there a capacity difference between ACSR and ACSS?

A Depending on how you construct the line, yes, the ACSR conductor can operate at a higher temperature.

Q When you say depending on how you construct the line, does that mean things like transformers on either end, or what do you mean by that?

MR. CROUCH: Just speaking about the line, it would depend on how you sag and tension the line.

Q What about the transformers?

MR. CROUCH: They are circuit components, so that affects the circuit rating as opposed to the line rating.

0322
Q And what was the circuit rating of the old configuration and the circuit rating of the new configuration?

MR. CROUCH: They are still the same.

Q Now, you were talking about impacting the, just a minute, pushing the manufacturing limits of monopoles. What do you mean by that?

Page 11

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MR. CROUCH: Well, once we had gotten into the detailed design, the Phase II design, you then have an opportunity to go to pole manufacturers with the engineering data.

Once we did that, some manufacturers had indicated that they would not be able to manufacture a single monopole and some questioned whether they would be able to do it.

At that point we decided to consider changing the conductor.

Q Was it a weight issue, a tension issue?

MR. CROUCH: It happens to be the size of the pole and it has to do with tension primarily.

Q So essentially the pole could not handle having that much on it?

MR. CROUCH: We were pushing the limits of manufacturing, we weren't quite sure whether they

could make them or not.

AS I indicated, some said they could, some said that they could not.

Q So is it correct that if you have that 3,005 MVA and four, and then you reduce it to 3,005 MVA on three, doesn't that change then the amps for those particular conductors?

MR. CROUCH: Each individual conductor would carry a little bit more amperage in the tri-bundled configuration as opposed to the quad bundled configuration.

Q Doesn't that also change all your EMF modeling?

MR. CROUCH: Not necessarily. It does affect somewhat the audible noise, but we would still be able to meet all of the requirements at the edge of the right-of-way.

Q What I am considering is, what Amp rating was used for the modeling and how that changes for the EMF modeling, because what it would do logically -- Is it correct that what it would do logically is raise the amperage of that three lines as opposed to four, so it would raise it by --

MR. CROUCH: I prefer to let Kyle speak to your concern in the EMF.

Q What is different in the construction aspect of it which is when you have four and you reduce it to three, what kind of percentage does it raise that three by?

MR. CROUCH: As far as raise by?

Q Okay.

You have got Amps, you have 3,005 spread across four, so then what does it take then, take a quarter of that and spread it between the three.

MR. CROUCH: It would take three if it's in the tri-bundle it is essentially a third of the 3,005.

In the quad bundle it would have been a fourth of 3,005.

Q 3,005 and that's MVA, so what Amps do you have for that 3,005; is there a direct correlation between the Amps and MVA?

MR. CROUCH: Yes.

Q Okay.

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20 So then if you have the 3,005 MVA how
 21 many Amps is that?
 22 MR. CROUCH: Just off the top of my head,
 23 for a tri-bundle it's a little over a thousand.
 24 Q And that's for conductors?
 25 MR. CROUCH: Yes.

0325
 1 Q So you have a little over a thousand, in
 2 the quad bundle would it be around a thousand?
 3 MR. CROUCH: No, it would be 3,005
 4 divided by four, a little over seven hundred.
 5 Q So then you are saying with the three it
 6 would be around a thousand, ballpark?
 7 MR. CROUCH: Yes, that's correct.
 8 Q Who would be the witness that would have
 9 the specifics on that?
 10 MR. CROUCH: Which specifics?
 11 Q To go from ballpark figures to specifics.
 12 MR. CROUCH: Which specifics are you
 13 speaking of?
 14 Q MVA and Amp?
 15 MR. CROUCH: I can actually come up with
 16 that. Specifically speaking, the design of the line
 17 is 3,005 MVA, so for the conductor itself it is a
 18 little over a thousand MVA.
 19 And then on the quad bundle it would have
 20 been 3,005 divided by four.
 21 So that's the specific answer.
 22 Q We can do the math, but we have on the
 23 record what the formula is.
 24 MR. CROUCH: Yes.
 25 Q You are saying that has an impact on the
 0326 conductor noise?
 1 MR. CROUCH: Primarily the quad bundled
 2 configuration was to address audible noise
 3 requirements at the edge of the right-of-way.
 4 Q I may have to think about this.
 5 (Pause.)
 6 Q That would have an impact, too, though,
 7 on substation design?
 8 MR. CROUCH: Not necessarily, because
 9 it's the same amount of power that you are carrying
 10 in the line.
 11 Q But would it mean that there are fewer
 12 transformers?
 13 MR. CROUCH: No, you are still requiring
 14 the same amount of power to flow so you are not
 15 reducing the amount of current by reducing the
 16 conductor. In this case because the conductors that
 17 we were putting up were to address audible noise it
 18 would still be able to meet audible noise with a
 19 tri-bundle.
 20 Q When you have bundles, doesn't one bundle
 21 go to a transformer and another bundle go to a
 22 different, you know, phase --
 23 MR. CROUCH: Yes.
 24 Q And they are divided up?
 25 MR. CROUCH: Yes.
 0327
 1 Q So doesn't that mean there is three, not
 2 four, no?
 3
 4

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6 MR. JACOB: If I can answer that
7 question, no, it does not.

8 Basically you have three phases, and in
9 each phase you either have four conductors or three
10 conductors, but the transformers still, you would
11 still have three transformers for that transformer
12 bank either way.
13 Q They are set up by phase rather than by
14 bundle?

15 MR. JACOB: Yes.

16 Q Does that mean then that you have -- then
17 if the MVA would be the same, the transformers would
18 be the same. Is that correct?

19 MR. JACOB: That's correct.

20 Q Thank you.

21 MS. OVERLAND: And given this is a new
22 change, is this a change that we could also take
23 some time to look at and address again when we deal
24 with the changes of substations.

25 MR. RICHTER: No objection from PSE&G.
COMMI SSIONER FIORDALISO: Yes.

0328

1 MS. OVERLAND: Because this is an

2 important, this is a big change.

3 Q Mr. Jacober, you say you are licensed in
4 seven states?

5 MR. JACOB: Yes.

6 Q That's all electrical?

7 MR. JACOB: Yes.

8 Q Now, I want to clarify, because I am from
9 the Midwest, we call them substations but you call
10 them switching stations, and can you address the
11 distinction between them, if there is one?

12 MR. JACOB: Basically a switching
13 station and substitution in the matter of this case
14 can be used interchangeably.

15 Basically as the definition goes, it's a
16 location where lines come in to interconnect with
17 the system, so we can say that they are used
18 interchangeably as to this subject.

19 Q In your direct--just one moment--in your
20 direct on page 7 you are describing the equipment,
21 and although the locations may change of the East
22 Hanover switching station, will the equipment
23 change, or will that still be the same?

24 MR. JACOB: Where is that?

25 Q Page 6 starting at line 16, where you are

0329

1 describing the equipment in the East Hanover
2 switching station, will that still be the same?

3 MR. JACOB: Can I read through it?

4 Q Sure.

5 (Pause.)

6 MR. JACOB: The movement of the proposed
7 alternative that's feasible on the Roseland site
8 would still maintain a GIS switchyard, that is
9 presently would utilize in this case nine breakers
10 and a breaker and-a-half substation rather than six
11 breakers that would be installed in a GIS building
12 very similar to the East Hanover.

13 Q Nine instead of six, why?

14 MR. JACOB: The new, the alternative,
15 the feasible alternative, would include similar to

Page 14

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 12 MS. MOSKOWITZ: Right. He was at least
 13 going to attempt to answer.
 14 COMMISSIONER FIORALISO: He was going to
 15 attempt to answer the question you had.
 16 MS. OVERLAND: It had something to do with a
 17 number.
 18 COMMISSIONER FIORALISO: Thank you very
 19 much. I told you I was getting stoonad because I did
 20 try to remember that and I didn't.
 21 If you could repeat the question so --
 22 Do you remember it?
 23 MR. KHADR: Yes, I remember it.
 24 COMMISSIONER FIORALISO: You remember it.
 25 Maybe you could ask the question and then
 26 give us the answer.
 1249

1 Unless you know the question.
 2 MS. OVERLAND: Well, that would help me
 3 interpret the answer if he give the question too but
 4 maybe rather --
 5 COMMISSIONER FIORALISO: It's sounds like a
 6 Laurel and Hardy routine.
 7 MS. OVERLAND: How about if I restate it?
 8 COMMISSIONER FIORALISO: Please.
 9 CROSS-EXAMINATION OF MR. KHADR BY MS. OVERLAND:
 10 Q. I want to be clear what number it is that I'm
 11 looking for, because, as I understand it, in the
 12 configuration now with the four down to three conductors
 13 on the 500 kV side, the limiting factor is in
 14 substation, be it GIS, switched gears, transformers, it
 15 is not the line.
 16 So what I wanted to know is what the ultimate
 17 rating for the line is if all things are good and
 18 glorious and best of all worlds?
 19 A. The circuit rating is limited by its connect
 20 switch. And 2007, 2008, and 2009 we had modelled the
 21 line rating as 2,650 MVA, normal and 340 MVA emergency
 22 for our --

23 Q. Is that three --
 24 A. I'm sorry. 3,040 MVA emergency, four-hour
 25 emergency rating. As you know, PJM study is a 15-year
 1250
 1 analysis. That rating has gone through the 15 years and
 2 it did not show that we going to need anymore than that
 3 rating for the full 15 years.
 4 If you look at the existing 500 kV circuits that
 5 we have, they are all dual conductor per phase, and a
 6 rating of I believe 3,005 and 300 -- 3,400 MVA for
 7 emergency.
 8 PJM -- and we don't see any need for higher
 9 rating on a conductor than what we -- than what I just
 10 mentioned right now. The reason we are doing -- going
 11 with tri and before with quadruple is to limit the noise
 12 level at the edge of the right-of-way, not for higher
 13 capacity on the line, higher capability on the line.
 14 We need to recognize that we cannot force flow on
 15 that line alone. If things change, not only the flow
 16 going to go on that line but also going to go on the
 17 parallel 230 kV circuits that line, as well as the
 18 parallel 500 kV circuits which all have much lower
 19 rating than this line would.
 20 Q. I want a number.
 21 A. All I'm saying is that we studied it for 15

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years. We don't need any additional capability on that line. That line we design it for triple conductors per phase for noise levels.
Q. But that does not answer the question of what if

all things were great and good and you did not need to worry about substation limitations, noise limitations, what the capacity would be --

A. It's much more --
Q. If may I finish, please?
-- if I had the conductors -- the conductor manufacturer's spec sheet, what would that say?

A. It's much more than just the transformers on the line or the disconnect switches on the station.
Q. Correct.

A. It's all the parallel lines that we have, it's the 500 kV. When you use that line -- number one, okay, based on Kirchoff's law (phonetic) -- it's a network analysis -- network analysis which shows that that line would have flow similar to the other 500 kV lines within the same thing -- same limitations. You cannot push huge amount of flow on that line that flow is going to go back that if you lose that line that flow is going to go back on the 230 kV panel circuits and cause severe overloads.
Q. There is an RTEP with a network of backbone lines which is only the beginning of the regional expansion plan. And what I want to know again is the number or if you will provide a spec sheet for the conductors for that line because I want -- with all changes coming up, a lot of things will change. The noise restriction may

not change, but substations can change and your planning for expansion. There's new lines being build all over. And when the new RTEP comes out, there will be more. And when the next RTEP comes out, there will be more, and so all of this will build up the 500 kV network.

So I want to know the number, if all those limitations were removed, what the total potential capacity for that line would be according to the manufacturer, that number.

COMMISSIONER FLOREALISO: Maybe I can cut through the chase here. Does a number exist?

MR. KHADR: I do not have that number.
COMMISSIONER FLOREALISO: Are we able to calculate that number? Is that possible?

I don't know. I'm asking you. I just want to get to a point where we continue here so we can get to leakage so we can get done here.

MS. MOSKOWITZ: So you are --
COMMISSIONER FLOREALISO: Is there a number or is that number able to be calculated that you're aware of?

MR. KHADR: I do not do the calculation for the line ratings. I'm not sure what's really involved in calculating that number. I would presume that that number could be calculated.

COMMISSIONER FLOREALISO: Ms. Moskowitz, I'm sorry, I didn't mean to cut you off, but I'm just trying to move this along.

MS. MOSKOWITZ: I know. And I'm trying to as well.
I'm being told that Mr. King knows the

7 number. I know we're sort of going from witness to
8 witness here, but if we can have your indulgence,
9 perhaps he can --

10 COMMISSIONER FIORDALISO: Mr. King, come up
11 to the microphone.

12 MS. OVERLAND: Wasn't he just the witness
13 who didn't know just a minute ago.

14 MR. KING: I was this morning.

15 MS. MOSKOWITZ: No. No.

16 COMMISSIONER FIORDALISO: I don't think
17 that's correct.

18 You're still under oath, sir.

19 If you could just give us a number that
20 Ms. Overland is looking for.

21 CROSS-EXAMINATION OF MR. KING BY MS. OVERLAND:

22 MR. KING: Can I just take a second to
23 calculate?

24 MS. OVERLAND: Yes.

25 MR. KING: The current that I think you're
1254 interested in is the amount of current you can push
1 through a particular conductor before it exceeds a
2 certain temperature.

3 MS. OVERLAND: It's own rating all by itself
4 in a vacuum all by itself.

5 MR. KING: All by itself. And the limiting
6 component is whatever you say the maximum temperature
7 is. That's the only thing would --

8 MS. OVERLAND: Correct. Thermal limits.
9 MR. KING: Thermal limit of a conductor. If
10 you chose the number to be 140 degrees Celsius for a
11 1590 ACSR Falcon conductor, the number -- the amount of
12 current you'd have to push through based on the PJM
13 summer normal rating conditions with no wires and a high
14 temperature, variably no wind and a high temperature
15 would be 1,838 amps per wire. So if we had four of
16 those it would be 7,352 amps and would go to down to
17 three, three times that 1,800 would be 5,514 amps.

18 MS. OVERLAND: 5,514 amps.

19 MR. KING: That would be the current
20 required to raise the conductor temperature to 140
21 degrees based on the PJM summer --

22 MS. OVERLAND: Rating conditions.
23 MR. KING: -- conditions.

24 MS. OVERLAND: And then do you have an MVA
1255 number for each of those?

1 MR. KING: If I can calculate it for you.

2 MS. OVERLAND: And then I will shut up on
3 this topic.

4 COMMISSIONER FIORDALISO: And you have very
5 few leakage questions. Correct?

6 MS. OVERLAND: Not many. A couple is good.
7 COMMISSIONER FIORDALISO: A couple is good.

8 I'll take it.

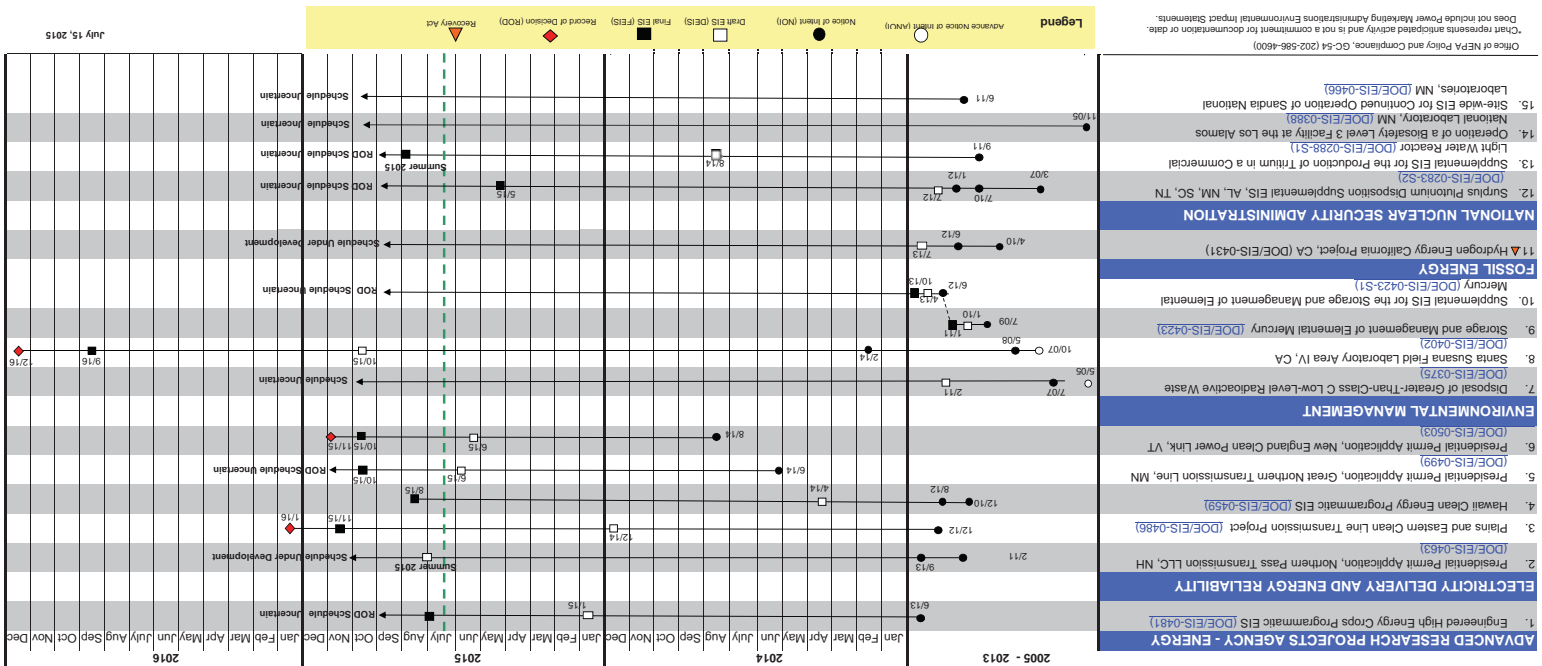
9 MS. OVERLAND: This was only one.

10 MR. KING: If I did my square roots
11 correctly, 5,514 amps per phase would correspond to
12 4,795 MVA at 500 kV, if did my square roots correctly.

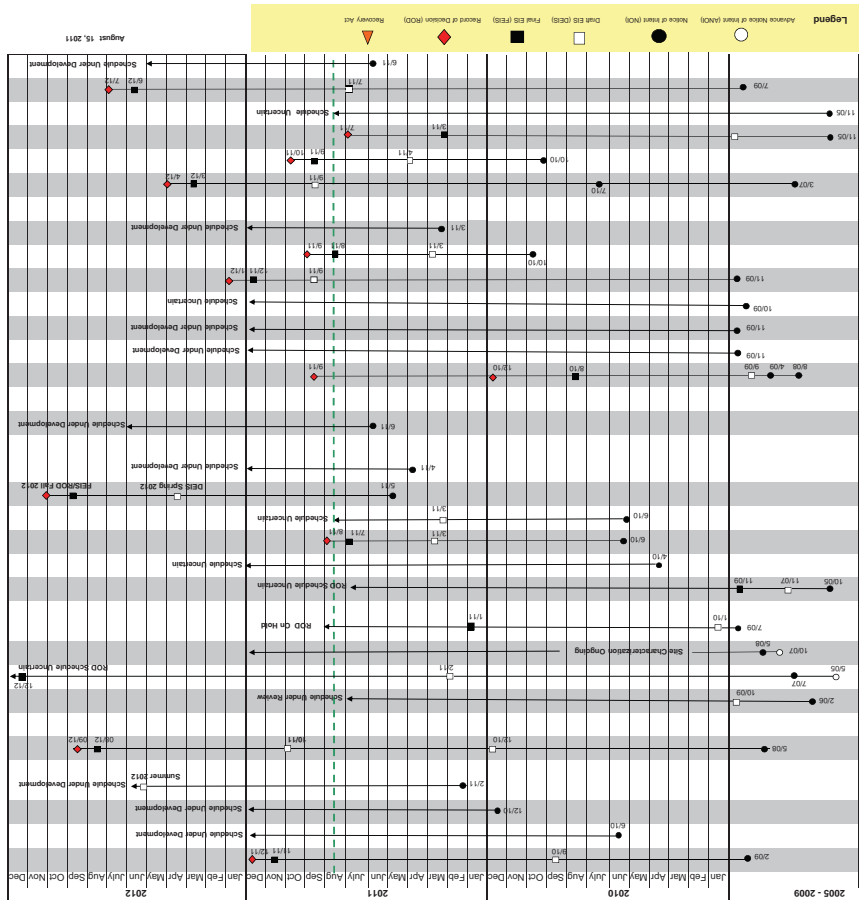
13 MS. OVERLAND: Okay. And -- okay. That
14 will do it. I am happy.

15 COMMISSIONER FIORDALISO: Ms. Overland, if
16 Page 33

SCHEDULES OF KEY ENVIRONMENTAL IMPACT STATEMENTS*



*Chart represents anticipated activity and is not a commitment for documentation or data. Does not include Power Marketing Administrations Environmental Impact Statements. Office of NEPA Policy and Compliance, GC-54 (202-586-4600)



Does not include Power Marketing Administration Environmental Impact Statements
Does not include Policy and Compliance (C-94 (2002-06-02))

29.	Site-wide EIS for Continued Operation of Sandia National Laboratories, NM (DOE/EIS-0466)	7/09
28.	Site-wide EIS for the Nevada National Security Site, NV (DOE/EIS-0426)	11/06
27.	Operation of a Biosafety Level 3 Facility at the Los Alamos National Laboratory, NM (DOE/EIS-0268)	11/06
26.	Site-wide EIS for the Y-12 National Security Complex, Anderson County, TN (DOE/EIS-0387)	10/10
25.	Supplemental EIS for the Chemistry & Metallurgy Replacement Project's Nuclear Reactor, NM (DOE/EIS-0354-1)	2/07
24.	Supplemental EIS for Sulfuric Acid Production at the Savannah River Site, SC (DOE/EIS-0283-2)	2/07
NATIONAL NUCLEAR SECURITY ADMINISTRATION		
23.	Federal Loan Guarantee for the Medicine Bow Fossil Fuel Power Pathway, WY (DOE/EIS-0452)	11/09
22.	Federal Loan Guarantee for the Topaz Solar Farm, San Luis Obispo County, CA (DOE/EIS-0458)	11/09
21.	Federal Loan Guarantee for the Medicine Bow Fossil Fuel and Power Coal-to-Liquid Facility, Carbon County, WY (DOE/EIS-0432)	11/09
20.	Federal Loan Guarantee for the Taylorville Energy Center, Taylorville, IL (DOE/EIS-0430)	11/09
19.	Combined Cycle, Rodaport, IN (DOE/EIS-0429)	11/09
18.	Federal Loan Guarantee for Mississippi Integrated Gasification Combined Cycle, Moss Point, MS (DOE/EIS-0428)	11/09
17.	Abengoa Bioenergy Project, Stevens County, KS (DOE/EIS-0407)	8/09
LOAN PROGRAMS		
16.	Programmatic Environmental Impact Statement for the Uranium Leasing Program, CO (DOE/EIS-0422)	6/11
LEGACY MANAGEMENT		
15.	Delta Chert Carbon Capture and Sequestration, LA (DOE/EIS-0460)	4/11
14.	Abengoa 2.0 (DOE/EIS-0460)	5/11
13.	Abengoa Commercial Scale Carbon Capture/Storage, WV (DOE/EIS-0445)	6/10
12.	Texas Clean Energy Project (TCEP), Ector County, TX (DOE/EIS-0444)	6/10
11.	Hydrogen Energy Center's Integrated Gasification Combined Cycle Project, CA (DOE/EIS-0431)	11/07
10.	Measles Energy Project, Itasca County, MN (DOE/EIS-0382)	11/07
FOSSIL ENERGY		
9.	Storage and Management of Elemental Mercury (DOE/EIS-0423)	7/09
8.	Sanita Susana Field Laboratory Area IV, CA (DOE/EIS-0402)	10/07
7.	Disposal of Greater-Than-Class C Low-Level Radioactive Waste (DOE/EIS-0379)	7/02
6.	Tank Closure and Waste Management for the Hanford Site, Richland, WA (DOE/EIS-0391)	10/09
ENVIRONMENTAL MANAGEMENT		
5.	Programmatic EIS for Solar Energy Development (DOE/EIS-0403) (BLM co-lead agency)	5/08
ENERGY EFFICIENCY AND RENEWABLE ENERGY		
4.	Presidential Permit Application, Northern Pass Transmission LLC, (DOE/EIS-0459) (State of Hawaii co-lead agency)	6/10
3.	Hawaii Renewable Renewable Energy Wind Programmatic EIS (DOE/EIS-0447)	6/10
2.	Presidential Permit Application, Chongshan Hudson Power Transmission Line (DOE/EIS-0414)	2/09
1.	Transmission Line Permit Application, Energia Sierra Juarez (DOE/EIS-0463)	2/09



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August 10, 2015

William Cole Storm, Environmental Review Manager
Minnesota Department of Commerce
85 7th Place East, Suite 500
St. Paul, Minnesota, 55101

Re: Great Northern Transmission Line Project and Associated Facilities
PUC Docket Nos. ET015/TL-14-21
DOE/EIS 0499

Dear Mr. Cole,

On June 19, 2015, the Minnesota Department of Commerce (DOC) issued a Notice of Availability of Draft Environmental Impact Statement and request for public comments on the Draft Environmental Impact Statement (DEIS) relating to the route permit application by Minnesota Power for the Great Northern Transmission Line Project and Associated Facilities in Beltrami, Itasca, Koochiching, Lake of the Woods, and Roseau Counties Minnesota. The Minnesota Department of Transportation (MnDOT) has reviewed the DEIS regarding the proposed transmission line project and submits the following comments in response to the Notice.

Both the Blue, Orange, Blue/Orange routes and route segment options evaluated in the DEIS have a number of locations that either cross or run parallel to highways that are part of the state trunk highway system and the National Highway System. As previously stated in MnDOT's Scoping Letter dated August 14, 2014, MnDOT's policy seeks to permit utilities to occupy portions of the highway rights of way where such occupation would not put the safety of the traveling public or highway workers at risk or unduly impair the public's investment in the transportation system. The enclosed comments also provide input on specific impacts associated with the proposed project discussed in the DEIS.

MnDOT appreciates the opportunity to comment and commends the Applicants and the DOC for their communication efforts throughout this process. MnDOT wishes to participate in the development of the EIS so that it will contain a thorough evaluation of the effects various route proposals may have on the state transportation system. MnDOT's fundamental interest is to ensure that the EIS identifies and quantifies, to the extent possible, any impacts the proposed high voltage transmission line (HVTL) may have on the safety of the transportation system, the effectiveness of the operations or maintenance of the state trunk highway system, and any additional costs that may be imposed on the state trunk highway fund as a result of the location of the proposed HVTL.

MnDOT has adopted a formal policy and procedures for accommodation of utilities on the highway rights-of-way ("Utility Accommodation Policy"). A copy of MnDOT's policy can be found at <http://www.dot.state.mn.us/policy/operations/op002.html>.

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MnDOT's approach to the high voltage transmission lines ("HVTL") involved in the Applicants' proposal is to work to accommodate these HVTLs within or as near as feasible to the trunk highway rights of way, based on an evaluation of the specific locations to ensure that appropriate clearance is maintained to preserve the safety of the traveling public and highway workers and the effective operation of the highway system now and in the foreseeable future. MnDOT's Utility Accommodation Policy seeks to guide the balance between accommodation of utility operations in the highway rights of way and preserving the safe and efficient operation of the transportation system.

The provisions of the Utility Accommodation Policy are based on the framework of several interrelated state and federal laws that led to its creation. These comments will outline the legal and regulatory structure under which the Policy was adopted, and will then discuss the types of circumstances and concerns that must be considered when applying the Utility Accommodation Policy to a specific situation as MnDOT works to accommodate a utility in a highway right of way while preserving the safe and efficient operation of the highway. The comments will provide as much specific information as is possible at this time on locations where the HVTL routes proposed by Applicants in this application either cross or run parallel to the trunk highway system. Finally, these comments will discuss a few specific portions of the DEIS.

I. Legal Framework Applicable to MnDOT's Utility Accommodation Policy

MnDOT's policy regarding accommodation of utilities is governed by both federal and state statutes and regulations. These comments will first describe the primary federal laws and then the state laws

A. Applicable Federal Laws

Certain highways in Minnesota are part of the National Highway System, which is established under 23 U.S.C. §103. The National Highway System and the Dwight D Eisenhower National System of Interstate and Defense Highways (Interstate System) are together known as the Federal-aid System. 23 U.S.C. §103(a). See also 23 CFR Part 470. In addition to the highways on the National Highway System, other highways also receive federal funding. Together, the highways in the National Highway System, the Interstate System, plus the other highways that receive federal funding are known as "Federal-aid highways." 23 CFR §470.103. Any of the highways in Minnesota that are potentially impacted by the Great Northern Transmission Line route proposal could be Federal-aid highways.

Congress articulated the transportation policy of the United States in 23 U.S.C. §101(b). Among other things, Congress noted that "it is in the national interest to preserve and enhance the surface transportation system to meet the needs of the United States for the 21st Century," that "the current urban and long distance personal travel and freight movement demands have surpassed the original forecasts and travel demand patterns are expected to continue to change," and that "special emphasis should be devoted to providing safe and efficient access for the type and size of commercial and military vehicles that access designated National Highway System intermodal freight terminals." 23 U.S.C. §101(b)(3)(A), (B) and (E).

Federal law requires that "The real property interest acquired for all Federal-aid projects . . . shall be adequate for the construction, operation, and maintenance of the resulting facility and for the protection of both the facility and the traveling public." 23 C.F.R. §710.201(e). In



addition, all real property that is part of the Federal-aid highway system must be devoted exclusively to highway purposes unless an alternative use is permitted by federal regulation or the Federal Highway Administration ("FHWA"). This basic proposition is stated in 23 C.F.R. §710.403, which provides:

"(a) The [State Transportation Department] must assure that all real property within the boundaries of a federally-aided facility is devoted exclusively to the purposes of that facility and is preserved free of all other public or private alternative uses, unless such alternative uses are permitted by Federal regulation or the FHWA. An alternative use must be consistent with the continued operation, maintenance, and safety of the facility, and such use shall not result in the exposure of the facility's users or others to hazards."

Similarly, 23 C.F.R. §1.23 restricts use of the highway right of way unless otherwise permitted. This section provides:

"(a) Interest to be acquired. The State shall acquire rights-of-way of such nature and extent as are adequate for the construction, operation and maintenance of a project.

(b) Use for highway purposes. Except as provided under paragraph (c) of this section, all real property, including air space, within the right of way boundaries of a project shall be devoted exclusively to public highway purposes. No project shall be accepted as complete until this requirement has been satisfied. The State highway department shall be responsible for preserving such right of way free of all public and private installations, facilities or encroachments, except (1) those approved under paragraph (c) of this section; (2) those which the Administrator approves as constituting a part of a highway or as necessary for its operation, use or maintenance for public highway purposes and (3) informational sites established and maintained in accordance with Sec. 1.35 of the regulations in this part.

(c) Other use or occupancy. Subject to 23 U.S.C. 111, the temporary or permanent occupancy or use of right of way, including air space, for nonhighway purposes and the reservation of subsurface mineral rights within the boundaries of the rights of way of Federal-aid highways, may be approved by the Administrator, if he determines that such occupancy, use or reservation is in the public interest and will not impair the highway or interfere with the free and safe flow of traffic thereon."

(Emphasis added.)

Federal law recognizes accommodating the placement of utility facilities as a permissible exception to the general mandate that all of a highway right of way, including the air space above the right of way, must be used solely for highway purposes. Section 109(i) of Title 23 of the U. S. Code provides:

"(1) In determining whether any right of way on any Federal-aid highway should be used for accommodating any utility facility, the Secretary shall—

- (A) first ascertain the effect such use will have on highway and traffic safety, since in no case shall any use be authorized or otherwise permitted, under this or any other provision of law, which would adversely affect safety;
- (B) evaluate the direct and indirect environmental and economic effects of any loss of productive agricultural land or any impairment of the productivity of any



agricultural land which would result from the disapproval of the use of such right of way for the accommodation of such utility facility; and
 (C) consider such environmental and economic effects together with any interference with or impairment of the use of the highway in such right of way which would result from the use of such right of way for the accommodation of such utility facility."

The U.S. DOT has implemented this statutory directive by adopting the rules relating to accommodation of utilities found at 23 C.F.R. Part 645, Subpart B. These regulations require that each state transportation department submit its policies for accommodating utilities within highway rights of way to the FHWA. 23 C.F.R. §645.215(a). See also 23 C.F.R. §645.209(c). The FHWA will approve the policy upon determination that it is consistent with federal statutes and regulations, and any changes to the policy are also subject to FHWA approval. 23 C.F.R. §645.215(b) and (c). Once a state's policy has been approved by the FHWA, the state transportation department can approve requests by a utility to use or occupy part of the right of way of a highway that is part of the Federal-aid highway system if the request is encompassed by that policy. Exceptions to the policy can be granted, but if a state proposes to grant to a utility an exception to its utility accommodation policy, the exception is subject to review and approval by the FHWA. 23 C.F.R. § 645.215(d). This may be considered a federal action which would need to meet all requirements of the National Environmental Policy Act (NEPA). 42 U.S.C. §4321 et seq., to be in conformance with federal regulations.

B. Applicable Minnesota Laws

In addition to these federal laws, MnDOT's policy on utility accommodation must also conform to laws of the State of Minnesota. Article 14 of the Minnesota Constitution establishes the state trunk highway system. It also establishes "a trunk highway fund which shall be used solely for the purposes [of constructing, improving and maintaining the trunk highway system]." Minn. Const. Art. 14, §5. Under Minn. Stat. §161.20, the Commissioner of the Department of Transportation is charged with the responsibility to carry out the directive of Article 14 to construct, improve and maintain the trunk highway system, subject to the directive that trunk highway funds may be used only for trunk highway purposes.

Minnesota has several statutes relating to use of highway rights of way by utilities. Minn. Stat. §222.37, Subd. 1, provides in part:

"Any . . . power company . . . may use public roads for the purpose of constructing, using, operating, and maintaining lines . . . for their business, but such lines shall be so located as in no way to interfere with the safety and convenience of ordinary travel along or over the same; and in the construction and maintenance of such line . . . the company shall be subject to all reasonable regulations imposed by the governing body of any county, town or city in which such public road may be."

Minn. Stat. § 161.45 provides additional obligations for utility facilities occupying portions of a trunk highway right of way. Section 161.45, Subd. 1 provides in part:

"Electric transmission . . . lines . . . which, under the laws of this state or the ordinance of any city, may be constructed, placed or maintained across or along any trunk highway . . . may be so maintained or hereafter constructed only in accordance with such rules as

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As discussed in Section 1.3.3, the Applicant will work with MnDOT to obtain necessary permits once a final route is selected.

No changes are made to the EIS in response to this comment.

may be prescribed by the commissioner who shall have power to prescribe and enforce reasonable rules with reference to the placing and maintaining along, across, or in any such trunk highway of any of the utilities hereinbefore set forth.

Subdivision 2 of §161.45 specifies the general rule that if the relocation of a utility placed in a trunk highway right of way is necessitated by a construction project on the trunk highway, the utility bears the costs associated with the relocation of its facility. However, if a utility facility is located on the Interstate System, then the cost of relocation of such facility is to be paid out of the state Trunk Highway Fund. See Minn. Stat. § 161.45.

Minnesota Rules part 8810.3100 through 8810.3600 contain rules relating to placement of utility facilities in trunk highway rights of way. Under part 8810.3300, a utility must obtain a permit for any construction or maintenance work in a trunk highway right of way. In addition, Subp. 6 of part 8810.3300 requires that, except for the negligent acts of the state, its agents and employees, the utility shall assume all liability for and save the state harmless from any and all claims arising out of the utility's work and occupation of a portion of the trunk highway right of way.

C. MnDOT's Utility Accommodation Policy

MnDOT has adopted a policy statement regarding the circumstances and methods under which it will grant permits to utilities to occupy a portion of a trunk highway right of way. MnDOT's Utility Accommodation Policy is in conformance with the federal and state statutes and regulations described above, and is also consistent with the American Association of State Highway and Transportation Officials (AASHTO) publications, A Guide for Accommodating Utilities Within Highway Right of way and A Policy on the Accommodation of Utilities Within Freeway Right of way. MnDOT's Utility Accommodation Policy has been reviewed and approved by FHWA under 23 CFR §645.215(b). Therefore, with respect to Federal-aid highways, further review and approval by the FHWA is required for MnDOT to grant an exception to the general application of the Policy, but FHWA review and approval is not necessary for permits granted within the scope of the Policy.

MnDOT's Utility Accommodation Policy recognizes that it is in the public interest for utility facilities to be accommodated on highway rights-of-way when such use would not interfere with the flow of traffic and safe operation of vehicles or otherwise conflict with applicable laws or impair the function of the highway. The Policy applies to all utilities, both public and private. Therefore it speaks in somewhat generic terms to cover as many anticipated situations as possible.

II. Overview of Transportation-Related Impacts of HVTLs on Trunk Highways

The preferred and alternate routes proposed by the Applicants in this matter either cross over or run parallel to trunk highways in a number of locations. When a route is ultimately selected by the Minnesota Public Utilities Commission (MPUC), the Applicants will need to obtain a valid permit from MnDOT in any location where the HVTL will occupy any portion of the highway right of way. It is acknowledged that the Applicant states multiple times that the potential impacts to the state transportation system will be limited, short-term and localized.

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In anticipation of the time when the Applicants will submit applications for permits after a final route is selected, MnDOT has engaged in an ongoing dialogue with representatives of the Applicants and the DOC in an effort to identify information that will be needed to assess the permit applications and, to the degree that specificity is possible at this stage of the proceedings, areas where specific concerns will need to be addressed along various potential route/alignment scenarios. MnDOT believes these discussions have been beneficial for all participants. The discussions have been challenging due to the large number of locations where the proposed HVTL routes and the trunk highways potentially intersect, the variety of unique circumstances that exist along each of these potential locations, and the number of unknowns and uncertainties surrounding the selection of the actual locations where the Applicants will eventually apply for permits from MnDOT.

One of the concepts that has been discussed with the Applicants and the DOC is the importance of recognizing that highway rights of way do not have a uniform width. The width of the right of way, and the distance from the centerline of the roadway to the boundary of the right of way, varies from highway to highway, and even from mile to mile along a given highway. The reasons for this variability are many, and include considerations such as the time when the right of way was purchased, the topography and geology of the area, the negotiations with the individual landowners from whom the right of way was acquired, and the timing and nature of changes and upgrades to the highway that have occurred over the years.

Therefore, a uniform policy that an HVTL can safely be located "X" feet or "Y" feet outside the highway right of way boundary line generally does not work well. A two-dimensional map does not provide sufficient information to determine a suitable alignment for a HVTL. Rather, MnDOT's approach is to evaluate the type of activities that regularly occur on and along highways. These activities can be evaluated in three groups – (a) traffic that uses a highway, (b) maintenance, repair and related activities and structures associated with the ongoing operation of the highway, and (c) construction activities that are likely to occur in the foreseeable future. These functions or uses of the highway each have a zone – i.e., a height and width – in which they take place either along the roadway surface or in the ditches, near bridges, intersections or interchanges where the maintenance and construction activities take place.

Once the zones of these recurring highway activities are identified, a safety buffer zone from the location of the energized wires of the HVTLs must be applied. The Occupational Safety and Health Administration (OSHA) and the National Electric Safety Code (NESC) can provide guidance on the safety clearances for activities near various voltages of HVTLs. The OSHA or NESC safety buffer should be applied between the zones of transportation activities and the location of the energized lines.

1. Traffic That Uses a Highway

Minnesota's trunk highways are designed to facilitate both personal travel and the distribution of freight throughout the state. Pursuant to Minn. Stat. §§169.80 and 169.81, vehicles that do not exceed 13 feet 6 inches in height and 8 feet 6 inches in width can be operated on Minnesota's highways without a permit. Vehicles with larger dimensions, excluding farm vehicles, must obtain a permit. On average, MnDOT has issued tens of thousands of permits each year for oversize vehicles to operate on state trunk highways. These do not include oversize farm machinery (which do not require a permit) nor movements of houses or other buildings such as

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As discussed in Section 2.13 and Section 5.2.1.6, the Applicant will work with MnDOT to obtain necessary oversize permits.

No changes are made to the EIS in response to this comment.

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0187-2
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grain bins. The number of building moves varies between 400 and 600 per year. Of the oversize vehicle permits issued, some were for vehicles over 18 feet 5 inches high. An example of the type of oversize loads frequently transported over trunk highways are the blades, base sections and nacelles used in constructing wind turbines.

In addition to freight and building moves, other traffic on the roadway portion of trunk highways includes such activities as snowplows, which operate on both the roadway and the shoulder. Snowplows are about 13 feet tall, and when their boxes are raised to distribute sand and salt, their height can reach as high as 18 feet.

2. Maintenance, Repair and Operational Activities

In addition to the zone associated with traffic traveling on a highway, there is another zone associated with maintenance and operational activities alongside the roadways. Examples of maintenance activities performed by highway workers, and the types of equipment commonly associated with those activities, include the following:

- guardrail and fence installation and repairs, using augers, loaders and skidsteers (which commonly have raised buckets for pulling posts, etc.)
- vegetation control, using mowers, bucket trucks for tree trimming, and equipment for applying herbicides.
- cleaning ditches, culverts and drains, using backhoes and excavators of various sizes that have boom arms that are used to scoop dirt and vegetation and deposit it into a dump truck that will be parked alongside the highway. MnDOT's larger ditch dredging equipment has a horizontal reach as long as 60 feet and a vertical operating dimension of up to 47 feet.
- vehicular accidents on highways often require special equipment to retrieve vehicles and repair damage. For example, when large vehicles such as trucks or buses run off the road or go down large ditches or into wetlands, large equipment with booms or winches may be used to pull them out.
- bridge inspections, using snoopers which have articulating arms that can lift a worker out over the side and then underneath the bridge structure.

Occasionally there is a need for immediate medical transport from roadside locations due to accidents and illnesses. For these situations there are a number of air medical helicopters stationed throughout Minnesota that will land in the roadside environment. These aircraft require clear approach and departure paths as well as an area large enough for the helicopter to land. Given the dimensions of the helicopters used in Minnesota, an area with a diameter of 90 feet should be considered the minimum requirement for landing. There should be two approaches to this area from different directions separated by an arc of at least 90° so that the aircraft can land and take off without a tailwind. Powerlines can be a particularly difficult obstruction for helicopter landings at night. The lines themselves are nearly invisible to the pilot, who must use the presence of poles as evidence that the lines exist. Most helicopters operating in this environment have line cutters installed on the aircraft to cut powerlines they encounter.

Even so, helicopter crashes occur when powerlines get entangled in their rotor system or landing gear.

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Thank you for providing information on the MnDOT maintenance and operational activities along roadways. Once a route is selected, the Applicant will work with MnDOT to ensure that medical helicopters are able to safely land in the vicinity of the proposed Project and that physical structures maintained by MnDOT are not affected.

0187-3
No changes are made to the EIS in response to this comment.

0187-3
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0187-4

MnDOT also maintains a number of structures alongside highways necessary for the safe and efficient operation of the highway, each of which requires periodic installation, maintenance and repair work. Examples of these structures include:

- road signs. The largest signs tend to be on freeways. Signs that extend out over the travel portion of a freeway must have 17.33 feet of clearance to the bottom of the sign, and the top of such signs can be 30.5 feet tall and may require boom trucks, bucket trucks or cranes to install or maintain such signs. Roadside guide signs along freeways can reach 13 feet tall and tend to be located as far out in the clear zone as practical.
- light posts, traffic control signals and poles for traffic monitoring cameras exist at various locations along highways, and range in height from 20 to 50 feet.
- high mast light towers are used along some freeways, and range in height from 100 to 140 feet.
- noise walls, which can be up to 20 feet high, are becoming increasingly common along freeways.

Another type of physical item located along highways is snow fences, either structural or living. Some snow fences are in the highway right of way, and others are placed by agreement with adjoining landowners and may be 150 feet off the highway right of way. MnDOT is usually able to work out arrangements with a utility owner regarding height and placement of vegetation used as a living snow fence in locations where a utility is placed. If living snow fences owned by MnDOT need to be removed or relocated to accommodate a utility placement, compensation for the removed vegetation is usually required as a condition for issuance of the permit.

3. Future Construction Activities

MnDOT continually evaluates the future needs for the trunk highway system and has construction projects in varying stages of development. Some have been designed and funded and are ready for construction. Others have been identified as needed or are anticipated due to development trends but have not yet been funded. The types of construction projects MnDOT performs that could be impacted by the location of a HVTL range from relatively minor changes to the width of a highway to major reconstruction projects. Examples of such construction projects might include:

- widening a roadway by addition of travel lanes or turn lanes, installation of a roundabout, or widening a shoulder area;
- rebuilding a highway in a way that changes the location or grade of a roadway; and
- addition of an overpass or interchange on a freeway or other highway.

In addition to changes in the configuration of a highway, consideration must be given to the equipment used during the construction process. Construction projects often involve the use of large excavators and cranes similar in size to the equipment described above which MnDOT uses for its maintenance activities. The equipment used in bridge work is especially large, usually requiring cranes with long booms to lift material into place. The equipment used on construction projects also needs to be refueled at the job site, which requires consideration of the safety precautions necessary for this procedure.

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Should MnDOT construction activities be necessary in the future that would require relocation of transmission line structures from the proposed Project, the Applicant would be responsible for the costs associated with the relocation (See Section 5.2.1.6). Identifying potential costs for future relocation activities are beyond the scope of this EIS.

No changes are made to the EIS in response to this comment.

0187-4

The activities associated with vehicular traffic using the roadway surface have a zone in which they typically occur. In addition to evaluating these zones of activity, MnDOT will also consider factors such as the width of the right of way, the topography of the land and the geometry of the roadway in a specific location when assessing the suitability of that location for an HVTL to occupy a portion of a highway right of way.

Location of a HVTL in close proximity to a highway right of way limits future expansion or reconstruction of highways due to the complex and extremely costly nature of either moving the transmission lines or moving the path of the highway. In order for the Minnesota Public Utilities Commission to make a fully-informed selection of a route based on all the pros and cons of the various alternatives, these costs should be recognized and evaluated in the EIS evaluation of the impacts of the proposed routes. The EIS should include an evaluation of the risk of trunk highway funding liabilities, and the potential magnitude of such liabilities, that may be imposed on the Trunk Highway Fund resulting from various proposed alignments along trunk highway rights-of-way.

III. Routes, Route Segment and Route Variation Proposals

In applying its Utility Accommodation Policy to a permit application, MnDOT must evaluate each proposed pole location individually in relation to the topography of the land, the geometry of the roadway, the width of the highway right of way, the design of the HVTL structures, and other factors. Given the variability of these factors and the large number of potential locations, MnDOT is not able to provide specific answers at this time about whether it can grant permits for the potential locations where the various route proposals intersect with highway rights of way. As referenced earlier, MnDOT's approach to the Applicants' proposal is to work to accommodate these HVTLs within or as near as feasible to the highway rights of way, based on an evaluation of the specific locations to ensure that appropriate clearance is maintained to preserve the safety of the traveling public and highway workers and the effective operation of the highway system now and in the foreseeable future.

To the degree that specificity is possible at this stage in the process, MnDOT will provide additional information about the locations proposed in the routes involved in the Applicant's proposals.

A. Highway Crossing Locations Proposed by the Applicants

The Applicant's preferred and alternate route proposals contain over 15 locations where the proposed HVTLs would cross over a trunk highway, as distinguished from circumstances where it would run parallel to the highway.

Highway crossings generally do not pose insurmountable difficulties in issuing a permit. MnDOT routinely grants such permits to a variety of types of utilities. These permits usually have conditions associated with them, such as placement of the poles so that they do not become a physical obstruction that might be struck by an errant vehicle or block the visibility of traffic. MnDOT also does not permit utilities to run diagonally across intersections, and prefers that crossings occur as close to right angles as possible. Special handling may be required for crossings of scenic byways. MnDOT has a long history of working with utilities, including the Applicants, to establish appropriate conditions in locations where the utility seeks to cross a trunk highway. With the locations proposed by the Applicants in this matter, MnDOT does not

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0187-5

The Applicant will work with MnDOT to ensure the proposed Project complies with the Utility Accommodation on Highway Right of Way requirements set forth in the MnDOT Utility Accommodation and Coordination Manual.

No changes are made to the EIS in response to this comment.

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0187-6

B. Locations Parallel to Highway Rights of Way Proposed by the Applicants

Section 5.2.1.6 of the DEIS identifies the locations where each of the various potential routes under consideration run parallel to or cross highways and roads. Some of the locations identified are roads or streets maintained by local highway authorities and are not part of the trunk highway system for which MnDOT is the responsible highway authority. The highway locations identified in the DEIS that are part of the trunk highway system over which MnDOT has jurisdiction include MN 1, MN 6, MN 11, MN 38, MN 46, MN 65, MN 72, MN 89, MN 217, MN 308, MN 310, MN 313, US 2, US 71 and US 189.

IV. Specific Comments on Matters Discussed in the DEIS

Although MnDOT cannot at this time state with specificity where permits might be granted for each of the locations listed above, there are a few situations where some additional information can be provided that would assist in the development of the EIS.

Section 2.12.1.1 Transmission Line Maintenance and Operation. On page 40, the DEIS discusses the maintenance and inspection of the transmission line that will be necessary during the life of the structures. The EIS should note that in any locations where the Applicants seek to gain access to the HVTL from a trunk highway for these purposes, or trim vegetation in a trunk highway right of way; they will need to coordinate these activities with MnDOT's Roadside Vegetation Management Unit and obtain any necessary approvals for these activities.

Section 5.2.1.6 – Roadways and Railways in the ROI. Railroads that could be affected by a HVTL route application should be part of the discussions to identify impacts of the proposed routes. Where a proposed HVTL may parallel highway rights of way and there is an existing freight railroad right of way adjacent to the highway, there may not be enough room for construction of the transmission lines outside of the clear zones for both the railroad and the highway. The clear zone is an area that must be free from obstructions or other hazards. The railroads may also have concerns with overhead crossings in their right of way, gate clearances, foundations, and electrical buildup on the rails.

General Impacts, Construction Impacts and Operation, Maintenance, and Emergency Repair Impacts. PUC route permit conditions should include mitigation measures relating to any short term impacts to roadways including but not limited to; temporary closing of roadways, traffic delays, halting of construction for traffic and train accommodation, physical damage to roadways, right of way restoration, temporary MnDOT land access and proper Oversized/Overweight permitting.

Section 5.2.1.9 Recreation and Tourism. On page 140, the DEIS identifies the scenic byways impacted by the routes under considerations – i.e., MN 11, MN 38, and MN 46. Scenic byways are designated because they possess one or more of six intrinsic qualities, including scenic, cultural, recreational, natural, historic and archaeological. An analysis of the physical and visual impact on these intrinsic qualities should be conducted at each proposed crossing location to determine the route with the least adverse impact on the byway routes and corridors. Mitigation

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0187-6
Thank you for the clarification regarding trunk highways that are under MnDOT's jurisdiction, as discussed in Section 5.2.1.6. No changes are made to the EIS in response to this comment.

0187-7
Information regarding coordination between the Applicant and MnDOT for access to the transmission line from a trunk highway is included in Section 2.12.1 of the EIS.

0187-8
Coordination with rail operators is discussed in Section 5.2.1.6. The Applicant will ensure that the proposed Project does not affect the clear zones or any railway operations.

No changes are made to the EIS in response to this comment.

0187-9
Applicant Proposed Measures to minimize impacts would be potential MN PUC permit conditions and are discussed in Section 2.13. Further, MN PUC permit conditions will require the Applicant to coordinate with the MnDOT to ensure the proposed Project complies with the Utility Accommodation on Highway Right of Way requirements set forth in the MnDOT Utility Accommodation and Coordination Manual.

No changes are made to the EIS in response to this comment.

0187-10
Proposed routes and variations cross three scenic byways at a total of five locations for the proposed Project. Detailed analyses of the visual impacts at all five locations where a route variation crosses a scenic byway have not been prepared as part of the Draft EIS. However, detailed analyses and visual simulations were prepared for three route crossings at two scenic byways: Waters of the Dancing Sky Scenic Byway (State Route 11) and Edge of the Wilderness Scenic Byway (State Route 38). These analyses are

0187-5
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0187-10

included in Sections 6.2.2.1 and 6.3.6.1 respectively, and visual simulations for these crossings are included in Appendix N, Photo Simulations. The EIS analyzes the contrast produced by the transmission line crossing at these locations. For the two viewpoints for the Waters of the Dancing Sky Scenic Byway (State Route 11), the Draft EIS concludes that the transmission line "would not substantially diminish the visual character or quality of views in this area of the scenic byway." For the viewpoint for the Edge of the Wilderness Scenic Byway (State Route 38), the EIS concludes that the transmission line "would interrupt views of the otherwise natural character of the forest landscape in this area of the scenic highway and diminish the aesthetic quality for viewers with high viewer sensitivity." These analyses and visual simulations are intended to describe and illustrate typical views of the transmission line crossings of scenic byways to provide reviewers with representative examples of what the proposed project would look like at these and the other two locations.

For locations where a proposed route or variation crossing of a scenic byway results in a visual impact, it may be possible to minimize or mitigate the impact by adjusting the alignment to cross perpendicular to the scenic byway (as is currently proposed by the Applicant), micro-siting structure positions to locate them as far as possible away from the edges of the highway, darkening the finish on structures to reduce color contrast, using non-specular conductors, and/or feathering vegetation edges of cleared rights-of-way in the vicinity of the highway to reduce contrast.

Once the proposed Project route is selected, the Applicant will coordinate with the affected scenic byway leaders' group and/or stakeholder group in order to identify any specific measures that may be employed to minimize visual impacts and identify any prohibitions or limitations associated with scenic easements in the vicinity of scenic byway crossings.

No changes are made to the EIS in response to this comment.

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measures should be recommended for unavoidable impacts on intrinsic qualities within the byway corridors. Each scenic byway has a leaders' group and/or stakeholder group which should be contacted as part of the environmental review process. Scenic easements should be investigated to identify any prohibitions or limitations that apply to land uses in the vicinity of the scenic byway.

Finally, MnDOT wishes to underscore the importance of preserving sufficient flexibility for MnDOT to work with the applicant to determine an appropriate specific location for each pole to be placed along a trunk highway right of way. As the selection of the final route is made, in all locations where the route will cross or run parallel to a trunk highway it is imperative that the designated route be sufficiently wide so that MnDOT and the applicant can work collaboratively to address the circumstances at each location and determine a specific alignment that can be permitted consistent with the considerations described in this letter.

MnDOT has a continuing interest in working with the DOC to ensure that possible impacts to highways and other transportation infrastructure are adequately addressed. We appreciate the opportunity to provide these comments. Please feel free to contact me if you have any questions regarding the information provided.

Sincerely,


Stacy Kotch
Utility Transmission Route Coordinator
Minnesota Department of Transportation

cc: Stephen Frisco – MnDOT District 2A Permits
Darren Laesch – MnDOT District 2 Planning Director
Earl Hill – MnDOT District 2B Permits
Wayne Scheer – MnDOT District 1 Permits

0187-11
Applicant Proposed Measures to minimize impacts would be potential MN PUC permit conditions and are discussed in Section 2.13. Further, MN PUC permit conditions will require the Applicant to coordinate with the MnDOT to ensure the proposed Project complies with the Utility Accommodation on Highway Right of Way requirements set forth in the MnDOT Utility Accommodation and Coordination Manual.

No changes are made to the EIS in response to this comment.

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United States Department of the Interior

FISH AND WILDLIFE SERVICE

5600 American Boulevard West, Suite 990
Bloomington, Minnesota 55437-1458



IN REPLY REFER TO:

FWS/R3/ER15-306

AUG 10 2015

Ms. Julie Ann Smith, Environmental Protection Specialist
Office of Electricity Delivery and Energy Reliability (OE-20)
U.S. Department of Energy
1000 Independence Avenue S.W.
Washington, D.C. 20585

Dear Ms. Smith,

The Fish and Wildlife Service (Service) thanks the Department of Energy (DOE) for the opportunity to comment on the Draft Environmental Impact Statement for the Great Northern Transmission Line (GNTL, DOE/EIS 0499). The Service has been closely involved in this project for several years providing technical assistance regarding impacts of this project on important wildlife, resources, and habitat. The Service has submitted four letters to date on this project:

- March 4, 2014: From the Service to the Minnesota Department of Commerce.
- July 1, 2014: From the Service to Minnesota Power (the Applicant).
- August 11, 2014: From Department of Interior (Office of Environmental Policy and Compliance) to DOE (electronically submitted as a draft letter by the Service to DOE November 20, 2014 and again as a signed letter by the Service to DOE July 22, 2015 due to a clerical error).
- August 14, 2014: From the Service to DOE.

In all of these letters, the Service has stated that the GNTL (both construction and long-term use) has the potential to impact Service interest lands, threatened, endangered, or species of concern, migratory birds, bald and golden eagles, wetlands, and wildlife habitat. The Service has emphasized avoidance and minimization of impacts to these resources, as well as appropriate mitigation for impacts that cannot be practicably avoided. The Service continues to stand by these previous comments and recommendations. This letter serves to outline the Service's recommendations on route selection, alignment modification, and additional comments on avoiding and minimizing impacts to migratory birds, listed species, and wetland/vegetation resources. The Service has additionally included a path forward for minimization and mitigation of potential impacts to Service interest lands. The Service makes these recommendations pursuant to the National Wildlife Refuge

Dr. Julie Ann Smith, Environmental Protection Specialist

2

Administration Act (NWRA), Endangered Species Act (ESA), Migratory Bird Treaty Act (MBTA), Executive Order (E.O.) 13186, Department of Energy's Migratory Bird Program Partnership Agreement, Bald and Golden Eagle Protection Act (BGEPA), Federal Aid in Wildlife Restoration Act (Pittman-Robertson Act), Federal Aid in Sport Fish Restoration Act (Dingell-Johnson Act), and Fish and Wildlife Act of 1956.

Route Recommendation and Avoidance of Service Interest Lands

The Service administers numerous tracts within the proposed GNTL routing options as part of the National Wildlife Refuge System (NWRS). Service administered and managed lands are acquired for the preservation of wildlife and their habitats. As stated in previous letters (see above), preservation and avoidance of impact to Service interest lands is one of the Service's highest priorities. The Service is supportive of both route alternatives and alignment modifications that maximize avoidance of Service interest lands. The Service favors a weighted tiered approach of avoidance, minimization, and mitigation of impacts.

The Service recommends the following routes and alignments be chosen for the final route selection:

- In the West section of the project, the Service recommends the selection of the Cedar Bend WMA variation, Hop 2 and the Beltrami North Central Variation 4. The Service believes the combination of these variations is the least impactful option with respect to wildlife, wetland, and forestry resources, as compared to the Applicant's preferred route outlined in the DEIS. Additionally, these variations will completely avoid all refuge impacts in the Western Section of this project. Our reasoning is as follows:
 - The Service prefers the Cedar Bend WMA Variation because:
 - It completely avoids Service interest lands and state Wildlife Management Areas (the Applicant-proposed route impacts 6 acres of Service Lands).
 - It impacts less state forest land and wetlands, fewer sites identified by the Minnesota Department of Natural Resources (MN DNR) as having Biodiversity Significance, High Conservation Value Forests, or Native Plant Communities, and fewer wildlife resources.
 - The impacts to listed species are similar to the Applicant's preferred route.
 - This variation will result in an overall shorter route and can be built within an existing ROW.
 - The Service prefers the Beltrami North Central Variation Routes 4 because:
 - It completely avoids Service interest lands (the Applicant-proposed route impacts 18 acres).
 - It impacts fewer rare (plant) species, fewer sites of Biodiversity Significance, fewer overall impacts to forestry, vegetation, wildlife, shrub wetlands, and rare features.

0188-2

Dr. Julie Ann Smith, Environmental Protection Specialist

Continued

- It impacts less State Forest and State Fee lands.
 - It impacts a similar (but slightly higher) acreage of National Wetland Inventory (NWI) Wetlands (305 vs. 272 acres of the Applicant-proposed route).
 - It can be built within the existing ROW (except for <1 mile stretch).
 - Impacts to federally listed wildlife resources are similar.
 - The Service acknowledges these variations will result in a slightly longer transmission line and will have a greater impact to water resources. Additionally, slightly more emergent and forested wetlands will be impacted (28 and 169 vs. 23 and 119 acres respectively).
- The Service then recommends adoption of the blue route (where Beltrami North Central Variation 4 connects to the Blue Route).
 - In the Central Section of the project the Service recommends utilization of the Silver Creek WMA Alignment Modification to avoid Service interest lands (specifically the parcel located T-160, R-30, S-27). The Service acknowledges this would create a new ROW and possible habitat fragmentation, but prefers this option to expanding the existing ROW on Service lands.
 - The Service then recommends the Blue Route be followed to the terminus of the project.

These recommendations by the Service should be considered our strongest recommendation and highest priority; not just one in a series of equally weighted options.

Should the above recommendations not be chosen for the final route selection, the Service recommends the following:

- In the West Section: Should the Cedar Bend WMA variation and the Beltrami North Central Variation 4 not be selected, the Service recommends examining the side-by-side comparison of the preferred route with the Beltrami North Variations 1&2, and the preferred route with the Beltrami North Central Variations 1, 2, 3, and 5 (detailed in the DEIS) to determine the least environmentally impactful alternative. Consideration should be given to existing ROW corridors as well as minimization of impact to wetland and forest resources.
- In the Central Section: If the Orange Route is selected as the final route, the Service recommends examining the side-by-side comparison of the proposed Orange Route and the Beltrami South Central and Beltrami South variations to determine the least environmentally impactful alternative. Consideration should be given to existing ROW corridors as well as minimization of impact to wetland and forest resources.
- In the Central Section: If the Orange Route (with the J2 Segment Option) is selected as the final route, the Service recommends the adoption of the Northholm Variation to avoid impacts to Service interest lands. Because neither the J2 Segment nor the Northholm variation parallel existing corridors, the Service would prefer the Service lands not be impacted.

0188-2
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0188-3

The Applicant will work with USFWS to determine the mitigation necessary for the route that will be selected by the MN PUC.

No changes are made to the EIS in response to this comment.

Dr. Julie Ann Smith, Environmental Protection Specialist

4

0188-3

If it is determined that the Applicant's preferred alternative is the least environmentally impactful option, the Service expects continued coordination with the Applicant to avoid refuge lands within the larger corridor (alignment modifications). If alignment modification within the larger corridor still results in impacts to refuge resources, the Service expects continued coordination with the Applicant to identify, avoid, and minimize impacts to the most sensitive resources within refuge properties through construction and maintenance measures.

As stated in previous letters, any impact to Service interest lands must be mitigated. Please note that mitigation of impacts to Service interest lands will be separate from any mitigation for impacts to listed species, important wildlife resources, and migratory bird resources. The Service lays out the following timeframe, expectations, and requirements for mitigation of impacts to Service interest lands.

Mitigation must result in a net benefit with regard to resources impacted. The Service expects that off-site converted habitat (i.e., wetlands, forests, and grassland that have been converted into agricultural areas) be purchased, restored, and donated (or set into a perpetual easement). These lands will become part of the Service's National Wildlife Refuge System upon acceptance by the Service. Restored parcels must be off-site of areas where impact occurs, but should be in close proximity to existing Service properties. Additionally, mitigation should be in the form of large, contiguous parcels rather than many small isolated parcels. The Service can assist in locating suitable properties. The Service recommends the Applicant closely coordinate with refuge staff on the evaluation of suitable mitigation sites with potential to meet habitat mitigation requirements, before proceeding with acquisition and restoration efforts.

The Service understands that mitigation of impacts to Service interest lands (including assessing impacts and location, acquisition, restoration, and donation of land for mitigation) may take additional time and may lag behind the construction schedule of the GNTL. However, the Service expects that mitigation efforts will closely parallel other construction efforts and be completed in a timely manner. Therefore, should the applicant's preferred final route of the GNTL affect Service interest lands, the Service is prepared to grant a provisional special use permit to authorize construction and accommodate the GNTL's schedule. A final ROW permit will be granted after mitigation for impacts to Service interest lands has been completed and accepted by the Service. Please be aware that issuance of the special use permit authorizes construction activities only. Approval of additional special use permits by the refuge will be required by the Applicant for all activities that occur after the initial construction period or until the ROW is granted. A compatibility determination (by the Service) and dedication of the funds (by the Applicant) must be completed before the provisional special use permit is granted. The ROW request process was laid out in the Service's letter on July 1, 2014, as well as in an email dated March 26, 2015. Additionally, the Service is available to help the Applicant begin this process.

Section 5.3.4.3 of the EIS is updated to include information on Executive Order 13186 and the MOU between USFWS and DOE.

Dr. Julie Ann Smith, Environmental Protection Specialist

Migratory Bird Impacts

The Migratory Bird Treaty Act (MBTA) prohibits taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests, except when specifically authorized by the Department of the Interior. Bald and golden eagles are afforded additional legal protection under the Bald and Golden Eagle Protection Act (BGEPA, 16 U.S.C. 668-668d). Executive Order (E.O.) 13186 (“Responsibilities of Federal Agencies to Protect Migratory Birds”) was signed in January of 2001. Its purpose is to further the purposes of the migratory bird conventions, the MBTA, the BGEPA, the Fish and Wildlife Coordination Act, the Endangered Species Act (ESA), the National Environmental Policy Act (NEPA), and other pertinent statutes.

As called for in E.O. 13186, a Memorandum of Understanding (MOU) between DOE and the Service was signed in 2013. Its purpose is to strengthen migratory bird conservation through enhanced collaboration between DOE and the Service, in coordination with state, tribal, and local governments. Under the MOU, DOE agreed to “Protect, enhance, and manage habitats of migratory birds, to the extent practicable,” including the following example: “When designing new projects, ensuring that they avoid important migratory bird habitats and otherwise avoid or minimize direct and indirect effects of new projects on migratory birds and their habitats, and when practicable and appropriate, restore and enhance bird habitat.” (Section E(1)).

The Service recommends avoidance, minimization, and mitigation of impacts to migratory birds and eagles. These impacts may include, but are not limited to: habitat alteration and destruction, take and disturbance, indirect impacts and collisions and electrocution. Where impacts cannot be avoided or fully minimized, the Service will seek compensatory mitigation for removed habitat which was used by either migratory birds (under E.O. 13186 and the 2013 MOU between DOE and the Service) or by listed species (under the ESA). The Service definition for mitigation is taken from NEPA regulations which includes, “(e) compensating for the impact by replacing or providing substitute resources or environments” (40 CFR, Section 1508.20).

The Service calculates mitigation for impacts to habitat for listed species and migratory birds using Habitat Equivalency Analysis (HEA). For a specific parcel of impacted habitat, the Service will only seek compensatory mitigation for listed species or migratory birds (i.e., there is no “double-dipping”). The Service strongly suggests the Applicant initiate contact to discuss the HEA analysis and mitigation for listed species and migratory birds as soon as possible to avoid construction delays. The Service also believes this issue needs to be resolved before a Final EIS can be completed and a permit issued.

The Service wishes to make the following specific comments on the DEIS with regards to migratory bird impacts:

0188-4

As discussed in Section 2.11.1 of the EIS, the Applicant would incorporate industry best practices to minimize impacts to migratory birds, which are consistent with the Avian Powerline Interaction Committee (APLIC’s) 2012 guidelines. In addition, the MN PUC Route Permit could require that the Applicant develop and implement an Avian Protection Plan. The Applicant would coordinate with the MnDNR and other appropriate agencies in the development of an Avian Protection Plan.

Dr. Julie Ann Smith, Environmental Protection Specialist

The Service has noted several contradictory statements in the DEIS regarding the protection and conservation of migratory birds:

1.2.4.3. *Although not formally subject to or part of an agency consultation process, take permits are not available under the MBTA.*

5.3.4.3 *The MBTA requires Federal agencies to consult with the USFWS to determine if an agency's proposed action would have, or is likely to have, measurable negative effects on migratory bird populations, and if so, to develop measures intended to avoid any negative effects on migratory birds.*

and

5.3.4.3 *The Federal Bald and Golden Eagle Protection Act require consultation with the USFWS to determine if a proposed project may have potential impacts on bald and golden eagles and, if applicable, to develop habitat conservation plans intended to avoid and minimize the project's impacts on the bald and golden eagles.*

Please note that responsibilities of federal agencies regarding the protection of Migratory Birds (including Bald and Golden Eagles) are outlined in E.O. 13186; and the implementation of this act is detailed in the MOU between DOE and the Service (2013).

1.2.4.3: *The Applicant, therefore, has proposed mitigation measures to minimize impacts on migratory birds.*

As discussed above, there exists a MOU between FWS and DOE to help protect migratory bird resources and to mitigate for impacts to those resources. The Service would like more information on the proposed mitigation measures the applicant has proposed, and strongly encourages the Applicant to initiate contact to discuss mitigation.

2.11.1.4. *Surveys would be conducted prior to vegetation removal to avoid impacts on nesting birds and to avoid active nest sites of sensitive species.*

The Service recommends conducting any clearing that may impact migratory birds outside of the breeding season. The Service can help with determination of these dates and applicable habitats.

2.11.1.4. *Appropriate construction windows would be incorporated into the construction schedule to minimize impacts on species such as bald eagle and goshawk in areas where these species are found to be present.*

The Service recommends the applicant incorporate distance buffers and daylight/temperature restrictions to avoid impacts to nesting raptors. Eagle disturbance permits may be available in cases where avoidance and minimization measures have been implemented and take is still unavoidable. Permits are available for eagle nest removal. However, the following conditions must be met:

1. The applicant must demonstrate that there is no practicable way to leave the eagle nest.
 2. The applicant must more than offset the loss of the nest.
- Eagle nest removal permits (other than for emergency reasons) often require additional time for pre-permit coordination (including tribal coordination) and processing.

0188-5

The Applicant will follow the APLIC guidance as possible during design and construction of the Project, as discussed in Section 2.11.1 of the EIS.

No changes are made to the EIS in response to this comment.

0188-4
Continued

0188-5

Dr. Julie Ann Smith, Environmental Protection Specialist

7

0188-5
Continued

2.11.1.4. *With regard to rare and unique species, USFWS first preference is to only allow the ROW to be cleared or moved in the fall or winter before the breeding season. If this is not possible, under limited circumstances the Applicant would have a qualified biologist conduct surveys for active nesting birds and bats prior to construction. If active nesting locations are identified during the surveys, the Applicant proposes to avoid nest sites during the breeding season and to identify construction restraints that would avoid disturbance to nesting birds.*

The Service recommends conducting any clearing that may impact migratory birds outside of the breeding season. The Service can help with determination of these dates and applicable habitats. Because bird nests may be concealed and difficult to detect, the Service does not believe that surveys are sufficient to prevent take of bird nests if trees were cleared during the breeding season.

The Service recommends conducting any tree clearing that may impact bats listed under ESA outside of the active season. The Service can help with determination of these dates and applicable habitats. To determine occupancy of habitat by listed bats, the Service recommends the Applicant follow the Range-wide Indiana Bat Summer Survey Guidelines (see enclosure).

Avoiding Collisions

The Service recommends the GNTL follow Avian Power Line Interaction Committee (APLIC)¹ guidance and recommends transmission lines be bundled and in as few planes as possible. Static wires should be shielded to be made visible, bundled with other wires, or have visual markings (flight diverters) to prevent avian collisions with the lines. The Service can work with both the MN DNR and the Applicant to determine most appropriate places for markers once final route is chosen.

2.5.4: Typical Supporting Structures

The Service supports the use of self-supporting suspension towers (those without guy-wires). If guy-wires are needed at points along the route, the Service recommends line markings.¹ The Service can work with both the MN DNR and the applicant to determine most appropriate places for markers once final route is chosen.

Lighting

Security lighting for on-ground facilities, equipment and infrastructure should be motion- or heat-sensitive, down-shielded, and of a minimum intensity to reduce nighttime bird attraction and eliminate constant nighttime illumination, but still allow safe nighttime access to the site.¹

¹ 2013 U.S. Fish and Wildlife Service (USFWS) Revised Voluntary Guidelines for Communication Tower Design, Siting, Construction, Operation, Retrofitting, and Decommissioning (<http://www.fws.gov/midwest/es/planning/pdf/USFWS2013RevisedGuidanceCommTowers27Sep13.pdf>) and Reducing Avian Collisions with Power Lines -- the State of the Art in 2012. Edison Electric Institute and APLIC.

0188-6

The Applicant will follow previously made recommendations from the USFWS and the APLIC guidance as possible during design and construction of the Project.

No changes are made to the EIS in response to this comment.

Dr. Julie Ann Smith, Environmental Protection Specialist

8

2.11.1.4: *The Applicant would select a transmission line alignment during detailed design to avoid bird concentration sites, nesting areas, migratory pathways, and geographic features that act as a funnel, and avoiding habitats that act as breeding grounds or feeding areas to the extent practical.*

Please note that alignment modifications will likely not be enough to avoid the above impacts. These issues will likely be best avoided and minimized by route selection. Please see the Service's recommendations above in "Route Recommendation and Avoidance of Service Interest Lands".

Bald Eagle Impacts

2.11.1.4. *Appropriate construction windows would be incorporated into the construction schedule to minimize impacts on species such as bald eagle and goshawk in areas where these species are found to be present.*

Please see comments above regarding clearing near nests of eagles and other migratory birds. Please note also that the MN DNR eagle nest database is not up-to-date. The Service recommends rigorous eagle nest and roost surveys be conducted once the final route is determined, preferably the season before clearing is to begin. The Service can assist with developing an eagle survey protocol.

Avoiding Wetland Impacts

The Service recommends route selection and alignment modification be utilized to minimize impacts to wetland resources. Transmission towers should span wetlands where possible. Please see exact recommendations above in "Route Recommendation and Avoidance of Service Interest Lands".

Avoidance of Vegetation Impacts

Preservation and enhancement of native plant communities should be conducted in order to support the recovery of listed species, such as the Poweshiek skipperling (*Oarisma Poweshiek*). On June 20, 2014, President Obama signed a Presidential Memorandum, "Creating a Federal Strategy to Promote the Health of Honey Bees and Other Pollinators," outlining an expedited agenda to address the devastating declines in honey bees and native pollinators, including the monarch butterfly (*Danaus plexippus*). Recent research has showed dramatic declines in monarchs and their habitats leading conservation groups to petition the Service to list the species under ESA. Ensuring adequate and sustainable habitats that meet all their life history needs would be key to conserving the monarch and other pollinator species. The success of both initiatives requires immediate actions to replace and restore monarch and pollinator habitat on both public and private lands across the U.S. landscape. The Service recommends that revegetation of disturbed areas with native plant species include species of nectar-producing plants and milkweed endemic to the area where the mix is applied. Consultation with state botanists is highly recommended.

0188-6

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Section 2.13 of the EIS summarizes Applicant-proposed measures to minimize impacts, including potential impacts to rare species. The Applicant has indicated that preconstruction field surveys for rare species, including identification of nest sites during the breeding season, would be conducted and measures to avoid disturbance to nesting birds would be implemented.

0188-7

No changes are made to the EIS in response to this comment.

0188-8

The EIS discusses potential impacts and avoidance, minimization, or mitigation measures to wetlands in Chapter 5 and 6. DOE and DOC-EERA continue to work with USFWS as a cooperating agency in the development of this EIS.

0188-8

No changes are made to the EIS in response to this comment.

0188-9

Chapter 6 of the EIS identifies that the MN PUC Route Permit could require the development of a Vegetation Management Plan as a permit condition, which could include plant surveys along the permitted ROW, incorporate vegetation clearing, and management of invasive species; this plan could also outline restoration strategies for the proposed Project. The MN PUC typically requires the Applicant to prepare a plan in coordination with the MnDNR as a condition of the Route Permit. The MnDNR typically requires the use of native plant community seed mixes for restoration, which would likely ultimately encourage a healthy population of pollinator species.

0188-9

Section 5.3.2.1 of the EIS now includes a discussion of potential impact to bees from the proposed Project.

0188-10

Chapters 5 and 6 (Rare and Unique Natural Resources) of the Final EIS are updated with the most current information available (MnDNR NHIS database) to assess presence and potential impacts on rare species.

0188-10

Chapter 6 of the EIS assess impacts to wildlife resources (i.e. WMAs) for all alternatives.

0188-11

A Biological Assessment is included in Appendix R of the Final EIS. As discussed in the Biological Assessment (included in Appendix R of the EIS), the Applicant will work with USFWS to minimize impacts to the northern long-eared bat.

Listed Species

The Service is tasked with the protection and recovery of species listed under the ESA. The following are listed, proposed, or candidate species occurring in one or more counties where the GNTL is proposed: Gray Wolf (*Canis lupus*), Canada lynx (*Lynx canadensis*), Piping plover (*Charadrius melodus*), Western prairie fringed orchid (*Platanthera praecleara*), Poweshiek skipperling (*Oarisma poweshiek*), Northern long-eared bat (*Myotis septentrionalis*), and Sprague's pipit (*Anthus spragueii*). The Service recommends this project employ all potential avoidance and minimization measures to reduce impact to these species. The Service will seek compensatory mitigation for removal of habitat that is occupied by a listed species. Please see "Migratory Bird Impacts" above for information on compensatory mitigation. Consultation with the Service under Section 7 of the ESA may be required for this project as described below.

General Wildlife Comments

In order to minimize wildlife impacts to the fullest degree practicable, the applicant should examine any potential alignment modifications and micro-siting of towers in order to lessen the impact to wildlife resources. The applicant should avoid impacts to managed wildlife habitats (WMAs, WPAs, Important Bird Areas, and Grassland Bird Conservation Areas).

Please note that the absence of critical habitat for listed species with the proposed route does not relieve the Applicant of avoidance and minimization measures. Listed species may be present outside of critical habitat designations. The Service recommends examining records of species occurrence near the proposed line to determine the most appropriate route option, as well as alignment within the chosen line corridor. These records can be accessed from the MN DNR Natural Heritage Information System (NHIS) database as well as coordination with the Service. Once the route decision is made, the Service requests further coordination with the Applicant to determine if additional wildlife surveys are necessary. If surveys are necessary to determine the occupancy of habitat by listed bats, the Service recommends the Applicant follow the Range-wide Indiana Bat Summer Survey Guidelines (see enclosure).

5.3.5.2 *General Impacts: "The proposed Project may affect, but is not likely to adversely affect these Federally-listed species or designated critical habitat".*
Because the Service has not had the opportunity to review the Biological Assessment (BA) for impacts of this project on listed species, the Service is unable to agree or disagree with this statement.

Northern Long Eared Bat

2.11.1.4. *With regard to rare and unique species, USFWS first preference is to only allow the ROW to be cleared or mowed in the fall or winter before the breeding season. If this is not possible, under limited circumstances the Applicant would have a qualified biologist conduct surveys for active nesting birds and bats prior to construction. If active nesting locations are identified during the surveys, the Applicant proposes to avoid nest sites during the breeding season and to identify construction restraints that would avoid disturbance to nesting birds.*

0188-11

Dr. Julie Ann Smith, Environmental Protection Specialist

10

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The Service will work with the Applicant to develop a Biological Opinion (BO) on the impact of the project to listed bat species. In order for take to be avoided, the Service recommends conducting any clearing outside of the breeding season. If clearing is to be done in the bat active season, the Service recommends the Applicant follow the Range-wide Indiana Bat Summer Survey Guidelines (see enclosure). Please note that due to anticipated clearing, indirect impacts to bats may occur through loss of available habitat. This component should also be addressed in the BA. Additional conservation measures to minimize bat impacts will be a component of the Service's BO.

Biological Assessment/Opinion

The Service appreciates the upcoming opportunity to review the draft Biological Assessment in the DEIS. However, the Service will not issue a Biological Opinion and associated Incidental Take Statement (if one is needed) until a final route has been chosen.

Thank you for your consideration of our comments on the Draft EIS for the Great Northern Transmission Line. Please direct any comments or questions to Mags Rheude at our Twin Cities Field Office: 612-725-3548 x2202, Margaret_rheude@fws.gov.

Sincerely,



Lynn Lewis
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Enclosures

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2014
RANGE-WIDE INDIANA BAT SUMMER SURVEY GUIDELINES
January 2014

INTRODUCTION

The Indiana bat (*Myotis sodalis*) was originally listed as being in danger of extinction under the Endangered Species Preservation Act of 1966 (32 FR 4001, March 11, 1967), and is currently listed as endangered under the Endangered Species Act (ESA) of 1973, as amended. This survey protocol provides the U.S. Fish and Wildlife Service's (USFWS) recommended guidance on survey methodology and outlines additional reporting requirements for surveyors.

The following guidance is designed to determine whether Indiana bats are present¹ or likely absent at a given site during the summer (May 15 to August 15). The phased-approach, which includes coordination with the USFWS², habitat assessments, and acoustic, mist-net, radio-tracking, and emergence surveys, supersedes the 2007 and 2013 Indiana Bat Mist-Netting Guidelines. Future changes to this guidance may occur and will be posted on the USFWS Indiana bat survey guidance website (<http://www.fws.gov/midwest/endangered/mammals/inba/inbasummersurveyguidance.html>). Please check this website to ensure use of the most current version of the guidance.

OBJECTIVES

The objectives of Indiana bat summer survey guidelines are to (1) standardize range-wide survey procedures; (2) maximize the potential for detection/capture of Indiana bats at a minimum acceptable level of effort; (3) make accurate presence/absence determinations; and (4) aid in conservation efforts for the species by identifying areas where the species is present.

BACKGROUND

In 2011, the USFWS developed a multi-agency team to determine whether improvements could be made to the 2007 Indiana Bat Mist-Net Protocols. The team included members of the four USFWS regions (Midwest, Northeast, Southeast, and Southwest) where Indiana bats are known to occur, representatives of state natural resource agencies from three of those four regions (Midwest, Northeast, and Southeast), and representatives from three federal agencies (U.S. Geological Survey, Department of Defense, and U.S. Forest Service). We obtained informal peer review of the draft guidelines in February 2012, gathered additional information in 2012, and made a revised version available for public comment in 2013 [78 FR 1879, January 9, 2013, and 78 FR 9409, February 8, 2013].

¹ The guidance are not intended to be rigorous enough to provide sufficient data to fully determine population size or structure.

² Coordinate with the appropriate state natural resource agencies and any involved federal agency(ies) whenever "USFWS" coordination is listed. USFWS FO(s) may direct project sponsors to state agencies for existing occurrence information. Coordinate with your local USFWS FO(s) to understand the process for their area of jurisdiction.

We considered the best available information for all aspects of the guidance. For example, please see our white paper³ outlining the methodologies used to determine the minimum level of survey effort. The USFWS continues to work with local, State, and Federal biologists; scientific and academic institutions; commercial organizations; and other interested parties to collect additional data on the distribution, ecology, and biology of the Indiana bat and looks forward to receiving any additional pertinent information.

GENERAL PROCESS

Indiana bat surveys for some proposed projects will require modification (or clarification) of this guidance through coordination with the USFWS FO(s) responsible for the state(s) in which the project occurs⁴. If not already required by federal permit, we encourage federal action agencies and surveyors to develop a proposed survey work plan in coordination with the USFWS FO(s) so that all parties fully understand which methods will be deployed, what assumptions will be made, and what the various outcomes would be based on the results of each step. Project proponents may stop survey work at any point once an assumption or documentation of Indiana bat presence occurs. Pre-survey coordination typically will preclude the need for subsequent reviews of intermediate steps by USFWS FO(s) during the busy field season. An online directory of USFWS FO(s) is available at <http://www.fws.gov/offices/>. Unless otherwise agreed to by the USFWS, negative presence/probable absence survey results obtained using this guidance are valid for a minimum of two years⁵ from the completion of the survey. If not already required by federal permit, please submit all results (negative or positive) from any phase to the USFWS FO(s). We strongly encourage this coordination as it improves the USFWS' understanding of (1) the level of survey effort underway and (2) the distribution of the species. A single report can be submitted at the end of all phases conducted for a given project.

USFWS FO(s) level coordination is also important during the survey planning process. The USFWS recognizes that there may be project-specific habitat conditions that do not lend themselves to surveying with either acoustic detectors or mist-nets even though it met the definition of suitable Indiana bat summer habitat. The guidelines that are described in this document are designed to be implemented in habitats conducive to each technique described. We strongly encourage coordination with the FO(s) prior to implementation of methodologies that may not be appropriate for site-specific habitat conditions.

³ Available at <http://www.fws.gov/midwest/endangered/mammals/inbau/inbausummersurveyguidance.html>

⁴ For example, project sponsors for large acreage and/or landscape-scale projects that do not result in permanent habitat loss and would not pose an ongoing threat of lethal take, especially those proposed by land management agencies, may work with local USFWS FOs to apply different scales of surveys (broad vs. project-level) or different types of surveys, such as long-term monitoring results (e.g., forest-wide acoustic transect data) and/or targeted survey efforts (e.g., sub-sampling of large project areas), to address P/A concerns.

⁵ The timeframe may be reduced if significant habitat changes have occurred in the area or increased based on local information.

Because Indiana bat surveys may result in take, such surveys should only be conducted by a qualified biologist⁶. Generally, a recovery permit for the Indiana bat authorizes the capture of bats for identification, and handling of bats for measurements, photography, and radio transmitter attachment. Following this guidance will meet standard USFWS requirements; however, surveyors also need to ensure they meet all applicable state permitting and reporting requirements. Failure to follow the survey guidance, as written, or failure to follow a study plan which has received concurrence from the local USFWS FO(s), may result in USFWS FO recommendations for additional survey effort.

The following provides a step-by-step outline of how Indiana bat summer surveys should be conducted in 2014. Some of these steps can occur concurrently.

PHASE 1 – INITIAL PROJECT SCREENING

Step 1. Coordinate with the U.S. Fish and Wildlife Service Field Office(s)⁷ regarding existing Indiana bat summer occurrence information.

[Projects located within known Indiana bat summer habitat will not proceed to Phase 2 of this process.]

- a) If a project (located within or outside of a known maternity colony home range) is already covered under an existing Endangered Species Act (ESA) incidental take authorization (e.g., HCP, BO), then no further summer surveys are needed, follow the procedures previously authorized by the USFWS FO(s).
- b) If there are known Indiana bat summer occurrences (e.g., known roost trees, capture locations, foraging locations) within the project action area⁸, **OR** if there are no known Indiana bat summer occurrences within the proposed project area itself, but the project area is located within a known maternity colony home range⁹, **OR**

if the project is located outside a known maternity colony home range, but is within the range of the Indiana bat (note this can change over time), then proceed to Step 2.

⁶ A qualified biologist is an individual who holds a USFWS Recovery Permit (Federal Fish and Wildlife Permit) for Indiana bats in the state/region in which they are surveying and/or has been authorized by the appropriate state agency to net and handle Indiana bats. Several USFWS offices maintain lists of qualified bat surveyors, and if working in one of those states with authorizations in lieu of a Recovery Permit, the individual will either need to be on that list or submit qualifications to receive USFWS approval prior to conducting any field work.

⁷ Coordinate with the appropriate state natural resource agencies and any involved Federal Action agencies whenever "USFWS" coordination is listed. USFWS FO(s) may direct project sponsors to state agencies for existing occurrence information. Coordinate with your local USFWS FO(s) to understand the process for their area of jurisdiction.

⁸ The "action area" is defined as all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action. [50 CFR Section 402.02]

⁹ See USFWS Indiana Bat Section 7 and Section 10 Guidance for Wind Energy Projects (Questions 4 & 5)

<http://www.fws.gov/midwest/endangered/mammals/inba/WindEnergyGuidance.html>

Step 2. Conduct Habitat Assessment (Desktop or Field-based; see Appendix A).

- a) If suitable summer habitat is present within the action area, then proceed to Step 3.
- b) If suitable summer habitat is absent within the action area, then no further summer surveys are necessary; however, additional coordination with the USFWS FO(s) will be necessary if Indiana bats may be present during any other season and may be affected by the proposed project.

Step 3. Assess potential for adverse effects to Indiana bats.

- a) If the project is not anticipated to result in adverse effects to Indiana bats (as proposed), then no further summer surveys are necessary, coordinate with the USFWS FO(s).
- b) If the project may result in adverse effects to Indiana bats but the impacts can be adequately assessed and conservation measures can be designed to minimize those effects without additional presence/absence information (this includes all proposed projects within known maternity colony home ranges, but may include other areas as well), then no further summer surveys are necessary, coordinate with the USFWS FO(s) regarding an assessment of the project's potential effects, development of conservation measures, and determination of the need for any ESA incidental take authorization.
- c) If the project does not meet the conditions of 3a or 3b, then proceed to Phase 2.

PHASE 2 - PRESENCE/ABSENCE SURVEYS (NETTING OR ACOUSTIC SURVEYS)¹⁰

During the summer of 2014, presence/probable absence (P/A) of Indiana bats may be determined by conducting either Step 4 (mist-netting; see Appendix B) or Step 5 (acoustics; see Appendix C) as outlined below. It is the project proponent's choice as to which option to use. The summer survey season is from 15 May through 15 August for either survey option. If netting is chosen as the preferred P/A method and an Indiana bat(s) is captured, then surveyors may immediately begin Phase 4/radio-tracking. Project proponents must decide whether they will proceed to Phase 4 in coordination with the USFWS FO before any mist netting occurs.

¹⁰ Note: acoustic and/or mist-net surveys should be conducted in the best suitable habitat possible for each survey type to increase the likelihood of detecting/capturing Indiana bats. In some cases, the most suitable habitat for effectively conducting surveys may occur outside a project site boundary and may be sampled if landowner permission is available. For projects with multiple survey areas (e.g., >123 acres or >1 km), survey methods may be interchanged. For example, acoustics could be used for one 123-acre survey area and netting could be used for another 123-acre area.

Step 4. Conduct Mist-Netting Surveys following Recovery Unit-based Protocols¹¹
(see Appendix B)

Northeast and Appalachian Recovery Units (CT, DE, MA, MD, NC, NJ, NY, PA, eastern TN, WV, VA, VT):

Linear projects: a minimum of 6 net nights per km (0.6 miles) of suitable summer habitat.

Non-linear projects: a minimum of 42 net nights per 123 acres (0.5 km²) of suitable summer habitat.

For example:

- 7 sites, 2 nets/site for 3 calendar nights = 42 net nights
- 7 sites, 3 nets/site for 2 calendar nights = 42 net nights
- 3 sites, 2 nets/site for 7 calendar nights* = 42 net nights

*Maximum of 3 nights of consecutive netting at any given net location. After 3 consecutive nights of netting at the same location, you must change net locations or wait at least 2 calendar nights before resuming netting at the same location.

- a) If no capture of Indiana bats, then no further summer surveys are necessary.¹²
- b) If capture of Indiana bat(s), then stop or proceed to **Phase 4** as previously decided in coordination with the FO.

Midwest and Ozark-Central Recovery Units (AL, AR, IA, IL, IN, GA, KY, MI, MO, MS, OH, OK, central & western TN, and Lee County, VA):

Linear projects: a minimum of 4 net nights per km (0.6 miles) of suitable summer habitat.

Non-linear projects: a minimum of 9 net nights per 123 acres (0.5 km²) of suitable summer habitat.

For Example:

¹¹ The Indiana bat populations in the Northeast and Appalachian Recovery Units have been most heavily impacted by white-nose syndrome to date; therefore, we recommend higher survey effort when compared to the Midwest and Ozark-Central Recovery Units. We have no recommendations for reducing the minimum level of effort required to demonstrate probable absence for projects <123 acres in size. Level of effort is based on detection probabilities and occupancy estimates that were derived from past survey efforts that used the same acreage threshold. Level of effort is designed to reach 90% confidence in negative survey results (see Niver et al. 2013).

¹² NOTE: For Phase 2 Presence/Absence Surveys, wherever the phrase "no further summer surveys are necessary" occurs within this document, the USFWS FO(s) is in effect assuming probable absence of Indiana bats.

- 3 sites, 1 nets/site for 3 calendar nights = 9 net nights
- 1 sites, 3 nets/site for 3 calendar nights = 9 net nights

The sampling period for each net shall begin at sunset and continue for at least 5 hours (longer survey periods may also improve success).

*Maximum of 3 nights of consecutive netting at any given net location. After 3 consecutive nights of netting at the same location, you must change net locations or wait at least 2 calendar nights before resuming netting at the same location.

- a) If no capture of Indiana bats, then no further summer surveys are necessary.
- b) If capture of Indiana bat(s), then stop or proceed to **Phase 4** as previously decided in coordination with the FO.

OR

Step 5. Conduct Acoustic Surveys¹³ (see Appendix C)

Linear projects: a minimum of 2 detector nights per km (0.6 miles) of suitable summer habitat.

Non-linear projects: a minimum of 4 detector nights per 123 acres (0.5 km²) of suitable summer habitat.

2 detector locations per 123 acre "site" shall be sampled until at least 4 detector nights has been completed over the course of at least 2 calendar nights (may be consecutive).

For example:

- 2 detectors for 2 nights each (can sample the same location or move within the site)
- 1 detector for 4 nights (must sample at least 2 locations)

The acoustic sampling period for each site must begin at sunset¹⁴ and ends at sunrise each night of sampling.

- a) Optional course screening - for high frequency (HF) or myotis calls (depending on available filters) or Proceed to **Step 6**

¹³ Acoustic surveys are available as a Presence/Absence option throughout the range (i.e., Northeast, Appalachian, Midwest, and Ozark-Central Recovery Units).

¹⁴ Surveys may need to start a little earlier or later than official sunset times (i.e., at "dusk") in some settings such as a deep/dark forested valleys or ridge tops to avoid missing early-flying bats or capturing late-flying birds, respectively. Sunset tables for the location of survey can be found at: http://aa.usno.navy.mil/data/docs/BS_OneYear.php

- ii) If no positive detection of HF calls (≥ 35 kHz) or myotis calls, no further summer surveys necessary.
- iii) If positive detection of HF or myotis calls, then
 - (a) proceed to Step 6 for further acoustic analysis; **OR**
 - (b) assume presence of Indiana bats and coordinate with the USFWS FO(s); **OR**
 - (c) assume presence and proceed to **Phase 3**.

Step 6. Conduct Additional Acoustic Analyses for each site that had HF or Myotis calls from Step 5 or ALL sites if Step 5 was not conducted.

Two or more of the currently available 'candidate' acoustic bat ID programs¹⁵ must be used (should use most recent versions). Beginning with acoustic data from night one at each acoustic site, run each night's data for each site through a minimum of two candidate acoustic ID programs. Review results by site by night from each acoustic ID program used¹⁶.

- a) If Indiana bat presence is considered unlikely by all candidate programs used in analysis, then no further summer surveys necessary.
- b) If Indiana bat presence is considered likely at one or more sites on one or more nights by any candidate programs used in analysis, then
 - i) proceed to **Step 7** for qualitative ID; **OR**
 - ii) assume presence of Indiana bats and coordinate with the USFWS FO(s); **OR**
 - iii) assume presence and proceed to **Phase 3**.

Step 7. Conduct Qualitative Analysis of probable Indiana bat calls from Step 6.

At a minimum, for each site/night a program considered Indiana presence likely, review all files from that site/night. Qualitative analysis¹⁷ must also include a comparison of the results of each acoustic ID program by site and night (including: number of call files flagged as probable Indiana bats by each tool used; an evaluation of other species identified by the acoustic ID program; individual file level agreements and disagreements on Indiana bats between programs; and a qualitative analysis of ALL probable Indiana bat call sequences to further evaluate that the correct ID has been recommended by the

¹⁵ Candidate programs are listed at

<http://www.fws.gov/midwest/Endangered/mammals/inbat/surveys/inbaAcousticSoftware.html>

¹⁶ The candidate acoustic identification programs all have implemented a maximum likelihood estimator (MLE) at this time. If the analysis of collected calls at a given site on a given night results in the probable presence of Indiana bats with high levels of certainty ($P < 0.05$), then select one of the options available in Step 6b.

¹⁷ Qualitative analysis of each acoustic site and night with probable detections of Indiana bats during Step 6 must include the entire night's call data and not just those files making it through the acoustic analysis tools as probable Indiana bats.

program used).

- a) If no visual confirmation of probable Indiana bats, then no further summer surveys necessary.
- b) If visual confirmation of probable Indiana bats, then
 - i) assume presence of Indiana bats and coordinate with the USFWS FO(s); **OR**
 - ii) assume presence and proceed to **Phase 3**.

PHASE 3. CONDUCT MIST-NETTING SURVEYS TO CAPTURE INDIANA BATS.

If netting was not conducted as the P/A method, then netting may be conducted in Phase 3 to capture and characterize (e.g., sex, age, reproductive condition) the Indiana bats that are present in an area and to facilitate Phase 4 efforts. We encourage working with the FOs to develop Phase 3 netting plans based on best available information (e.g., positive acoustic locations). There are no minimum requirements for this phase as this is not a P/A phase.

- a) If no Indiana bats are captured, then coordinate with the USFWS FO.
- b) If Indiana bats are captured, then proceed to **Phase 4**.

PHASE 4. CONDUCT RADIO-TRACKING AND EMERGENCE SURVEYS
(See Appendices D and E).

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The effect of forest structure and fragmentation on site occupancy of bat species in Missouri Ozark forests. M.D. Yates and R.M. Muzika. *Journal of Wildlife Management* 70(5):1238-1248. This study examined the occupancy of four bat species (Little Brown Myotis, Eastern Pipistrelle, Indiana Myotis, and Silver-haired Bat) in Missouri Ozark forests. The researchers used a hierarchical occupancy model to estimate the probability of site occupancy for each species, accounting for imperfect detection. Forest structure variables included canopy cover, tree density, and tree diameter. Fragmentation variables included patch size, patch shape, and distance to the nearest forest edge. The results showed that occupancy probability varied among species and was influenced by both forest structure and fragmentation. For example, the Little Brown Myotis showed higher occupancy in larger, more continuous forest patches, while the Eastern Pipistrelle showed higher occupancy in smaller, more fragmented patches. The Indiana Myotis and Silver-haired Bat showed intermediate occupancy probabilities across different forest structures and fragmentation levels.

Journal of Wildlife Management, Volume 70, Number 5, 2006, pp. 1238-1248

DOI: 10.2193/0093-1048(2006)70[1238:EFFSOF]2.0.CO;2

Abstract: We used a hierarchical occupancy model to estimate the probability of site occupancy for four bat species (Little Brown Myotis, Eastern Pipistrelle, Indiana Myotis, and Silver-haired Bat) in Missouri Ozark forests. The model accounted for imperfect detection and included variables for forest structure (canopy cover, tree density, tree diameter) and fragmentation (patch size, patch shape, distance to nearest forest edge). Occupancy probability varied among species and was influenced by both forest structure and fragmentation. The Little Brown Myotis showed higher occupancy in larger, more continuous forest patches, while the Eastern Pipistrelle showed higher occupancy in smaller, more fragmented patches. The Indiana Myotis and Silver-haired Bat showed intermediate occupancy probabilities across different forest structures and fragmentation levels.

APPENDIX A PHASE 1 SUMMER HABITAT ASSESSMENTS

Summer habitat assessments are Step 2 of Phase 1 - Initial Project Screening. The information below is provided to assist applicants, consultants, and/or project proponents (hereinafter termed the "applicant") in establishing whether summer surveys for Indiana bats should be conducted. As a reminder, the first step for determining presence of Indiana bats at a given site is to determine whether there is any existing occurrence data available for the vicinity of the project from the local USFWS FO. This step can be conducted remotely via a desktop analysis (e.g., use of aerial photography to assess the potential presence of suitable habitat). The applicant is responsible for developing and providing sufficient information as to whether potentially suitable summer Indiana bat habitat exists within a proposed project area. If suitable habitat is present, the applicant should calculate the amount and submit this to the USFWS FO(s) and determine the need for any presence/absence surveys (Phase 2). Note: if Indiana bats are present or assumed to be present during any phase, more detailed habitat information may be necessary to adequately assess the potential for impacts (see attached example Indiana Bat Habitat Assessment Datasheet). If no suitable habitat is present, no surveys are needed to assess risk during the summer. Habitat assessments for Indiana bats can be completed any time of year and applicants are encouraged to submit results and proposed Phase 2 study plans well in advance of the summer survey season.

PERSONNEL

Habitat assessments should be completed by individuals with a natural resource degree or equivalent work experience.

DEFINITION FOR POTENTIALLY SUITABLE SUMMER HABITAT

Suitable summer habitat for Indiana 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 habitats¹⁸ 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 ≥ 5 inches dbh¹⁹ (12.7 centimeter) 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 other forested/wooded habitat. We recommend that project proponents or their representatives

¹⁸ Non-forested habitats typically should be excluded from acreages used to establish a minimum level of survey effort for Phase 2 surveys.

¹⁹ While trees <5 inches (<12.7 cm) dbh that have exfoliating bark, cracks, crevices, and/or hollows may have some potential to be used as roosting habitat, the USFWS does not consider early-successional, even-aged stands of trees <5 inches dbh to be suitable roosting habitat for the purposes of this guidance. Suitable roosting habitat is defined as forest patches with trees of 5-inch (12.7 cm) dbh or larger. However, early successional habitat with small diameter trees may be used as foraging habitat by Indiana bats. Therefore, a project that would remove or otherwise adversely affect ≥ 20 acres of early successional habitat containing trees between 3 and 5 inches (7.6-12.7 cm) dbh would require coordination/consultation with the USFWS FO to ensure that associated impacts would not rise to the level of take. The USFWS may request P/A surveys if >20 acres of early successional habitat were proposed for removal.

APPENDIX A
PHASE 1 SUMMER HABITAT ASSESSMENTS

coordinate with the appropriate USFWS Field Office to more clearly define suitable habitat for their particular region as some differences in state/regional suitability criteria may be warranted (e.g., high-elevation areas may be excluded as suitable habitat in some states).

SUBMISSION OF HABITAT ASSESSMENT AND PHASE 2 STUDY PLAN (IF NEEDED)

If a proposed project may affect (positively or negatively) Indiana bats and the conditions outlined in Step 3 a or b are not met, a habitat assessment report should be submitted to the appropriate USFWS FO(s) (and/or to the lead Federal Action Agency, such as the USACE, as appropriate) along with a draft study plan for the Phase 2 (acoustic or netting) survey (if suitable habitat is present). Complete reports will include the following:

1. Full names and relevant titles/qualifications of individuals (e.g., John E. Smith, Biologist II, State University, B.S. Wildlife Science 2007) completing the habitat assessment and when the assessment was conducted
2. A map and latitude/longitude or UTM clearly identifying the project location (or approximate center point) and boundaries
3. A detailed project description (if available)
4. Documentation of any known/occupied spring staging, summer, fall swarming, and/or winter habitat for Indiana bats within or near the project area
5. A description of methods used during the habitat assessment
6. A summary of the assessment findings and a completed Indiana Bat Habitat Assessment Datasheet (see attached below; use of this particular datasheet is optional)
7. Other information that may have a bearing on Indiana bat use of the project area (e.g., presence of fall or winter habitat [caves, crevices, fissures, or sinkholes, or abandoned mines of any kind], bridges and other non-tree potential summer roosts.)
8. Any other information requested by the local USFWS FO(s) related to the project

In addition, Phase 2 Study Plans should contain the following:

1. A statement as to which type of P/A surveys will be conducted (i.e., mist netting or acoustic surveys) and how the proposed survey level of effort (i.e., total # of net nights or detector nights) was calculated/determined;
2. A map depicting the proposed number of survey sites (mist netting or acoustic) and their tentative distribution throughout the project area;
3. A tentative list of surveyors names and copies of relevant federal permits (if required in the project State); and
4. A tentative survey schedule (e.g., start date, duration, end date).

APPENDIX A
PHASE 1 SUMMER HABITAT ASSESSMENTS

INDIANA BAT HABITAT ASSESSMENT DATASHEET

Project Name: _____ Date: _____
Township Range Section: _____
Lat Long/UTM Zone: _____ Surveyor: _____

Brief Project Description

Project Area	Total Acres	Forest Acres	Open Acres
Project			
Proposed Tree Removal (ac)	Completely cleared	Partially cleared (will leave trees)	Preserve acres- no clearing

Vegetation Cover Types	Pre-Project	Post-Project

Landscape within 5 mile radius
Flight corridors to other forested areas?

Describe Adjacent Properties (e.g. forested, grassland, commercial or residential development, water sources)

Proximity to Public Land
What is the distance (mi.) from the project area to forested public lands (e.g., national or state forests, national or state parks, conservation areas, wildlife management areas)?

APPENDIX A
PHASE 1 SUMMER HABITAT ASSESSMENTS

Use additional sheets to assess discrete habitat types at multiple sites in a project area. Include a map depicting locations of sample sites if assessing discrete habitats at multiple sites in a project area. A single sheet can be used for multiple sample sites if habitat is the same.

Sample Site Description		Sample Site No.(s):																									
<table border="1"> <tr> <th colspan="4">Water Resources at Sample Site</th> </tr> <tr> <td>Stream Type (# and length)</td> <td>Intermittent</td> <td>Perennial</td> <td rowspan="3">Describe existing condition of water sources:</td> </tr> <tr> <td>Pools/Ponds (# and size)</td> <td colspan="2">Open and accessible to bats?</td> </tr> <tr> <td>Wetlands (approx. ac.)</td> <td>Permanent</td> <td>Seasonal</td> </tr> </table>				Water Resources at Sample Site				Stream Type (# and length)	Intermittent	Perennial	Describe existing condition of water sources:	Pools/Ponds (# and size)	Open and accessible to bats?		Wetlands (approx. ac.)	Permanent	Seasonal										
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Stream Type (# and length)	Intermittent	Perennial	Describe existing condition of water sources:																								
Pools/Ponds (# and size)	Open and accessible to bats?																										
Wetlands (approx. ac.)	Permanent	Seasonal																									
<table border="1"> <tr> <th colspan="4">Forest Resources at Sample Site</th> </tr> <tr> <td>Closure/Density</td> <td>Canopy (> 50%)</td> <td>Midstory (20-50%)</td> <td>Understory (<20%)</td> </tr> <tr> <td>Dominant Species of Mature Trees</td> <td colspan="3">1-1-10%, 2-11-20%, 3-21-40%, 4-41-60%, 5-61-80%, 6-81-100%</td> </tr> <tr> <td>% Trees w/ Exfoliating Bark</td> <td colspan="3"></td> </tr> <tr> <td>Size Composition of Live Trees (%)</td> <td>Small (3-8 in)</td> <td>Med (9-15 in)</td> <td>Large (>15 in)</td> </tr> <tr> <td>No. of Suitable Snags</td> <td colspan="3"></td> </tr> </table>				Forest Resources at Sample Site				Closure/Density	Canopy (> 50%)	Midstory (20-50%)	Understory (<20%)	Dominant Species of Mature Trees	1-1-10%, 2-11-20%, 3-21-40%, 4-41-60%, 5-61-80%, 6-81-100%			% Trees w/ Exfoliating Bark				Size Composition of Live Trees (%)	Small (3-8 in)	Med (9-15 in)	Large (>15 in)	No. of Suitable Snags			
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No. of Suitable Snags																											
<p>Standing dead trees with exfoliating bark, cracks, crevices, or hollows. Snags without these characteristics are not considered suitable.</p>																											
<p>IS THE HABITAT SUITABLE FOR INDIANA BATS? _____</p>																											
<p>Additional Comments:</p>																											

Attach aerial photo of project site with all forested areas labeled and a general description of the habitat.

Photographic Documentation: habitat shots at edge and interior from multiple locations; understory/midstory/canopy; examples of potential suitable snags and live trees; water sources

APPENDIX B

PHASE 2 or 3 MIST-NETTING

Mist-netting can be used as a presence/probable absence method (Phase 2 surveys) or it can be conducted for the purpose of attempting to capture Indiana bats after detection during acoustic presence/probable absence surveys (Phase 3 surveys). The same recommendations (e.g., season, personnel, equipment, net placement, checking nets) apply for either use of mist-netting surveys.

SUMMER MIST-NETTING SEASON: May 15²⁰ – August 15

Capture of reproductive adult females (i.e., pregnant, lactating, or post-lactating) and/or young of the year during May 15 – August 15 confirms the presence of a maternity colony in the area. Since adult males and non-reproductive females have commonly been found summering with maternity colonies, radio-tracking results will be relied upon to help determine the presence or absence of a maternity colony or large concentrations of bats in the area when only males and/or non-reproductive females are captured.

PERSONNEL

A qualified biologist(s)²¹ must (1) select/approve mist-net set-ups in areas that are most suitable for capturing Indiana bats, (2) be physically present at each mist-net site throughout the survey period, and (3) confirm all bat species identifications. This biologist may oversee other biological technicians and manage mist-net set-ups in close proximity to one another as long as the net-check timing (i.e., every 10 minutes) can be maintained while **walking** between nets.

COORDINATION WITH USFWS FO(s)

If not already required by federal permit, we recommend that applicants submit a draft study plan for all survey phases to the USFWS FO(s) for review and approval. Study plans should include a map/aerial photo identifying the proposed project area boundaries, suitable bat habitats and acreages within the project area, and the proposed number and tentative locations of net sites.

EQUIPMENT

Use the finest, lowest visibility mesh mist-nets commercially available, as practicable. Currently, the finest net on the market is 75 denier, 2 ply, denoted 75/2 (Arndt and Schactz 2009); however, the 50 denier nets are still acceptable for use at this time. The finest mesh size available is approximately 1½ inches (38 millimeters).

²⁰ Due to concerns with transmission of white-nose syndrome, some USFWS FO(s) and state natural resource agencies have delayed the start of the Indiana bat summer field survey season/mist-netting until June 1. Surveyors/applicants should always coordinate with local USFWS FO(s) and state natural resource agencies before beginning surveys.

²¹ A qualified biologist is an individual who holds a USFWS Recovery Permit (Federal Fish and Wildlife Permit) for Indiana bats in the state/region in which they are surveying and/or has been authorized by the appropriate state agency to net and handle Indiana bats. Several USFWS offices maintain lists of qualified bat surveyors, and if working in one of those states with authorizations in lieu of a Recovery Permit, the individual will either need to be on that list or submit qualifications to receive USFWS approval prior to conducting any field work.

APPENDIX B
PHASE 2 or 3 MIST-NETTING

No specific hardware is required. There are many suitable systems of ropes and/or poles to hold nets. The system of Gardner et al. (1989) has been widely used. See NET PLACEMENT for minimum net heights, habitats, and other netting requirements that affect the choice of hardware.

To minimize potential for disease transmission, any equipment that comes in contact with bats should be kept clean and disinfected, following approved protocols; this is particularly a concern relative to white-nose syndrome (WNS). Disinfection of equipment to avoid disease transmission (e.g., WNS) is required; protocols are posted at <http://www.whitenosesyndrome.org/>. Federal and state permits may also have specific equipment restrictions and disinfection requirements.

MINIMUM PRESENCE/ABSENCE MIST-NETTING LEVEL OF EFFORT (PHASE 2)

Conduct Mist-Netting Surveys following Recovery Unit-based protocols²²

Northeast and Appalachian Recovery Units (CT, DE, MA, MD, NC, NJ, NY, PA, eastern TN, WV, VA, VT):

Linear projects: a minimum of 6 net nights per km (0.6 miles) of suitable summer habitat.

Non-linear projects: a minimum of 42 net nights per 123 acres²³ (0.5 km²) of suitable summer habitat.

For example:

- 7 sites²⁴, 2 nets²⁵/site for 3 calendar nights = 42 net nights
- 7 sites, 3 nets/site for 2 calendar nights = 42 net nights
- 3 sites, 2 nets/site for 7 calendar nights* = 42 net nights

Maximum of 3 nights of consecutive netting at any given net location. After 3 consecutive nights of netting at the same location, you must change net locations or wait at least 2 calendar nights before resuming netting at the same location.

- a) If no capture of Indiana bats, then no further summer surveys are

²² The Indiana bat populations in the Northeast and Appalachian Recovery Units have been most heavily impacted by white-nose syndrome; therefore, we recommend higher survey effort when compared to the Midwest and Ozark-Central Recovery Units.

²³ We have no recommendations for reducing the minimum level of effort required to demonstrate probable absence for projects <123 acres in size. Detection probabilities and occupancy estimates were derived from past survey efforts that used the same acreage threshold (see Niver et al. 2013).

²⁴ A site is defined as a geographic area to be sampled. It can include one or more nets that can be managed by one Qualified Biologist.

²⁵ A net is defined as any combination of individual panels and poles (e.g., single, double, triple high) to fill the area (e.g., corridor) being sampled.

APPENDIX B
PHASE 2 or 3 MIST-NETTING

necessary²⁶.

- b) If capture of Indiana bat(s), then stop or proceed to **Phase 4** as previously decided in coordination with the FO(s).

Midwest and Ozark-Central Recovery Units (AL, AR, GA, IA, IL, IN, KY, MI, MO, MS, OH, OK, and central & western TN):

Linear projects: a minimum of 4 net nights per km (0.6 miles) of suitable summer habitat.

Non-linear projects: a minimum of 9 net nights per 123 acres (0.5 km²) of suitable summer habitat.

- 3 sites, 1 nets/site for 3 calendar nights = 9 net nights
- 1 sites, 3 nets/site for 3 calendar nights = 9 net nights

Maximum of 3 nights of consecutive netting at any given net location. After 3 consecutive nights of netting at the same location, you must change net locations or wait at least 2 calendar nights before resuming netting at the same location.

- a) If no capture of Indiana bats, then no further summer surveys are necessary.
- b) If capture of Indiana bat(s), then stop or proceed to **Phase 4** as previously decided in coordination with the FO(s).

MIST-NETTING SURVEYS TO CAPTURE INDIANA BATS AFTER ACOUSTICS WERE USED AS P/A METHOD (PHASE 3)

If netting was not conducted as the P/A method, then netting may be conducted to capture and characterize (e.g., sex, age, reproductive condition) the Indiana bats (documented through the Phase 2 acoustic P/A survey) present in an area and to facilitate Radio-tracking (Phase 4) efforts. We encourage working with the FO(s) to develop Phase 3 netting plans based on best available information (e.g., positive acoustic locations). There are no minimum requirements for this phase as this is not a P/A phase.

- a) If no Indiana bats are captured, then coordinate with the USFWS FO.
- b) If Indiana bats are captured, then proceed to **Phase 4** as previously decided in coordination with the FO(s).

²⁶ NOTE: For Phase 2 Presence/Absence Surveys, wherever the phrase "no further summer surveys are necessary" occurs within this document, the USFWS FO(s) is in affect assuming probable absence of Indiana bats during the summer.

APPENDIX B
PHASE 2 or 3 MIST-NETTING

NET PLACEMENT

Potential travel corridors (e.g., streams, logging trails) typically are the most effective places to net (although other places may also be productive; see Carroll et al. 2002). Place nets approximately perpendicular across the corridor. Nets should fill the corridor from side to side, extending beyond the corridor boundaries when possible, and from stream (or ground) level up to the overhanging canopy. Nets of varying widths and heights may be used as the situation dictates. A typical set is at least 5 m to 9 m high consisting of two or more nets stacked on top one another and from 6 m to 18 m wide. If netting over water, ensure there is enough space between the net and the water so that captured bats will not get wet.

Occasionally it may be necessary or desirable to net where a suitable corridor is lacking. The typical equipment described in the section above may be inadequate for these situations, requiring innovation on the part of the surveyor (see Humphrey et al. 1968). See Kiser and MacGregor (2005) for additional discussion about net placement.

Although no minimum spacing between mist-nets is being specified, surveyors should distribute net set-ups throughout suitable habitat. Net set-ups can be repeatedly sampled throughout the project, but generally no more than 2-3 nights at a single location is recommended. In addition, changing locations within a project area may improve capture success (see Robbins et al. 2008; Winhold and Kurta 2008). Photo-document placement of nets.

SURVEY PERIOD

The survey period for each net shall begin at sunset²⁷ and continue for at least 5 hours (longer survey periods may also improve success).

CHECKING NETS

Each net set-up should be checked approximately every 10 minutes, never exceeding 15 minutes (Gannon et al. 2007). If surveyors monitor nets continuously, take care to minimize noise, lights and movement near the nets. Monitoring the net set-up continuously with a bat detector (ideally using ear phones to avoid alerting bats) can be beneficial: (a) bats can be detected immediately when they are captured, (b) prompt removal from the net decreases stress on the bat and potential for the bat to escape (MacCarthy et al. 2006), and (c) monitoring with a bat detector also allows the biologist to assess the effectiveness of each net placement (i.e., if bats are active near the net set-up but avoiding capture), which may allow for adjustments that will increase netting success on subsequent nights. There should be no other disturbance near the nets, other than to check nets and remove bats. Biologists should be prepared to cut the net if a bat is severely entangled and cannot be safely extracted within 3 or 4 minutes (CCAC 2003; Kunz et al. 2009).

²⁷ Surveys may need to start a little earlier or later than official sunset times (i.e., at "dusk") in some settings such as deep/dark forested valleys or ridge tops to avoid missing early-flying bats or capturing late-flying birds, respectively. Sunset tables for the location of survey can be found at: http://ma.usno.navy.mil/dm/dcese/RS_OneYear.php.

APPENDIX B PHASE 2 or 3 MIST-NETTING

Capture and handling are stressful for bats. Emphasis should be on minimizing handling and holding bats to as short a time as possible to achieve field study objectives. Indiana bats should not be held for more than 30 minutes after capture, unless the individual is targeted for radio-tracking. Bats targeted for radio-tracking should be released as quickly as possible, but no longer than 45 minutes after capture, or as allowed in federal and state permits. See Kunz and Kurta (1988) for general recommendations for holding bats.

WEATHER AND LIGHT CONDITIONS

Severe weather adversely affects capture of bats. Some Indiana bats may remain active despite inclement weather and may still be captured while others in the same area become inactive. Therefore, negative surveys combined with any of the following weather conditions throughout all or most of a sampling period are likely to require an additional night of mist-netting: (a) temperatures that fall below 50°F (10°C); (b) precipitation, including rain and/or heavy fog, that exceeds 30 minutes or continues intermittently during the survey period; and (c) sustained wind speeds greater than 9 miles/hour (4 meters/seconds; 3 on Beaufort scale).

NOTE: Provided that nets are not dripping wet, surveyors can resume netting to meet the minimum 5-hour requirement after short periods of adverse weather. If nets are under good cover, light rain may not alter bat behavior. However, if no bats are being captured during marginal weather, coordinate with the USFWS FO(s).

It is typically best to place net set-ups under the canopy where they are out of moonlight, particularly when the moon is half-full or greater. Net set-ups illuminated by artificial light sources should also be avoided.

DOCUMENTATION OF *MYOTIS SODALIS* CAPTURES

If an Indiana bat(s) is captured during mist-netting, protocols for radio-tracking and emergence survey requirements, as provided in Appendix D and E, respectively, should be followed. In addition, the appropriate USFWS FO(s) must be notified of the capture within 48 hours (or in accordance with permit conditions), and the sex and reproductive condition of the bat and GPS coordinates of the capture site should be provided.

Several species of bats from the genus *Myotis* share common features which can make identification difficult; Indiana bats and little brown bats (*Myotis lucifugus*) can be particularly difficult to distinguish. Photo-documentation of all bats captured and identified as Indiana bats and the first 10 little brown bats per project are requested to verify the identifications made in the field.

Photo-documentation should include diagnostic characteristics:

- a ¾-view of face showing ear, tragus, and muzzle
- view of calcar showing presence/absence of keel
- a transverse view of toes showing extent of toe hairs

APPENDIX B
PHASE 2 or 3 MIST-NETTING

If a bat from the genus *Myotis* is captured during mist netting that cannot be readily identified to the species level, then species verification may be attempted through fecal DNA analysis. Collect one or more fecal pellets (i.e., guano) from the bat in question by placing it temporarily in a holding bag (15 minutes is usually sufficient, no more than 30 minutes is recommended). The pellet (or pellets) collected should be placed in a small vial (e.g., 1.5 ml) with silica gel desiccant; pellets from each individual bat should be stored in separate vials and out of direct light. Fees charged by independent laboratories for sequencing fecal DNA samples is generally inexpensive (approx. \$50 per guano sample), however, it has been challenging to identify labs willing to consistently conduct these analyses. Any additional information and a list of available laboratories will be made available on the Indiana bat webpage on the USFWS's Region 3 website (<http://www.fws.gov/midwest/Endangered/mammals/inba/index.html>).

SUBMISSION OF MIST-NETTING RESULTS

Provide results of netting surveys to the appropriate USFWS FO(s) in accordance with previously agreed upon²⁸ timeframes. If Indiana bats are captured, this report should also include the results of subsequent radio-tracking and emergence counts. Reports should include the following:

1. Copy of prior phase reports (if not previously provided).
2. Explanation of any modifications from original survey plan (e.g., altered net locations).²⁹
3. Description of net locations (including site diagrams), net set-ups (include net heights), survey dates, duration of surveys, weather conditions, and a summary of findings.
4. Map identifying netting locations and information regarding net set-ups, including lat/long or UTM, individual net placement, and net spacing (i.e., include mist-netting equipment in photographs of net locations).
5. Full names of mist-netting personnel attending each mist-net site during an operation, including the federally-permitted/qualified biologist present at each mist-net site. Indicate on the field data sheet the full name of person who identified bats each night at each site.
6. Legible copies of all original mist-netting datasheets (see example datasheet below) and a summary table with information on all bats captured during the survey including, but not limited to: capture site, date of capture, time of capture, sex, reproductive condition, age, weight, right forearm measurement, band number and type (if applicable), and Reichard's wing damage index score (Reichard and Kunz, 2009).

²⁸ As discussed in the Introduction, we encourage coordination with USFWS FO(s) prior to implementation of any surveys to ensure that all parties agree upon the need for surveys, the methods proposed, and the decisions from various survey results.

²⁹ If the USFWS previously agreed upon the study plan we need to understand whether the revised work still accomplished the agreed upon methods

APPENDIX B
PHASE 2 or 3 MIST-NETTING

7. Photographs of all net set-ups, as well as **all** Indiana bats and the first 10 little brown bats captured from each project, so that the placement of netting equipment and identification of species can be verified. Photographs of bats should include all diagnostic characteristics that resulted in the identification of the bat to the species level.
8. Any other information requested by the local USFWS FO(s) related to the project.

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APPENDIX C
PHASE 2 ACOUSTIC SURVEYS

SUBMISSION OF ACOUSTIC SURVEY RESULTS

Provide results of acoustic surveys to the appropriate USFWS FO(s) in accordance with previously agreed upon³⁷ timeframes. Each acoustic survey report should include the following:

1. Copy of habitat assessment (if not previously provided)
2. Explanation of any modifications from original survey plan (e.g., altered site locations)³⁸
3. Description of acoustic monitoring sites, survey dates, duration of survey, weather conditions, and a summary of findings
4. Map identifying acoustic monitoring locations and a corresponding table including the GPS coordinates
5. Full names of all personnel conducting acoustic surveys, including those that selected acoustic sites and deployed detectors, and include copies of state and federal permits (if applicable)
6. Full name and resume of individual(s) conducting qualitative acoustic analyses
7. Table with information on acoustic monitoring and resulting data, including but not limited to: detector GPS coordinates, survey dates, survey hours
8. Description of acoustic detector brand(s) and model(s) used, microphone type, use of weatherproofing, acoustic monitoring equipment settings (e.g., sensitivity, audio and data division ratios), deployment data (i.e., deployment site, habitat, date, time started, time stopped, orientation), and call analysis methods used
9. Acoustic analysis software program output/summary results by site by night (i.e., number of calls detected, species composition, MLE results)
10. Detailed analysis and results of any qualitative acoustic analysis conducted on those projects where a program(s) considered Indiana bat presence likely, including justification for rejecting any program MLE results (if applicable).
11. Photographs of each acoustic site documenting the location of the detector, the orientation of the detector, and the detection cone (i.e., what the detector sampled.
12. A description of how proper functioning of bat detectors was verified
13. Any other information requested by the local USFWS FO(s) related to the project

³⁷ As discussed in the Introduction, we encourage coordination with USFWS FO(s) prior to implementation of any surveys to ensure that all parties agree upon the need for surveys, the methods proposed, and the decisions from various survey results.

³⁸ If the USFWS previously agreed upon the study plan we need to understand whether the revised work still accomplished the agreed upon methods.

APPENDIX C
PHASE 2 ACOUSTIC SURVEYS

Two or more of the currently available 'candidate' acoustic bat ID programs³⁴ must be used (should use most current software versions available). Beginning with acoustic data from night one at each acoustic site, run each night's data for each site through a minimum of two candidate acoustic ID programs. Review results by site by night from each acoustic ID program used³⁵.

- a) If Indiana bat presence is considered unlikely by all candidate programs used in analysis, then no further summer surveys necessary.
- b) If Indiana bat presence is considered likely at one or more sites on one or more nights by any candidate programs used in analysis, then
 - i) proceed to Step 7 for qualitative ID; **OR**
 - ii) assume presence of Indiana bats and coordinate with the USFWS FO(s); **OR**
 - iii) assume presence and proceed to Phase 3.

Step 7. Conduct Qualitative Analysis of probable Indiana bat calls from Step 6.

At a minimum, for each site/night a program considered Indiana presence likely, review all files from that site/night. Qualitative analysis³⁶ must also include and present within a written report a comparison of the results of each acoustic ID program by site and night (including: number of call files flagged as probable Indiana bats by each tool used; an evaluation of other species identified by the acoustic ID program; individual file level agreements and disagreements on Indiana bats between programs; and a qualitative analysis of ALL probable Indiana bat call sequences to further evaluate whether the correct ID has been made by the program(s) used).

- a) If no visual confirmation of probable Indiana bats, then no further summer surveys necessary.
- b) If visual confirmation of probable Indiana bats, then
 - i) assume presence of Indiana bats and coordinate with the USFWS FO(s); **OR**
 - ii) assume presence and proceed to Phase 3.

³⁴ Candidate programs are listed at

<http://www.fws.gov/midwest/Endangered/mammals/nabat/surveys/nbatAcousticSoftware.html>

³⁵ The candidate acoustic identification programs all have implemented a maximum likelihood estimator (MLE) at this time. If the analysis of collected calls at a given site on a given night results in the probable presence of Indiana bats with high levels of certainty ($P < 0.05$), then select one of the options available in Step 6b.

³⁶ Qualitative analysis of each acoustic site and night with probable detections of Indiana bats during Step 6 should include the entire night's call data and not just those files making it through the acoustic analysis tools as probable Indiana bats in Step 6.

APPENDIX C
PHASE 2 ACOUSTIC SURVEYS

MINIMUM LEVEL OF EFFORT

The number of acoustic survey sites required for a project will be dependent upon the overall acreage of suitable habitat proposed to be impacted by the action. To determine the acoustic survey effort, quantify the amount of suitable summer habitat within the project area.

Linear projects: a minimum of 2 detector nights per km (0.6 miles) of suitable summer habitat.

Non-linear projects: a minimum of 4 detector nights per 123 acres (0.5 km²) of suitable summer habitat.

2 detector locations per 123 acre "site" shall be sampled until at least 4 detector nights has been completed over the course of at least 2 calendar nights (may be consecutive).

For example:

- 2 detectors for 2 nights each (can sample the same location or move within the site)
- 1 detector for 4 nights (must sample at least 2 locations)

The acoustic sampling period for each site must begin at sunset³³ and ends at sunrise each night of sampling.

ANALYSIS OF RECORDED ECHOLOCATION CALLS

Step 5. Optional coarse screening - for high frequency (HF) or myotid calls (depending on available filters) or Proceed to Step 6.

- a) If no positive detection of HF calls (≥ 35 kHz) or myotid calls, no further summer surveys necessary.
- b) If positive detection of HF or myotid calls, then
 - i) proceed to Step 6 for further acoustic analysis; **OR**
 - ii) assume presence of Indiana bats and coordinate with the USFWS FO(s); **OR**
 - iii) assume presence and proceed to **Phase 3**.

Step 6. Conduct Additional Acoustic Analyses for each site that had HF or Myotid calls from Step 5 or ALL sites if Step 5 was not conducted.

³³ Surveys may need to start a little earlier or later than official sunset times (i.e., at "dusk") in some settings such as a deep/dark forested valleys or ridge tops to avoid missing early-flying bats or capturing late-flying birds, respectively. Sunset tables for the location of survey can be found at: http://aa.usno.navy.mil/data/doc/PS_OneYear.php

APPENDIX C
PHASE 2 ACOUSTIC SURVEYS

Orientation

Detectors deployed near the ground (e.g., on a tripod) should be aimed 45 degrees or more above horizontal. Microphones deployed higher within the flight path/zone (e.g., on a pole) should be oriented horizontally. In some circumstances (e.g., forest openings), it might be desirable to aim a detector's microphone vertically. This has shown to record high-quality calls but precludes the use of weatherproofing for protection of the microphone, since no currently-approved weatherproofing system will adequately protect the microphone of a detector aimed vertically.

Deploy detectors at or below the lowest expected flight height of the bats but high enough above ground vegetation to avoid interference within the detection cone. Once acoustic sites are identified, photographs documenting the orientation, detection cone (i.e., "what the detector is sampling"), and relative position of the microphone should be taken for later submittal to the USFWS FO(s) as part of the acoustic survey report.

Weather Conditions

If any of the following weather conditions exist at a survey site during acoustic sampling, note the time and duration of such conditions, and repeat the acoustic sampling effort for that night:

- (a) temperatures fall below 50°F (10°C) during the first 5 hours of survey period; (b) precipitation, including rain and/or fog, that exceeds 30 minutes or continues intermittently during the first 5 hours of the survey period; and (c) sustained wind speeds greater than 9 miles/hour (4 meters/second; 3 on Beaufort scale) during the first 5 hours of the survey period.
- At a minimum, nightly weather conditions for survey sites should be checked using the nearest NOAA National Weather Service station and summarized in the survey reports.

Weatherproofing

Most bat detectors are not weatherproof when delivered from the factory. Recording without after-market weatherproofing is preferred as the addition of these systems may result in some signal degradation. **The decision to weatherproof detectors or not should be determined nightly based on the likelihood of precipitation in the survey area.**

For directional microphones, the use of a polyvinyl chloride (PVC) tube³², generally in the form of a 45-degree elbow the same diameter as the microphone (Britzke et al. 2010) is acceptable, if the situation requires the use of after-market weatherproofing. Attach the elbow to a weatherproof box that houses the main portion of the detector. Point the microphone into one end of the elbow and point the open end of the elbow in the direction to be monitored (generally 45 degrees to horizontal). Another option for weatherproofing detectors is to detach the microphone from the detector so that the detector can be placed in a weatherproof container but the microphone (tethered by a cable) remains unobstructed.

Other after-market weatherproofing systems may become available and approved by the USFWS provided they show that call quality and the number of calls recorded are comparable to those without weatherproofing.

³² The PVC option has only been tested with AnaBat detectors and directional microphones. It may not perform as well with other detector microphone combinations.

APPENDIX C
PHASE 2. ACOUSTIC SURVEYS

Verification of Deployment Location

It is recommended to temporarily attach GPS units to each detector (according to manufacturer's instructions) to directly record accurate location coordinates for each acoustic site that is paired with the acoustic data files. Regardless of technique used, accurate GPS coordinates must be generated and reported for each acoustic survey site.

Verification of Proper Functioning

It is highly recommended that surveyors ensure acoustic detectors are functioning properly through a periodic verification of performance to factory specifications (a service currently offered or in development by several manufacturers). It may be possible that independent service bureaus would be willing to perform this service, providing that a standard test/adjustment procedure can be developed.

It is also recommended to ensure equipment is working during set-up in the field. This can be done simply by producing ultrasound (e.g., finger rubs, calibrator, or follow the equipment manufacturer's testing recommendations) in front of the microphone at survey start and survey finish. This documents that the equipment was working when deployed and when picked up (and by assumption throughout the entire period). Detector field settings (e.g., sensitivity, frequency, etc.) should follow the recommendations provided by the manufacturer. Surveyors should also save files produced by detectors (e.g., log files, status files, sensor files) as an excellent way to provide documentation when equipment was functioning within the survey period. Many types of detectors allow for setting timers that initiate and end recording sessions. This saves battery life as well as reducing the number of extraneous noise files recorded. However, if the units are visited when the timer is off, the surveyor cannot verify that the unit is functioning properly. This is particularly important in areas where no bat activity is recorded for the entire night or during the last portion of the night. In these cases, if the surveyor cannot demonstrate that the detector was indeed functioning properly throughout the survey period then the site will need to be re-sampled, unless adequate justification can be provided to the USFWS FO(s).

Selection of acoustic sites is similarly important. Suitable set-up of the equipment should result in high-quality call sequences that are adequate for species identification. Nights of sampling at individual sites that produce no bat calls may need to be re-sampled unless adequate justification (e.g., areas with significant bat population declines due to WNS) can be provided to the USFWS FO(s). Modifications of the equipment (e.g., changing the orientation) at the same location on subsequent nights may improve quantity and quality of call sequences recorded, which can be determined through daily data downloads. If modifications of the equipment do not improve call identification, then the detectors will need to be moved to a new location.

APPENDIX C
PHASE 2 ACOUSTIC SURVEYS
ACOUSTIC SAMPLING PROTOCOL

Detector/Microphone Placement

Detector/Microphone placement is critical to the successful isolation of high-quality bat call sequences for later analysis. The following locations are likely to be suitable sites for detectors/microphones, including, but not limited to: (a) forest-canopy openings; (b) near water sources; (c) wooded fence lines that are adjacent to large openings or connect two larger blocks of suitable habitat; (d) blocks of recently logged forest where some potential roost trees remain; (e) road and/or stream corridors with open tree canopies or canopy height of more than 33 feet (10 meters); and (f) woodland edges (Britzke et al. 2010). It is also important to assess the volume and area of highest sensitivity within the zone of detection around the microphone to ensure the best detector/microphone placement and orientation. If detectors/microphones are placed in unsuitable locations, effective data analysis may be impossible, and the results of the sampling effort will likely be invalid.

Many features (e.g., vegetation, water, wind turbines, high-tensile power-lines, micro-wave towers) can reduce the quality of call sequences recorded in the field and impact the surveyor's ability to record high-quality bat call sequences by causing calls to reflect off of these surfaces. The following recommendations are provided to aid surveyors in their selection of acoustic sites. If surveyors choose acoustic sites outside of these recommendations, then adequate justification for doing so should be provided with the acoustic survey report provided to the USFWS FO(s); otherwise, results from these sites will not be accepted. Surveyors should deploy detectors/microphones: (a) at least 5 feet (1.5 meters) in any direction from vegetation or other obstructions (Hayes 2000; Weller and Zabel 2002); (b) in areas without, or with minimal³⁰, vegetation within 33 feet (10 meters) in front of the microphone; (c) parallel to woodland edges; and (d) at least 49 feet (15 meters) from known or suitable roosts³¹ (e.g., trees/snags, buildings, bridges, bat houses, cave or mine portal entrances).

Elevating a detector greater than 1.5 meters above ground level vegetation can dramatically improve recording quality. For example, microphones can be attached horizontally to a pole to listen out into flight space, rather than just listening up from the ground. This will serve to increase the volume of airspace sampled and avoid the distortion effect of recording near the ground.

Surveyors should distribute acoustic sites throughout the project area or adjacent habitats. In most cases, acoustic sites should be at least 656 feet (200 meters) apart. If closer spacing is determined to be necessary or beneficial (e.g., multiple suitable habitats and acoustic sites immediately adjacent to each other), sufficient justification must be provided in the acoustic survey report submitted to USFWS FO(s).

³⁰ If necessary, surveyors can remove small amounts of vegetation (e.g., small limbs, saplings) from the estimated detection cone at a site, much like what is done while setting up mist-nets. Deployment of detectors/microphones in closed-canopy locations that typically are good for mist-netting are acceptable as long as the area sampled below the canopy does not restrict the ability of the equipment's detection cone to record high-quality calls (i.e., the vegetation is outside of the detection cone).

³¹ If the surveyor discovers a potential roost and wishes to document bat use, please refer to Appendix E for guidance on conducting emergence surveys and contact the USFWS FO(s).

APPENDIX C
PHASE 2 ACOUSTIC SURVEYS
SUMMER ACOUSTIC SURVEY SEASON: May 15 – August 15

PERSONNEL

Overall: Acoustic surveyors should have either completed one or more of the available bat acoustic courses/workshops (e.g., BCI, BCM, AnaBat) or be able to show similar on-the-job or academic experience.

Detector Deployment: Acoustic surveyors should have a working knowledge of the acoustic equipment and Indiana bat ecology. Surveyors should be able to identify appropriate detector placement sites and establish those sites in the areas that are most suitable for recording high-quality Indiana bat calls. Thus, it is highly recommended that all potential acoustic surveyors attend appropriate training and have experience in the proper placement of their field equipment.

Acoustic Analysis: Acoustic surveyors should have a working knowledge of the candidate acoustic analysis programs. Thus, it is highly recommended that all potential acoustic surveyors attend appropriate training and have experience in the analysis of acoustic recordings.

Qualitative Analysis: Individuals qualified to conduct qualitative analysis of acoustic bat calls typically have experience: (1) gathering known calls. This provides a valuable resource in understanding how bat calls change and the variation present in them; (2) identifying bat calls recorded in numerous habitat types; (3) familiarity with the species likely to be encountered within the project area; and (4) individuals must have multiple years of experience and must have stayed current with qualitative ID skills. A resume (or similar documentation) must be submitted along with final acoustic survey reports for anyone making final qualitative identifications.

COORDINATION WITH USFWS FO(s)

If not already required by federal permit, we recommend that applicants submit a draft study plan for all survey phases to the USFWS FO(s) for review and approval. Study plans should include a map/aerial photo identifying the proposed project area boundaries, suitable bat habitats and acreages within the project area, and the proposed number and tentative locations of acoustic monitoring sites.

DETECTOR AND MICROPHONE REQUIRED CHARACTERISTICS

Full-spectrum and/or zero-crossing detectors are suitable for use in this survey protocol.

Directional microphones are the only microphone type accepted for acoustic surveys at this time, although omni-directional microphones that have been converted to directional microphones are also acceptable. Microphones attached to detectors via a cable are also acceptable.

Sample Data Sheets for Indiana Bat Surveys

Net Site Diagram		Comments:		
1	Dominant Vegetation		<p>Other Species:</p>	
2				
3				
4				
5				
Net Sites by Habitat				
	A	B		C
Habitat				
River				
Stream				
Pond				
Wooded Wet				
Corridor				
Cave/Inlet				
Total				
No. of Poles X Net length				
A	=	X		
B	=	X		
C	=	X		
D	=	X		

APPENDIX B
PHASE 2 or 3 MIST-NETTING

Sample Data Sheets for Indiana Bat Surveys

Site No.		Project/Firm:										Date:		
Location:														
County:						State:		Quad:		Quadrant:				
Lat/Long (DMS):		N		W		Zone:				Surveyors:				
#	Time	Species	Age	Sex	Repro. Cond.*	RFA (mm)	Mass (g)	Net/Hit	Guano/Hair	Wing Score	Band # Type	Moon Phase:		%
1													Rise	Set
2														
3														
4														
5														
6														
7														
8														
9														
10														
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30														

*Repro. Cond (Reproductive Condition): (P) pregnant; (L) lactating; (PL) post-lactating; (NR) non-reproductive, (TD) testes descended

APPENDIX B
PHASE 2 or 3 MIST-NETTING

- Kunz, T.H., R. Hodgkison, and C.D. Weise. 2009. Methods of capturing and handling bats. Pp. 3-35 in T.H. Kunz and S. Parsons (eds.), Ecological and behavioral methods for the study of bats, second edition. The Johns Hopkins University Press, Baltimore, Maryland.
- MacCarthy, K.A., T.C. Carter, B.J. Steffen, and G.A. Feldhamer. 2006. Efficacy of the mist-net protocol for Indiana bats: A video analysis. *Northeastern Naturalist* 13:25-28.
- Reichard, J.D., and T.H. Kunz. 2009. White-nose syndrome inflicts lasting injuries to the wings of little brown myotis (*Myotis lucifugus*). *Acta Chiropterologica* 11: 457-464.
- Robbins, L.W., K.L. Murray, and P.M. McKenzie. 2008. Evaluating the effectiveness of the standard mist-netting protocol for the endangered Indiana bat (*Myotis sodalis*). *Northeastern Naturalist* 15:275-282.
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APPENDIX C
PHASE 2 ACOUSTIC SURVEYS

REFERENCES

- Britzke, E.R., B.A. Slack, M.P. Armstrong, and S.C. Loeb. 2010. Effects of orientation and weatherproofing on the detection of bat echolocation calls. *Journal of Fish and Wildlife Management* 1(2):136-141.
- Hayes, J. P. 2000. Assumption and practical considerations in the design and interpretation of echolocation-monitoring studies. *Acta Chiropterologica* 2:225-236.
- MacKenzie, D.I., and J.A Royle. 2005. Designing occupancy studies: general advice and allocating survey effort. *Journal of Applied Ecology* 42:1105-1114.
- Weller, T. J., and C. J. Zabel. 2002. Variation in bat detections due to detector orientation in a forest. *Wildlife Society Bulletin* 30:922-930.

APPENDIX D
PHASE 4 RADIO-TRACKING

PERSONNEL

Transmitter Attachment: A qualified biologist³⁹ who is experienced in handling Indiana bats and attaching radio transmitters must perform transmitter attachments, as further explained in the protocol below.

Tracking: Biological technicians and/or a qualified biologist who is experienced in tracking transmitter bats must be present and actively involved in all tracking activities for Indiana bats as further explained in the protocol below.

METHODS

If one or more Indiana bats are captured, the following radio-tracking protocols will be applicable:

1. Biologists should coordinate in advance with USFWS FO(s) regarding recommendations for the number and distribution of transmitters (e.g., prioritization of sex/age, maximum number per site) and whether foraging data would be beneficial to collect. Also, professional judgment should be used to determine whether attachment of transmitters could compromise the health of a bat. Since the maximum holding times for Indiana bats targeted for radio-tracking is 45 minutes, or as allowed in federal and state permits, surveyors should be prepared to place transmitters on bats immediately following their capture to minimize holding times.
2. The radio transmitter, adhesive, and any other markings (e.g., wing bands) should weigh less than 5% of pre-attachment body weight (Aldridge and Brigham 1988, American Society of Mammalogists 1998), but must not weigh more than 10% of a bat's total body weight (Kurta and Murray 2002) and must comply with any USFWS and state permits. In all cases, the lightest transmitters capable of the required task should be used, particularly with pregnant females and volant juveniles. With pregnant bats, biologists should always use the lightest transmitter possible but no more than 5% of their expected non-pregnant weight.
3. Proposed radio telemetry equipment (e.g., receivers, antennas, and transmitters) and frequencies should be coordinated with the appropriate state natural resource agency and USFWS FO(s).
4. The qualified biologist or biological technician(s) should track all radio-tagged bats captured to diurnal roosts in accordance with permit requirements. We generally recommend tracking until the transmitter fails, fall off, or cannot be located for at least 7

³⁹ A qualified biologist is an individual who holds a USFWS Recovery Permit (Federal Fish and Wildlife Permit) for federally-listed bats in the state/region in which they are surveying and/or has been authorized by the appropriate state agency to mist-net for Indiana bats. Several USFWS offices maintain lists of qualified bat surveyors, and if working in one of those states with authorizations in lieu of a Recovery Permit, the individual will either need to be on that list or submit qualifications to receive USFWS approval prior to conducting any field work.

APPENDIX D
PHASE 4 RADIO-TRACKING

days and should conduct a minimum of 2 evening emergence counts at each identified roost (See Appendix F for Emergence Survey Protocols). However, biologists are encouraged to continue radio-tracking efforts for the life of the transmitter. Biologists should contact the USFWS FO(s) immediately if they plan to cease tracking efforts before the 7-day tracking period ends. If landowner access is denied, approximate roost locations (i.e., coordinates) should be determined using triangulation.

5. Daily radio telemetry searches for roosts must be conducted during daylight hours and should be conducted until the bat(s) is located or for a minimum of 4 hours of ground or 1 hour of aerial-searching effort per tagged bat per day for 7 days. However, multiple bats captured at the same net location or nearby may be tracked simultaneously. Once a signal is detected, tracking should continue until the roost is located. At a minimum, biologists should document all ground and aerial-searching effort for all bats not recovered during radio-tracking for submittal with the survey report. For each roost identified during tracking, the biologist should complete a "USFWS Indiana Bat Roost Datasheet" (Appendix D).
6. To minimize potential for disease transmission, any equipment that comes in contact with bats should be kept clean and disinfected, following approved protocols; this is particularly a concern relative to WNS. Protocols are posted at <http://www.whitenosesyndrome.org/>. Federal and state permits may also have specific equipment restrictions and disinfection requirements.

SUBMISSION OF RADIO-TRACKING RESULTS

Phase 4 radio-tracking results should be included with the Phase 2 or 3 mist-netting report and submitted to the appropriate USFWS FO(s). Each report should include the following information related to radio-tracking efforts:

1. Copy of prior phase reports (if not previously provided)
2. Explanation of any modifications from original survey plan (e.g., number of transmitters used, frequency of transmitters changed)⁴⁶
3. Map and narrative detailing all ground and aerial searching effort for all bats not recovered during radio-tracking and relative to the negotiated or agreed effort as determined by the appropriate USFWS FO(s)
4. Map summarizing Indiana bat data collected from summer surveys for the proposed project (e.g., project area boundary and results from the site habitat assessment, acoustic survey, mist-net survey, radio-tracking, and emergence surveys)
5. Full names and permit numbers of personnel who attached transmitters to Indiana bats and full names of all personnel conducting radio-tracking efforts
6. Photographs of all roosts identified during radio-tracking
7. Legible copies of all original USFWS Indiana Bat Roost Datasheets
8. Any other information requested by the local USFWS FO(s) where work was conducted

⁴⁶ If the USFWS previously agreed upon the study plan we need to understand whether the revised work still accomplished the agreed upon methods

APPENDIX D
PHASE 4 RADIO-TRACKING

REFERENCES

- Aldridge, H., and R.M. Brigham. 1988. Load carrying and maneuverability in an insectivorous bat: a test of the 5% "rule." *Journal of Mammalogy* 69:379-382.
- American Society of Mammalogists. 1998. Guidelines for the capture, handling and care of mammals. *Journal of Mammalogy* 79:1416-1431.
- Kurta, A., and S. Murray. 2002. Philopatry and migration of banded Indiana Bats (*Myotis sodalis*) and effects of radio transmitters. *Journal of Mammalogy* 83:585-589.

APPENDIX D
PHASE 4 RADIO-TRACKING

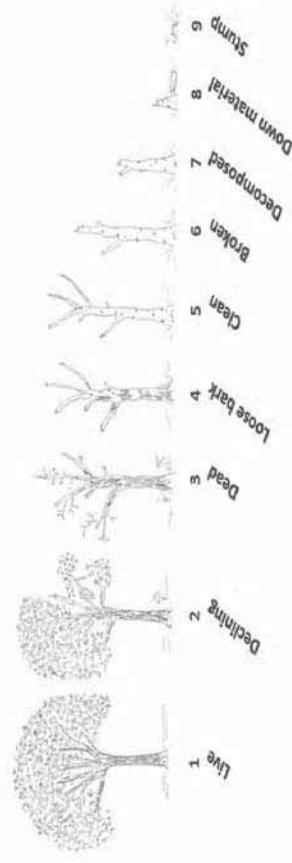
USFWS INDIANA BAT ROOST DATASHEET

Biologists (Full Name): _____ Date: _____
 UTM: Zone _____ Easting _____ Northing _____ OR
 LAT _____ LONG _____
 Property Owner: _____ Phone# _____
 State _____ County _____ Site # _____
 Roost # _____ Roost Name: _____

Roost Tree Data

Species: _____ Live ___ Snag ___ Other ___
 (if other, explain) _____
 DBH (in or cm) _____ Total Height (ft or m) _____
 Height of roost area (if known) _____ Dist. from capture site _____
 Roost position aspect (deg) _____
 Exfoliating bark on bole (%) _____ Describe: sloughing ___ platy ___ tight ___
 Cavities present? ___ If so, describe: _____

Roost Decay State: 1 2 3 4 5 6 7 8 9 Other



APPENDIX D
PHASE 4 RADIO-TRACKING

Roost tree or snag canopy position: Dominant ___ Co-Dominant ___ Suppressed ___

Surrounding Habitat Condition

Canopy closure at roost (%) _____
Approximate woodland size (ac or ha) _____ Distance to non-forest (ft or m) _____

Describe forest/woodlot current condition (mature, partially cut-over, burned, insect damage, etc.)

Additional Comments

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

PERSONNEL

Qualified biologists⁴¹, biological technicians, and any other individuals deemed qualified by a local USFWS FO may conduct emergence surveys for Indiana bats by following the protocols below.

EMERGENCE SURVEYS FOR KNOWN INDIANA BAT ROOSTS

The following protocols should begin as soon as feasible after identification of a diurnal roost (ideally that night):

1. Bat emergence surveys should begin one half hour before sunset⁴² and continue until at least one hour after sunset or until it is otherwise too dark to see emerging bats. The surveyor(s) should be positioned so that emerging bats will be silhouetted against the sky as they exit the roost. Tallies of emerging bats should be recorded every few minutes or as natural breaks in bat activity allow. There should be at least one surveyor per roost. Surveyors must be close enough to the roost to observe all exiting bats but not close enough to influence emergence. That is, do not stand directly beneath the roost, do not make noise or carry on a conversation, and minimize use of lights (use a small flashlight or similar to record data, if necessary). Do not shine a light on the roost as this may prevent or delay bats from emerging. Use of an infra-red, night vision, or thermal-imaging video camera or spotting scope is encouraged but not required. Likewise, use of an ultrasonic bat detector may aid in identifying the exact timing of bats emerging and may be used to help differentiate between low- and high-frequency bats species, and therefore, is strongly recommended. If multiple roosts are known within a colony, then simultaneous emergence surveys are encouraged to estimate population size. [Note: If a roost cannot be adequately silhouetted, then the local USFWS FO(s) should be contacted to discuss alternative survey methods].
2. Bat activity is affected by weather; therefore emergence surveys should not be conducted when the following conditions exist: (a) temperatures that fall below 50°F (10°C); (b) precipitation, including rain and/or fog, that exceeds 30 minutes or continues intermittently during the survey period; and (c) sustained wind speeds greater than 9 miles/hour (4 meters/second; 3 on Beaufort scale).
3. Surveyors should use the attached (or similar) "Bat Emergence Survey Datasheet".

⁴¹ A qualified biologist is an individual who holds a USFWS Recovery Permit (Federal Fish and Wildlife Permit) for federally-listed bats in the state/region in which they are surveying and/or has been authorized by the appropriate state agency to mist-net for Indiana bats. Several USFWS offices maintain lists of qualified bat surveyors, and if working in one of those states with authorizations in lieu of a Recovery Permit, the individual will either need to be on that list or submit qualifications to receive USFWS approval prior to conducting any field work.

⁴² Surveyors may need to start a little earlier or later than one half hour before official sunset times (i.e., before "dusk") in some settings such as deep/dark forested valleys or ridge tops, respectively. Sunset tables for the location of survey can be found at: http://aa.usno.navy.mil/data/doc/PS_OneYear.php

APPENDIX E
PHASE 4 EMERGENCY SURVEYS

4. Surveyors should also complete an "Indiana Bat Roost Datasheet" for each roost known to be used by one or more Indiana bats (see Appendix D for an example).
5. Completed datasheets should be included in reports prepared for the USFWS.

EMERGENCY SURVEYS FOR POTENTIAL INDIANA BAT ROOSTS

In some limited cases (e.g., individual hazard tree removal during the active season), surveyors may have the option of conducting emergency surveys for individual potential Indiana bat roosts to determine use prior to removal. The following protocol applies to these surveys:

1. Consult with the local USFWS FO(s) to determine whether a tree(s) that needs to be felled/ cleared may be potential roosting habitat for Indiana bats and whether conducting an emergency survey is an appropriate means of avoiding take of Indiana bats⁴³. In general, the USFWS only approves of conducting emergency surveys as a means of avoiding direct take of bats for projects that only affect a very small number of potential roosts (e.g., less than or equal to 10)⁴⁴ in relatively small project areas. An online directory of USFWS offices is available at <http://www.fws.gov/offices/>.
2. If the USFWS FO(s) approves/concurs with Step 1, then follow the emergency guidelines for Emergency Surveys for Known Indiana Bat Roosts (above) to determine if any bats are roosting in the tree(s).
3. At the conclusion of the emergency survey:
 - a. If **no** bats were observed emerging from the potential roost(s), then it may be felled immediately. If safety concerns dictate that a tree cannot be felled immediately (i.e., in the dark), then the tree(s) should be felled as soon as possible after sunrise on the following day. If a tree is not felled during the daytime immediately following an emergency survey, then the survey has to be repeated, because bats may switch roosts on a nightly basis. Immediately after the tree is felled, a visual inspection of the downed tree must be completed to ensure that no bats were present, injured, or killed. The USFWS FO(s) should be contacted immediately, if bats are discovered during this inspection.
 - b. If **1 or more** bats (regardless of species, because species identification cannot reliably be made during visual emergence counts alone) are observed emerging from the roost, then it should **not** be felled, and the USFWS FO(s) should be contacted the next working day for further guidance.

⁴³ If a potential bat roost tree poses an imminent threat to human safety or property, then emergency consultation procedures should be followed as appropriate. (50 CFR §402.05). If a hazard tree does not pose an imminent threat, then the USFWS requests that it be felled during the bat's inactive season (i.e., generally from October – March, but contact the FO for specific dates for your area.) When possible, felling of potential roost/hazard trees should be avoided during the primary maternity period (June – July) to avoid potential adverse effects to non-volant pups.

⁴⁴ Areas containing >10 hazard trees will be assessed by the USFWS on a case-by-case basis with the project proponent.

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

SUBMISSION OF EMERGENCE SURVEY RESULTS

Emergence survey results should be included with the mist-netting survey report, unless the survey was completed as an evaluation of potential roosts, and should be submitted to the appropriate USFWS FO(s) for review. Each survey report should include the following information related to emergence survey efforts:

1. Copy of prior phase reports (if not previously provided)
2. Explanation of any modifications from the Phase 4 emergence count study plan (e.g., number of potential roosts surveyed), if applicable
3. Summary of roost emergence data
4. Map identifying location of roost(s) identified during radio-tracking and/or emergence surveys for Indiana bat(s) including GPS coordinates
5. Full names of personnel present during emergence survey efforts and who conducted emergence surveys of roosts
6. Photographs of each identified roost
7. Copies of all "Emergence Survey" and "Indiana Bat Roost" datasheets
8. Any other information requested by the local USFWS FO(s) where work was conducted
9. Copy of the pre-approved site-specific written authorization from USFWS and/or state natural resource agency (if required)



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August 10, 2015

VIA Email and E-FILE

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Re: *In the Matter of the Request by Minnesota Power for a Route Permit for the
Great Northern Transmission Line*
MPUC Docket No. E015/TL-14-21
DoE No. EIS-0499

Dear Mr. Storm and Ms. Smith,

Please find enclosed Minnesota Power's response to the Great Northern Transmission Line Draft Environmental Impact Statement released on June 19, 2015. Parts of this response have previously been included in supplemental testimony submitted on July 31, 2015 in MPUC Docket E015/TL-14-21. This response includes the following documents:

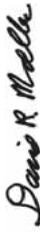
- Minnesota Power DEIS Comments Summary;
- Minnesota Power's Comments on the Draft Environmental Impact Statement;
- Minnesota Power's DEIS Cost Comments;
- Map of Potential Displacements – Cedar Bend WMA Variation;
- Magnetic Field Simulation Results: Projected Peak Loading;
- Magnetic Field Simulation Results: Max Continuous Rating;
- Audible Noise Simulation Results;
- Response to Request for Information dated April 6, 2015 – Substation Noise;

Mr. Storm and Ms. Smith
Page 2
August 10, 2015

- Manitoba Justice Letter dated June 2, 2015;
- Manitoba Hydro Letter dated July 30, 2015; and
- Great Northern Transmission Line Draft EIS Errata Table.

Please feel free to contact me at the number above if you should have any questions.

Yours truly,



David R. Moeller

DRM:sr
Enc.

0190-1

Thank you for providing your DEIS Comments Summary. Responses to all issues identified in the Comments Summary are included as part of the detailed comment responses.

No changes are made to the EIS in response to this comment.

0190-1

Minnesota Power DEIS Comments Summary

Purpose and Need and Alternatives

- The statement of purpose from Minnesota Power's Application should appear, word-for-word, in the FEIS.
- The FEIS should clearly state that the "alternative border crossings" are infeasible.
 - Routes leading to border crossings not being considered for a Presidential permit are infeasible because they are outside of the MN PUC's jurisdiction to approve.
 - DOE's preferred alternative must be the endpoint for the project, and routes that do not reach that endpoint should be declared infeasible.
 - Routes that would require Minnesota Power and Manitoba Hydro to restart their regulatory processes are infeasible because they would not fulfill the region's established need for more energy and transmission capacity by 2020.
- The FEIS should recognize in Sections 6.2.2 and 6.2.3 that Roseau WMA Variation 1 and the Cedar Bend Variations would provoke significant public opposition, and that such opposition would violate Minnesota Power's purposes for the project.

Human Settlement Effects

- All tables titled "Land Ownership within the Anticipated ROW" and all figures titled "Land Ownership within the ROI" should be revised to include privately owned land.
- Section 5.3.1.1 should emphasize that aesthetic effects will be greater in agricultural areas, where structures will be visible well outside of the ROI for aesthetic effects.
- Section 5.2.1.1 should clearly explain that displacement of homes and other structures is possible anywhere within the route, not just within the anticipated ROW.
- Chapter 6 should not include state forests in discussions or calculations of effects on aesthetics, vegetation, or wildlife; state forests are relevant only to forestry and land ownership effects.
- Sections 5.3.2.1, 5.4.2.1, and 5.5.2.1 should include language clearly recognizing the potential for permanent adverse agricultural effects outside of the ROW, particularly in the West Section.

Corridor Sharing

- Because corridor sharing only has a significant environmental benefit if it involves paralleling the existing 230 kV or 500 kV lines, the FEIS text and tables should not account for corridor sharing in other circumstances.

0190-1 cont'd

0190-1

Continued

- Because paralleling the abandoned corridor has no environmental benefits, Section 6.4.3 should not describe it in text or tables as an opportunity for corridor sharing.
- The FEIS should clearly state that paralleling existing transmission lines does not reduce the amount of forest land or vegetation that must be cleared within the 200-foot ROW, and should remove all statements suggesting that corridor sharing offers forestry or vegetation benefits.
- Section 6.4.1.7 should explain that the consequences of an outage are significantly greater for the Effie and East Bear Lake Variations, which would place three Manitoba tie lines (two 500 kV and one 230 kV) the same corridor and require the new line to cross both of those tie lines.

Environmental Effects

- Because there is an active mine permit within the Balsam Variation ROW, that route should be considered infeasible in the FEIS.
- Chapters 5 and 6 should acknowledge that selection of routes other than the Proposed Blue or Orange Routes would likely require relocation of the Series Compensation Station, and that any new location would likely require several acres of wetland fill.
- Because the FEIS did not include the necessary 250-foot separation between HVTL centerlines, it failed to capture the displacement of four residences within the Cedar Bend WMA Variation ROW.
- The DEIS should acknowledge in Chapter 6 that the Cedar Bend WMA Variation cannot be built as drawn because it passes through an infeasibly narrow pathway between two existing substations.

Costs

- The FEIS should not compare costs on a per-mile basis, because that is irrelevant to both cost recovery and the Applicant's decision of whether to build the Project.
- The FEIS should recognize that route variations or permit conditions that increase Project costs will have an effect on ratepayers.

Relative Merits Tables

- The "stoplight motif" relative merits tables in Chapter 6 are unhelpful and misleading. Minnesota Power has prepared updated tables that include both numbers and colors, and the FEIS should either replace the graphics in Chapter 6 with those provided by Minnesota Power, or include Minnesota Power's tables in an appendix.

0190-2

With regard to purpose and need, DOE has determined the purpose and need is adequate, per program goals and objectives and no changes are made to the purpose and need or alternatives analyzed in the EIS.

Section 2.2 of the EIS is modified to include the Applicant's purpose for the proposed Great Northern Transmission Line Project by adding the following:

"The Applicant's federal and state permit applications states that the purpose of the proposed Project is to efficiently provide the Applicant's customers and the region with energy that will: (a) help meet the region's growing energy demands; (b) advance Minnesota Power's *EnergyForward* strategy of increasing its generation diversity and renewable portfolio; (c) strengthen electric system reliability; and (d) fulfill the Applicant's obligations under its power purchase agreements with Manitoba Hydro, all in a manner that is consistent with the Applicant's commitment to making a positive impact on communities."

The EIS is updated with accurate information about the status of the MN PUC's certificate of need process and related written order issued by the MN PUC on June 30, 2015.

0190-2

Minnesota Power's Comments on the Draft Environmental Impact Statement

On the whole, the Draft Environmental Impact Statement (DEIS) for the Great Northern Transmission Line (GNTL) presents an accurate picture of the Project's potential environmental effects. Minnesota Power commends the U.S. Department of Energy (DOE) and the Minnesota Department of Commerce Energy, Environmental Review and Analysis unit (EERA) for their thoroughness in documenting these effects. Minnesota Power is further pleased that the public has now had the opportunity to see that the Project's overall effects are relatively small, and differ little among the various route alternatives.

That said, Minnesota Power believes that the Final EIS can improve on several important aspects of the DEIS's analysis. Those issues are discussed in detail below.¹

I. The DEIS should accurately reflect Minnesota Power's objectives.

- A. **The EIS must contain a statement of purpose and need that is shaped by the Application at issue.**

The Council on Environmental Quality (CEQ) regulations implementing NEPA require that an EIS "briefly specify the underlying purpose and need to which the agency is responding"² That statement of purpose and need naturally derives from, and depends on, the circumstances that trigger the agency action. When an agency is responding to a private applicant's request, as EERA and PUC are here, its purpose and need must account for that request.³ Indeed, the agency should specify a purpose and need that allows the alternatives studied in the EIS to be "shaped by the application at issue and by the function the agency plays in the decisional process."⁴

Section 1.2.2. of the DEIS states that "[t]he purpose of and need for DOE action is to decide whether . . . to grant the Applicant a Presidential permit." Minnesota Power does not object to that characterization, as far as it goes. But "[w]here a private party's proposal triggers a project," the EIS statement of purpose and need must also "give substantial weight to the goals and objectives of that private actor."⁵ In that regard, the DEIS is deficient.

- B. **The DEIS's discussion of "Minnesota Power's Objectives" should include the statement of purpose contained in Minnesota Power's Application.**

Section 2.2—entitled "Applicant's Objectives"—purports to identify "three factors" that are driving Minnesota Power's decision to construct the GNTL. That discussion, however, fails to account for Chapter 2 of Minnesota Power's Application, which carefully describes the

¹ Minnesota Power's comments focus on the body of the DEIS. Presumably any changes that are made in the Final EIS will also be reflected in the Executive Summary, which is not specifically addressed below.

² 40 C.F.R. § 1502.13. The Rules implementing Minnesota Environmental Policy Act (MEPA) similarly require that the project description in the EIS "allow the public to identify the purpose of the project." Minn. R. 4410.2300(E).

³ *City of Angoon v. Hodel*, 803 F.2d 1016, 1021 (9th Cir. 1986); *Citizens Against Burlington, Inc. v. Busey*, 938 F.2d 190, 196 (D.C. Cir. 1991).

⁴ *Citizens Against Burlington*, 938 F.3d at 199.

⁵ *BioDiversity Conservation Alliance v. Bureau of Land Mgmt.*, 608 F.3d 709, 715 (10th Cir. 2010).

0190-2 cont'd

0190-2

Continued

company's purpose in proposing the GNTL Project. Specifically, the Application states that the purpose of the GNTL is:

To efficiently provide the Applicant's customers and the region with clean, emission-free energy that will

- (a) help meet the region's growing energy demands
- (b) advance the Applicant's *EnergyForward* strategy of increasing its generation diversity and renewable portfolio
- (c) strengthen system reliability
- (d) fulfill the Applicant's obligations under its power purchase agreements with Manitoba Hydro

all in a manner that is consistent with the Applicant's commitment to making a positive impact on communities.

An EIS that studies the potential environmental effects of a private applicant's proposed project should never attempt to "redefine the goals of the proposal,"⁶ as the DEIS does in Section 2.2. Indeed, an agency has a responsibility to consider "private goals, especially when the agency is determining whether to issue a permit or license."⁷

To the extent that the DEIS omits information from the Application on the grounds that "the need for the transmission line is the central issue of the MPUC's ongoing certificate of need proceeding," it is both outdated and incorrect. As the DEIS itself acknowledges elsewhere, the MPUC approved at its May 14, 2015 agenda hearing granting a Certificate of Need for the GNTL Project and subsequently on June 30, 2015 issued a written order, for which no party requested reconsideration.⁸ Consequently, the need for the GNTL Project can no longer be questioned.⁹ At the same time, federal law requires the EIS to account for Minnesota Power's "private goals" as it evaluates alternatives.¹⁰ The DEIS as written does not fulfill this requirement.

Minnesota Power's statement of purpose should appear, word-for-word, in the EIS. Only then can the EIS's evaluation of alternatives be properly "shaped by" both the Application at issue and DOE's responsibility to consider whether to issue a Presidential permit.

II. The Department of Energy's preferred border crossing is the only feasible border crossing alternative.

A. The federal government has the exclusive authority to select the location of the international border crossing.

Executive Order 10485 states that "the proper conduct of the foreign relations of the United States requires that executive permission be obtained" for any facilities located "at the borders of the United States." That executive permission takes the form of a Presidential permit, which—in

⁶ *Citizens Against Burlington*, 938 F.2d at 199.

⁷ *Alaska Survival v. Surface Transp. Bd.*, 705 F.3d 1073, 1085 (9th Cir. 2013).

⁸ MPUC Docket No. E015/CN-12-1163, MPUC Order dated June 30, 2015.

⁹ Minn. R. 7850.3700, subp. 7.

¹⁰ *Id.*

0190-3

MN PUC is the siting authority for transmission lines within the state of Minnesota up to the U.S.-Canada international border. The EIS analyzes alternative border crossings that were proposed during scoping at the request of resource agencies that are intended to inform the MN PUC transmission line route selection. At the time of the state scoping decision (see Appendix D), the Applicant did not sufficiently object to the scoping expansion. MN PUC cannot authorize an international border crossing, but the MN PUC may perform its due diligence in considering alternative routes to what was proposed by the Applicant in its Route Permit application.

Sections S.7 and 4.1.1 of the EIS are made to clearly state that the alternative border crossings considered in the EIS are done so only for the purposes of the analysis supporting the Route Permit and transmission line siting decision, but are not being considered by DOE as alternatives to its consideration of the crossing proposed by the Applicant in its applications to both DOE and MN PUC at latitude 49 00 00.00 N and longitude 95 54 50.49 W, roughly 2.9 miles east of Highway 89 in Roseau County, Minnesota. This proposed border crossing is also identified as DOE's preferred alternative in the EIS in Sections S.6.2, 1.2.2, and 1.2.2.1.

0190-3

0190-3 cont'd

0190-3

Continued

the case of electric transmission facilities—must be obtained from DOE.¹¹ As a federal district court in Minnesota has explained, “the President’s authority to issue [a] border-crossing Permit comes by way of his constitutional authority over foreign affairs and authority as Commander in Chief”¹²

By nature, the conduct of foreign relations is “an area where federal uniformity is essential.”¹³ “Foreign commerce,” in particular, “is pre-eminently a matter of national concern.”¹⁴ To that end, Article II of the Constitution gives the President the “vast share of responsibility for the conduct of our foreign relations.”¹⁵

In the case of Presidential permits for international border crossings, the President is explicitly exercising the federal power to conduct “foreign relations.”¹⁶ When such exclusive “national power” is invoked, it may not be “obscured by state or local action.”¹⁷ Indeed, the President’s authority to conduct foreign relations preempts and invalidates any action by state or local entities that would infringe on the national power.¹⁸ States simply are not permitted to “intrude[] . . . into the field of foreign affairs[,] which the Constitution entrusts to the President and the Congress.”¹⁹

DOE’s role under Executive Order 10485 is to consider whether issuing a Presidential permit for the border crossing facility proposed by Minnesota Power is consistent with the public interest.²⁰ If DOE determines that a permit should issue, it will be exercising delegated Presidential authority to conduct foreign relations.²¹

Neither the State of Minnesota nor any other state has authority to alter the location of an international border crossing. The Final EIS accordingly should note that any routes inconsistent with the single border crossing for a Presidential permit are outside of the MPUC’s jurisdiction to approve.

B. The Department of Energy’s preferred alternative is the only permissible endpoint for the GNTL project.

A Presidential permit application is a request for permission to cross the U.S. border at a single, specific location. DOE regulations implementing Executive Order 10485 accordingly require that every application for a Presidential permit include a “detailed map . . . showing the physical location, longitude and latitude of the facility on the international border.”²² After extensive

¹¹ *Id.*; see Executive Order 12038 (transferring authority from the Federal Power Commission to the Secretary of Energy).

¹² *Sierra Club v. Clinton*, 689 F. Supp. 2d 1147, 1163 (D. Minn. 2010).

¹³ *Japan Line Ltd. v. Los Angeles Cty.*, 441 U.S. 434, 448 (1979).

¹⁴ *Id.*

¹⁵ *American Ins. Ass’n v. Garamendi*, 539 U.S. 396, 414 (2003).
¹⁶ E.O. 10485.

¹⁷ *Crosby v. National Foreign Trade Council*, 530 U.S. 363, 381 (2000).

¹⁸ See, e.g., *American Ins. Ass’n*, 539 U.S. at 419-20; *Crosby*, 530 U.S. at 385-86.

¹⁹ *American Ins. Ass’n*, 539 U.S. at 417 (quoting *Zscherig v. Miller*, 389 U.S. 429, 432 (1968)).

²⁰ Executive Order 10485, § 1(a)(3).

²¹ *Sierra Club*, 689 F. Supp. 2d at 1163.

²² 10 C.F.R. § 205.322(b)(2).

0190-3 cont'd

0190-3

Continued

0190-4

Thank you for your comment. No change is made in the EIS in direct response to this comment, however, Section 1.3.2 is updated with information about the status of the Canadian process for siting this project in Canada by Manitoba Hydro as provided by comment letters submitted by both the Province of Manitoba's General Counsel (see response to comment 078-1) and Manitoba Hydro (see response to comments 079-1 and 079-2).

negotiations, Minnesota Power and its Canadian partner, Manitoba Hydro, agreed on the border crossing location that DOE is considering as part of the Presidential permit process.²³

The DEIS announces in Section 1.2.2.1 that "DOE's preferred alternative is to grant a Presidential permit to Minnesota Power's proposed international border crossing." That announcement should foreclose consideration of any alternative border crossings. DOE has exclusive authority to permit an international border crossing, and its preference is to permit the border crossing agreed to by Minnesota Power and Manitoba Hydro that is being considered in the Presidential Permit process (the "Presidential Permit Border Crossing"). The Minnesota transmission line routing process should take that border crossing as the northern endpoint for the GNTL Project, just as it has accepted the expanded Blackberry substation as the southern endpoint.

Because DOE has identified a preferred international border crossing, the Final EIS should note that all other border crossings are no longer permissible endpoints for the GNTL Project.

C. Because Canada's regulatory process is not considering any other crossing, the other "alternatives" would not result in a transmission line project.

Even apart from DOE's exclusive jurisdiction over international border crossings, and its preferred alternative for this Project, no border crossing is feasible other than the Presidential Permit Border Crossing.

1. No alternative border crossing is feasible given the current status of the Canadian environmental review process.

As the DEIS was being finalized, the government of Manitoba filed a letter with the Administrative Law Judge assigned to the GNTL Route Permit proceedings.²⁴ That letter explains that, after a "detailed route selection process" in Canada, "*Manitoba Hydro has selected a specific proposed route*" for purposes of the Canadian regulatory process.²⁵ That route ends at the Presidential Permit Border Crossing.²⁶ When Manitoba Hydro files its Environmental Impact Statement with the appropriate Canadian authorities, it will not contain any alternative border crossings.²⁷ Canadian authorities will conduct "an extensive review" of Manitoba Hydro's filing, but "that review is based upon the *single proposed route and selected border crossing*."²⁸ No other border crossing will be considered as part of the Canadian process.²⁹ And, as the DEIS acknowledges, it is not DOE's or EERA's role to consider potential environmental effects in Canada, or to second-guess the Canadian environmental review process.³⁰

0190-4

²³ Letter from Manitoba Hydro to Minn. Dep't of Commerce at 2 (July 30, 2015) (MH Letter).

²⁴ See Docket No. E015/RP-14-21, Document ID 0156-111176-01, Letter from Gordon E. Hannon, General Counsel, Manitoba Justice to Administrative Law Judge Ann O'Reilly (June 2, 2015) (Manitoba Justice Letter).

²⁵ *Id.* at 6 (emphasis added).

²⁶ *Id.*

²⁷ *Id.* at 6-7; MH Letter at 2.

²⁸ *Id.* at 7 (emphasis added).

²⁹ *Id.* at 7-8.

³⁰ DEIS at 11-12. ("NEPA does not require an analysis of environmental impacts that occur within another sovereign nation that result from actions approved by that sovereign nation.")

0190-4 cont'd

0190-4

Continued

Even more recently, Manitoba Hydro itself has transmitted a letter to EERA clearly stating that it “can only support the agreed-upon border crossing . . . known as the “Proposed Border Crossing – Blue/Orange Route in the Draft EIS.”³¹ That letter briefly summarizes the “robust, transparent analysis of routes and all potential border crossings” that took place in Canada, and explains how that process led to the selection of the Blue/Orange Route as the “preferred end point for each entity.”³² Leaving no doubt about where things now stand in the Canadian process, the letter further states that “Manitoba Hydro does **not** have routes that connect to the border crossing variations included in the Draft EIS.”³³

It makes no common sense for the EIS to continue evaluating border crossing alternatives that are not being considered as part of the Canadian review process. The GNTL Project cannot exist unless it connects to the Manitoba Hydro transmission line that will bring hydroelectricity into the United States from Canada. A border crossing that does not match any crossing being considered in Canada is fundamentally infeasible, and should be treated that way in the Final EIS.

Practically speaking, the selection of an “alternative border crossing” would cause both Minnesota Power and Manitoba Hydro to reconsider their long-term plans for meeting their customers’ energy needs.³⁴ The companies have spent considerable resources identifying a border crossing that was “in the best interests of the overall project and acceptable to both parties.”³⁵ If the MPUC identified a different crossing, it is unlikely that the companies would invest more time or effort in the GNTL, and the project would be abandoned.

2. It is not feasible for Minnesota Power to submit a new Presidential permit application at this stage.

The DEIS fails to recognize the infeasibility of the alternative border crossings. Instead, it proposes in Section 1.2.2.1 that “[i]f the MN PUC issues a permit for a route with a different border crossing . . . , the Applicant could submit an amended Presidential permit application to DOE. . . .” Setting aside the DOE’s exclusive power to determine the location of an international border crossing, requiring Minnesota Power to restart the application process is infeasible because it would thwart the purposes of the GNTL Project.

Selecting an “alternative border crossing” would not simply require Minnesota Power to restart its Presidential permit application process. Manitoba Hydro would also have to agree to that border crossing and obtain approval from Canadian authorities.³⁶ And even if Manitoba Hydro did file “new or amended applications containing a different proposed route,” it “would be very unlikely that the necessary studies and the regulatory process would be completed in time to

³¹ MH Letter at 1.

³² *Id.* at 2.

³³ *Id.*

³⁴ MPUC Docket No. E015/CN-12-1163, MPUC Order dated June 30, 2015 at 2: “The project is part of a joint effort with Manitoba Hydro to construct a new Canada-United States transmission interconnection. The project is intended to provide hydropower and wind storage energy products to Minnesota Power’s customers and will provide an additional 500 MW of transfer capacity from the line.”; see MH Letter at 2.

³⁵ Manitoba Justice Letter at 6; MH Letter at 2.

³⁶ Manitoba Justice Letter at 6.

0190-5

Thank you for your comment. The EIS analyzes alternative border crossings that were proposed during scoping at the request of resource agencies and are intended to inform the MN PUC transmission line route selection. MN PUC cannot authorize an international border crossing, but the MN PUC may perform its due diligence in this EIS in considering alternative routes to what was proposed by the Applicant in its Route Permit application.

Sections S.7 and 4.1.1 of the EIS are changed to clearly state that the alternative border crossings considered in the EIS are done so only for the purposes of the analysis supporting the Route Permit and transmission line siting decision, but are not being considered by DOE as alternatives in its Presidential permit decision. The international border crossing proposed by the Applicant in its applications to both DOE and MN PUC at latitude 49 00 00.00 N and longitude 95 54 50.49 W, roughly 2.9 miles east of Highway 89 in Roseau County, Minnesota, is clearly identified as DOE’s preferred alternative in the EIS in Sections S.6.2, 1.2.2, and 1.2.2.1.

0190-5

DOE has determined the purpose and need is adequate, per program goals and objectives, and no changes are made to the alternatives analyzed in the EIS.

0190-5 cont'd

0190-5
Continued

0190-6

The potential impact on human settlement and agricultural land is evaluated for all alternatives in the EIS. As discussed in Section 5.2.1 of the EIS, high voltage transmission line projects, like the proposed Great Northern Transmission Line project, have the potential to impact human settlement in a variety of ways, including potential displacement of humans which can be assessed by evaluating the presence or absence of human settlement features like residences, churches, schools, etc. The EIS also goes on to assess the potential for impacts to humans for all alternatives in terms of several other closely related resource areas, including, noise, public health and safety, transportation, air quality, electronic interference, and property values. Impacts to agricultural lands and practices are evaluated for all alternatives in Chapter 6 of the EIS.

0190-6

The purpose of the EIS is to evaluate the potential impacts from DOE granting a Presidential permit for the proposed Great Northern Transmission Line project and alternatives evaluated to inform the Route Permit decision to be made by the MN PUC.

No changes are made to the EIS in response to this comment.

meet the proposed 2020 in-service date” required by the power purchase agreements between Manitoba Hydro and Minnesota Power.³⁷

Fulfilling the June 2020 in-service date specified by those power purchase agreements is one aspect of Minnesota Power’s purpose for the GNTL Project. That purpose stems from the MPUC’s determination that Minnesota Power faces “capacity and energy deficits over the period 2020 – 2035.”³⁸ As a result, Minnesota Power “need[s] a significant additional amount of peaking capacity and energy to meet its future capacity and energy needs.”³⁹ If an alternative border crossing cannot meet the June 2020 in-service date, it is not feasible, and should be excluded from further consideration in the EIS under NEPA⁴⁰ and the MPUC’s rules.⁴¹

The Final EIS should state that all “alternative border crossings” are infeasible because they cannot satisfy the Project’s purpose and need to have the GNTL in service by 2020, as required by Minnesota Power’s power purchase agreements with Manitoba Hydro.

III. The DEIS does not adequately describe potential effects on human settlement and agriculture.

A. The Roseau Lake WMA Variation 1 and Cedar Bend WMA Variation violate Minnesota Power’s purposes for the GNTL Project.

As a matter of corporate philosophy, Minnesota Power is committed to having a positive impact on the communities it serves. That is why the company spent years planning the GNTL Project, listening to the people who lived in the areas where the line might be routed, and carefully identifying a route that would receive widespread acceptance from the community. By and large, the company believes that it was successful in achieving that goal, as evidenced by the minimal amount of public opposition to the Proposed Blue/Orange Route.

To ensure that the GNTL Project remained consistent with Minnesota Power’s philosophy as it progressed through environmental review, the company built its commitment to having a positive impact on communities into the project’s statement of purpose. As discussed above, DOE and EERA are legally obligated to consider that purpose as part of the DEIS’s statement of underlying purpose and need for the project.

Unfortunately, the DEIS contains two route variations that plainly would not have a positive impact on their host community. Roseau Lake WMA Variation 1 would, as the DEIS acknowledges, include 50 residences within a 3,000-foot route—more than one residence for every mile of transmission line.⁴² The route would also include more than 12,600 acres of

³⁷ Manitoba Justice Letter at 8; MH Letter at 2.

³⁸ MPUC Docket No. E015/CN-12-1163, Findings of Fact and Conclusions of Law at 33, ¶ 175 (Mar. 16, 2015) as approved in MPUC Order dated June 30, 2015.

³⁹ *Id.*

⁴⁰ “The [EIS] need not consider an infinite range of alternatives, only reasonable or feasible ones.” *Alaska Survival*, 705 F.3d at 1087.

⁴¹ Minn. R. 7850.3700, subp 7 (“When the Public Utilities Commission has issued a Certificate of Need for a . . . high voltage transmission line . . . the environmental assessment shall not address questions of need, including size, type, and timing; questions of alternative system configurations; or questions of voltage.”).

⁴² DEIS at 270, Table 6-13.

0190-6 cont'd

Continued

agricultural land.⁴³ Having spoken with the farmers and residents who would be affected by Roseau Lake WMA Variation 1, Minnesota Power can say with confidence that they would not view the transmission line as having a positive effect on their community. Indeed, many of them have expressed staunch opposition to the line being located on their property.

The situation is similar with the Cedar Bend WMA Variation. There are 101 residences within the 3,000-foot route width.⁴⁴ That means Minnesota Power would face an average of more than five residences for every mile of transmission line. The route also contains over 2,600 acres of agricultural land.⁴⁵ Again, Minnesota Power has listened to the residents in this area, and knows that they do not want a transmission line built along the proposed Cedar Bend WMA Variation route. Building a line in the face of unified, vocal public opposition is not usually consistent with having a positive impact on communities.

Because the Roseau Lake WMA Variation 1 and the Cedar Bend WMA Variation would each have a negative effect on their host communities, they do not satisfy Minnesota Power's purpose in building the GNTL Project, and should be eliminated from further consideration in the Final EIS.

B. The DEIS must account for effects on human settlement by identifying effects on privately owned land.

Among the 14 "routing factors" that the MN PUC considers when deciding whether to permit a high-voltage transmission line, the first-listed is "effects on human settlement."⁴⁶ The DEIS acknowledges as much in Section 1.3.1.1.

Minnesota Power's purpose for the GNTL—which, as discussed above, should be incorporated into the EIS—also includes "making a positive impact in on communities." Consideration of private property accordingly was central to the company's multi-year routing and public outreach process for the GNTL.⁴⁷

In addition, the Working Group that was assembled by the EERA to review the GNTL project emphasized that the GNTL "is a public purpose project and should therefore be routing as much as possible on public land, minimizing impact to human settlement and private property use."⁴⁸

Despite all of this, the DEIS's discussion of effects does not measure the effects of the proposed route and route variations on privately owned property. As a result, the DEIS does not adequately measure "effects on human settlement," as required by the Minnesota Rules.

To begin with, Chapter 5 of the DEIS describes the Affected Environment and Potential Impacts, but omits any discussion of privately owned lands as a factor that would be affected by the Project. Consistent with Minnesota Rules 7850.4100(A), Minnesota Power's purpose for the

⁴³ *Id.* at 272, Table 6-14.

⁴⁴ DEIS at 289, Table 6-25.

⁴⁵ *Id.* at 291, Table 6-26.

⁴⁶ Minn. R. 7850.4100(A).

⁴⁷ Minnesota Power Received over 1,000 comments on the Project, the majority of which expressed concern over impacts to private property, residences, and agriculture.

⁴⁸ DEIS Appendix C at 11.

0190-7
The tables in the Land Use Compatibility Sections in Chapter 6 of the EIS are updated with the total acres of land in the ROW, along with acres of public and private land in the ROW. The titles of the land ownership figures were updated to indicate public land ownership. As such, private land is not shown on the land ownership figures.

0190-7

GNTL Project, and the instructions from the Working Group, Chapter 5 should be revised to include a statement that effects on privately owned lands are an important consideration in the EIS.

Chapter 6 is also deficient when it describes the Comparative Environmental Consequences of each Route and Alignment Modification.

Although the Human Settlement analysis for each "Variation Area" discusses land ownership, it does not mention privately owned land. Likewise, the acreage of privately owned land within each Variation is not included in any table or figure in Chapter 6. The discussion of Land Ownership instead focuses on how each Variation impacts state forest, state fee, county, state conservation, or USFWS interest lands.

Table 6-15 for the Roseau Lake WMA Variation Area is presented as an example:

Table 6-15 Land Ownership within the Anticipated ROW in the Roseau Lake WMA Variation Area

Resource	Type	Evaluation Parameter	Roseau Lake WMA Variation Area	
			Proposed Blue/Orange Route	Roseau Lake WMA Variation 1 Roseau Lake WMA Variation 2
State Forests	--	Acres within ROW	334	6
State Fee Lands ⁽¹⁾	--	Acres within ROW	453	6
Total				145
State Fee Lands ⁽¹⁾ by Type	Consolidated Conservation	Acres within ROW	346	6
	Other - Acquired, Tax Forfeit, Volstead	Acres within ROW	13	0
	Trust Fund	Acres within ROW	94	<0.5
	Federal - State Lease	Acres within ROW	0	0
		Acres within ROW		
				11
				39
				0

Note(s): Totals may not sum due to rounding.
 (1) This dataset represents state land ownership using public land survey quarter-quarter sections as the smallest unit. In some cases, multiple state lands are located within a single quarter-quarter section. Therefore, features may be duplicated and the analysis results may over-represent potential impacts.

Source(s): MnDNR 2003, reference (148); MnDNR 2014, reference (152)

All of the "Land Ownership within the Anticipated ROW ..." tables in Chapter 6 generally look similar to this example.⁴⁹ None of them mention private land ownership.⁵⁰

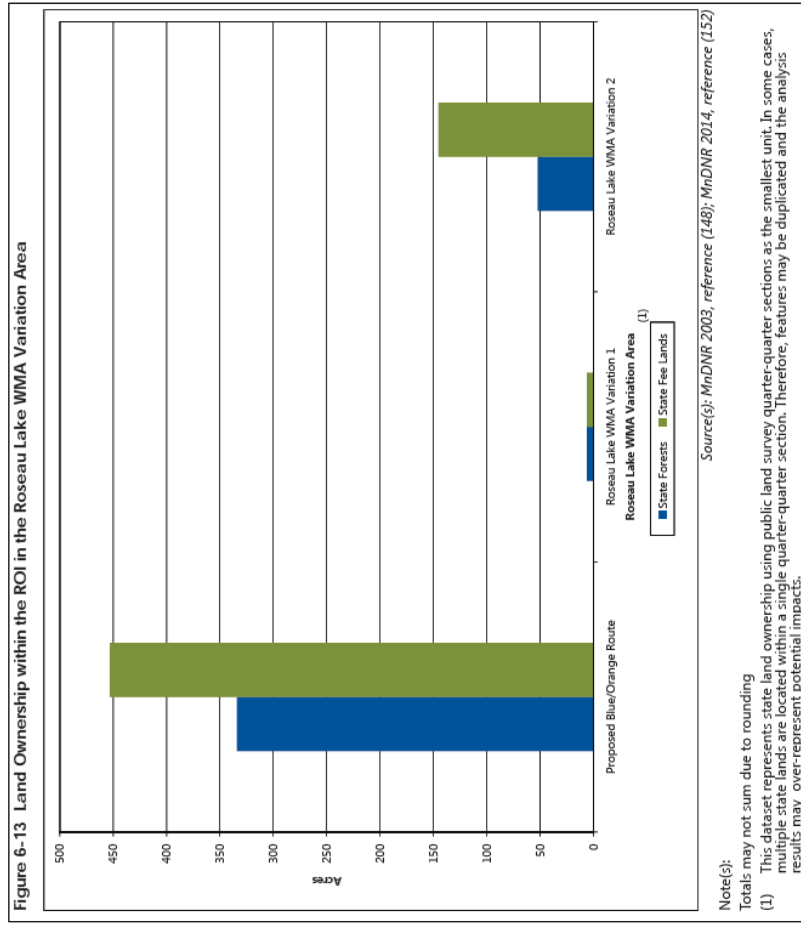
Because these tables do not account for privately owned land, they are unclear about how many **total** acres are within the ROW for each alternative within the Variation Area. More important, the tables make no effort to calculate the amount of privately owned land within each ROW. It is difficult for the Administrative Law Judge (ALJ), the MN PUC, or any other reader to fully

⁴⁹ Table 6-3; Table 6-15; Table 6-27; Table 6-39; Table 6-51; Table 6-68; Table 6-80; Table 6-91; Table 6-102; Table 6-112; Table 6-124; Table 6-136; Table 6-145; Table 6-162; Table 6-174; Table 6-185; Table 6-197; and Table 6-206.

⁵⁰ In addition, the land ownership tables are misleading about how much public land is within the ROW. The categories of "State Forests" and "State Fee Land" appear to overlap, leaving the impression of more total acres of state land than are actually present.

account for human settlement effects without an understanding of how much land is owned by individual human beings—many of whom likely live and work on the land they own.

The problem with the land ownership tables in Chapter 6 is, if anything, magnified in the corresponding figures. For example, Figure 6-13, entitled “Land Ownership within the ROI in the Roseau Lake WMA Variation Area,” shows that the Proposed Blue/Orange Route has over 450 acres of state fee lands and more than 300 acres of state forests. Roseau Lake WMA Variation 1, by contrast, has very little of either. The height of the bars strongly suggests that the Proposed Blue/Orange Route has significantly greater effects on “Land Ownership.”

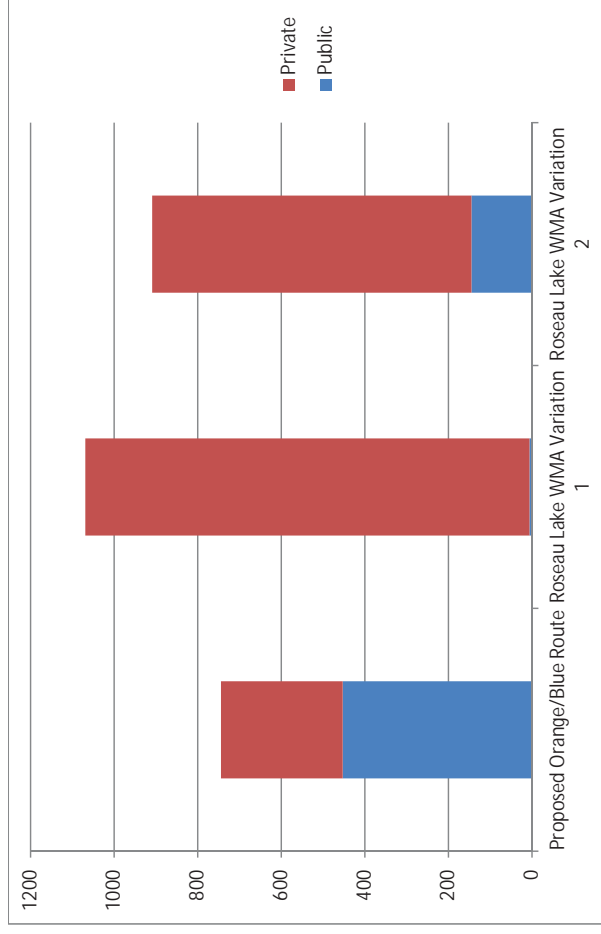


0190-7 cont'd

0190-7

Continued

In fact, the huge swaths of land within the Roseau Lake WMA Variation 1 ROI are privately owned. If Figure 6-13 took that land ownership into account, it would look quite different:



Because tables and figures that omit the amount of privately owned land from the calculation of land ownership are misleading, and do not fully account for potential effects on human settlement, all of the land ownership figures and tables, as well as the accompanying discussion, should be revised to include effects on privately owned land.

C. The discussion of aesthetics should recognize that the ROI is too simplistic in agricultural areas.

Consistent with the instructions in the Minnesota Rules, the DEIS attempts to evaluate effects on human settlement in part by considering the Project's potential aesthetic effects.⁵¹ Unfortunately, that analysis falls short in a manner that understates aesthetic effects, especially in agricultural areas.

Section 5.3.1.1 (and similar sections for the Central and East Sections) defines the ROI for aesthetic effects as "1,500 feet from the anticipated alignment of the transmission line." That distance is reasonable in places where the line is located in a forested area, and thus visually obscured by surrounding trees.

The situation is different, however, in predominantly agricultural areas. As the DEIS acknowledges, "[a]esthetic impacts are likely to be greatest for views of the proposed Project in

⁵¹ Minn. R. 7850.4100(A).

0190-8

As stated in Section 5.3.1.1, "The 1,500 foot ROI for aesthetic resources was identified because the proposed Project is *most likely* to be visible within this near-foreground distance zone and views of the proposed Project from aesthetic resources within this distance zone have the *greatest potential* to result in visual impacts for sensitive viewers" (*emphasis added*). The EIS also states, in Section 5.3.1.1, that "Aesthetic impacts are likely to be greatest for views of the proposed Project in the foreground distant zone (i.e., up to about 0.5 miles from the proposed Project), but impacts can also be substantial for views from greater distances." Thus, 1,500 feet provides a reasonable distance within which aesthetic resources may be identified and compared for the different route variations and modifications to assess potential aesthetic impacts, but the EIS does not identify that aesthetic impacts would only occur within this distance. In addition, while distance is an important factor in determining the level of aesthetic impact, a variety of other factors in combination contribute to determining aesthetic impacts. As stated in Section 5.3.1.1 "Impacts on aesthetics are assessed based on the extent of changes to landscape character and scenic quality, the level of contrast introduced by the proposed Project, its proximity to viewers, and the visual sensitivity related to views of the proposed Project." Depending on these factors, aesthetic impacts are as likely to occur in forested areas as agricultural areas. Therefore, while there is a greater potential for aesthetic impacts in the near-foreground and foreground distance zones, it cannot be reliably stated that there is a "potential for greater aesthetic effects in agricultural areas, where long-distance visibility tends to be much higher."

Visual simulations, provided in Appendix N, Photo Simulations, of the EIS, were prepared for seven viewpoints within the study area to represent typical views of the proposed Project. These simulations are intended to provide reviewers with a sense of what the transmission line would look like from various distances and in various landscape settings within the study area.

No changes are made to the EIS in response to this comment.

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0190-8

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the foreground distance zone (i.e. up to **about 0.5 miles** from the proposed Project), but impacts can also be substantial for views from greater distances.”⁵² In fact, “a recent study on the visibility of transmission lines in western landscapes” found that structures were “noticeable to casual observers at **up to 10 miles** and strongly attracted attention at up to **3 miles**.”⁵³ Residents of the agricultural areas that predominate in the West Section of the study area may thus experience aesthetic effects—in other words, they will see the proposed transmission line—at distances far greater than 1,500 feet.

For example, Table 6-13, “Aesthetic Resources within the ROI in the Roseau Lake WMA Variation Area,” currently lists the number of houses within 500 feet, 1,000 feet, and 1,500 feet of the proposed route and variations. Most of that Variation Area—especially for Roseau Lake WMA Variation 1—is within a “western landscape” like the one referenced in the DEIS. There are 727 residences within 3 miles of Roseau Lake WMA Variation 1. The study cited in Chapter 5 suggests that most or all of these residences would be affected by the proposed variation.

To account for the study of western landscapes cited in the DEIS, Section 5.3.1.1 of the Final EIS should include a discussion that emphasizes the potential for greater aesthetic effects in agricultural areas, where long-distance visibility tends to be much higher.

D. Displacement effects are not the same for all alternatives, and should not be dismissed in Chapter 5.

Under Minnesota Rules, consideration of effects on human settlement must include “displacement” caused by the proposed transmission line.⁵⁴ The DEIS describes displacement as something that “would have similar expected general impacts . . . for all proposed routes and variations.”⁵⁵ According to the DEIS, “[d]isplacements are relatively rare,” and would occur only within the 200-foot ROW for the transmission line.⁵⁶ The DEIS goes on to conclude that “there are no residences, churches, schools, daycares, or nursing homes within the [200-foot] ROI that would be displaced as a result of the anticipated alignment.”⁵⁷

Simply using the ROW as the ROI for displacement does not adequately account for potential effects. As the DEIS explains in Section 1.3.1.4, the MN PUC will permit a 650-3,000 foot route. The 200-foot ROW may be located anywhere within the permitted Route, not necessarily on the presently anticipated alignment. That means that any residence or other building within the entire 650-3,000 foot route faces a possibility of displacement.⁵⁸ This potential effect could readily be captured using a table that included both the number of residences and other buildings within the 200-foot ROW, as well as the number of residences or other buildings within the potential 3,000-foot permitted route.

⁵² DEIS at 159 (emphasis added).

⁵³ *Id.*

⁵⁴ Minn. R. 7850.4100(A).

⁵⁵ DEIS at 77.

⁵⁶ *Id.* at 78.

⁵⁷ *Id.*

⁵⁸ The Final EIS should note that Minnesota Power has carefully evaluated the Proposed Blue and Orange Routes, and is confident that it can avoid displacing any residences along those routes. The route variations, by contrast, have not been subject to careful scrutiny, increasing the risk of displacement within the route.

0190-9

While the MN PUC may permit a 650-3,000 foot route, as identified in the Generic Route Permit Template (Appendix B of the EIS, Section 3.1): “Any alignment modifications within the designated route shall be located so as to have comparable overall impacts relative to the factors in the Minn. Rules, part 7850.4100, as does the alignment 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 4.1 of this permit.”

When evaluating direct impacts throughout the EIS, the ROW, not the route width is regularly used for analysis because of this procedural requirement should the proposed alignment change. Further, including an evaluation of the route width instead of the ROW would result in an overestimation of the potential impacts as not all residences outside of the defined ROW would be displaced; only those that would be within the 200 foot ROW of the revised alignment.

0190-9

No changes are made to the EIS in response to this comment.

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For example, as already noted above, the Roseau Lake WMA 1 Variation has no residences within the expected ROW, but 50 within the potential 3,000-foot route. The Cedar Bend WMA Variation is just 19.6 miles long, but has 101 homes within a 3,000-foot route width. The Effie Variation has 14 residences within its 3,000-foot route, but would have less room to maneuver around them due to the presence of two existing high-voltage transmission lines. None of these issues is adequately addressed in the DEIS.

The Final EIS should acknowledge in Section 5.2.1.1 that any residence or other building within the permitted Route could be displaced. Moreover, because the number of residences and other buildings within the potential routes, the issue of displacement should be discussed for each Variation Area in Chapter 6, not dismissed as a similar effect in Chapter 5.

E. State forests should not be overemphasized as an effect on human settlement because many of them are inaccessible to residents.

As described above, the DEIS underemphasizes displacement and aesthetic effects on residences—both of which are issues directly relevant to human settlement. At the same time, the DEIS overemphasizes certain “aesthetic resources” that have a far more attenuated connection to human settlement.

Section 5.3.1.1 rightly acknowledges that “visual resources are generally defined as the natural and built features of the landscape that may be viewed by the public”⁵⁹ Yet its definition of “aesthetic resources includes “state forests” and “national forests,” neither of which is typically “viewed by the public” within the Project Area. What is more, the DEIS already addresses public recreation opportunities within state forests by including trails, campgrounds, and water access points in its list of aesthetic resources. Adding state forests to the list essentially double-counts these public recreational opportunities, while ignoring the fact that the vast state forests in the project area are rarely used as recreational areas. The Final EIS accordingly should eliminate state forests from its calculation of aesthetic effects.

The presence of state forests is also overemphasized or double-counted in other parts of the DEIS. Chapter 6 includes state and national forests in its analysis of Land Ownership, Land-Based Economies, and Vegetation for each Variation Area. Chapter 7 accounts for state forests when evaluating the relative merits of each route variation’s effects on Aesthetics, Land Use Compatibility, Forestry, Vegetation, and Wildlife.

As Map 5-12 illustrates, forest land is the dominant land cover type within the proposed routes and route variations. As a result, the proposed routes and variations have nearly identical effects on state forests—especially when those routes are considered as a whole. It would not be unreasonable to discuss state forests in Chapter 5 as effects common to all alternatives, and omit them from the comparative analyses in Chapters 6 and 7.

The Final EIS should explicitly acknowledge that all proposed routes and route variations affect similar amounts of state forest land. In addition, Chapter 6 of the Final EIS should not include state forests in its discussion of aesthetics, vegetation, or wildlife. The presence of state forests is useful only to calculate effects on forestry and land ownership.

⁵⁹ DEIS at 158.

0190-10
Presence of state forest land is not double counted in the EIS. For example, in the Vegetation sections of Chapter 6, acres of GAP forested land cover types are provided in addition to acres of state forest land (in an effort to provide the reader with all relevant information). These acreages are not meant to be summed and are never summed in the EIS. Further, state forests serve multiple uses to the state and to the public (land-based economies, recreation and tourism, wildlife, etc.) and to accurately reflect the proposed Project’s impact on each of these uses, discussion of state forests within multiple resource areas is appropriate within the EIS.

No changes are made to the EIS in response to this comment.

0190-10

F. The DEIS should more clearly state the ways in which different alignments will affect agricultural lands.

In addition to requiring the MN PUC to consider a project's effects on human settlement, the Minnesota Rules also mandate consideration of "effects on land-based economies, including, but not limited to, agriculture, forestry, tourism, and mining."⁶⁰ This factor is especially significant in the Project Area, where agriculture is a rare resource, while forests and wetlands are plentiful. Yet the DEIS fails to fully capture the potential effects on agriculture in several places.

Section 5.3.2.1 describes the potential impact to agricultural practices across the Project Area. The text states:

The ROI for this analysis of impacts to agriculture includes the anticipated 200-foot ROW of the proposed transmission line [T]his ROI was selected based on the expectation that, given the construction activities proposed, the majority of impacts on agriculture would likely be limited to this area.⁶¹

Contrary to these statements in the DEIS, the effects of the proposed transmission line on agricultural practices are not generally temporary and short-term in nature, and they are not necessarily limited to the 200-foot ROW. Permanent effects that may occur outside of the ROW include effects on drive lines (for agricultural machinery) and effects caused by angle structures, which can limit aerial spraying for agriculture in an area much greater than the ROW. These concerns were raised during scoping, and should be addressed in the EIS.⁶²

Minnesota Power recognizes that permanent effects outside the ROW are not easily quantified in terms of acreage. Nonetheless, the discussion of Land-Based Economies in Sections 5.3.2.1, 5.4.2.1, and 5.5.2.1 should include language recognizing this potential for permanent, adverse agricultural effects outside of the ROW, particularly in the West Section.

IV. The DEIS's discussion of corridor sharing is misleading and inaccurate.

The Minnesota Rules for routing high-voltage transmission lines place particular emphasis on corridor sharing—i.e., the "use or paralleling of existing rights-of-way, survey lines, natural division lines, and agricultural field boundaries," and the "use of existing transportation, pipeline, and electrical transmission systems or rights-of-way."⁶³ Minnesota Power accordingly considered such corridor sharing opportunities when it developed its proposed routes. The DEIS's analysis of corridor sharing, however, fails to account for the different environmental benefits that different types of corridors may offer, especially in the context of a 500 kV transmission line like the GNTL.

⁶⁰ Minn. R. 7850.4100(C).

⁶¹ DEIS at 167.

⁶² See Scoping Summary Report at C-10, C-18.

⁶³ Minn. R. 7850.4100(H), (J).

0190-11

The majority of impacts to agriculture would occur within the ROW, as Chapter 5 and 6 of the EIS suggests. Section 5.3.2 discusses potential impacts to agriculture that may occur outside of the ROW, including aerial spraying, irrigation systems, and precision farming systems.

As discussed in Section 1.3.1.4 of the EIS, once a route is selected and a permit is issued, the Applicant would contact landowners to gather information about their property and their concerns and discuss how the ROW would best proceed across the property. The Applicant will work with landowners to minimize impacts to agriculture.

No changes are made to the EIS in response to this comment.

0190-12

References to an ROI in the Corridor Sharing sections of Chapter 5 and Chapter 6 are removed from the EIS.

The purpose of the Corridor Sharing sections in Chapter 6 is to present all available information on potential for paralleling existing corridors, including transmission lines, roads, trails, field lines, and PLSS boundaries. The tables in the Corridor Sharing sections of Chapter 6 are intentionally broken down by corridor types so that one can identify the percentages of each alternative that would parallel each type of existing corridor, as opposed to just providing a total number of corridor sharing for each alternative. Furthermore, these tables are broken down in a hierarchical manner to place emphasis on paralleling corridors in the following order: transmission line, road/trail, field line, and PLSS.

As the EIS states, paralleling existing corridors can reduce fragmentation on the landscape, which could influence impacts associated with human settlement and the natural environment. As such, the potential for paralleling existing transmission line corridors is discussed when analyzing all alternatives within a variation area in Chapter 6 for several resources, such as aesthetics, vegetation, and wildlife.

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0190-12

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0190-12 Continued. The ROI was used as an outer limit when reviewing the alternatives for corridor sharing or paralleling opportunities as required under Minnesota Rule 7850.4100 subpart h and subpart j. When the transmission line is located along other transmission lines, it was paralleling the other transmission lines, not sharing a corridor. Opportunities for corridor sharing or paralleling are located as close to the road, section line, etc. as possible in order to meet the intent of Minnesota Rule 7850.4100 subpart h and subpart j.

No changes are made to the EIS in response to this comment.

A. **The DEIS should be clear that not all “corridors” have the same—or any—environmental benefits, and adjust its calculations accordingly.**

1. **It is inappropriate to use a quarter-mile ROI to identify corridor sharing.**

To account for the presence of corridor sharing, the DEIS defined a ROI that “generally includes infrastructure corridors within approximately 0.25 miles of the proposed routes and variations.”⁶⁴ The DEIS explains this definition by first acknowledging that “as distance from existing corridors increases, the benefits of corridor sharing diminish.”⁶⁵ But the DEIS fails to explain why benefits exist within a quarter-mile (1,320 feet), and not some other, shorter distance.

As the DEIS acknowledges, the primary benefit of corridor sharing is to “minimize[] fragmentation of the landscape” and “adjacent property.”⁶⁶ But those benefits do not exist for corridors a quarter-mile away.

For example, an existing 200-foot transmission line ROW through a forested area may cause “fragmentation”—a break between two larger forested areas—that could adversely affect wildlife. If a new line is built parallel to the existing line, additional fragmentation is avoided if the new 200-foot ROW is adjacent or nearly adjacent to the existing one. If the new ROW is 1,000 feet away from the old one, however, the result would be *more* fragmentation—an isolated, 1,000-foot stretch of forested land in-between two 200-foot ROWs. Yet the DEIS counts both of these scenarios as favorable “corridor sharing.” Similarly, the DEIS would potentially identify a “corridor sharing” benefit for a transmission line that is hundreds of feet away from an agricultural field boundary, even though any location other than directly on the field boundary would offer no benefits whatsoever to adjacent property.

Because the 0.25 ROI results in misleading conclusions about corridor sharing, the Final EIS should not use it. The Final EIS should further recognize that, realistically, corridor sharing creates environmental benefits only if the new centerline is specifically designed to take advantage of a corridor sharing opportunity. Many of the route variations studied in the DEIS are not so designed.

2. **The only corridor sharing that provides significant environmental benefits for a project like this is paralleling a 500 kV or 230 kV line.**

The Minnesota Rules requiring the MN PUC to consider various types of corridor sharing do not distinguish between them. An environmental analysis should.

Not all corridor sharing offers the same environmental benefits, especially for a 500 kV transmission line like the GNTL. There are few, if any, environmental benefits to paralleling a field line, which may change from season to season. Likewise, paralleling PLSS lines, which are not necessarily connected to any landscape features, does not reduce environmental effects.

⁶⁴ DEIS at 193.

⁶⁵ *Id.*

⁶⁶ *Id.*

0190-12 cont'd

0190-12
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For similar reasons, paralleling an existing two-lane road offers no environmental benefits for a 500 kV transmission line. The primary benefit of paralleling an existing road or small transmission line is to reduce the total ROW by overlapping the two ROWs. The ROW for a 500 kV line, however, cannot overlap the ROW for an existing road or small transmission line.⁶⁷ What is more, paralleling existing roads and small transmission lines in agricultural areas could have the adverse effect of reducing farm equipment mobility. Ultimately, the only significant corridor sharing benefits that may exist in this project would accrue from paralleling an existing 230 kV or 500 kV transmission line, where corridor sharing could reduce fragmentation.

Section 6.2.2.6 and Table 6-23 illustrate the importance of this distinction. As written, the tables list and calculate all "Feature Sharing Corridors" for the Roseau Lake WMA Variations, including transmission lines, field lines, PLSS lines, and roads. Table 6-23 thus makes it appear that the Proposed Orange/Blue Route would offer the benefits of corridor sharing along 60% of its length, while the Roseau Lake WMA Variation 2 would provide those same benefits along 71% of its length. But it is far more important that 33% of the Proposed Orange/Blue Route would parallel large transmission lines, as opposed to 27% of the Roseau Lake WMA Variation 2.⁶⁸ Because the DEIS does not make this clear, it could be misleading to the decisionmakers and the public.

The Final EIS should explain that the benefits of corridor sharing are only significant where the proposed GNTL would parallel an existing 230 kV line or an existing 500 kV line. Other corridor sharing calculations should be dropped from comparison tables.

3. Paralleling the abandoned corridor offers no environmental benefits.

The Balsam Variation Area – Balsam Variation Scoping Decision Route was accepted for analysis in the DEIS because there once was a transmission line corridor in that area. That line has since been removed, the ROW sold, and the landscape re-planted with trees and other natural vegetation. Section 6.4.3 nevertheless concludes that the impacts of the Balsam Variation are minimized or reduced because it "parallels an abandoned corridor."

There are no environmental benefits to paralleling an abandoned transmission line corridor in these circumstances. Contrary to the suggestion in Section 6.4.3, the "abandoned corridor" is not being used as a trail, or for recreational purposes of any kind. It should instead be regarded as greenfield or open land that presents no corridor sharing opportunities.

The Final EIS should remove all text and tables that inaccurately describe the abandoned corridor or identify it as an opportunity for corridor sharing.

B. The DEIS inaccurately suggests that paralleling existing transmission lines reduces effects on forestry and vegetation.

Chapter 6 repeatedly concludes that paralleling existing transmission line ROW minimizes or reduces the impact to forestry, vegetation, wildlife, threatened and endangered species, and rare

⁶⁷ The DEIS is inaccurate on this point. *See* DEIS at 194.

⁶⁸ As discussed below, the variation itself parallels no transmission lines. Table 6-23 is actually counting the corridor sharing in areas where the Proposed Orange/Blue Route and Roseau Lake WMA Variation 2 share the same route.

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species and communities. As discussed above, corridor sharing—properly defined—may offer benefits insofar as it minimizes habitat fragmentation effects. But corridor sharing does not significantly reduce effects on forests.

To ensure safety and system reliability, ROW corridors for large transmission lines cannot overlap. Thus, even when a new line parallels an existing one, the entire 200-foot ROW must be cleared. If that ROW contains forest land or other vegetation, the same amount of forest would be cleared as if the line did not parallel an existing line. The DEIS seems not to recognize this fact, claiming that a route would have fewer effects on “timber activities” because it offered the most opportunities for corridor sharing.⁶⁹

The Final EIS should clearly state that paralleling existing transmission lines does not reduce the amount of forest land or vegetation that must be cleared within the 200-foot ROW, and should remove all statements suggesting that corridor sharing offers forestry or vegetation benefits.

C. The DEIS does not accurately describe the potential effects of existing transmission lines on electrical system reliability.

Electrical system reliability is one of the factors MN PUC is required to consider in determining which route to select and permit.⁷⁰ Strengthening system reliability is also one of Minnesota Power’s explicit goals in building the GNTL Project. The DEIS, however, fails to adequately account for the adverse effects on electrical system reliability that can result from transmission line paralleling and transmission line crossing.

1. Paralleling the existing Manitoba-United States tie lines increases adverse effects on system reliability.

The DEIS acknowledges that the more parallel ROWs or common corridors are used for multiple transmission lines—particularly high voltage facilities—the more likely it becomes that an outage involving multiple facilities could occur.⁷¹ The DEIS also rightly states that Minnesota Power should evaluate the electrical reliability impact of corridor sharing on a case-by-case basis.⁷² But the DEIS only applies this principle where the Project would be in a common corridor with the existing 500 kV Manitoba–United States tie line.⁷³ Other parallel corridor scenarios are generally handled by considering whether there would be two or three transmission lines in a common corridor. The DEIS generally assumes that locating two lines in the same corridor would not adversely affect electrical system reliability,⁷⁴ while locating three lines in the same corridor would have potential adverse effects.⁷⁵

In reality, the electrical reliability impacts of establishing a common transmission line corridor are much more nuanced, depending primarily on the purpose and expected performance of the transmission lines. In this case, the only parallel corridor scenarios that have any noteworthy

⁶⁹ DEIS at 275.

⁷⁰ Minn. R. 7850.4100(K); see DEIS at 194.

⁷¹ DEIS at 195.

⁷² *Id.*

⁷³ See, e.g., *id.* at 197 (discussing system reliability in the West Section).

⁷⁴ See, e.g., *id.* at 238 (discussing reliability in the East Section).

⁷⁵ *Id.*

0190-15

The following text is added to Section 2.8.3 of the EIS: According to the Applicant, the electrical reliability impacts of establishing a parallel transmission line corridor depend primarily on the purpose and expected performance of the transmission lines. None of the alternatives that parallel existing corridors with 69 kV, 115 kV, or 230 kV transmission lines that do not connect Manitoba and the United States would impact electrical system reliability.

If the proposed Project parallels the existing 230 kV tie line corridor, the impact of a simultaneous, unexpected outage of the two facilities on electrical reliability would be minimal, but still notable because the lines would share a common purpose of transferring power from Manitoba to the United States. If the Proposed Project parallels the existing 500 kV tie line corridor, a simultaneous unexpected outage would have a greater impact on electrical system reliability because the transmission lines not only share a common load, but would also carry similar (and greater) amounts of power.

If three transmission lines (i.e., the Proposed Project, 500 kV tie line, and 230 kV tie line) are located in parallel corridors, a simultaneous unexpected outage of the Proposed Project and two tie lines could have the greatest impact to electrical reliability.

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electrical system reliability impacts are those involving the Project and one or more of the existing Manitoba–United States tie lines. The Final EIS accordingly should recognize that none of the common corridor scenarios involving 69 kV, 115 kV, or 230 kV lines that do not connect Manitoba and the United States has any significant impact on electrical system reliability, regardless of how many transmission lines are located in the common corridor.

Where the Project shares a common corridor with the existing 230 kV tie line, the impact of a simultaneous, unexpected outage of the two facilities on electrical reliability would be relatively minimal, but still notable because the lines would share a common purpose of transferring power from Manitoba to the United States. Where the Project shares a common corridor with the existing 500 kV tie line, a simultaneous unexpected outage would have a greater impact on electrical system reliability because the lines not only share a common purpose, but would also carry similar (and greater) amounts of power. The Final EIS should thus recognize that establishing a common corridor with the Project and another Manitoba–United States tie line carries an elevated level of risk to electrical system reliability.

Where the Project would be placed in a common corridor with both of the existing tie lines, as proposed in the Effie and East Bear Lake Variations, a simultaneous unexpected outage of the three tie lines would have a substantially greater impact to electrical reliability than would paralleling just one of those tie lines. Such an event would leave only two operating tie lines, both of which are far smaller. This would severely weaken the Manitoba–United States transmission interface, putting a significant amount of Minnesota load at risk that would not be at risk during a simultaneous outage of the two 500 kV lines. The Final EIS accordingly should explain that establishing a common corridor with the Project, the existing 500 kV tie line and the existing 230 kV tie lines—as proposed in the Effie and East Bear Lake Variations—carries the highest level of risk to electrical system reliability of any proposed route or variation, and that a simultaneous unexpected outage of the Project and these two particular transmission lines could have severe consequences for the electric power system in Manitoba and Minnesota.

2. Crossing the existing Manitoba-United States tie lines increases adverse effects on system reliability.

The DEIS briefly acknowledges that Minnesota Power wants to minimize the number of times the GNTL crosses existing transmission lines, for the sake of system reliability.⁷⁶ But there is no further discussion of the construction, operation, and maintenance effects that would be caused by new transmission line crossings.

As with the parallel corridors, the only line crossing scenarios that have any noteworthy electrical system reliability effects are those involving the Project and one or more of the existing Manitoba–United States tie lines. To ensure safety, constructing such crossing spans would require an outage of the line being crossed. Increasing the number of crossings would increase the number of discrete outages required. This could limit construction timeframes because system requirements may not always permit such outages. The Final EIS should explicitly recognize this potential system reliability factor.

⁷⁶ DEIS at 195.

0190-16
The following text is added to Section 5.3.7 of the EIS: Based on information provided by the Applicant, to ensure safety, constructing such crossing spans would require an outage of the line being crossed. Increasing the number of crossings could increase the number of discrete outages required. This could limit construction timeframes because system requirements may not always permit such outages.

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Similar issues could occur during operation and maintenance of the Project. When one of the tie lines is out of service for maintenance, the power transfer capability on the Manitoba–United States interface is intentionally limited to avoid overloading the remaining tie lines. The larger the tie line, the more limited the transfer capability when it is out of service. When two of the tie lines must be taken out of service simultaneously, such as for maintenance of a crossing span, transfer capability during the outage would be further reduced, magnifying the impact of the outage on the reliability of the system. Limiting the number places where the GNTL crosses the existing Manitoba–United States tie lines would limit these effects.

Finally, transmission line crossings in general increase the likelihood of conductor-to-conductor contacts, which occur when the conductors of one line fall onto the conductors of another line. While this risk is relatively minimal, especially given that appropriate design criteria considerations that be incorporated at all crossing locations, it is impossible for one line to fall on the other if they do not cross.

The FEIS should recognize that the creating new transmission line crossings involving the existing Manitoba–United States tie lines has electrical reliability impacts during construction, operation, and maintenance of the Project, and that these impacts are best mitigated by limiting the total number of crossings.

V. The DEIS understates certain effects that would result from the route variations.

A. There is an active mine permit that makes the Balsam variation infeasible.

Under the Minnesota Rules, the MPUC is required to account for the effects of a proposed transmission line on “land-based economies,” including “mining.”⁷⁷

In December 2014, Magnetation LLC⁷⁸ began operating its “Plant Four” within the ROW for the Balsam Variation. Magnetation has both a mineral lease and a mine permit for this operation, neither of which is identified in the DEIS. In fact, the DEIS erroneously states that “no active mining operations that could pose existing public health and safety hazards have been identified in the Project footprint.”⁷⁹ That is no longer the case with respect to the Balsam Variation, which would traverse a large stockpile of red ore tailings that is a part of Magnetation’s active operations. It should go without saying that a high-voltage transmission line cannot feasibly cross an active mine site.

The Final EIS should state that Magnetation’s mining operations eliminate the Balsam Variation from further consideration as a feasible alternative.

⁷⁷ Minn. R. 7850.4100(C).

⁷⁸ Magnetation Inc. is a natural resources and iron ore mining company that has developed a process to recover high-quality iron ore concentrate from previously abandoned waste stockpiles and tailings basins. Magnetation LLC is a joint venture between Magnetation Inc. and AK Steel Corporation.

⁷⁹ DEIS at 155.

0190-17

The southern portion of the Balsam Variation crosses know state mineral resources leased by the MnDNR. The area is within the property boundary for Magnetation as shown on the map at <http://www.magnetation.com/home/wp-content/uploads/2014/05/Land-Plant4JLOPropBound300dpi.pdf>. While transmission lines cannot be constructed on active mine features, the 3,000 foot route width could allow flexibility to site the transmission line to avoid the feature. Construction of transmission lines could affect future mining operations if the transmission line or structures encumber the lease or interfere with access to mineable resources or the ability to remove these resources. However, if a conflict were to arise, then the transmission line and structures would need to be relocated to allow access to the mineral resource.

Sections S.10.3.3, 6.4.3.2 and 7.2.2.4 of the EIS are updated with information related to the Balsam Variation and mining.

0190-17

0190-18

Section 2.9.4 of the EIS is updated with a statement explaining that the proposed location of the Series Compensation Station is specific to the Proposed Blue Route or the Proposed Orange Route. Until the final route is permitted by the MN PUC, specific wetland impacts for the the Series Compensation Station are unknown.

0190-18

B. Selecting a route variation would likely require relocation of the Series Compensation Station, which could have significant wetland fill effects not documented in the DEIS.

The DEIS rightly acknowledges that constructing the GNTL Project will involve construction of a Series Compensation Station somewhere near the midpoint of the line.⁸⁰ It does not, however, address the effects that certain route variations would have on the location of the Series Compensation Station.

Electrical design optimization studies concluded that the best location for the Project's series compensation station is near the midpoint of the combined Manitoba and Minnesota projects, running from the Dorsey Substation near Winnipeg, Manitoba, Canada, to Minnesota Power's existing Blackberry Substation near Grand Rapids, Minnesota, USA. Based on this conclusion and the preliminary estimated line lengths in Manitoba and Minnesota, Minnesota Power undertook a site search to identify a viable series compensation station site somewhere on the segment of the Proposed Blue/Orange Route that runs generally west to east, south of Warroad in Roseau County. Since the series compensation station, similar to a traditional substation, would require permanent filling of any wetlands located within the estimated 6 acre footprint of the facility, a primary goal of Minnesota Power's site search was to minimize the facility's environmental effects by identifying a predominantly upland site for the series compensation station.

As shown in Map 6-18, viable upland sites in the search area are limited. Minnesota Power has obtained an option to purchase the only viable upland site it found—a 60 acre privately owned parcel that is currently cultivated. This proposed series compensation station site is located at almost the exact overall midpoint of the line based on the preliminary estimated line lengths, making it an ideal site from both an engineering and environmental perspective.

Three of the route variations analyzed in the DEIS would impact Minnesota Power's ability to use the site that it has optioned for the series compensation station. Two of those variations—the Cedar Bend WMA Variation and Beltrami North Variation 2—would bypass Minnesota Power's proposed series compensation station site entirely, forcing Minnesota Power to give up its option on the proposed site and seek an entirely different site for the series compensation station. The DEIS does not discuss or evaluate the impact of relocating the series compensation station as a result of these two variations, even though a new series compensation station site would almost certainly have greater wetland fill and/or aesthetic impacts (or other types of impacts). A different site would also potentially be less optimal from an engineering perspective if it couldn't be located as near to the overall midpoint of the combined projects as Minnesota Power's proposed site.

The other variation, Beltrami North Variation 1, follows the north side of the existing 500 kV line through the series compensation station site. While the same site could be utilized, placing the series compensation station—and thus the new transmission line—on the north side of the existing 500 kV line would increase the human impact of the project, because the facility would be closer to and more visible from nearby residences. The DEIS does not discuss or evaluate the

⁸⁰ DEIS at 15.

0190-18 cont'd

0190-18
Continued

0190-19

The Applicant provided the shapefiles used in the EIS analysis for their Proposed Blue Route, Proposed Orange Route, C2 Segment Option Variation, and J2 Segment Option Variation. In addition, the Applicant provided a memo with design changes (December 1, 2014) which assumed a 250 foot separation between the anticipated alignments when paralleling existing 500 kV transmission line.

The shapefiles provided by the Applicant show that where their proposed alternatives parallel the existing 500 kV transmission line, there is a separation of 250 feet between the anticipated alignments. However, in the shapefile, where the proposed alternatives parallel the existing 230 kV transmission lines, the distance between the anticipated alignments is 150 feet. And where the proposed alternatives parallel an existing 115 kV transmission line, there is a separation of 150-300 feet between the anticipated alignments.

Based on the distance provided in the Applicant's shapefile for paralleling existing 230 kV transmission lines, the Cedar Bend WMA Variation (which parallels an existing 230 kV transmission line) would not displace four residences. If the MN PUC selects the Cedar Bend WMA Variation, the Applicant will need to work within the 3,000 foot route to develop an anticipated alignment.

No changes are made to the EIS in response to this comment.

0190-20

0190-20

Communication towers are located at the subject substations and are accurately identified on related maps (e.g., Map 6-65 in Volume II of the EIS). No information is provided by the Applicant that supports the conclusion made in this comment that it would not be possible for the proposed transmission line to be routed between these substations.

No changes are made to the EIS in response to this comment.

aesthetic impact (or any other type of impact) from relocating the series compensation station to the north side of the existing 500 kV line as a result of Beltrami North Variation 1.

The Final EIS should address the potential relocation of the Series Compensation Station, noting that such relocation would likely increase wetland fill and other effects, in addition to causing significant engineering difficulties.

- C. **Because the DEIS does not consistently show a 250-foot separation between the existing HVTL and proposed variation centerlines, the effects of those variations are misstated.**

Safety and system reliability generally require a minimum 250-foot separation between the centerlines of any existing 230 kV or 500 kV transmission line and the proposed GNTL line.⁸¹ Unfortunately, it appears that the GIS maps used in preparing the DEIS did not consistently maintain this minimum separation distance for some of the route variations proposed during the scoping process.

Because the affected environment is often similar throughout the project area, moving the route variation ROWs to a proper distance away from the existing transmission lines is unlikely to substantially change the effects calculations in the DEIS. There is, however, one important exception that Minnesota Power identified in the Cedar Bend WMA Variation. If a 250-foot separation were in place between the proposed Cedar Bend WMA Variation ROW centerline and the existing 230 kV line centerline, it would result in displacement of four homes.⁸² These displacements are not accounted for anywhere in the DEIS.

The Final EIS should acknowledge that, if its proposed ROW is properly spaced away from the existing transmission line, the Cedar Bend WMA Variation would displace four homes.

- D. **The DEIS does not account for the location of existing HVTL substations, some of which would render the variation route infeasible.**

Throughout the DEIS, there is little mention of the substations that serve the existing 500 kV and 230 kV tie lines. But especially with respect to the Cedar Bend WMA Variation, those substations are likely to cause insurmountable difficulties.

Although it is not easy to see in the DEIS maps, the "Common Start Point" for the Cedar Bend WMA Variation is nearly adjacent to two operating substations—one that serves the existing 500 kV line, and one that serves the existing 230 kV line. (The problem can be seen in the DEIS Map Book, Map 7, although these substations are there incorrectly identified as "communication towers.") The Cedar Bend WMA Variation proposed ROW appears to thread right between these two substations. From a construction, operation, and electrical system reliability perspective, however, such a path for the new line is simply not possible.

⁸¹ The DEIS acknowledges this need for "all new" ROW in several places, and notes that 250 or 300 foot ROW may be needed for longer spans. DEIS at S-4, 27, 238.

⁸² See attached map, Potential Displacements: Cedar Bend WMA Variation Area.

0190-20 cont'd

0190-20
Continued

0190-21

The cost per mile was originally provided by the Applicant in a data call so is included in Chapter 6 of the Draft EIS. For clarification, the Final EIS is updated to describe this as average cost per mile in the tables.

0190-21

0190-22

The relative merit tables in Chapter 6 of the EIS use the 20% threshold as a way to highlight cost differences.

0190-22

There is no feasible way to build, operate, or maintain a 500 kV line that passes so close to two existing substations. That fact alone makes the Cedar Bend WMA Variation infeasible, and should exclude it from further consideration in the Final EIS.

VI. The DEIS does not adequately discuss the Project's costs or the effects of increasing those costs.

- A. The EIS should not compare costs on a per-mile basis, because that is irrelevant to both cost recovery and the Applicant's decision of whether to build the Project.**

The Minnesota Rules require the PUC to consider the "costs of constructing, operating, and maintaining" a proposed high-voltage transmission line.⁸³ And while they need to be updated in the Final EIS, the DEIS does include the total costs of the GNTL Project. In addition, the DEIS's discussion of construction costs consistently cites the "cost per mile" for building various route alternatives.⁸⁴ That factor is irrelevant, and should not be carried forward in the Final EIS.

Nothing in the Minnesota Rules suggests that the PUC will consider the per-mile cost of the GNTL Project. This makes sense, because the PUC sets cost recovery rates based on the total costs to the project proponent, not the per-mile cost. A project with a longer route, such as Roseau Lake WMA Variation 1, might cost less to build on a per-mile basis, but its overall length makes its total cost far higher. Neither Minnesota Power nor ratepayers would see any benefit from the theoretical per-mile cost of such a route. Indeed, both Minnesota Power and its ratepayers would obviously prefer a line that costs less overall, regardless of how much it costs per mile.

Because cost-per-mile is irrelevant, it should not be discussed in the Final EIS.

- B. The EIS should recognize that route variations or permit conditions that increase Project costs will have an effect on ratepayers.**

Presumably, costs are included in the list of factors that the PUC considers when licensing a new transmission primarily because increases in cost can lead to increases in the rates paid by consumers. Yet this issue is left unmentioned in the DEIS.

Cost increases are important because Minnesota Power's Certificate of Need establishes a "soft cap" on recovery for the estimated cost for the GNTL Project.⁸⁵ If the Project significantly exceeds those costs, the PUC will likely consider a rate increase to ensure cost recovery. This is particularly problematic for route variations that cost far more than the Proposed Blue/Orange Route, like Roseau Lake WMA Variation 1.

As shown in Minnesota Power's relative merit assessment tables, variations that exceed the cost of the proposed route by more than 20% should be clearly identified because they are more likely to result in rate increases for consumers.

⁸³ Minn. R. 7850.4100(L).

⁸⁴ See, e.g., DEIS at 349 (Table 6-62), 353 (Table 6-65).

⁸⁵ MPUC Docket No. E-015/CN-12-1163, MPUC Order dated June 30, 2015 at 19.

VII. The DEIS recognize the problems with comparing route variations without using common start and end points for each variation.

In several places, the DEIS groups multiple variations together to compare them with the Proposed Blue/Orange Route. The document never explains why it does this, but the result is often misleading.

Creating common start and end points for purposes of comparison requires variations that actually have the same starting and ending points. Only then can the decisionmaker and the public accurately identify the ways in which the environmental effects of the routes may differ. What is more—and what the DEIS does not consistently accomplish—the route variations should be treated as variations from the Proposed Blue/Orange Route, not as one of several ways to travel between two arbitrarily chosen points.

Unfortunately, the DEIS makes several comparisons using multiple variations with different end points. The result is that one or more of the variations share the same route for a certain distance, and that shared route is included in the comparison of effects. It should go without saying that such route variations cannot truly be compared to one another, or to the proposed route.

The Final EIS should clearly acknowledge when its calculation of effects is based in part on areas where the Proposed Blue/Orange Route and the route variation are identical.

VIII. The color-coded tables in Chapter Six do not serve their intended purpose, and should be eliminated or substantially modified.

A. The color-coded tables cannot assist the decisionmaker or the public in comparing environmental effects among alternatives.

Throughout Chapter 6, the DEIS uses what it describes as a “stoplight motif” to “describe the relative merits of each alternative.”⁸⁶ These graphics purport to compare effects across alternatives, apparently with the goal of creating a shorthand reference that can be used in determining the route that best meets the state’s routing criteria. At least for a project of this size and scope, however, a simplification of this nature is not helpful to the decisionmaker or the public.

1. The GNTL Project is too long, and the DEIS contains too many variations, to be compared using numerous, independent graphics.

It is possible that a relative merits graphic with a “stoplight motif” would provide some insight into comparative environmental effects for a project with two or three widely divergent routes with common start and ending points. For a project like the GNTL, with two proposed routes and 22 sometimes overlapping route variations, such graphics only add confusion.

The DEIS contains a separate relative merits graphic for every variation area in three separate sections that cover large portions of northern Minnesota. The decisionmaker cannot simply start with the first graphic, decide on a preferable route, and then move to the next graphic, because

⁸⁶ DEIS at 344.

0190-23

Chapter 4 of the EIS explains and provides maps that show the alternatives in each variation area. The shared portion(s) of the alternatives are shown on Maps 4-3, 4-4, 4-6, 4-7, 4-15, and 4-17. All maps in Chapter 4 also show the shared portions of the Proposed Blue Route, Proposed Orange Route, or Proposed Blue/Orange Route.

0190-23

Section 4.2 defines the terms used to describe the analysis of the alternatives in this EIS. Section 4.3 describes the starting and ending points for the alternatives.

No changes are made to the EIS in response to this comment.

0190-24

The relative merits table provided by the Applicant used different methodology and is included in the Appendix Y of the Final EIS.

0190-24

selecting one route variation eliminates certain variations in other sections. This requires the decisionmaker to jump from graphic-to-graphic, skipping comparisons made irrelevant by prior route choices.

What is more, there is no principled reason to start with a particular variation area when putting together a preferred route. A decisionmaker who progressively eliminated variations starting with the west section could end up with a different route from one who began with the east section, even if both had precisely the same values when reading the comparison graphics.

Worst of all, the variation areas do not represent equal units of measurement with respect to the routing factors. For example, the border crossing area contains about 10-25 miles of transmission line, depending on the variation. The Pine Island variation area, by contrast, contains over 100 miles of transmission line. Obviously, the alternatives within the Pine Island Variation Area should have a far greater weight when comparing the overall effects of the project alternatives. Yet because a decisionmaker cannot see this disparity in effects using the relative merits graphics, he or she could choose a border crossing that may appear preferable when compared within its variation area, but that leads to substantially greater effects elsewhere on the route.

Simply put, the color-coded “stoplight motif” graphics are at best unhelpful—and at worst actively harmful—when applied to a project like the GNTL that contains numerous variation areas across more than 200 miles of transmission lines.

2. Even within a variation area, the “stoplight motif” graphics do not shed any light on which route is preferable.

Setting aside their lack of value for the project as a whole, the “stoplight motif” graphics frequently offer little guidance in choosing among alternatives within a variation area. A decisionmaker faced with a table containing numerous green, orange, and red boxes often has no principled reason to choose one variation over another. The result, again, is confusion and error.

To take just one example, Table 6-65 purports to compare the relative merits of five route variations in the Beltrami North Central Variation Area using the “stoplight motif.” Each column in the table represents a different route variation. The first column, for the Proposed Blue/Orange Route, contains 8 green squares, 2 orange squares, and 1 red square. The fourth column, representing Beltrami North Central Variation 3, contains 6 greens and 5 oranges. The decisionmaker is left to wonder whether it is better for a route to have no red squares, but more orange squares, or one red square and more green squares.

Similar quandaries abound in the relative merits tables. And the process only becomes more complicated if the decisionmaker wants to weigh certain effects more heavily than others, which would require comparing both rows and columns. Because the “stoplight motif” graphics do even not work on their own terms, they should be ignored or removed from the Final EIS.

3. The methodology by which colors were chosen is inevitably arbitrary, and in any event not adequately explained.

Perhaps most problematic of all, the method by which the colors in the “stoplight motif” graphics is completely obscure. Each of the graphics contains a footnote stating, in full: “Colors represent

least impacts (green), moderate impacts (orange), and greatest impacts (red) relative to the specific Factor.” No further explanation of how the colors were selected appears anywhere in the DEIS.

The footnote describing the method of selecting colors is inaccurate on its face. If green truly represented the “least impacts,” and red the “greatest impacts,” with respect to each factor, every row in every table would logically have one green square and one red square. But that is not the case. Very few of the rows have red squares, indicating that red does not actually identify the route variation with the “greatest impacts” for each routing factor. If the colors actually represent something more like low, moderate, and high impacts, the DEIS never says so.

To make matters worse, the color assignments in the relative merits graphics often appear to be incorrectly or arbitrarily assigned. These problems could be addressed to some degree on a case-by-case basis. But they reveal a larger methodological problem with the entire concept of the “stoplight motif” graphics. Without a clear, repeatable standard for assigning colors, the tables will remain inherently misleading. That is reason enough to remove them from the Final EIS entirely. At a bare minimum, the Final EIS should strongly caution the decisionmaker against relying on the standardless “stoplight motif” graphics without extensive reference to the more precise—and often more accurate—discussions of effects in the text.

B. Because the colors that appear in the Chapter Six tables are often erroneous or arbitrary, Minnesota Power has created its own tables.

Instead of suggesting changes to the “stoplight motif” graphics, Minnesota Power is offering its own version of the “Relative Merits Assessment” tables that appear throughout Chapter 6.⁸⁷ If such tables are going to be used, these versions are an improvement in several respects.

First, Minnesota Power’s Relative Merits Assessment tables include all of the routing factors described in the Minnesota Rules.⁸⁸ This creates a better picture of how the routing alternatives are similar, on the premise that a choice between alternatives generally should not hinge on a minor difference that appears more significant when some factors are omitted.

Second, Minnesota Power’s tables include numerical measurements and percentages wherever possible. This makes it easier to understand the degree to which one route alternative differs from another, and allows for small differences to be identified even where two routes receive the same color designation.

Third, Minnesota Power’s tables assign colors based on a logical, repeatable methodology. A route alternative is colored green where it would have minimal effects on a resource with the implementation of best management practices, such that no mitigation is required. Yellow means that the route could have minimal to moderate effects on the resource with best management practices, and mitigation is likely to be required. Red means that the route’s effects are moderate or greater, and that those effects cannot be mitigated. This methodology works for most of the routing factors and elements covered in the table.

⁸⁷ Because the Presidential Permit Border Crossing is the only feasible alternative in the Border Crossing Variation Area, Minnesota Power is not providing a revised graphic for that area.

⁸⁸ See Minn. R. 7850.4100.

Some routing factors that are not susceptible to the minimal-moderate-unmitigable system described in the previous paragraph. In such cases, Minnesota Power's tables assign colors in the following manner:

- For corridor sharing, Minnesota Power selected colors intended to indicate that increased transmission line corridor sharing typically has greater environmental benefits. Thus, green means corridor sharing of 90% or greater, yellow means corridor sharing greater than 10% but less than 90%, and red means corridor sharing of 10% or less. The exact percentages are available in Minnesota Power's table so the reader can tell exactly where a route alternative lies along this continuum.
- For costs, green represents the costs proposed in Minnesota Power's Certificate of Need application for a particular route segment, or anything less expensive. Yellow represents anything that costs up to 20% more than Minnesota Power's proposed costs. Red represents anything that costs more than 20% of what Minnesota Power proposed, because anything in excess of that threshold increases the risks of changes to ratepayer cost recovery.
- For electrical system reliability, a case-by-case determination of effects is necessary. Accordingly, green means that a route alternative would have no identifiable effect on system reliability, because it does not parallel one of the existing Manitoba-Minnesota tie lines. Yellow means that a route alternative could have moderate but acceptable effects on system reliability because it parallels one of the existing tie lines. Red means that a route alternative could have severe and unacceptable effects on system reliability because it parallels both of the existing tie lines.

By assigning colors based on an absolute scale, Minnesota Power's tables present a much more realistic picture of the GNTL Project's effects than the DEIS tables, which often use a different color for relatively small differences in effects. This allows the decisionmaker and the public to assess the relative merits of the routes as a whole, as opposed to the relative merits of each routing factor. This is a far less confusing way of distinguishing between the effects of different route alternatives, and illustrates that, for the most part, the environmental effects of the various route alternatives are not significantly different.

Minnesota Power does not expect the Final EIS to completely replace the tables that appear in the DEIS. Instead, Minnesota Power requests that (1) its tables be acknowledged in the Final EIS, and published in the appendix to the Final EIS that contains DEIS comments;⁸⁹ and (2) that the DOE and EERA review these alternative tables to determine whether the information they contain justifies changing any of the colors used in the DEIS.

⁸⁹ See 40 C.F.R. § 1503.4(b) ("All substantive comments received on the draft statement . . . should be attached to the final statement . . .").

0190-25

Revisions for the cost estimates provided by the Applicant are included in Chapters 4 amd 6 of the EIS.

Minnesota Power's BEIS Cost Comments
Page 1 of 5

0190-25

Route Segment	Segment Length Reported in DEIS	Total Cost Reported in DEIS	Total Cost Provided by Applicant	Total Cost Updated in DEIS	Proposed Action	Comment
Border Crossing Proposed	25.7	\$29,012,219	\$29,012,219	\$29,012,219	Okay	
Border Crossing Pine Creek Variation	25.7	\$29,292,118	\$29,292,118	\$29,292,118	Okay	
Border Crossing Hwy 310 Variation	18.6	\$21,144,610	\$21,144,610	\$21,144,610	Okay	
Border Crossing 500kV Variation	10.1	\$11,512,144	\$11,512,144	\$11,512,144	Okay	
Border Crossing 200kV Variation	8.2	\$9,862,592	\$9,862,110	\$9,862,110	Update DEIS	DEIS mistake (typo?)
Rosau Lake WMA Proposed	30.7	\$33,247,089	\$33,247,089	\$33,247,089	Okay	
Rosau Lake WMA Variation 1	44.1	\$57,086,075	\$57,086,075	\$57,086,075	Okay	
Rosau Lake WMA Variation 2	37.5	\$46,162,144	\$46,162,144	\$46,162,144	Okay	
Cedar Bend WMA Proposed	24.7	\$27,197,650	\$27,197,650	\$27,197,650	Okay	
Cedar Bend WMA Variation	19.6	\$21,235,417	\$21,285,417	\$23,202,312	Update DEIS	Included Cedar Bend WMA Hop 1 to have a common endpoint (See Map #1) Added \$660,000 to account for two 500 kV line crossings
Beltrami North Proposed	18.5	\$18,984,370	\$18,984,370	\$18,984,370	Okay	
Beltrami North Variation 1	15.8	\$18,411,668	\$18,411,668	\$19,691,668	Update DEIS	Added \$850,000 for a new 500 kV line crossing to have a common endpoint (See Map #2) Added \$330,000 to account for one 500 kV line crossing
Beltrami North Variation 2	19.7	\$24,571,721	\$24,571,721	\$24,571,721	Okay	
Beltrami North Central Proposed	11.6	\$12,574,123	\$12,574,123	\$12,574,123	Okay	Can only be compared with Variations 1, 2, & 3 (See Map #3)
Beltrami North Central Variation 1	13.7	\$13,708,602	\$13,708,602	\$14,368,602	Update DEIS	Added \$660,000 to account for two 500 kV line crossings
Beltrami North Central Variation 2	12.6	\$14,478,550	\$14,478,550	\$14,478,550	Okay	Can only be compared with Proposed Blue/Orange Route (See Map #3)
Beltrami North Central Variation 3	12.2	\$16,155,266	\$16,155,266	\$16,815,266	Update DEIS	Added \$660,000 to account for two 500 kV line crossings
Beltrami North Central Proposed wh/DP	15.1	N/A	\$18,235,175	\$18,565,175	Update DEIS	Can only be compared with Variations 4 & 5 Added \$330,000 to account for one 500 kV line crossing
Beltrami North Central Variation 4	13.5	\$17,188,969	\$17,188,969	\$17,498,969	Update DEIS	Can only be compared with Proposed Blue Route including "hop" (See Map #3) Length is incorrect - should be 14.5 miles (includes Beltrami North Hop.3)
Beltrami North Central Variation 5	15	\$16,636,730	\$16,636,730	\$16,966,730	Update DEIS	Added \$330,000 to account for one 500 kV line crossing
Pine Island Blue Alternative	108.8	\$118,546,237	N/A	\$118,676,237	Update DEIS	Added \$330,000 to account for one 500 kV line crossing
Pine Island Orange Alternative	106.4	\$113,672,041	N/A	\$113,672,041	Okay	
Beltrami South Central Proposed	1.2	\$5,805,518	\$1,214,573	\$1,214,573	Update DEIS	DEIS mistake (swapped with Beltrami South)
Beltrami South Central Variation	1.7	\$9,925,986	\$5,440,123	\$3,440,123	Update DEIS	DEIS mistake (swapped with Beltrami South)
Beltrami South Proposed	5.6	\$3,440,123	\$5,805,518	\$3,605,518	Update DEIS	DEIS mistake (swapped with Beltrami South Central)
North Fork River Proposed	6	\$5,233,163	\$5,233,163	\$5,233,163	Okay	
North Fork River Variation	9.2	\$5,769,239	\$5,769,239	\$5,769,239	Update DEIS	MP refined this estimate slightly based on land cover information
27 Variation	32.8	\$54,466,435	\$54,466,435	\$54,466,435	Okay	
27 Proposed	42.2	\$48,706,641	\$48,706,641	\$48,706,641	Okay	

0190-25
Continued

Route Segment	Segment Length Reported in DBS	Total Cost Reported DBS	Total Cost Provided by LSE	Total Cost LSE	Proposed Action	Comment
EA Variation	3.2	\$57,128,879	\$57,128,879	\$57,128,879	Okay	
Near Home Proposed	3.7	\$4,192,942	\$4,192,942	\$4,192,942	Okay	
Near Home Variation	4	\$6,385,615	\$6,385,615	\$6,385,615	Okay	
Culfoot Proposed	4.2	\$5,640,538	\$5,640,538	\$5,640,538	Okay	
Culfoot Variation	4.8	\$6,222,257	\$6,222,257	\$6,222,257	Okay	
Effie Proposed Blue	41.1	\$46,649,600	\$46,649,600	\$46,649,600	Okay	
Effie Proposed Orange	44.6	\$49,488,323	N/A	\$49,488,323	Okay	
Effie Variation	48.8	\$57,353,305	\$57,353,305	\$57,353,305	Okay	
East Bear Lake Proposed	8.9	\$9,736,790	\$9,736,790	\$9,736,790	Okay	
East Bear Lake Variation	10.5	\$13,279,079	\$13,279,079	\$13,279,079	Okay	
Balsam Proposed Blue	12.9	\$15,121,621	\$15,121,621	\$15,121,621	Okay	
Balsam Proposed Orange	13.7	\$16,018,490	\$16,018,490	\$16,018,490	Okay	
Balsam Variation	17.6	\$19,502,472	\$19,502,472	\$19,502,472	Okay	
Dead Mains Pond Proposed	2.2	\$2,873,223	\$2,873,223	\$2,873,223	Okay	
Dead Mains Pond Variation	2.3	\$4,409,841	\$4,409,841	\$4,409,841	Okay	
Blackberry Blue Alternative	5.4	\$6,380,680	\$6,380,680	\$6,380,680	Okay	
Blackberry Orange Alternative	6.1	\$10,148,060	\$10,148,060	\$10,148,060	Okay	

0190-26

The proposed routes and alternatives are described in Chapter 4. Alternatives discussed in the EIS were proposed during the scoping process and selected for inclusion in the EIS.

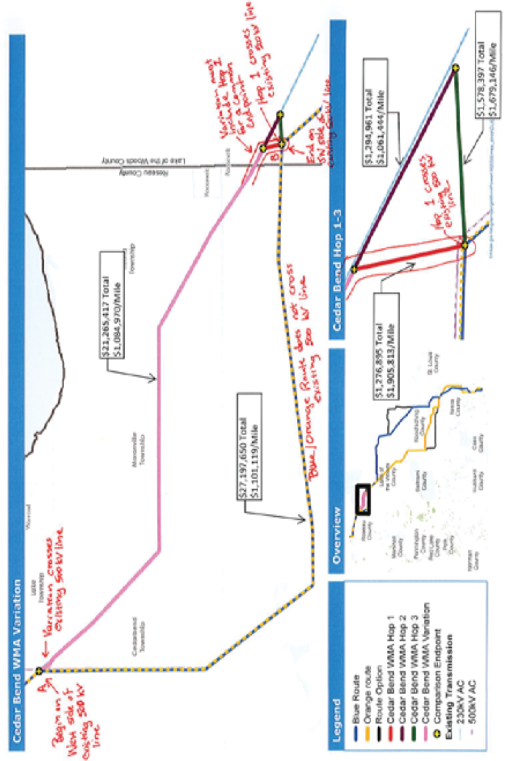
The following text is added to Section 2.8.3 of the EIS to address electrical system reliability: According to the Applicant, the electrical reliability impacts of establishing a parallel transmission line corridor depend primarily on the purpose and expected performance of the transmission lines. None of the alternatives that parallel existing corridors with 69 kV, 115 kV, or 230 kV transmission lines that do not connect Manitoba and the United States would impact electrical system reliability.

If the proposed Project parallels the existing 230 kV tie line corridor, the impact of a simultaneous, unexpected outage of the two facilities on electrical reliability would be minimal, but still notable because the lines would share a common purpose of transferring power from Manitoba to the United States. If the Proposed Project parallels the existing 500 kV tie line corridor, a simultaneous unexpected outage would have a greater impact on electrical system reliability because the transmission lines not only share a common load, but would also carry similar (and greater) amounts of power.

If there are three transmission lines (i.e., the proposed Project, 500 kV tie line, and 230 kV tie line) located in parallel corridors, a simultaneous unexpected outage of the Proposed Project and two tie lines could have the greatest impact to electrical reliability.

Cedar Bend WMA Variation Area - Additional Comments on Cost & Electrical Reliability
Because the Cedar Bend WMA Variation does not come to a common endpoint with the Proposed Blue/Orange Route, the cost & electrical reliability comparisons (and the other impact comparisons) are mischaracterized. As shown in Map #1 below, both the Proposed Route & the Variation begin at Point A, located on the west side of the existing 500 kV line. The Proposed Route ends at Point B, located on the south side of the existing 500 kV line, and never crosses the existing line between Point A and Point B. The Cedar Bend WMA Variation, as shown in the map, ends at Point C, which is approximately 300 feet north of Point B on the other side of the existing 500 kV line. For the purposes of this map, the Variation is shown with the Proposed Route.
Cost Impact: The total cost of the Cedar Bend WMA Variation as reported in the DEIS is approximately \$1.28 million less because it does not include Map 1.
Reliability Impacts: The Cedar Bend WMA Variation already includes one crossing of the existing 500 kV line where it diverges from the Proposed Route immediately east of Point A. Because the Variation does not include Map 1, the second 500 kV line crossing needed to get to a common endpoint with the Proposed Route is not captured and the electrical reliability impact of the Cedar Bend WMA Variation is understated. The Variation also passes unacceptably close to existing substations.

MAP # 1



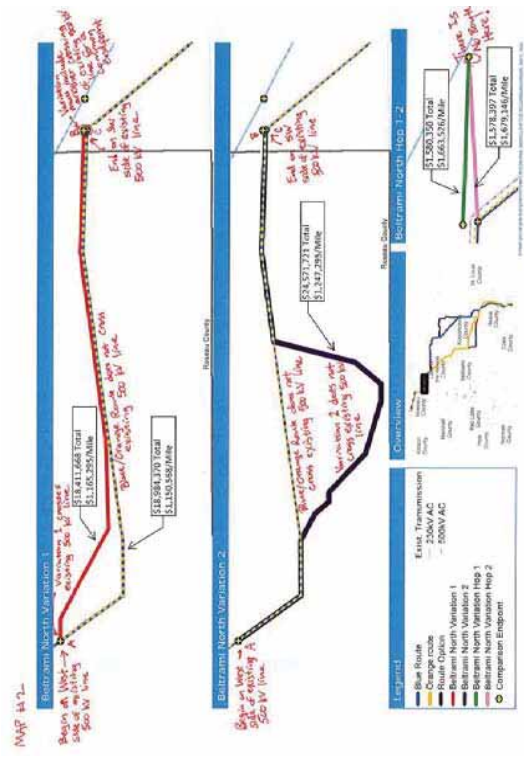
0190-26
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Beltrami North Variation Area - Additional Comments on Cost & Electrical Reliability

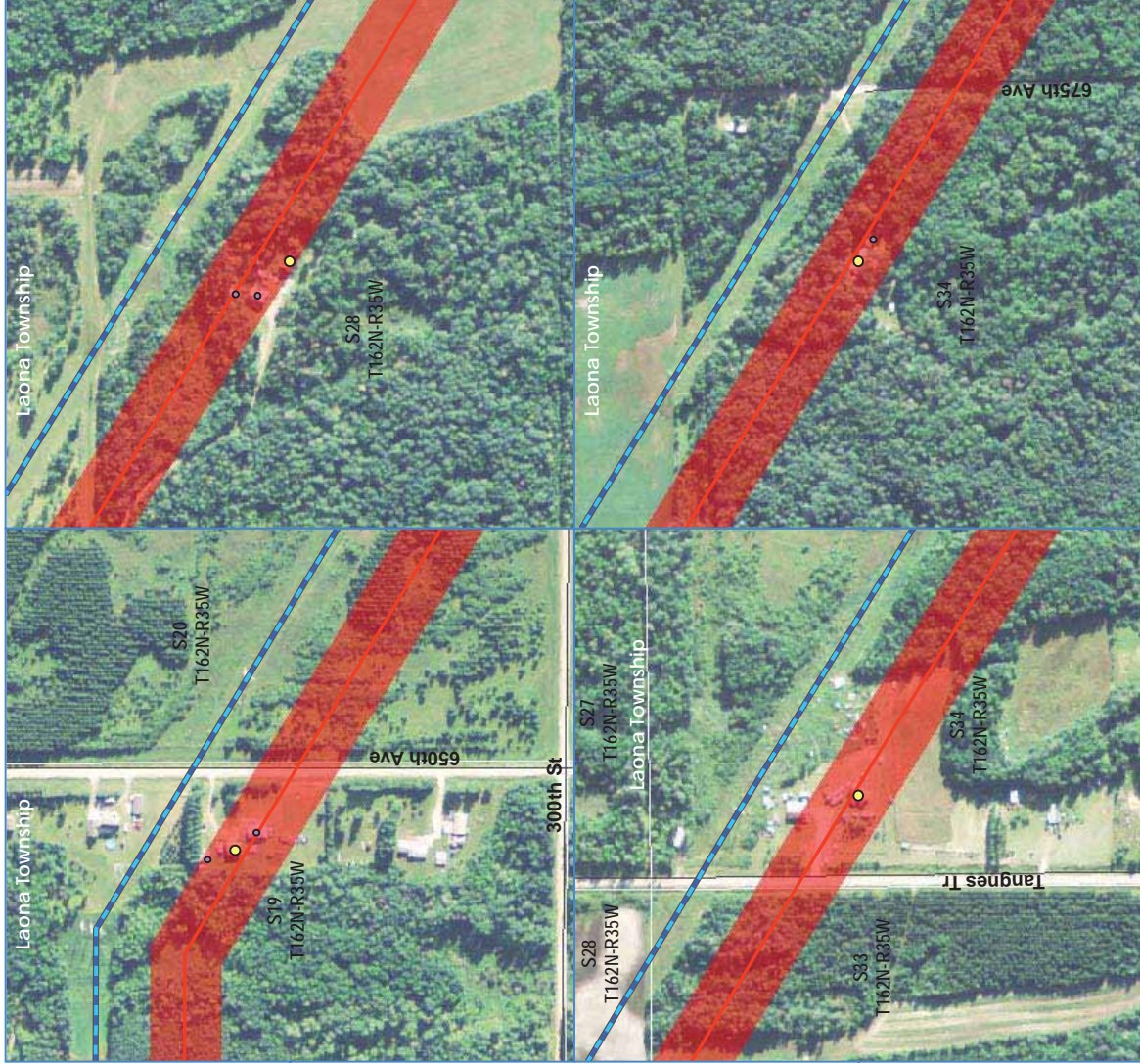
Because Beltrami North Variation 1 does not come to a common endpoint with the Proposed Blue/Orange Route, the cost & electrical reliability comparisons (and to a lesser extent the other impact comparisons) are mischaracterized. As shown in Map 72 below, both the Proposed Route & both Beltrami North Variations begin at Point A, located on the west side of the existing 500 kV line. The Proposed Route ends at Point C, located on the south side of the existing 500 kV line, and never crosses the existing line between Point A and Point C. Beltrami North Variation 1, as shown in the map and evaluated in the DES, ends at Point B, which is on the opposite side (the north side) of the existing 500 kV line. For the purposes of this map, the Proposed Route is shown in blue, Beltrami North Variation 1 is shown in orange, and Beltrami North Variation 2 is shown in green.

Cost Impact: The total cost of Beltrami North Variation 1 is recorded in the DES as approximately \$1.18 million lower because it does not include the complex structure & crossing span.

Reliability Impact: Beltrami North Variation 1 already includes one crossing of the existing 500 kV line where it diverges from the Proposed Route immediately east of Point A. Because the Variation does not include the second 500 kV line crossing needed to get to a common endpoint with the Proposed Route, the additional crossing is not captured and the electrical reliability impact of Beltrami North Variation 1 is understated.



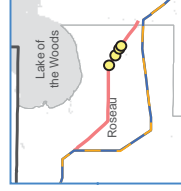
Potential Displacements
Cedar Bend WMA Variation



Legend

- Scoping Decision Route
- Cedar Bend WMA Variation
- Cedar Bend WMA Variation Right-of-Way
- Existing 230kV AC Transmission
- Structure
- Residence

0 400 Feet F



Source: ESR, Minnesota DNR
<http://mapserver.org/geoportal/wma/over/162055.mxd>
arcclient101.usdisplacements.mnd

0190-27

These figures are associated with Comment 209-19 (page 24, lines 11-3). See the previous response to Comment 209-19 .

No changes are made to the EIS in response to this comment.

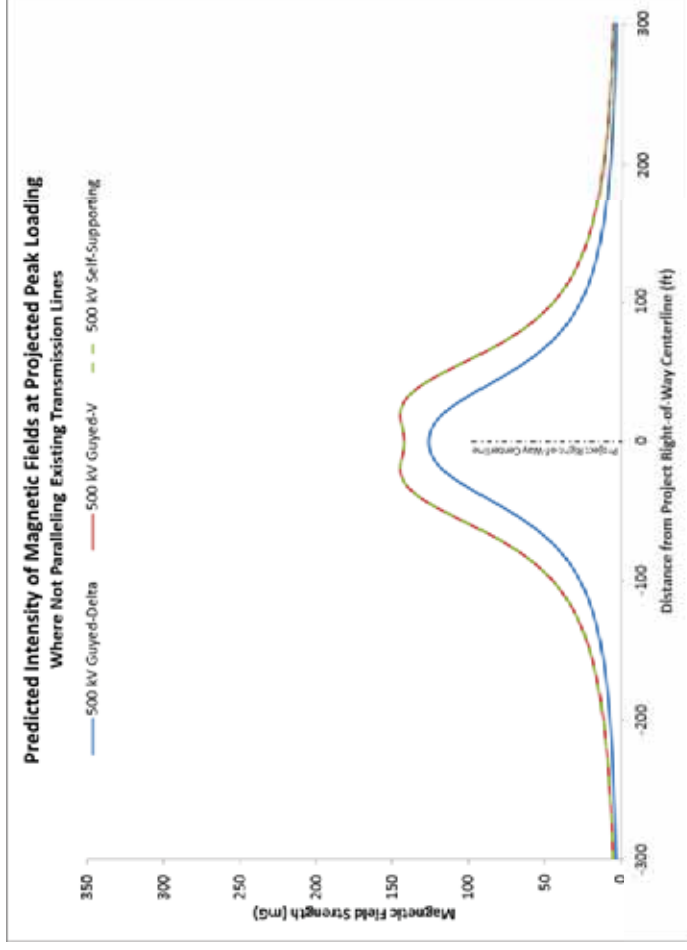
Magnetic Field Simulation Results: Projected Peak Loading

0190-28

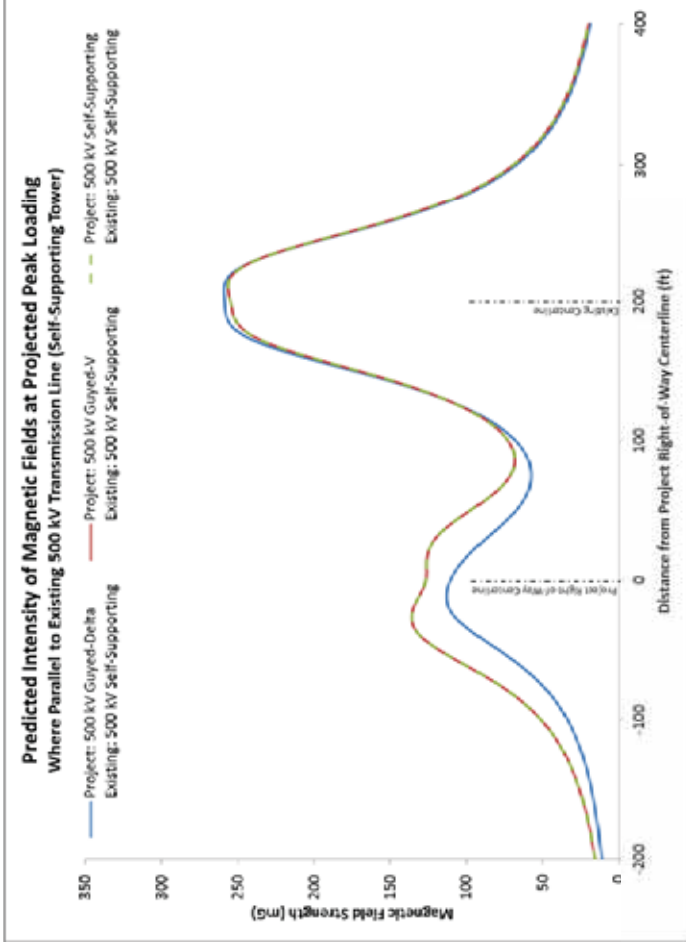
Appendix H and Table 5-4 and Appendix I and Tables 5-20 to 5-22 of the EIS are updated with the analysis provided by the Applicant.

0190-28

Predicted Intensity of Magnetic Fields (mG) at Projected Peak Loading Where Not Paralleling Existing Transmission Lines											
Structure Type	Distance from Project ROW Centerline										
	-300	-200	-100	-50	-25	0	25	50	100	200	300
500 kV Guyed-Delta	3.2	7.2	26.8	73.1	111.2	126.2	111.2	73.1	26.8	7.2	3.2
500 kV Guyed-V	5.2	11.6	44.8	115.9	143.8	141.9	143.8	115.9	44.8	11.6	5.2
500 kV Self-Supporting	5.2	11.6	44.8	115.9	143.8	141.9	143.8	115.9	44.8	11.6	5.2



Predicted Intensity of Magnetic Fields (mG) at Projected Peak Loading Where Parallel to Existing 500 kV Transmission Line (Self-Supporting Tower)												
Structure Type	Line Voltage	Distance from Project ROW Centerline										
		-200	-100	-50	-25	0	25	50	100	200	300	400
Project: 500 kV Guyed-Delta	1,024 A	11.5	33.8	78.5	108.2	110.8	92.9	68.3	67.4	258.8	66.9	18.8
Existing: 500 kV Self-Supporting	1,897 A											
Project: 500 kV Guyed-V	1,024 A	15.9	51.1	117.2	136.1	126.6	123.7	98.5	72.4	254.8	68.8	19.9
Existing: 500 kV Self-Supporting	1,897 A											
Project: 500 kV Self-Supporting	1,024 A	15.9	51.1	117.2	136.1	126.6	123.7	98.5	72.4	254.8	68.8	19.9
Existing: 500 kV Self-Supporting	1,897 A											



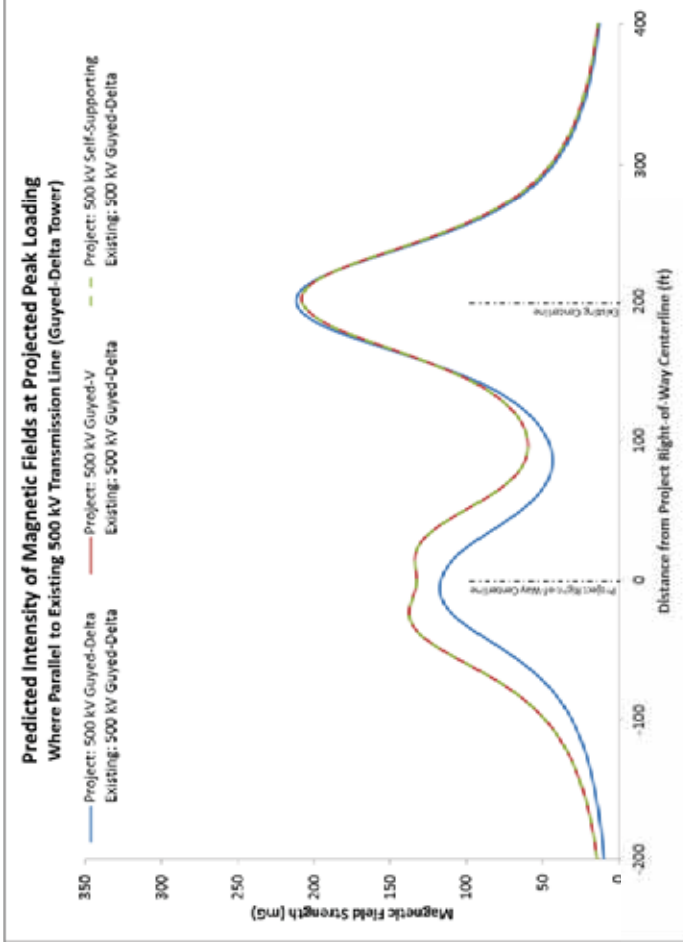
[Simulation assumes that Project ROW is adjacent to existing line ROW]

Magnetic Field Simulation Results: Projected Peak Loading

0190-28 cont'd

0190-28
Continued

Predicted Intensity of Magnetic Fields (mG) at Projected Peak Loading Where Parallel to Existing 500 kV Transmission Line (Guyed-Delta Tower)		Distance from Project ROW Centerline										
Structure Type	Line Voltage	-200	-100	-50	-25	0	25	50	100	200	300	400
Project: 500 kV Guyed-Delta	1,024 A	9.9	30.8	75.1	108.1	116.7	98.9	65.3	46.4	211.7	43.0	12.6
Existing: 500 kV Guyed-Delta	1,897 A	14.2	48.3	115.3	137.4	132.7	131.5	102.4	59.8	207.6	44.9	13.6
Project: 500 kV Guyed-V	1,024 A	14.2	48.3	115.3	137.4	132.7	131.5	102.4	59.8	207.6	44.9	13.6
Existing: 500 kV Guyed-Delta	1,897 A	14.2	48.3	115.3	137.4	132.7	131.5	102.4	59.8	207.6	44.9	13.6
Project: 500 kV Self-Supporting	1,024 A	14.2	48.3	115.3	137.4	132.7	131.5	102.4	59.8	207.6	44.9	13.6
Existing: 500 kV Guyed-Delta	1,897 A	14.2	48.3	115.3	137.4	132.7	131.5	102.4	59.8	207.6	44.9	13.6



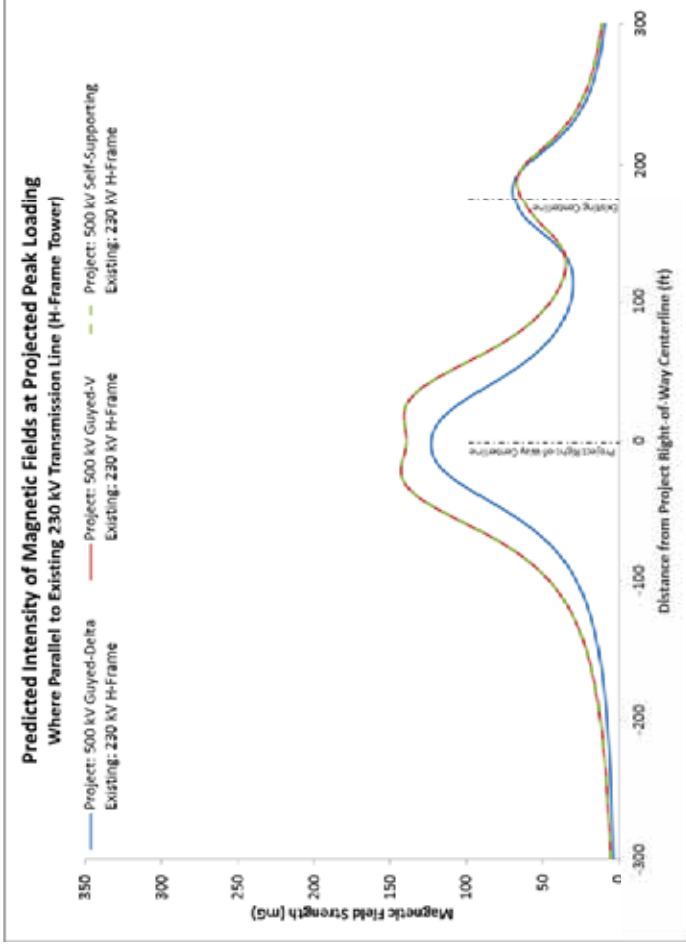
[Simulation assumes that Project ROW is adjacent to existing line ROW]

Magnetic Field Simulation Results: Projected Peak Loading

0190-28 cont'd

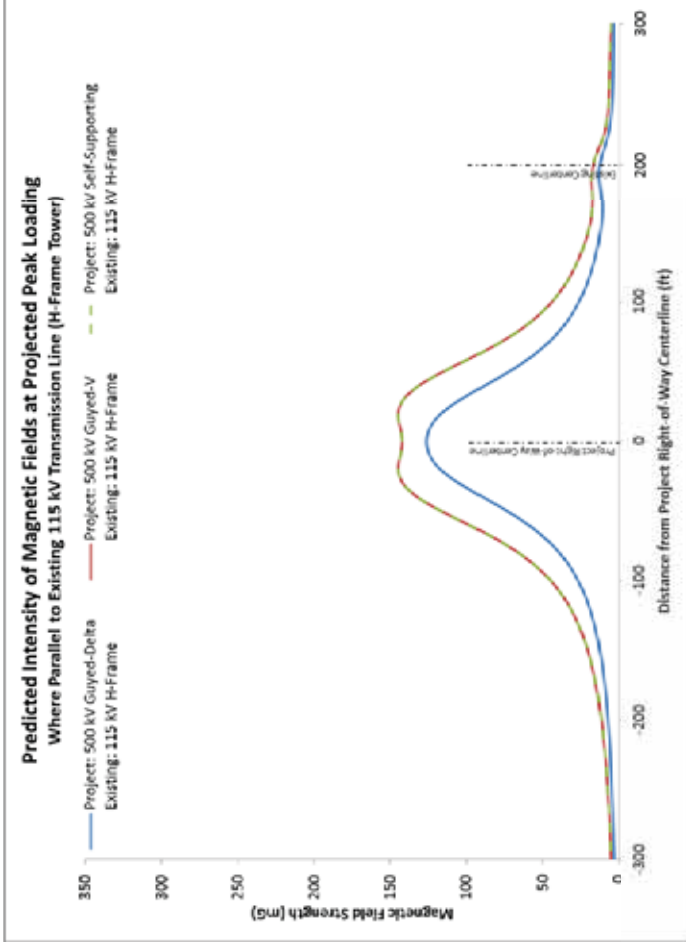
0190-28
Continued

Predicted Intensity of Magnetic Fields (mG) at Projected Peak Loading Where Parallel to Existing 230 kV Transmission Line (H-Frame Tower)		Distance from Project ROW Centerline										
Structure Type	Line Voltage	-300	-200	-100	-50	0	25	50	100	200	300	
Project: 500 kV Guyed-Delta Existing: 230 kV H-Frame	1,024 A 434 A	3.7	7.9	27.9	73.8	110.4	123.3	107.7	71.5	32.0	60.1	9.1
Project: 500 kV Guyed-V Existing: 230 kV H-Frame	1,024 A 434 A	5.6	12.3	45.7	116.0	142.3	139.0	140.0	112.3	45.5	61.4	11.1
Project: 500 kV Self-Supporting Existing: 230 kV H-Frame	1,024 A 434 A	5.6	12.3	45.7	116.0	142.3	139.0	140.0	112.3	45.5	61.4	11.1



[Simulation assumes that Project ROW is adjacent to existing line ROW]

Predicted Intensity of Magnetic Fields (mG) at Projected Peak Loading Where Parallel to Existing 115 kV Transmission Line (H-Frame Tower)												
Structure Type	Line Voltage	Distance from Project ROW Centerline										
		-300	-200	-100	-50	-25	0	25	50	100	200	300
Project: 500 kV Guyed-Delta Existing: 115 kV H-Frame	1,024 A 32 A	3.2	7.2	26.8	73.0	111.2	126.3	111.3	73.1	26.7	12.4	2.9
Project: 500 kV Guyed-V Existing: 115 kV H-Frame	1,024 A 32 A	5.2	11.6	44.7	115.9	143.9	142.0	143.9	116.0	44.7	16.7	4.8
Project: 500 kV Self-Supporting Existing: 115 kV H-Frame	1,024 A 32 A	5.2	11.6	44.7	115.9	143.9	142.0	143.9	116.0	44.7	16.7	4.8



[Simulation assumes that Project ROW is adjacent to existing line ROW]

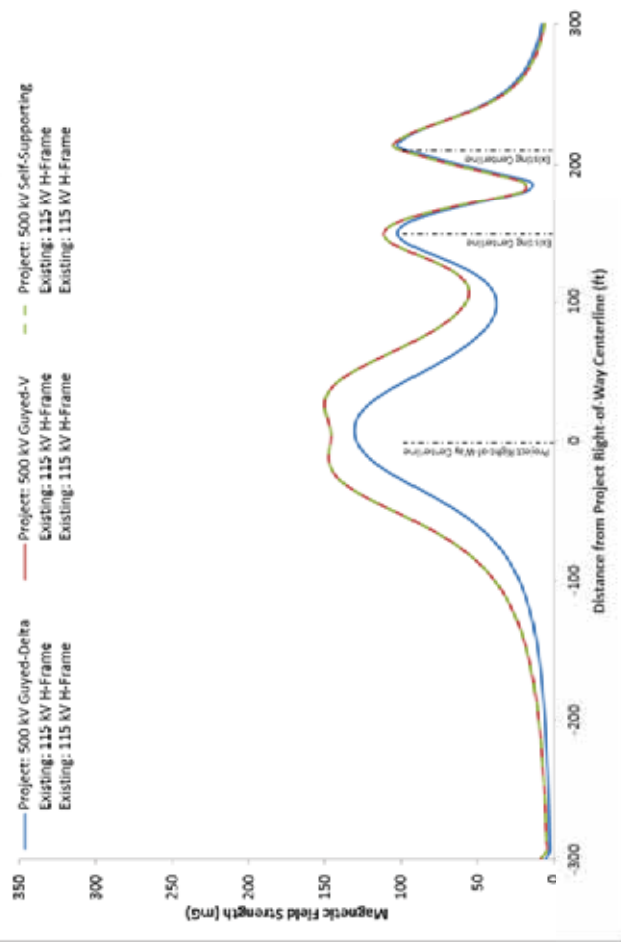
Magnetic Field Simulation Results: Projected Peak Loading

0190-28 cont'd

0190-28
Continued

Structure Type		Distance from Project ROW Centerline										
		-300	-200	-100	-50	-25	0	25	50	100	200	300
Project: 500 kV Guyed-Delta	1,024 A	5.3	5.9	22.6	63.0	103.2	128.9	123.1	86.4	37.5	60.7	7.7
Existing: 115 kV H-Frame	536 A											
Existing: 115 kV H-Frame	536 A											
Project: 500 kV Guyed-V	1,024 A	9.1	10.1	38.8	104.3	142.3	146.4	150.1	132.2	58.0	65.4	5.8
Existing: 115 kV H-Frame	536 A											
Existing: 115 kV H-Frame	536 A											
Project: 500 kV Self-Supporting	1,024 A	9.1	10.1	38.8	104.3	142.3	146.4	150.1	132.2	58.0	65.4	5.8
Existing: 115 kV H-Frame	536 A											
Existing: 115 kV H-Frame	536 A											

**Predicted Intensity of Magnetic Fields at Projected Peak Loading
Where Parallel to Two Existing 115 kV Transmission Lines (H-Frame Towers)**



[Simulation assumes that Project ROW is adjacent to existing line ROW]

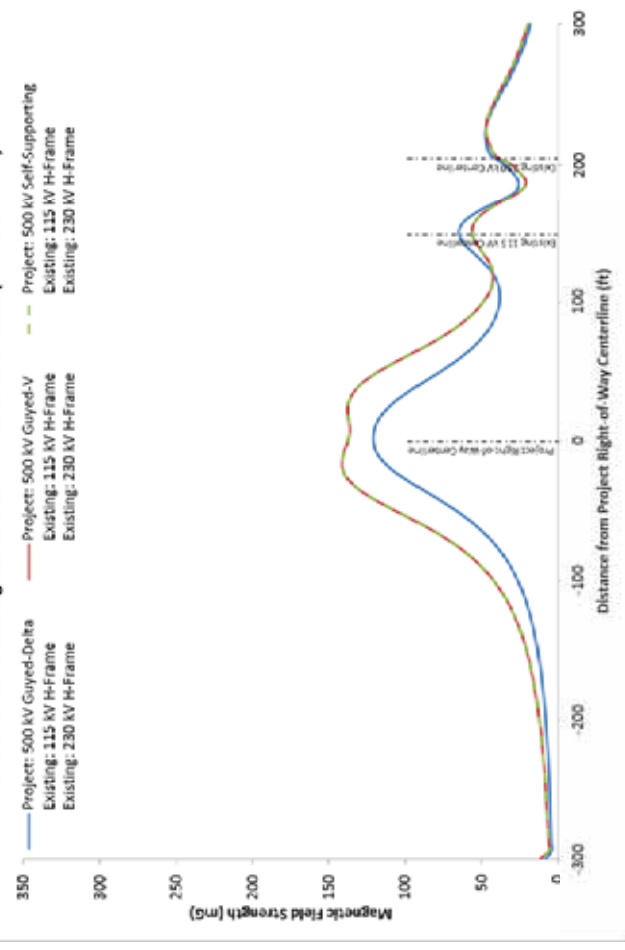
Magnetic Field Simulation Results: Projected Peak Loading

0190-28 cont'd

0190-28
Continued

Structure Type		Distance from Project ROW Centerline										
		-300	-200	-100	-50	-25	0	25	50	100	200	300
Project: 500 kV Guyed-Delta	1,024 A	8.3	8.1	26.3	66.1	102.4	120.8	110.8	77.9	38.4	34.4	17.7
Existing: 115 kV H-Frame	557 A											
Existing: 230 kV H-Frame	601 A											
Project: 500 kV Guyed-V	1,024 A	12.1	12.2	42.0	105.5	138.7	137.6	118.2	49.5	30.0	19.6	
Existing: 115 kV H-Frame	557 A											
Existing: 230 kV H-Frame	601 A											
Project: 500 kV Self-Supporting	1,024 A	12.1	12.2	42.0	105.5	138.7	137.6	118.2	49.5	30.0	19.6	
Existing: 115 kV H-Frame	557 A											
Existing: 230 kV H-Frame	601 A											

**Predicted Intensity of Magnetic Fields at Projected Peak Loading
Where Parallel to Existing 115 kV & 230 kV Transmission Lines (H-Frame Towers)**



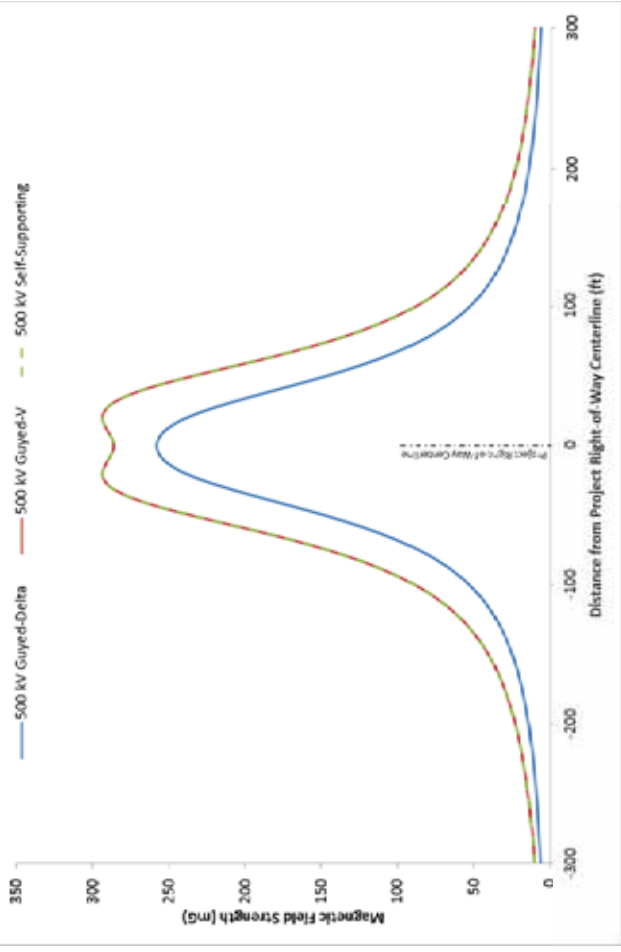
[Simulation assumes that Project ROW is adjacent to existing line ROW]

Magnetic Field Simulation Results: Max Continuous Rating

Predicted Intensity of Magnetic Fields (mG) at Maximum Continuous Rating Where Not Paralleling Existing Transmission Lines

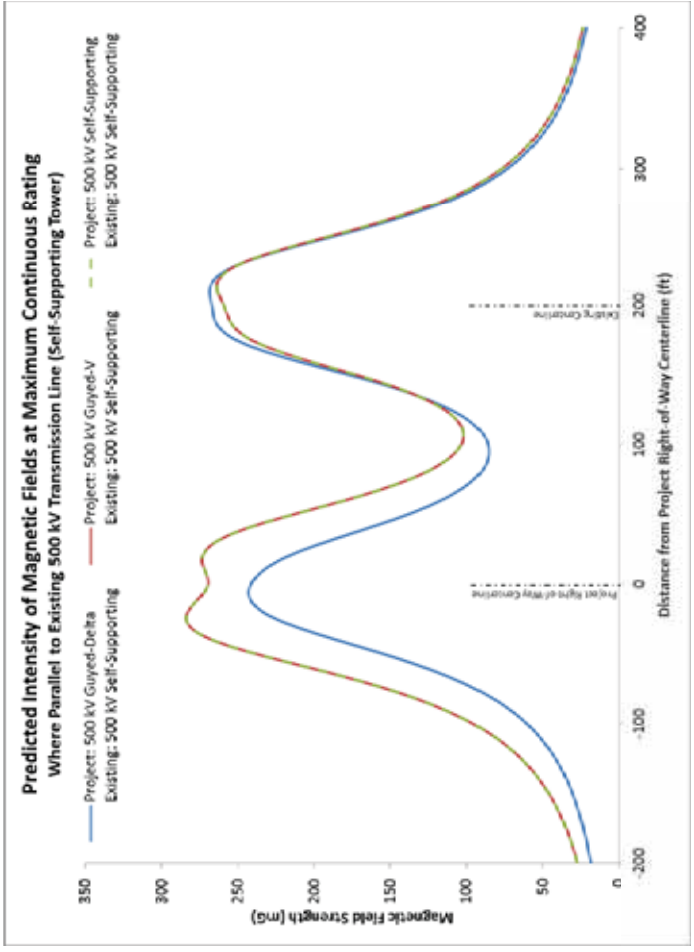
Structure Type	Line Current	Distance from Project ROW Centerline										
		-300	-200	-100	-50	0	25	50	100	200	300	
500 kV Guyed-Delta	2,000 A	6.3	14.1	52.9	147.3	227.2	258.1	227.2	147.3	52.9	14.1	6.3
500 kV Guyed-V	2,000 A	10.1	22.8	88.5	235.0	292.5	286.2	292.5	235.0	88.5	22.8	10.1
500 kV Self-Supporting	2,000 A	10.1	22.8	88.5	235.0	292.5	286.2	292.5	235.0	88.5	22.8	10.1

Predicted Intensity of Magnetic Fields at Maximum Continuous Rating Where Not Paralleling Existing Transmission Lines



Magnetic Field Simulation Results: Max Continuous Rating

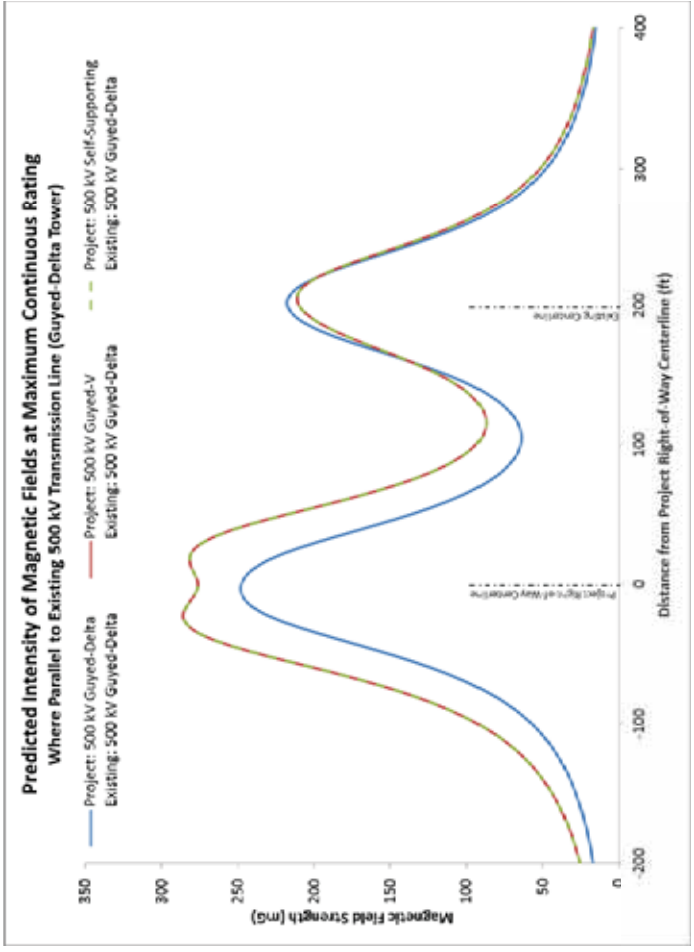
Predicted Intensity of Magnetic Fields (mG) at Maximum Continuous Rating Where Parallel to Existing 500 kV Transmission Line (Self-Supporting Tower)		Distance from Project ROW Centerline										
Structure Type	Line Voltage	-200	-100	-50	-25	0	25	50	100	200	300	400
Project: 500 kV Guyed-Delta Existing: 500 kV Self-Supporting	2,000 A 2,000 A	18.6	60.3	153.0	223.8	241.7	207.7	140.2	85.6	267.1	72.9	21.4
Project: 500 kV Guyed-V Existing: 500 kV Self-Supporting	2,000 A 2,000 A	27.3	95.2	236.4	284.1	269.9	271.3	216.1	103.9	259.1	76.6	23.6
Project: 500 kV Self-Supporting Existing: 500 kV Self-Supporting	2,000 A 2,000 A	27.3	95.2	236.4	284.1	269.9	271.3	216.1	103.9	259.1	76.6	23.6



[Simulation assumes that Project ROW is adjacent to existing line ROW]

Magnetic Field Simulation Results: Max Continuous Rating

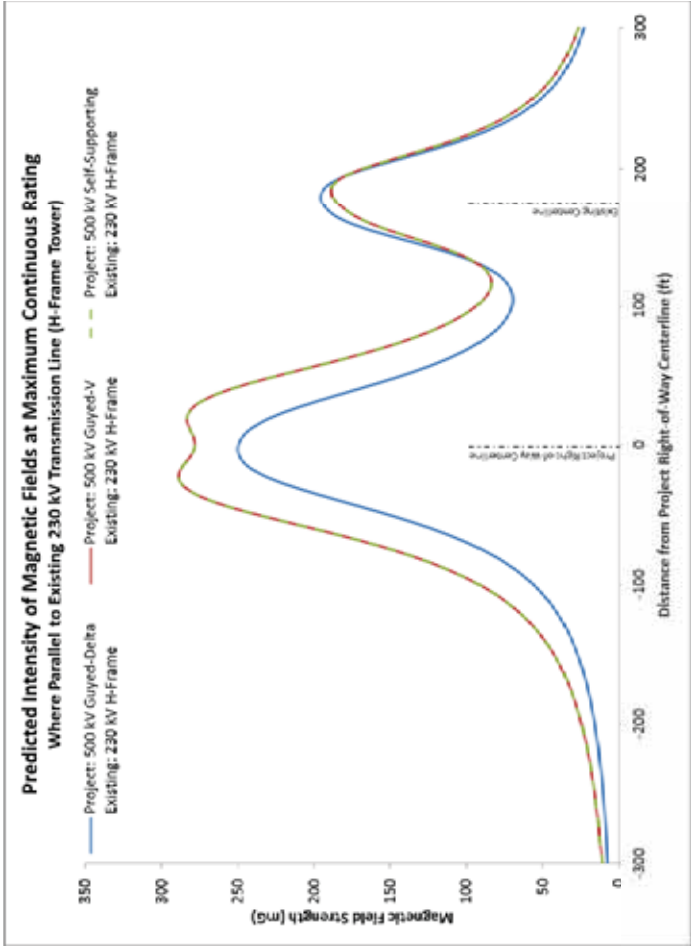
Predicted Intensity of Magnetic Fields (mG) at Maximum Continuous Rating Where Parallel to Existing 500 kV Transmission Line (Guyed-Delta Tower)												
Structure Type	Line Voltage	Distance from Project ROW Centerline										
		-200	-100	-50	-25	0	25	50	100	200	300	400
Project: 500 kV Guyed-Delta	2,000 A	16.9	57.2	149.4	223.8	248.0	214.3	138.5	64.9	217.3	47.9	14.9
Existing: 500 kV Guyed-Delta	2,000 A											
Project: 500 kV Guyed-V	2,000 A	25.5	92.3	234.2	285.5	276.2	279.5	220.5	94.6	209.4	51.7	16.9
Existing: 500 kV Guyed-Delta	2,000 A											
Project: 500 kV Self-Supporting	2,000 A	25.5	92.3	234.2	285.5	276.2	279.5	220.5	94.6	209.4	51.7	16.9
Existing: 500 kV Guyed-Delta	2,000 A											



[Simulation assumes that Project ROW is adjacent to existing line ROW]

Magnetic Field Simulation Results: Max Continuous Rating

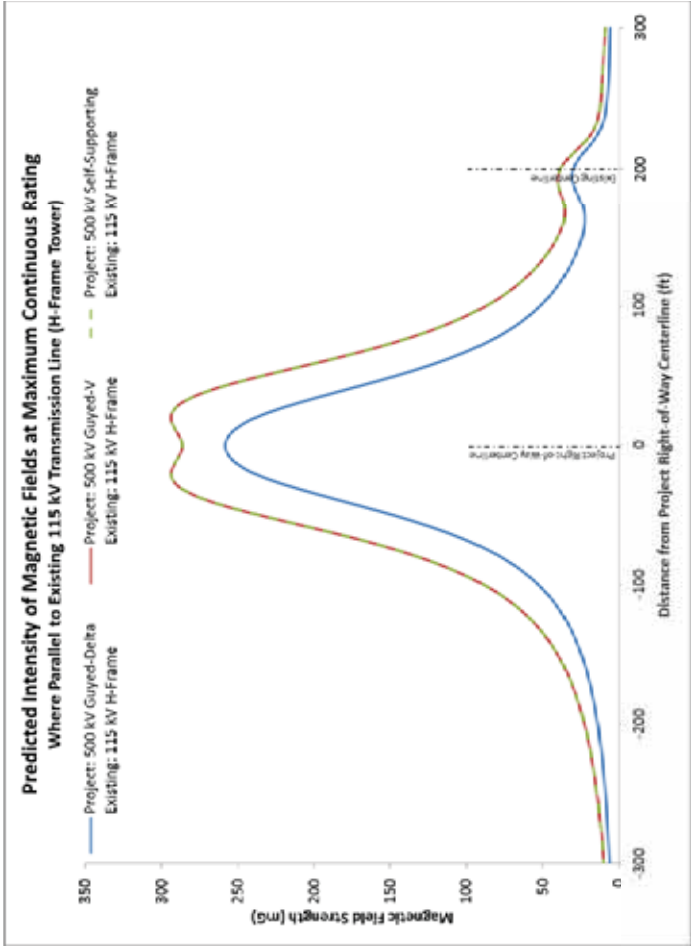
Predicted Intensity of Magnetic Fields (mG) at Maximum Continuous Rating Where Parallel to Existing 230 kV Transmission Line (H-Frame Tower)		Distance from Project ROW Centerline										
Structure Type	Line Voltage	-300	-200	-100	-50	0	25	50	100	200	300	
Project: 500 kV Guyed-Delta	2,000 A	7.5	16.0	56.0	149.5	225.2	250.1	217.7	143.6	70.4	165.7	22.6
Existing: 230 kV H-Frame	1,198 A											
Project: 500 kV Guyed-V	2,000 A	11.3	24.6	91.3	235.3	288.3	278.2	281.9	225.4	94.2	167.9	26.5
Existing: 230 kV H-Frame	1,198 A											
Project: 500 kV Self-Supporting	2,000 A	11.3	24.6	91.3	235.3	288.3	278.2	281.9	225.4	94.2	167.9	26.5
Existing: 230 kV H-Frame	1,198 A											



[Simulation assumes that Project ROW is adjacent to existing line ROW]

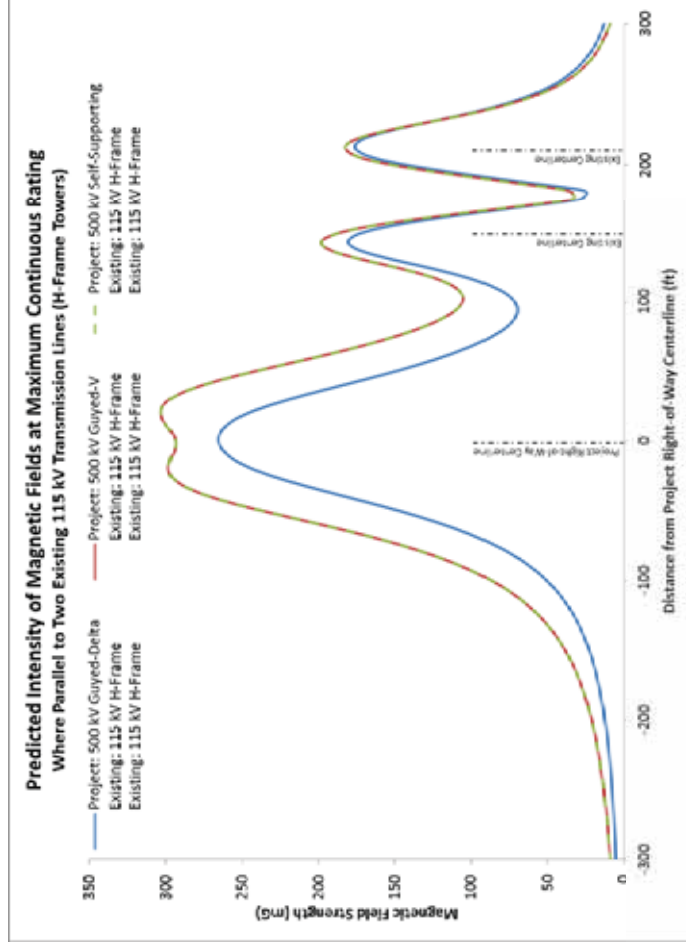
Magnetic Field Simulation Results: Max Continuous Rating

Predicted Intensity of Magnetic Fields (mG) at Maximum Continuous Rating Where Parallel to Existing 115 kV Transmission Line (H-Frame Tower)		Distance from Project ROW Centerline										
Structure Type	Line Voltage	-300	-200	-100	-50	0	25	50	100	200	300	
Project: 500 kV Guyed-Delta Existing: 115 kV H-Frame	2,000 A 96 A	6.3	14.1	52.8	147.2	227.3	258.4	227.5	147.4	52.5	29.9	5.4
Project: 500 kV Guyed-V Existing: 115 kV H-Frame	2,000 A 96 A	10.1	22.7	88.5	235.0	292.7	286.5	292.9	235.3	88.3	38.3	9.0
Project: 500 kV Self-Supporting Existing: 115 kV H-Frame	2,000 A 96 A	10.1	22.7	88.5	235.0	292.7	286.5	292.9	235.3	88.3	38.3	9.0



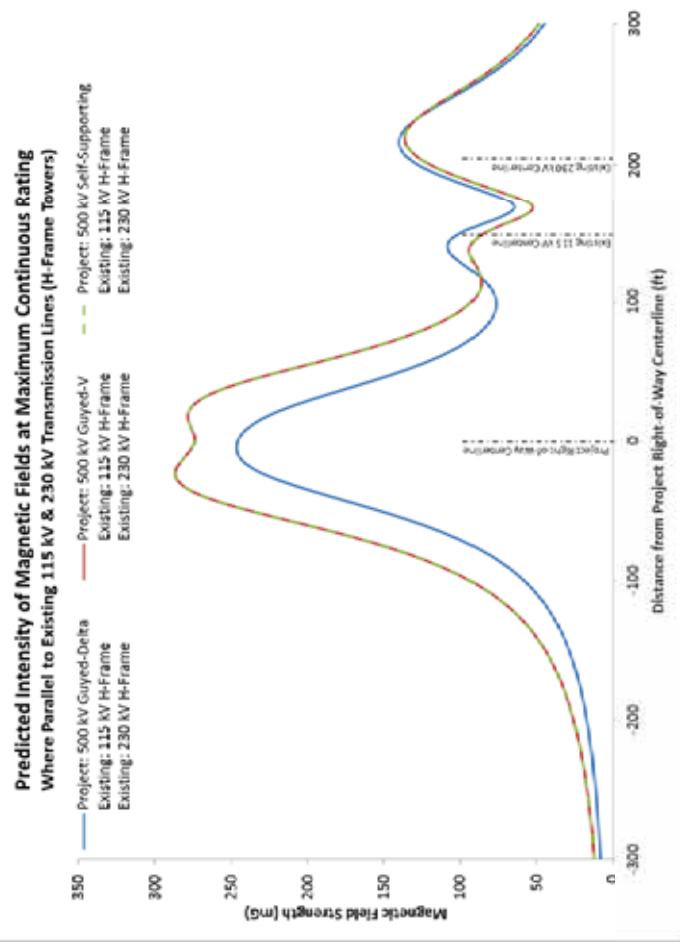
[Simulation assumes that Project ROW is adjacent to existing line ROW]

Predicted Intensity of Magnetic Fields (mG) at Maximum Continuous Rating Where Parallel to Two Existing 115 kV Transmission Lines (H-Frame Towers)		Distance from Project ROW Centerline										
Structure Type	Line Voltage	-300	-200	-100	-50	0	25	50	100	200	300	
Project: 500 kV Guyed-Delta Existing: 115 kV H-Frame Existing: 115 kV H-Frame	2,000 A 929 A 929 A	5.3	12.6	50.4	145.7	229.4	265.5	235.9	151.9	71.2	143.0	12.6
Project: 500 kV Guyed-V Existing: 115 kV H-Frame Existing: 115 kV H-Frame	2,000 A 929 A 929 A	9.1	21.3	86.3	235.1	296.4	293.6	302.5	244.5	105.8	152.0	9.1
Project: 500 kV Self-Supporting Existing: 115 kV H-Frame Existing: 115 kV H-Frame	2,000 A 929 A 929 A	9.1	21.3	86.3	235.1	296.4	293.6	302.5	244.5	105.8	152.0	9.1



[Simulation assumes that Project ROW is adjacent to existing line ROW]

Predicted Intensity of Magnetic Fields (mG) at Maximum Continuous Rating Where Parallel to Existing 115 kV & 230 kV Transmission Lines (H-Frame Towers)												
Structure Type	Line Voltage	Distance from Project ROW Centerline										
		-300	-200	-100	-50	-25	0	25	50	100	200	300
Project: 500 kV Guyed-Delta Existing: 115 kV H-Frame Existing: 230 kV H-Frame	2,000 A 804 A 1,753 A	8.3	17.2	58.1	151.4	224.8	246.1	212.1	140.2	76.7	127.5	44.8
Project: 500 kV Guyed-V Existing: 115 kV H-Frame Existing: 230 kV H-Frame	2,000 A 804 A 1,753 A	12.1	25.9	93.3	236.0	286.6	274.3	276.2	219.1	93.3	119.3	48.3
Project: 500 kV Self-Supporting Existing: 115 kV H-Frame Existing: 230 kV H-Frame	2,000 A 804 A 1,753 A	12.1	25.9	93.3	236.0	286.6	274.3	276.2	219.1	93.3	119.3	48.3



[Simulation assumes that Project ROW is adjacent to existing line ROW]

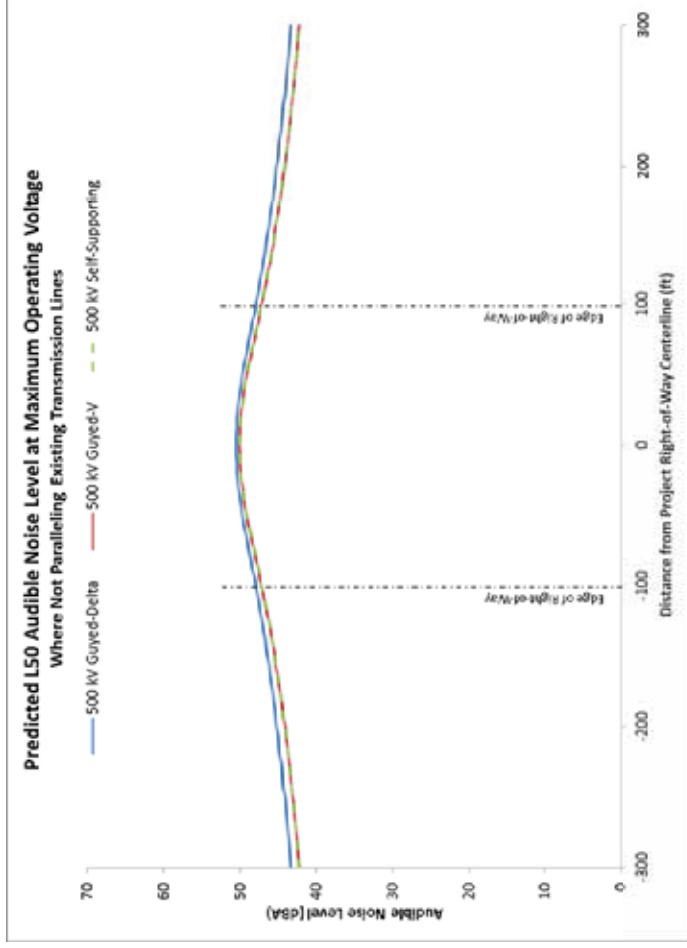
Audible Noise Simulation Results

0190-28 cont'd

0190-28
Continued

Predicted L50 Audible Noise Level (dBA) at Maximum Operating Voltage Where Not Paralleling Existing Transmission Lines

Structure Type	Line Voltage	Distance from Project ROW Centerline										
		-300	-200	-100	-50	-25	0	25	50	100	200	300
500 kV Guyed-Delta	550 kV	43.3	45.2	47.9	49.7	50.3	50.5	50.3	49.7	47.9	45.2	43.3
500 kV Guyed-V	550 kV	42.2	44.1	47.2	49.1	49.8	50.1	49.8	49.1	47.2	44.1	42.2
500 kV Self-Supporting	550 kV	42.2	44.1	47.2	49.1	49.8	50.1	49.8	49.1	47.2	44.1	42.2

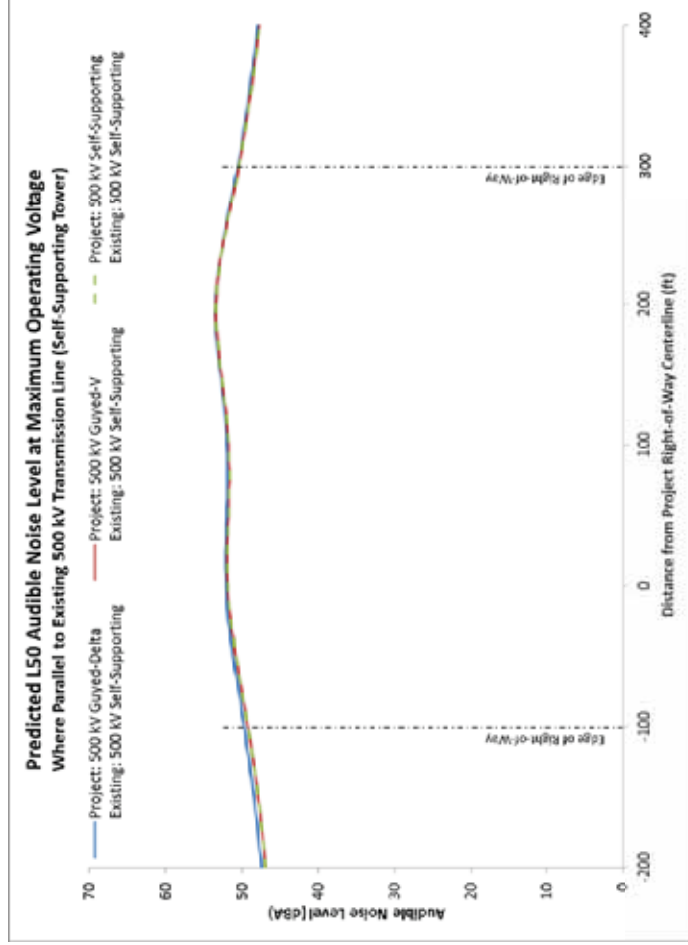


Audible Noise Simulation Results

0190-28 cont'd

0190-28
Continued

Predicted L50 Audible Noise Level (dBA) at Maximum Operating Voltage Where Parallel to Existing 500 kV Transmission Line (Self-Supporting Tower)												
Structure Type	Line Voltage	Distance from Project ROW Centerline										
		-200	-100	-50	-25	0	25	50	100	200	300	400
Project: 500 kV Guyed-Delta	550 kV	47.4	49.7	51.2	51.8	52.1	52.2	52.0	52.0	53.4	50.5	47.9
Existing: 500 kV Self-Supporting	550 kV											
Project: 500 kV Guyed-V	550 kV	46.9	49.2	50.8	51.4	51.8	51.9	51.7	51.7	53.4	50.4	47.7
Existing: 500 kV Self-Supporting	550 kV											
Project: 500 kV Self-Supporting	550 kV	46.9	49.2	50.8	51.4	51.8	51.9	51.7	51.7	53.4	50.4	47.7
Existing: 500 kV Self-Supporting	550 kV											



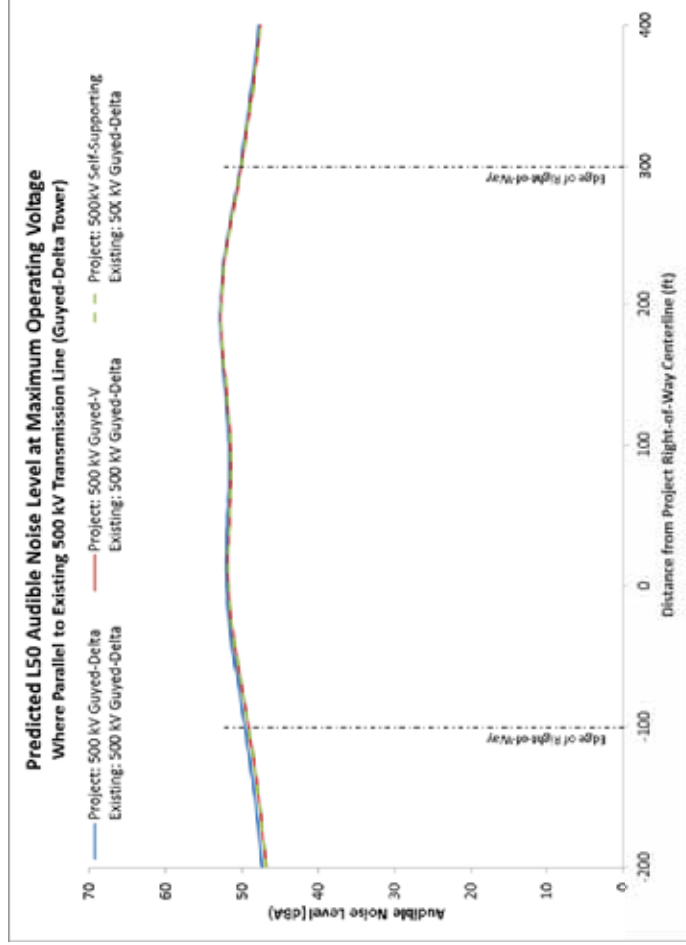
[Simulation assumes that Project ROW is adjacent to existing line ROW]

Audible Noise Simulation Results

0190-28 cont'd

0190-28
Continued

Predicted L50 Audible Noise Level (dBA) at Maximum Operating Voltage Where Parallel to Existing 500 kV Transmission Line (Guyed-Delta Tower)												
Structure Type	Line Voltage	Distance from Project ROW Centerline										
		-200	-100	-50	-25	0	25	50	100	200	300	400
Project: 500 kV Guyed-Delta	550 kV	47.3	49.6	51.1	51.7	52.0	52.0	51.9	51.7	52.8	50.2	47.8
Existing: 500 kV Guyed-Delta	550 kV											
Project: 500 kV Guyed-V	550 kV	46.8	49.1	50.7	51.4	51.7	51.8	51.6	51.5	52.7	50.1	47.6
Existing: 500 kV Guyed-Delta	550 kV											
Project: 500 kV Self-Supporting	550 kV	46.8	49.1	50.7	51.4	51.7	51.8	51.6	51.5	52.7	50.1	47.6
Existing: 500 kV Guyed-Delta	550 kV											



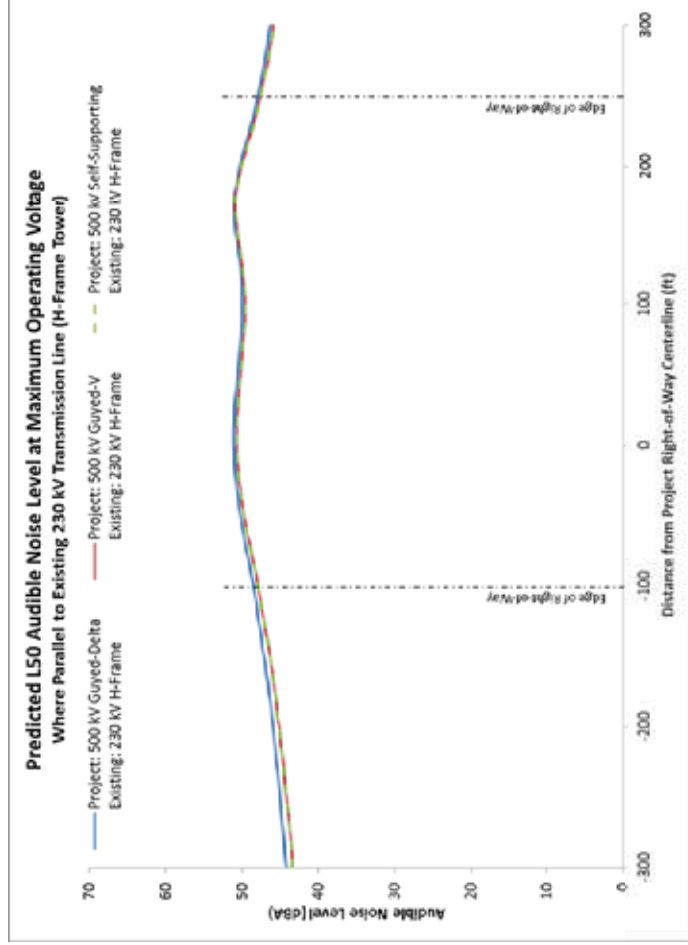
[Simulation assumes that Project ROW is adjacent to existing line ROW]

Audible Noise Simulation Results

0190-28 cont'd

0190-28
Continued

Structure Type		Distance from Project ROW Centerline										
		-300	-200	-100	-50	-25	0	25	50	100	200	300
Project: 500 kV Guyed-Delta	550 kV	44.2	45.9	48.5	50.2	50.8	51.1	51.0	50.6	50.0	50.3	46.3
Existing: 230 kV H-Frame	253 kV											
Project: 500 kV Guyed-V	550 kV	43.4	45.1	47.9	49.7	50.4	50.7	50.6	50.2	49.6	50.1	45.9
Existing: 230 kV H-Frame	253 kV											
Project: 500 kV Self-Supporting	550 kV	43.4	45.1	47.9	49.7	50.4	50.7	50.6	50.2	49.6	50.1	45.9
Existing: 230 kV H-Frame	253 kV											



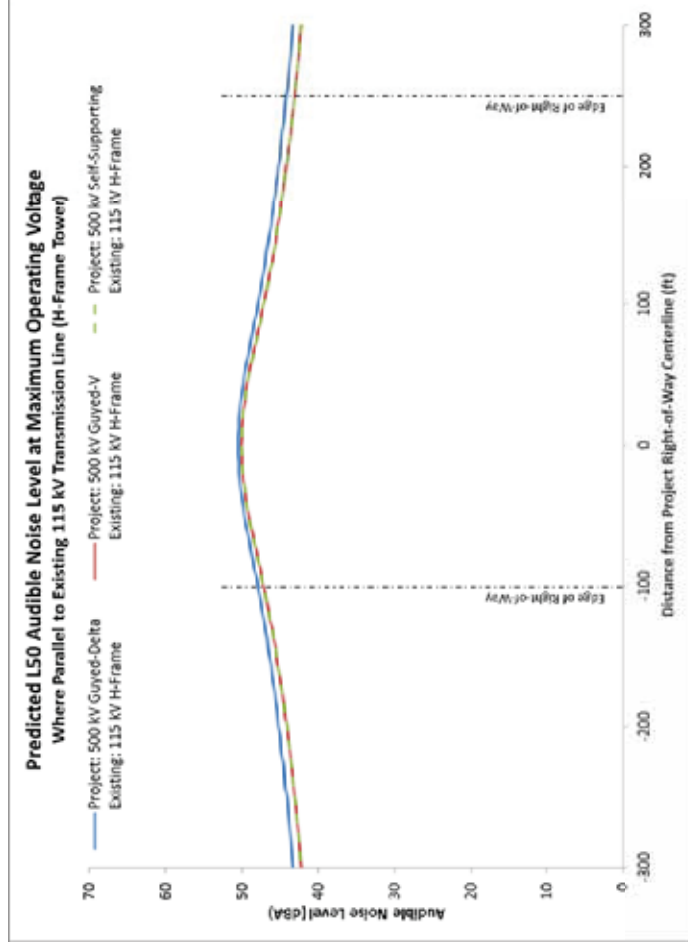
[Simulation assumes that Project ROW is adjacent to existing line ROW]

Audible Noise Simulation Results

0190-28 cont'd

0190-28
Continued

Structure Type		Line Voltage	Distance from Project ROW Centerline											
			-300	-200	-100	-50	-25	0	25	50	100	200	300	
Project: 500 kV Guyed-Delta	Existing: 115 kV H-Frame	550 kV 127 kV	43.3	45.2	47.9	49.7	50.3	50.5	50.3	49.7	47.9	45.2	43.3	
Project: 500 kV Guyed-V	Existing: 115 kV H-Frame	550 kV 127 kV	42.2	44.1	47.2	49.1	49.8	50.1	49.8	49.1	47.2	44.2	42.2	
Project: 500 kV Self-Supporting	Existing: 115 kV H-Frame	550 kV 127 kV	42.2	44.1	47.2	49.1	49.8	50.1	49.8	49.1	47.2	44.2	42.2	



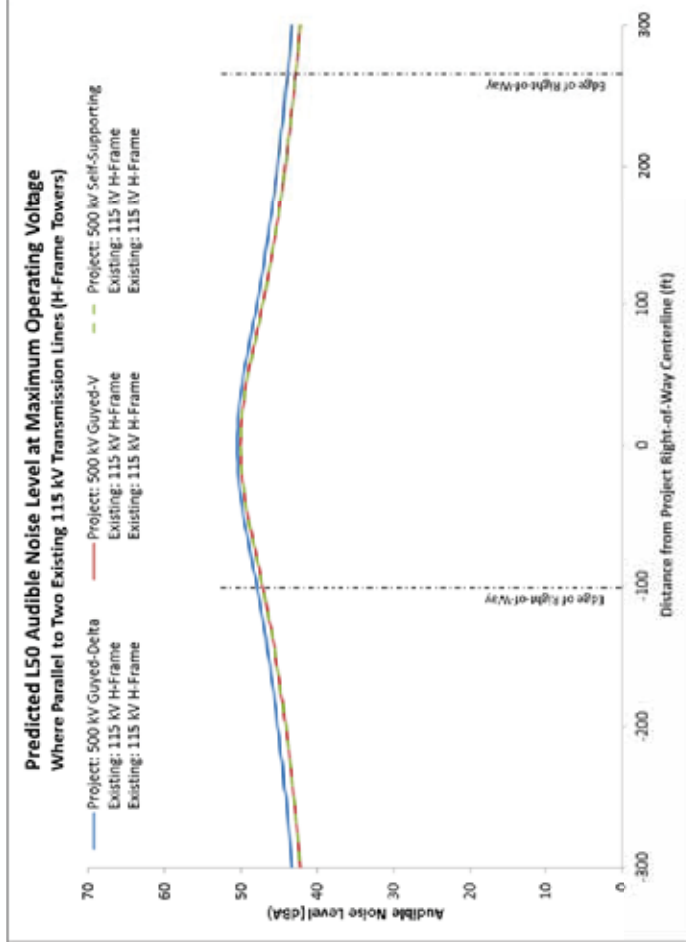
[Simulation assumes that Project ROW is adjacent to existing line ROW]

Audible Noise Simulation Results

0190-28 cont'd

0190-28
Continued

Structure Type		Line Voltage	Distance from Project ROW Centerline											
			-300	-200	-100	-50	0	25	50	100	200	300		
Project: 500 kV Guyed-Delta	550 kV		43.3	45.2	47.9	49.7	50.3	50.5	49.7	47.9	45.2	43.3		
Existing: 115 kV H-Frame	127 kV													
Existing: 115 kV H-Frame	127 kV													
Project: 500 kV Guyed-V	550 kV		42.2	44.1	47.2	49.1	49.8	50.1	49.8	49.1	47.2	44.2	42.2	
Existing: 115 kV H-Frame	127 kV													
Existing: 115 kV H-Frame	127 kV													
Project: 500 kV Self-Supporting	550 kV		42.2	44.1	47.2	49.1	49.8	50.1	49.8	49.1	47.2	44.2	42.2	
Existing: 115 kV H-Frame	127 kV													
Existing: 115 kV H-Frame	127 kV													

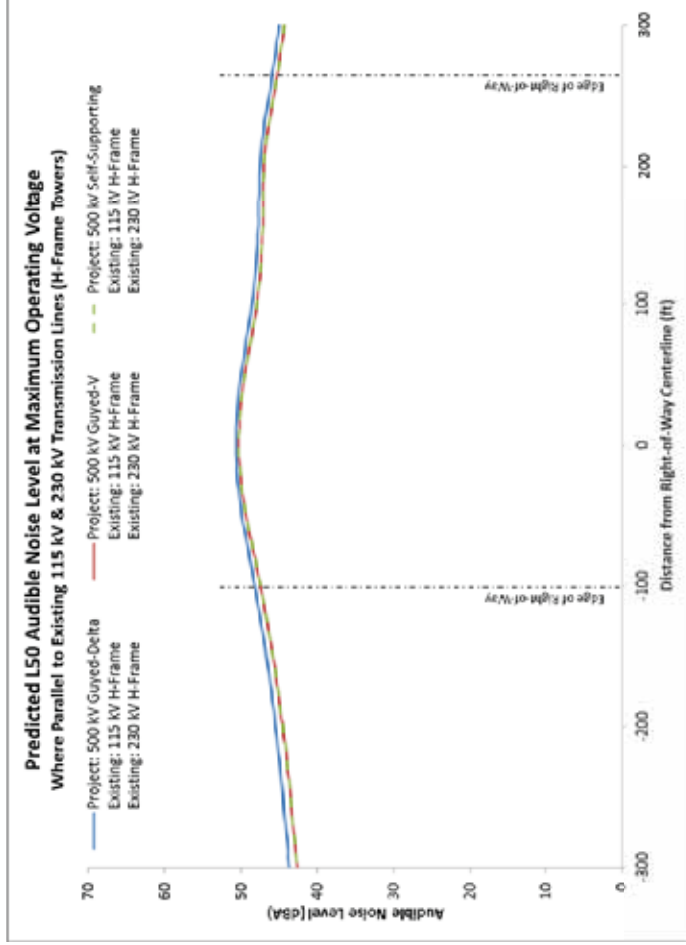


[Simulation assumes that Project ROW is adjacent to existing line ROW]

Audible Noise Simulation Results

0190-28
Continued

Predicted L50 Audible Noise Level (dBA) at Maximum Operating Voltage Where Parallel to Existing 115 kV & 230 kV Transmission Lines (H-Frame Towers)											
Structure Type	Line Voltage	Distance from Project ROW Centerline									
		-300	-200	-100	-50	0	25	50	100	200	300
Project: 500 kV Guyed-Delta Existing: 115 kV H-Frame Existing: 230 kV H-Frame	550 kV 127 kV 253 kV	43.7	45.5	48.2	49.9	50.5	50.7	50.5	48.6	47.5	45.0
Project: 500 kV Guyed-V Existing: 115 kV H-Frame Existing: 230 kV H-Frame	550 kV 127 kV 253 kV	42.6	44.5	47.4	49.3	50.0	50.3	50.1	49.5	47.0	44.3
Project: 500 kV Self-Supporting Existing: 115 kV H-Frame Existing: 230 kV H-Frame	550 kV 127 kV 253 kV	42.6	44.5	47.4	49.3	50.0	50.3	50.1	49.5	47.0	44.3



[Simulation assumes that Project ROW is adjacent to existing line ROW]



MEMORANDUM

DATE: April 6, 2015
Julie Smith, DOE
Bill Storm, DOC
To: Cheryl Feigum, Barr
C: Lydia Nelson
FROM: Jim Atkinson & David Moeller
SUBJECT: Response to Request for Information (RFI) – Substation Noise

Substation Noise

Following is a response to RFI dated 2/27/15

Request:

Does MN power now know or have an idea of the equipment that would be installed [at the Iron Range Substation]? Or typical equipment? A preliminary look at the range of noise emission related to such equipment and that expected at the station is helpful in the draft document.

Response:

As noted in the Application, the dominant noise sources at substations are power transformers. Devices similar to transformers, such as transmission-level reactors, also generate similar levels of audible noise. At the time the Application was written, the exact size, number, and location of Project transformers and other substation equipment had not yet been determined by electrical design optimization studies. Therefore, it was not appropriate at that time to provide a substation audible noise analysis.

Since the Application was submitted in April 2014, electrical design optimization studies have concluded, recommendations have been provided, and engineering is proceeding based on the recommended size and number of project transformers and other substation equipment from the electrical studies. Based on these recommendations, Minnesota Power anticipates that the predominant noise emitters from the Iron Range 500/230 kV Substation will include a single 1200 MVA 500/230 kV transformer bank and two 150 MVA 500 kV shunt reactors. The 500/230 kV transformer bank will consist of three single phase 400 MVA transformers and a spare phase of the same size that will not normally carry load. At this time, a final general arrangement and site plan for the Iron Range 500/230 kV Substation is not available, so the exact location of the transformer and reactor banks has not yet been determined. Given the limited information available at this time, it is still not appropriate to provide a detailed substation audible noise assessment. However, Minnesota Power provides the following simplified and conservative substation noise assessment, based on the best available information at this time:

The four transformers were modeled as a single point source at their estimated position on the property, approximately midpoint in the substation based on the preliminary site plan shown in Figure 1. A single point source was modeled for the two reactors at their estimated position, at the northern fence line in the substation based on the preliminary site plan shown in Figure 1. The site plan shown in Figure 1 is the best information available at this time about the substation arrangement and location on the property, but is subject to change based on several site-specific engineering factors. Transformer noise levels were calculated using the Electric Power Plant Environmental Noise Guide (EPPENG). These values were compared to feedback received directly from transformer manufacturers for a transformer of comparable size and design characteristics and were found to be higher. The decision to use the higher transformer noise levels from the EPPENG provides a more conservative analysis. Reactor noise levels were estimated using the National



MEMORANDUM

Electrical Manufacturer's Association (NEMA) Standard TR1 Table 0-2, which provides guidance to manufacturers pertaining to the maximum allowable noise level that equipment must be designed to operate within. Other noise sources in the area, such as wind and traffic, and obstacles in the propagation path, such as fencing, other equipment and firewalls, were ignored.

The two nearest residences were considered for the analysis, as shown in Figure 2.

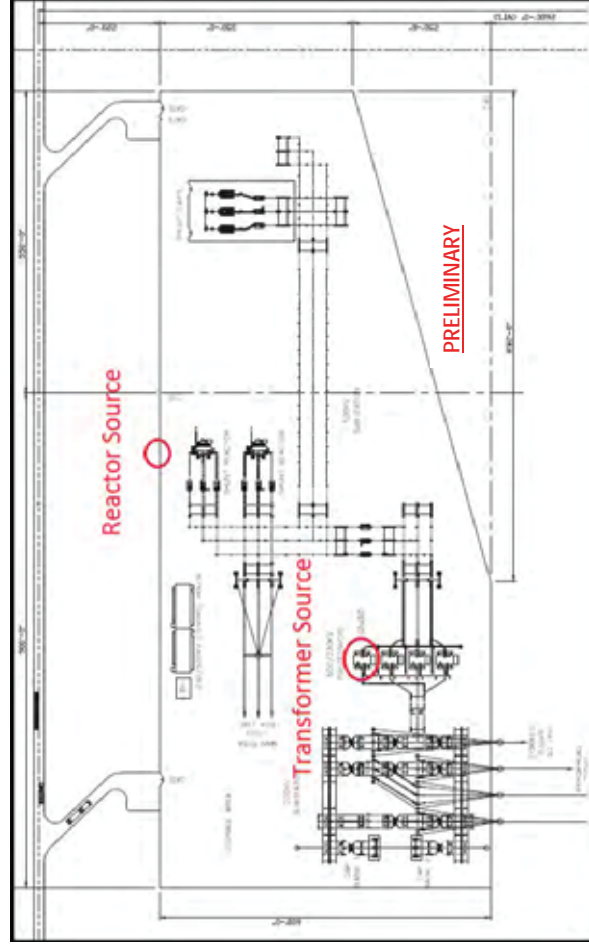


Figure 1: Point Source Locations



Figure 2: Noise Receptors

0190-29
 Continued

The calculated project-related noise levels for the two receptor locations shown in Figure 2 are given in Tables 1 and 2.

Table 1: Calculated Noise Levels for Northern Receptor

Range of noise emissions from the transformers (SPL @ 3ft., dBA)	Noise emissions from the reactors (SPL @ 6ft., dBA)	Transformers at 1,120 ft. (dBA)	Reactors at 1,155 ft. (dBA)	Overall SPL at the residence immediately North of the substation (dBA)
Low	90	30	44	44
High	90	40	44	46

Table 2: Calculated Noise Levels for Northeastern Receptor

Range of noise emissions from the transformers (SPL @ 3ft., dBA)	Noise emissions from the reactors (SPL @ 6ft., dBA)	Transformers at 1,700 ft. (dBA)	Reactors at 1,100 ft. (dBA)	Overall SPL at the residence Northeast of the substation (dBA)
Low	90	27	45	45
High	90	37	45	45

Analysis results show that the calculated noise levels are expected to comply with the Minnesota Pollution Control Agency (MPCA) 50 dBA nighttime limit at both of the receptor locations based on the assumptions used to perform this assessment. As noted, this is a simplified assessment based on the dominant noise sources in the Iron Range 500/230 kV Substation and neglecting other noise influences in the area. If the size of the equipment or the general arrangement and site plan for the Iron Range 500/230 kV Substation vary from the assumptions used to calculate the noise levels discussed above, the noise impact of the substation on the surrounding environment, including the noise receptors analyzed in this assessment, will change.

COPY



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Legal Services Branch
Civil Law Division
Room 730 Woodsworth Building
405 Broadway
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In reply, please refer to:
Gord Hannon
General Counsel

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Fax: (204) 948-2244
Gord.Hannon@gov.mb.ca
File No: NR04DO (429)

June 2, 2015

Administrative Law Judge Ann O'Reilly
Office of Administrative Hearings
600 N. Robert Street
St. Paul, MN 55164




Dear Madam:

Re: Canadian and Provincial Permitting of the Manitoba Minnesota
Transmission Project
OAH Docket No. 65-2500-31367
MPUC Docket No. E-015/TL-14-21

Please find enclosed Manitoba Justice's comments to the Minnesota Public Utilities Commission E-Docket Number E-015/TL-14-21, in the Matter of the Application of Minnesota Power for a Route Permit for the Great Northern Transmission Line Project in Roseau, Lake of the Woods, Beltrami, Koochiching and Itasca Counties. Please include our comments in the above-referenced record.

Yours truly,


Gordon E. Hannon
General Counsel

c. Dan Wolf, Executive Secretary, Minnesota Public Utilities Commission ✓



Justice
Legal Services Branch
Civil Law Division
Room 730 Woodsworth Building
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Winnipeg MB R3C 3L6

In reply, please refer to:
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File No: NFR04D0 (429)

June 2, 2015

Administrative Law Judge Ann O'Reilly
Office of Administrative Hearings
600 N. Robert Street
St. Paul, MN 55164

Dear Madam:

Re: Canadian and Provincial Permitting of the Manitoba Minnesota
Transmission Project
OAH Docket No. 65-2500-31367
MPUC Docket No. E-015/TL-14-21

Through representatives of Manitoba Hydro, representatives of the Government of Manitoba have been informed of regulatory developments regarding Minnesota Power's application for a route permit that would allow the construction of the Great Northern Transmission Line, the United States portion of a proposed new International Power Line ("IPL"), that would connect with the Manitoba Minnesota Transmission Project ("the Project") at the Canada-United States Border.

On behalf of the Government of Manitoba, this letter is being submitted for filing on the public record and to inform the Administrative Law Judge, Minnesota Department of Commerce – Energy Environmental Review and Analysis Division and Minnesota Public Utilities Commission about these issues:

- (I) Canadian federal and Manitoba provincial legal regime and regulatory processes for authorizing an International Transmission Line;
- (II) an overview of the regulatory processes in Canada to date;
- (III) the required steps to complete the regulatory processes in Canada; and
- (IV) coordination with United States and Minnesota regulatory processes.

As a representative of the Government of Manitoba we can advise particularly of the Manitoba Government understanding of Manitoba provincial regulatory processes. However, the federal National Energy Board ("the NEB") has Canadian federal regulatory responsibilities under federal law because of the international nature of the

IPL, Manitoba is working with the NEB to coordinate the provincial and federal regulatory processes.

I. Canadian Federal and Provincial Legal Regime and Regulatory Processes for Authorizing an International Transmission Line

A. Overview

Under Canada's *Constitution Act, 1867*, laws in relation to international power lines are matters of exclusive federal jurisdiction. This jurisdiction has been exercised by the enactment by Canadian Parliament of the *National Energy Board Act* and the provisions of the *Canadian Environmental Assessment Act, 2012* relating to IPLs.

Provincial legislation applies to the use and allocation of Crown (public) land in Manitoba for the line in Manitoba.

Generally, intra-provincial power transmission lines are subject to environmental assessment and licensing under *The Environment Act* of Manitoba. *The Environment Act* provides a regime of environmental assessment and licensing of projects or developments of defined classes. Transmission lines greater than 230 kV are considered Class 3 developments under the Classes of Development Regulation made under *The Environment Act* and are thus subject to the highest level of environmental assessment under Manitoba legislation. All documents filed in the environmental assessment process are filed on a public registry. The Environmental Impact Statement is open to public comments which are considered in the decision-making process.

Federal legislation allows for the involvement of provincial authorities and processes, including the assessment of the environmental impacts of IPLs, under certain circumstances. A common feature of both federal and provincial environmental review processes is the requirement for an applicant to conduct a public engagement program ("PEP") regarding the project, including the proposed route of an IPL, and its potential socio-economic and environmental impacts as part of its environmental assessment of the project prior to filing an application for licenses and authorizations.

The regulatory practice in Manitoba is that government authorities do not formally engage in public consultations about projects of this type. Government decision makers do not generally engage directly in public consultation; public input is provided through the proponent's public engagement program and through comments on the public registry. In some cases, however, a public hearing may be commissioned by the minister of Conservation and Water Stewardship before the Clean Environment Commission, for the Commission to provide advice to decision makers respecting a proposed development.

The Government of Manitoba engages directly in consultations with Aboriginal peoples about potential adverse effects of the project on the exercise of Aboriginal or treaty rights recognized pursuant to section 35 of the *Constitution Act, 1982*.

B. Canadian Federal law

1. National Energy Board Act, R.S.C., 1985, c. N-7

The responsibility for regulating the construction and operation of IPLs rests with the National Energy Board of Canada pursuant to the *National Energy Board Act*, R.S.C., 1985, c. N-7. In accordance with Section 58.1 of the *National Energy Board Act*, authorization is required to construct or operate an IPL. The *National Energy Board Electricity Regulations*, SOR/97-130 set out a comprehensive list of information requirements for inclusion in an application to be filed with the NEB for an authorization of an IPL. The NEB Electricity Filing Manual provides additional extensive detail and guidance on the expectations for the content of an application. Both the regulations and the Filing Manual identify the need for an application to contain: an identification of a single proposed route and border crossing point for the IPL; an environmental and socio-economic assessment of the IPL; and a description of the Public Engagement Program that has been undertaken by the applicant. Upon the filing of an application, the NEB's authority is limited under Section 58.11 of the Act to either issuing a permit authorizing the IPL or recommending and issuing a certificate for the IPL. There is no authority for NEB to determine an alternate route for an IPL.

Notwithstanding federal jurisdiction over IPLs, Sections 58.17 and 58.2 of the Act allow for the application of provincial laws to certain matters relating to IPLs, including environmental assessment, where an Order in Council is issued by the government of the province where the IPL is located. While the NEB allows for a provincial environmental review process, and while the NEB is also under a duty to seek to avoid the duplication of measures undertaken by a province in respect of an IPL, the NEB is prohibited from delegating its decision-making authority regarding the environmental impacts of an IPL under federal environmental legislation, as discussed below.

2. Canadian Environmental Assessment Act, 2012, S.C. 2012, c. 19, s. 52

The construction, operation and decommissioning of a new electrical transmission line with a voltage of 345 kV or more and requiring 75 km or more of new right of way in totality is considered a Designated Project pursuant s. 39 of the Schedule to the *Regulation Designating Physical Activities SOR/2012-147* under the *Canadian Environmental Assessment Act, 2012*, S.C. 2012, c. 19, s. 52 (CEAA, 2012).

Pursuant to paragraph 15(b) of CEAA, 2012, the NEB is a "Responsible Authority" for a "Designated Project" regulated under the *National Energy Board Act*. As part of its responsibilities, the NEB must ensure that an environmental assessment has been performed by the applicant pursuant to CEAA, 2012 and must determine whether the IPL is likely to cause significant adverse environmental effects.

C. Provincial law

1. ***The Crown Corporations Public Review and Accountability Act, C.C.S.M. c. P336 and The Public Utilities Board Act, C.C.S.M. c. P280***

The Public Utilities Board of Manitoba ("the PUB") has jurisdiction over Manitoba Hydro's retail electricity rates in accordance with Section 26 of *The Crown Corporations Public Review and Accountability Act* and *The Public Utilities Board Act*. Although the PUB does not have the specific authority to review Manitoba Hydro's capital projects, the PUB can be assigned additional duties by order of the Lieutenant Governor in Council.

Manitoba Order in Council 128/2013 was issued on April 17, 2013 under the authority of section 107 of *The Public Utilities Board Act* requiring a panel of the Public Utilities Board of Manitoba to conduct a "Needs For and Alternatives To" ("NFAT") review of Manitoba Hydro's preferred development plan, including the construction of a new 500 kV IPL and to make a recommendation to the Government of Manitoba as to whether construction of the new IPL should go forward.

2. ***The Environment Act, C.C.S.M. c. E125***

The construction of electrical transmission lines greater than 230 kV and associated facilities is considered a Class 3 Development pursuant to the Classes of Development Regulation M.R. 164/88, made under *The Environment Act* and is subject to licensing under Section 12 of *The Environment Act*. The Licensing Procedures Regulation, M.R. 163/88 made under the Act outlines the process to be used and the information requirements for proposals under the Act. Subsection 1(1) of this Regulation requires the submission of a proposal that contains the location of the proposed development and a description of the environmental and socio-economic impacts of the development. A full, detailed assessment of the impacts for the proposed development is limited to the single proposed route and associated infrastructure. While alternative routes are included in the proposal, they are included only for comparison purposes to demonstrate why the single proposed route was selected. The proposal will not include detailed environmental or social-economic impacts of these alternatives. Should the proposed route be rejected in this process, an alternative route is not chosen by the regulator.

The Environment Act process includes an opportunity for public comments through a public registry maintained by Manitoba Conservation and Water Stewardship

3. ***The Crown Lands Act, C.C.S.M. c. C.340***

Publicly-owned lands in Canada are considered to be "Crown lands", administered and controlled on behalf of the Crown. Under Canada's constitution Crown lands are generally administered and controlled by the provinces. The use and allocation of Crown

lands in Manitoba is governed by *The Crown Lands Act*. That Act provides the legislative authority for the provincial government to allocate or grant rights in provincial Crown land in Manitoba. Authorizations for the use of any Crown land for the IPL in Manitoba will be required under *The Crown Lands Act*.

4. The Constitution Act, 1982 and Consultation by the Government with Aboriginal Peoples

Subsections 35(1) and (2) of the *Constitution Act, 1982* state:

Recognition of existing aboriginal and treaty rights

35. (1) The existing aboriginal and treaty rights of the aboriginal peoples of Canada are hereby recognized and affirmed.

Definition of "aboriginal peoples of Canada"

(2) In this Act, "aboriginal peoples of Canada" includes the Indian, Inuit and Métis peoples of Canada.

The *Constitution Act, 1982* is part of the constitution of Canada and applies to federal and provincial government action. In accordance with governing case law interpreting s. 35, including leading Supreme Court of Canada cases *Haida Nation v. British Columbia (Minister of Forests)*, [2004] 3 S.C.R. 511, 2004 SCC 73 and *Mikisew Cree First Nation v. Canada (Minister of Canadian Heritage)* [2005] 3 S.C.R. 388, 2005 SCC 69, it is settled law in Canada that the Crown (federal and provincial governments within the scope of their responsibilities) has a duty to consult with Aboriginal peoples about any decision or action that might affect the exercise of Aboriginal rights or treaty rights of the Aboriginal peoples and to attempt in good faith to address or accommodate concerns expressed by the Aboriginal peoples about those effects before making the decision or taking the action.

The Government of Manitoba has developed an Interim Provincial Policy for Crown Consultation with First Nations, Métis Communities and Other Aboriginal Communities as a general statement of the approach of the Government to meeting its duty of consultation with Aboriginal peoples. The Government is committed to completing consultation processes with potentially-affected Aboriginal communities. In order to determine the communities potentially affected an initial assessment of the consultation requirements is undertaken by the Government based on the route of the proposed project. Consultation is being planned based on the identified proposed route in Manitoba.

II. An Overview of the Regulatory Processes to Date

The need for and justification for the Project has already been confirmed by the Public Utilities Board of Manitoba as a result of the NFAT review process conducted between June 2013 and May 2014. The PUB issued a final report to the Manitoba Government

on the NFAT process in June 2014. The NFAT review process commenced with the filing of Manitoba Hydro's proposal and rationale, followed by two rounds of written information requests, the filing of evidence by interveners, one further round of information requests, and finally a hearing held from March 3 to May 26, 2014. The NFAT review included the appointment of independent expert consultants to examine Manitoba Hydro's plans. Those experts filed reports on their findings and testified at the NFAT hearing.

The PUB final report recommended that Manitoba Hydro be given approval to proceed with the construction of the proposed 500 kV Manitoba Minnesota transmission line. On December 10, 2014, Order in Council 545/2014 was issued by the Government of Manitoba under *The Manitoba Hydro Act* authorizing Manitoba Hydro to proceed with all actions necessary to construct and operate the new transmission line.

Manitoba Order in Council No. 00386/2013 has also been issued under the authority of the *National Energy Board Act* designating the Manitoba Minister of Conservation and Water Stewardship as the provincial regulatory agency for the proposed IPL. This allows for the provincial environmental assessment and licensing process under *The Environment Act* to apply to the portion of the line in Manitoba.

It is our understanding that Manitoba Hydro has considered several different alternative routes for the Project over the last few years and conducted a Public Engagement Process that included consideration of these alternative routes. Based upon the outcome of that Public Engagement Process and a detailed route selection process conducted with the assistance of several external consultants, Manitoba Hydro has selected a specific proposed route. That route ends at a border crossing that was determined after several months of analysis and in-depth discussion with Minnesota Power. The crossing selected was considered to be in the best interests of the overall project and acceptable to both parties.

It is our understanding that Manitoba Hydro will be filing an application with the NEB for approval of a specific final preferred route with an identified associated border crossing, consistent with Canadian legal requirements.

We understand that three pre-application meetings have been held with the NEB providing information regarding the scope of the Project and the intended authorizations that will be sought once the application is filed. As described below, the NEB was also provided with Manitoba Hydro's draft Scoping Document.

Several meetings have also been held with representatives of Manitoba Conservation and Water Stewardship with respect to scope of environmental assessment, including the Public Engagement Program. On November 21, 2014, Manitoba Hydro filed an Environment Act Proposal with MCWS for a Class 3 Development under subsections 12(1) and 12(3) of *The Environment Act*, and provided a draft Scoping Document that outlines the proposed contents of an Environmental Impact Statement (EIS) for the Manitoba-Minnesota Transmission Project that describes the various environmental

components that will be studied. Included in that draft Scoping Document was a map of the final preferred route that identified the selected border crossing.

Pursuant to subsection 12(4) of *The Environment Act*, MCWS posted the filed documents on a public registry, and provided an opportunity for public/stakeholder comment until February 25, 2015. The public registry is available on-line at: <http://www.gov.mb.ca/conservation/eal/registries/5750mbhydrofrombminnesota/index.html>

Also pursuant to subsection 12(4) of *The Environment Act*, the Proposal was provided for analysis to the Technical Advisory Committee (TAC), made up of experts from several different provincial departments, including the wildlife branch, heritage branch, and fisheries branch, of the preferred route and associated border crossing. Comments from various departments have already been received.

III. The Required Steps to Complete the Regulatory Processes in Canada

It is anticipated that the current round of public engagement by Manitoba Hydro will be completed by summer 2015 and Manitoba Hydro will file its Environmental Impact Statement with Manitoba Conservation and Water Stewardship shortly after that pursuant to subsection 12(5) of *The Environment Act*.

An application will subsequently be filed with NEB. The NEB application and the EIS filed under the Environment Act will both seek approval for the single proposed route and the selected border crossing.

Public notification of the NEB application will be made and an opportunity for interested parties to file written comments with NEB will be specified in the notice. Manitoba Hydro will then have an opportunity to file written responses to any comments.

Once the EIS is filed, MCWS, coordinating with the NEB, will then begin its assessment of the Project and the EIS in accordance with subsection 12(5) of *The Environment Act*. Public consultations conducted by Manitoba Hydro are taken into consideration by MCWS when conducting its assessment. A public hearing before the Manitoba Clean Environment Commission may also be ordered under clause 12(5)(e) and subsection 12(6) of that Act. The NEB also has jurisdiction to order a public hearing under section 24 of the *National Energy Board Act*. As such, there could possibly be a joint public hearing or two separate hearings.

The provincial Technical Advisory Committee also conducts an extensive review of submitted EIS documents and provides written information requests to Manitoba Hydro that must be satisfied as part of the process. This may be done in advance of the public hearing or concurrently. Again, that review is based upon the single proposed route and selected border crossing.

Independent of the environmental assessment process, including any public hearings is the Crown consultation process with Aboriginal communities referred to above. The

consultations will involve consideration of the single proposed route and selected border crossing.

IV. Coordination with United States and Minnesota Regulatory Processes

It is our understanding from Manitoba Hydro that the Minnesota Department of Commerce – Energy Environmental Review and Analysis Division and Minnesota Public Utilities Commission have issued an environmental scoping document that includes multiple alternative border crossings in addition to the border crossing associated with the Preferred Route. It is further our understanding that these additional border crossings are not included in Minnesota Power's application for a Presidential Permit.

Any decision by the Minnesota Department of Commerce, Energy Environmental Review and Analysis Division, or Minnesota Public Utilities Commission that would require a border crossing other than the selected border crossing included in the Canadian, Provincial and Presidential Permit review process will require the filing of new or amended applications containing a different proposed route. Manitoba Hydro advises that the filing of new or amended proposals with MCWS, or a new or amended application to the NEB, would require significant new studies to address the change in route to a different border crossing as part of the regulatory process in Canada. Manitoba Hydro also advises that it would be very unlikely that the necessary studies and the regulatory process would be completed in time to meet the proposed 2020 in-service date. As the agreements between Manitoba Hydro and Minnesota Power require a 2020 in-service date, the project may therefore be jeopardized.

Yours truly,



Gordon E. Hannon
General Counsel

c. Dan Wolf, Executive Secretary, Minnesota Public Utilities Commission

0190-30

Section 1.3.2 is updated with information about the status of the Canadian process for siting this project in Canada by Manitoba Hydro as provided by comment letter submitted by both the Province of Manitoba's General Counsel (see response to comment 078-1).

0190-30

Appendix A – Links to legislation and key documents referred to in letter

Order in Council 00128/2013 for Manitoba Public Utilities Board NFAT Review:
<http://oic.gov.mb.ca/OICDocs/2013/04/Healthy%20Living,%20Seniors%20&%20Consumer%20Affairs.130417.Public%20Utilities%20Board%20Act.1282013.pdf>

Terms of Reference for Manitoba Public Utilities Board NFAT Review:
<http://www.pub.gov.mb.ca/pdf/infat/TermsOfReference-Ap25.pdf>

Interim Provincial Policy for Crown Consultation with First Nations, Métis Communities and Other Aboriginal Communities:
http://www.gov.mb.ca/fana/pdf/pubs/interim_aboriginal_consultation_policy_and_guidelines.pdf

National Energy Board Act (Canada)
<http://laws-lois.justice.gc.ca/eng/acts/N-7/FullText.html>

National Energy Board Electricity Regulations
<http://laws-lois.justice.gc.ca/eng/regulations/SOR-97-130/index.html>

Canadian Environmental Assessment Act, 2012 (Canada)
<http://laws-lois.justice.gc.ca/eng/acts/C-15.2/1/index.html>

The Environment Act (Manitoba)
<http://web2.gov.mb.ca/laws/statutes/ccsm/e125e.php>

Classes of Development Regulation
<http://web2.gov.mb.ca/laws/regs/current/pdf-regs.php?reg=164/88>

The Public Utilities Board Act (Manitoba)
<http://web2.gov.mb.ca/laws/statutes/ccsm/p280e.php>

The Crown Lands Act (Manitoba)
<http://web2.gov.mb.ca/laws/statutes/ccsm/c340e.php>

Order in Council 545/2014, authorizing Transmission Line
<http://oic.gov.mb.ca/OICDocs/2014/12/Manitoba%20Hydro.141210.Manitoba%20Hydro%20Act.5452014.pdf>

Order in Council 00386/2013
<http://oic.gov.mb.ca/OICDocs/2013/11/Conservation%20&%20Water%20Stewardship.131106.National%20Energy%20Board%20Act.3862013.pdf>



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July 30, 2015

Mr. William Cole Storm
Environmental Review Manager
Minnesota Department of Commerce
85 7th Place East, Suite 500
St. Paul, Minnesota, 55101

Dear Mr. Storm:

RE: Great Northern Transmission Line Border Crossing

As you are aware, Manitoba Hydro is the Proponent for the Canadian portion of the 500 kV transmission project known in Canada as the 'Manitoba-Minnesota Transmission Project,' and in the U.S. as the Great Northern Transmission Line (Project). We recently reviewed the Draft Environmental Impact Statement (EIS) (June 19, 2015), submitted by the Minnesota Department of Commerce - Energy Environmental Review and Analysis Staff and U.S. Department of Energy.

The Draft EIS identifies a number of border crossing variations that are under consideration. Manitoba Hydro would like to provide the following comments regarding selection of the border crossing:

1. Manitoba Hydro can only support the agreed-upon border crossing located at Lat. 49 00 00.00N; Long. 95 54 50.49W; known as the Proposed Border Crossing - Blue/Orange Route in the Draft EIS and noted as the MH Preferred Border Crossing and shown as a light blue area on the attached map.

Manitoba Hydro completed a robust, transparent comparative analysis of routes and all potential border crossings using a process based on the EPRI-GTC Overhead Electric Transmission Line Siting Methodology. This process:

- Evaluated numerous social, technical and environmental factors, similar to those criteria identified in the Minnesota Public Utilities Commission routing and siting regulations (such as land use, human settlement, agriculture, forestry, cultural and historic resources, wildlife, rare species, water resources, noise, air quality, health and safety, engineering constraints, etc.);
- Incorporated routing preferences (that is, a weighting of the routing criteria) based on discussions with internal and external stakeholders; and
- Used this data to identify and rank potential border crossings and routes.

Using this methodology, Manitoba Hydro determined that Piney East Border crossing (MH Former Border Crossing shown in light grey on the attached map) which encompassed Border Crossing Hwy 310 Variation, was not a feasible border crossing for a variety of compelling reasons. These included, but were not limited to, the fact that routes to this crossing traverse areas of high biological diversity that had been noted by government agencies and environmental

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0190-31

Section 1.3.2 is updated with information about the status of the Canadian process for siting this project in Canada by Manitoba Hydro as provided by comment letter submitted by Manitoba Hydro (see response to comments 079-1 and 079-2).

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Continued

non-government organizations. Furthermore, this area is primarily composed of Crown (public) lands, which support traditional Aboriginal use and First Nations noted significant concerns in regards to route alternatives in this area. Border Crossing 500 kV Variation and the Border Crossing 230 kV Variation were outside of the agreed upon Border crossing and thus were not analyzed but would pose many of the same challenges.

Based on our environmental analysis and public, First Nations and Métis engagement processes, in consultation with Minnesota Power, the Proposed Border Crossing - Blue/Orange Route was selected as the preferred end point for each entity. While other border crossings were favored by each entity, the Proposed Border Crossing - Blue/Orange route was jointly selected because it balances environmental, technical, and stakeholder impacts on both sides of the border.

The preferred route and border crossing were presented as part of a third round of our engagement processes earlier this year. With the feedback received and through the environmental review work being undertaken, Manitoba Hydro determined the final placement of the transmission line and will submit an environmental impact statement to Manitoba Conservation and Water Stewardship. An application will also be filed with the National Energy Board in September. Manitoba Hydro **does not** have routes that connect to the border crossing variations included in the Draft EIS. Our application will only include the Proposed Border Crossing - Blue/Orange Route location developed and agreed upon by Manitoba Hydro and Minnesota Power.

Manitoba Hydro and Minnesota Power have made a business commitment to have the Project in service by June 2020. Selection of a border crossing location that does not align with our border crossing and route jeopardizes this commitment and the Project.

Should you have any questions or require further clarification please do not hesitate to contact me at 204-360-4394.

Regards,

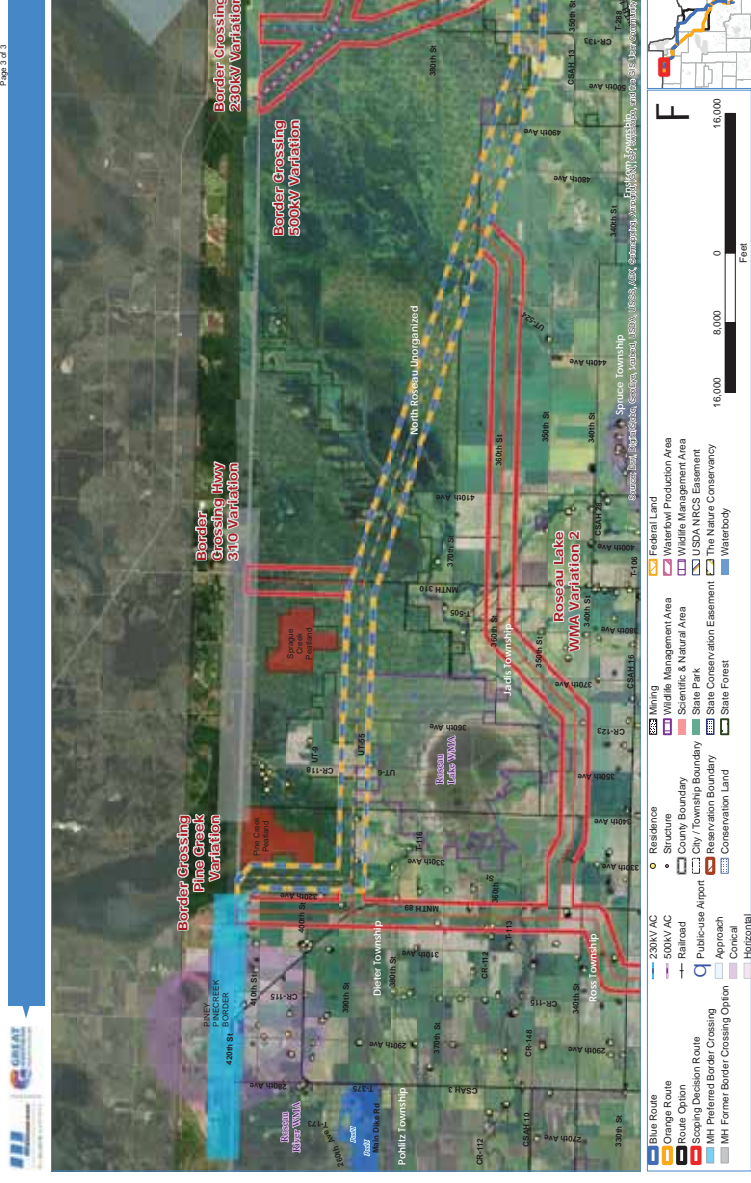
Original signed by Shannon Johnson

Shannon Johnson
Manager
Licensing and Environmental Assessment Department
Manitoba Hydro
820 Taylor Ave (3)
Winnipeg, Manitoba
R3M 3T1

Attachments: 1

Cc: Julie Ann Smith, PhD, Federal Document Manager
DOE Office of Electricity Delivery and Energy Reliability
1000 Independence Avenue SW
Washington, DC, 20585

Merriam Highways Center
dated July 29, 2015
Page 3 of 3



DEIS Chapter	Section	Page #	Paragraph, Figure or Table #	Comment
1	1.3.1.1	6		Does not address Minn. Stat. 216E.02, subd. 3 (cooperation on interstate routes) AND Does not address Minn. Stat. 216E.03, subd. 7(b)(12) issues raised by local entities (such as Roseau County) only addresses issues raised by DNR and USFWS.
1	1.3.2	9		Minnesota Public Utilities Commission – Certificate of Need: "The MN PUC must also determine whether there is a need for a transmission line, and establish the size, type, and required end points of the proposed project..." The MN PUC granted a Certificate of Need for the GNTL Project on June 30, 2015. This statement should be updated throughout the EIS.
1	1.4.3	12		The description of USFWS's role as a cooperating agency is too limited. The DEIS states that "USFWS will also coordinate any special use permit if ROW access is requested and granted on USEFWS interest properties." This doesn't mention the fact that ROW access would be requested from, and granted by, USFWS. That should be listed as one of USFWS's primary roles as a cooperating agency.
2	2.1	15		"The new 500 kV substation required for the proposed Project would be expected to permanently impact approximately 17.8 acres." Approximately 23 acres anticipated at this time with preliminary engineering, may deviate during detailed engineering. The DEIS references both 17.8 and 17.4 acres throughout.
2	2.1	15		"The series compensation station will permanently impact approximately 60 acres." Approximately 6 acres anticipated at this time with preliminary engineering, may deviate during detailed engineering. Wetland investigations may dictate the layout and affect total size. Update throughout the document.
2	2.1	15		"The final location for the 500 kV series compensation station would be determined by electric design optimization studies and final route selection, but would likely be located at the approximate midpoint of the Minnesota portion of the transmission line." MP has provided its preferred series comp station site, which is located at approximately the midpoint between the Dorsey Substation (the endpoint of the Canadian project) and the Iron Range Substation (the endpoint of the Minnesota project).
2	2.1	16		"The applicant proposes..." [x4] "Additional details of the proposed Project and construction methods are provided in Section 2.7 through 2.11." Add a new sentence: "The Applicant notes that the details of construction methods are subject to change based on field surveys and numerous other factors."
2	2.2.2	20		"...a new 500 kV transmission line – which can carry a total of up to 883 MW of electric power..." The line itself will have higher capacity than that, as described elsewhere. It's transfer capability on the Manitoba-U.S. interface that we're after. To avoid confusion, suggest revising to say "...a new 500 kV transmission line – which can facilitate up to 883 MW of additional power transfers between Manitoba and the United States..."
2	2.2.2	20		"[The Applicant] operates transmission and distribution systems, including 8,866 miles of transmission lines..." Should say "...8,866 miles of transmission & distribution lines..."
2	2.2.3	21		"...additional 133 MW 'Renewable Optimization Agreement' that the Applicant will also submit to the MN PUC for approval once the agreement has been formally approved by both parties." The ROA described here was approved in a MPUC written order dated January 30, 2015 (MPUC Docket No. E015/M-14-960).
2	2.6.2	28		Remove the following: "...and one-third of the overall transmission line distance from the Riel Substation to the Blackberry 500 kV Substation." The endpoint is wrong (should be Dorsey not Riel) and this location is no longer under consideration. Also, two sentences earlier, change "Riel" to "Dorsey."
2	2.8.1	30		"The proposed Project is designed to increase the total transfer capability between the U.S. and Manitoba by at least 750 MW." While this is technically accurate, it is out-of-date. Suggest updating to say "...increase the total transfer capability between the U.S. and Manitoba by up to 883 MW."

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Local entities that raised substantive issues during the Draft EIS comment period are addressed as part of the comment/response process.

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No changes are made to the EIS in response to this comment.

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The text is updated in Section 1.3.2 of the EIS to state that the formal order from the MN PUC was issued on June 30, 2015.

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USFWS, a cooperating agency for this EIS, provided this information.

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No changes are made to the EIS in response to this comment.

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The acreage is revised to 23 acres in Sections 2.1, 2.6.1, and 6.7.3.2 of the EIS.

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This edit is made in Section 2.1 of the EIS.

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These comments are incorporated in Chapter 2 of the EIS.

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The following sentence is incorporated into Section 2.1 of the EIS: "The Applicant notes that the details of construction methods are subject to change based on field surveys."

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This comment is incorporated into Section 2.2.2 of the EIS.

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This comment is incorporated into Section 2.2.2 of the EIS.

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This comment is incorporated into Section 2.2.3 of the EIS.

0190-42

This comment is incorporated into Section 2.6.2 of the EIS.

0190-43

This comment is incorporated into Section 2.8.1 of the EIS.

2	2.8.1	30	Remove the following sentence: "The Applicant will supplement this information after completion of additional MISO system impact studies." Additional information filed with Chris Lawrence at DOE: see 11/19/2014 email from David Moeller.
2	2.9.4	33	"...the Applicant has identified a candidate site for the compensation station..." This is MP's preferred site. Suggest replacing "candidate" with "preferred."
2	2.9.4	33	"...located at the approximate midpoint of the Minnesota portion of the transmission line..." The midpoint of the Minnesota portion is very different from the overall midpoint between Winnipeg and the Iron Range. Please modify as follows: "...located at the approximate overall midpoint of the transmission line."
2	2.9.4	33	"The Applicant would then seek to obtain purchase option agreements with the owners of the identified properties along the route selected by the MN PUC." MP has obtained an option on its preferred series comp station site. Suggest eliminating this paragraph and continuing the first paragraph with the following: "The Applicant has entered a purchase option agreement with the owner of the property for its preferred compensation station site. The purchase agreement would be executed upon receiving the necessary regulatory permits."
2	2.9.5	34	"The Applicant may then seek to obtain purchase option agreements with the owners of the identified properties along the route selected by the MN PUC. Once the route has been determined, the Applicant will execute the appropriate purchase agreement." To be accurate, change this language to the following: "Depending on further engineering analysis, the Applicant may seek purchase option agreements on some or all of these candidate sites. Once the final route has been selected by the MN PUC, the Applicant will execute the appropriate purchase agreements."
2	2.11.7.6	37	"Equipment would not be refueled in wetlands. In addition, no petroleum products, herbicides or pesticides or hazardous chemicals of any kind should be mixed or poured or otherwise handled in wetland areas." This should read, "Where practical, equipment would not be refueled in wetlands. In addition, and where practical, no petroleum products, herbicides or pesticides of any kind should be mixed or poured or otherwise handled in wetland areas."
2	2.14	43	"...the Applicant currently estimates that the construction of the proposed Project on the route alternatives or any combination of proposed segment options, including substation facilities, would cost between \$495.5 million and \$647.7 million (2013 dollars)." Minnesota Power has provided updated cost information. Should say "...would cost between \$558 million and \$710 million (2013 dollars)."
2	2.15	43	This section should be amended to state that "...construction could begin as early as fall of 2016; however, the applicant currently anticipates a 2017 start."
3		3rd	"...pending 133 MW Renewable Optimization Agreement." This ROA was approved in MPUC written order dated January 30, 2015 (MPUC Docket No. E015/AM-14-960).
3		last	It should be noted here that MN PUC has now granted a CoN for the Project.
4	4.3.1.3		To be consistent with other parts of this chapter, the statement "a need to avoid USFWS land" should say "a need to consider avoiding USFWS' land.
4	4.3.2.5		C2 was developed by Minnesota Power, not commenters.
4	4.3.2.6		C2 was developed by Minnesota Power, not commenters.
4	4.3.3.2		The East Bear Lake variation is supposed to mitigate Bear-Wolf Peatland impacts, but there are no boundaries of this peatland, so it's impossible to know if the alternative mitigates impacts. The EIS should acknowledge this fact.
5	5.2.1.1	78	"...adequate space is generally available to allow the alignment of the transmission line to be adjusted so that no buildings would ultimately be located within the ROW of the proposed Project." This statement should be removed. This is not a true statement for a 500 KV line where the cost and space requirements of turning structures are significantly greater than even a 230 KV line. This line will not weave its way around inside the route to avoid things.

0190-44

The text is updated in Section 2.8.1 of the EIS to identify the Applicant filed the required sensitivity studies and other reliability-related reports to DOE on July 24, 2014.

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This comment is incorporated into Section 2.9.4 of the EIS.

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This comment is incorporated into Sections 2.1 and 2.9.4 of the EIS.

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This comment is incorporated into Section 2.9.4 of the EIS.

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This comment is incorporated into Section 2.9.5 of the EIS.

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Applicant's Route Permit Application states, "refueling will occur at sites away from wetlands and waters" on pages ES-22, ES-23, 6.17-27, and 6.18-12 and that "refueling of equipment in wetlands will not be permitted" on page 5-12.

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Section 2.11.1.6 of the EIS now states, "As a BMP, equipment would not be refueled in wetlands. In addition, no petroleum products, herbicides or pesticides or hazardous chemicals of any kind should be mixed or poured or otherwise handled in wetland areas."

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This comment is incorporated into Section 2.14 of the EIS.

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This comment is incorporated into Section 2.15 and Table 2-4 of the EIS.

0190-52

This comment is incorporated into Chapter 3 of the EIS.

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Section 1.3.2 states that the certificate of need was granted. The text in Chapter 3 refers to Section 1.3.2.

No changes are made to the EIS in response to this comment.

0190-54

This comment is incorporated into Section 4.3.1.3 of the EIS.

0190-55

Chapter 4 does not mention who developed the C2 alternative. No changes are made to the EIS in response to this comment.

0190-56

Chapter 4 does not mention who developed the J2 alternative. No changes are made to the EIS in response to this comment.

0190-57

The Bear-Wolf Peatland does have a boundary defined per the preliminary MBS SBS data received from the MnDNR on 12/10/2014. The SBS Site Name is "Bear - Wolf Peatland" and it has a rating of "High." The Proposed East Bear Lake Variation nearly entirely avoids this area. There is also adjacent, to the east, the "Bear Lake Inclusion" site which has a "Below" rating. Both the Proposed Orange Route and East Bear Lake Variation have new impacts through this area.

0190-58

The 3,000 foot route width would allow flexibility to site the transmission line.

5	5.2.1.2	105	Values in second row ("500 kV Transmission Line paralleling existing 500 kV Transmission Line") are incorrect. They appear to have been copied from the previous row ("Standalone"). Correct values are as follows: Within ROW: 52 dBA \\\ At edge of ROW: 52 dBA \\\ At 300 feet from centerline: 51 dBA.
5	5.2.1.2	105	Values in fifth row ("500 kV paralleling two existing 115 kV Transmission Lines") are incorrect. They appear to be the missing values from the second row (see above comment). Correct values are as follows: Within ROW: 51 dBA \\\ At edge of ROW: 48 dBA \\\ At 300 feet from centerline: 43 dBA.
5	5.2.1.2	105	Values in sixth row ("500 kV paralleling existing 115 kV and 230 kV Transmission Lines") are incorrect. Correct values are as follows: Within ROW: 51 dBA \\\ At edge of ROW: 49 dBA \\\ At 300 feet from centerline: 45 dBA.
5	5.2.1.2	105	Footnote (5) should say "Existing 115 kV 20L and 230 kV 83L transmission lines (H-Frame structures)."
5	5.2.1.2	106	"Major noise sources from a series compensation station include capacitor bank, damping circuit, by-pass switches, and protective devices." It is misleading to say that these are "major noise sources" – the only "major noise sources" in a substation are generally transformers & reactors. Most of the time the operation of the listed equipment will be relatively silent, and noise will be below background levels. See a handful of sentences later, where the DEIS states "Most of the other electrical equipment at substations is either silent or generates minimal noise in comparison to transformers."
5	5.2	106	"Based on these assumptions, the predicted noise operational level perceived at 100 feet from the proposed Blackberry 500 kV Substation would be 41 dBA (assuming the use of a substation perimeter wall). A perimeter wall is not currently planned for the site. Substation security has not yet been addressed in engineering. Firewalls are likely between transformers and possible between reactors. Typical substation construction includes a perimeter fence – not a solid wall.
5	5.2.1.2	106	"The nearest residence is located approximately 560 feet northeast of the proposed Blackberry 500 kV Substation." This may or may not be true if you're measuring from the fence, but a more appropriate way to characterize the distance would be to provide distance from the primary noise source (transformer) to the residence. See MP's RFI response dated April 6, 2015. Nearest residence is 1,120 feet from preliminary transformer location. This also directly contradicts the statement from Appendix H: "No residences have been identified in the vicinity of the substation site." (Page H-5)
5	5.2.1.2	106	"At this location [the nearest residence], noise from the proposed substation would be 26 dBA (assuming the use of a substation perimeter wall)." See MP's RFI response dated April 6, 2015. Expected noise from substation transformers and reactors at this residence is between 44-46 dBA.
5	5.2.1.8	134	"...that there is currently a sufficient labor pool in the ROI to supply the number of construction workers required for the proposed Project." The Project will have significant local economic benefit, but the assumption that labor will be largely supplied from the ROI is likely not correct due to the specialty trades required.
5	5.2.1.9	141	"In addition, hunting activities in close proximity to a transmission line increases the risk for shooting insulators or conductors which can break wires and cause an electrical discharge arc." This statement is not consistent with the stated reference (67) and is not correct. Transmission lines appear to provide hunting opportunities based on the prevalence of hunting blinds on existing rights-of-way. Responsible hunting will not result in shot out insulators because no game species reside on the insulators. Insulators are shot at on occasion, but this should be characterized as a crime and discussed in Section 5.2.2.6 Intentional Destructive Acts.

0190-59

This comment is incorporated into Table 5-4 in Section 5.2.1.2 of the EIS.

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This comment is incorporated into Table 5-4 in Section 5.2.1.2 of the EIS.

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This comment is incorporated into Table 5-4 in Section 5.2.1.2 of the EIS.

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This comment is incorporated into Table 5-4 in Section 5.2.1.2 of the EIS.

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This comment is incorporated into Section 5.2.1.2 of the EIS.

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This comment is incorporated into Section 5.2 of the EIS.

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This comment is incorporated into Section 5.2.1.2 of the EIS.

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This comment is incorporated into Section 5.2.1.2 of the EIS.

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This comment is incorporated into Section 5.2.1.8 of the EIS.

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Section 5.2.1.9 indicates an "increased risk" of potential damage to insulators or conductors due to accidental shooting during hunting

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activities. As you indicate in your comment, insulators are shot at on occasion, this risk of occasional shooting is acknowledged in the literature cited in Section 5.2.1.9.

No changes are made to the EIS in response to this comment.

0190-69

Thank you for your comment. No changes are made to the EIS in response to this comment.

5	5.2.2.1	142	<p>"Based on epidemiological studies, there is an association between childhood leukemia and EMF exposure." This is taken out of context and it is misleading. The studies quoted in Appendix K always say or imply that it is a weak association. At the very least, the same language (weak association) should be used here. "...despite an association between childhood leukemia and EMF exposure..." Suggest modifying: "...despite a weak association between..."</p>
5	5.2.2.1	144	<p>"Maximum field within ROW" value is incorrect for "500 kV Guyed V- and Self-Supporting towers" under "Proposed 500 kV paralleling existing 230 kV Line" section. Instead of 6.91 kV/m it should be 7.04 kV/m \\\ Instead of 7.02 kV/m it should be 7.04 kV/m \\\ Instead of 6.41 kV/m it should be 6.43 kV/m.</p>
5	5.2.2.1	144	<p>Footnote (4) should say "Existing 230 kV 907L transmission line (H-Frame structures)."</p>
5	5.2.2.1	144	<p>Footnote (7) should say "Existing 115 kV 20L and 230 kV 83L transmission lines (H-Frame structures)."</p>
5	5.2.2.1	145	<p>Title should be "Predicted Magnetic Field Strengths for the Proposed Project at Maximum Continuous Rating."</p>
5	5.2.2.1	145	<p>Multiple data errors are present in this table. MP will provide the correct data in a similar tabular format so it may be updated. Notes on MP-provided table below:</p> <ul style="list-style-type: none"> o All data based on "Maximum Continuous Rating" (2000 Amps) o "Maximum within ROW" based on the raw data from the POWER Engineers analysis o "paralleling existing 500 kV Transmission Line" data assumes existing D602F transmission line self-supporting structures o Variations from the data in Table 5-21 of the DEIS are highlighted in a separate document.
5	5.2.2.1	145	<p>Footnote (1) should say "The Applicant has assumed magnetic fields from Self-Supporting lattice tower as equivalent to magnetic fields from guyed V-structures."</p>
5	5.2.2.1	145	<p>Footnote (3) should say "Existing 230 kV 907L transmission line (H-Frame structures)."</p>
5	5.2.2.1	145	<p>Footnote (6) should say "Existing 115 kV 20L and 230 kV 83L transmission lines (H-Frame structures)."</p>
5	5.2.2.1	146	<p>"500 kV D602F transmission line (guyed Delta, guyed V, and self-supporting structures)" The existing 500 kV line was not modeled in a Guyed-V configuration. Suggest modifying as follows: "500 kV D602F transmission line (Guyed Delta and self-supporting structures)."</p>
5	5.2.2.1	146	<p>"230 kV 83L transmission line..." should say "230 kV 907L transmission line..."</p>
5	5.2.2.1	146	<p>"115 kV 28L and 230 kV 83L transmission lines..." should say "115 kV 20L and 230 kV 83L transmission lines..."</p>
5	5.2.2.1	146	<p>"The Applicant has modeled magnetic field levels for the two main operational scenarios that considered the proposed types of structures, and whether the proposed 500 kV transmission line would be installed stand-alone or located in a shared corridor with an existing transmission line. Predicted magnetic fields from a total of six cases were calculated at average and peak current levels. The average levels for these scenarios are the current levels experienced for most hours of the year; peak levels are current levels for limited hours of the year when current levels are projected to be higher due to system loading and electrical generation in the proposed Project area, among other factors." This entire paragraph is misleading. Suggest the following wording (refer to RPA text, Page 6.15-7): "The Applicant has modeled magnetic field levels for two conditions: the maximum continuous rating of the Project, which represents the maximum allowable power flow on the transmission line, and the projected peak loading when the Project is in service, derived from power system modeling of the Project under peak loading conditions. For both conditions, predicted magnetic fields from a total of six corridor scenarios (stand-alone or where the Project may parallel existing transmission lines) were calculated for each of the proposed structure types for the Project."</p>

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This comment is incorporated into Section 5.2.2.1 of the EIS.

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This comment is incorporated into Table 5-21 in Section 5.2.2.1 of the EIS.

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0190-74
This comment is incorporated into Table 5-21 in Section 5.2.2.1 of the EIS.

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0190-73
This comment is incorporated into Table 5-21 in Section 5.2.2.1 of the EIS.

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0190-77
This comment is incorporated into Table 5-22 in Section 5.2.2.1 of the EIS.

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0190-75
This comment is incorporated into Table 5-22 in Section 5.2.2.1 of the EIS.

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0190-76
This comment is incorporated into Table 5-22 in Section 5.2.2.1 of the EIS.

0190-77
This comment is incorporated into Table 5-22 in Section 5.2.2.1 of the EIS.

0190-78
This comment is incorporated into Table 5-22 in Section 5.2.2.1 of the EIS.

0190-79

This comment is incorporated into Section 5.2.2.1 of the EIS.

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This comment is incorporated into Section 5.2.2.1 of the EIS.

0190-81

This comment is incorporated into Section 5.2.2.1 of the EIS.

0190-82

This comment is incorporated into Section 5.2.2.1 of the EIS.

5	5.2.2.8	158	The last paragraph states: "The Applicant would use protective devices to safeguard workers and the public from transmission line operational hazards, including the use of shield wires, circuit breakers, and relays." These devices are for the protection of equipment, not necessarily the public. "This conversion from forest land in state fee areas where timber can no longer be harvested would result in a reduction of revenues to the School Trust Land program." The property taxes paid by the Project would counter-balance any lost timber revenue. In addition, timber revenue from the ROW clearing go to the School Trust Land program as a one time payment.
5	5.3.1.2	163	
5	5.3.2.1	168	"For the transmission line itself, the footprint of the structure proposed for the project is 33 square feet." This is not accurate. See Route Permit Application, Page 6-2: "Permanent land cover impacts are assumed to 1,936 square feet per structure for self-supporting suspension towers, which includes the area covered by the base of each structure plus a 2-foot buffer..."
5	5.3.2.1	168	"In addition, stray voltage could affect livestock if facilities are not properly wired/grounded." This is misleading since there are no stray voltage impacts directly from the Project. See previously-provided information on stray voltage: Page 149, Stray Voltage – General Impacts: "Stray voltage impacts are not anticipated as a result of construction, operation, maintenance, and emergency repair of the proposed Project..." \ \ Page 149, Stray Voltage – General Impacts: "Potential impacts related to stray voltage are not expected from construction, operation, maintenance, and emergency repair of the proposed Project for any proposed route or variation considered..."
5	5.3.2.2	169	"In addition, increasing the time between line maintenance in forested areas could result in harvestable products. Finally, elevated spanning, in areas with high elevations, could reduce forest clearing." This is not practical. Utilities must certify vegetative clearance requirements are met annually to insure reliability. These statements are not accurate, and should be deleted.
5	5.3.2.2	169	"As mentioned above, short-term impacts are estimated as 0.92 acres per structure location. Long-term impacts to forestry resources would be caused by the clearing of trees and physical presence of transmission line structures and associated facilities in forest lands. As mentioned above, for the transmission line itself, the footprint of the structure proposed for the project is 33 square feet." The ROW would be cleared of vegetation during construction, not just the structure staging area. The footprint of the self-supporting structure would be 1,936 square feet. The 33 square foot footprint of the foundation system for the Guyed-V structure is irrelevant here.
5	5.3.4.3	185	"Impacts are expected to be extensive in areas where new ROW would be created." Chapter 6 consistently and accurately describes impacts as minimal in the context of the entire area. This statement should be edited to make it consistent with those other statements.
5	5.3.4.3	185	"Because the structures would be larger and the phase spacing for the proposed project's conductors greater compared to distribution lines, avian electrocutions are unlikely." In light of this statement, electrocutions should not be included in Chapter 6.
5	5.3.7	195	"The existing 500-kV transmission line already has experienced an unexpected outage causing it to be the second largest contingency in the MISO footprint." This is not stated correctly. It would be more accurate to say, "An unexpected outage of the existing 500-kV transmission line is currently the second largest contingency in the MISO footprint."
5	5.3.7	195	"The applicable Category D contingencies are loss of all transmission lines along a common ROW and loss of an entire voltage level at a substation." It would help to add the following clarifying information: "The applicable Category D contingencies from NERC standard IPL-004 are..."
5	5.3.7	195	"(see Section 2.8.5)" This is not a helpful reference as the information in Section 2.8.5 doesn't help understand the NERC standard being discussed.

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This comment refers to text on page 6.5-5 of the Applicant's Route Permit Application.

0190-84

No changes are made to the EIS in response to this comment.

0190-84

The property taxes and timber revenue from ROW clearing would offset some of the revenue lost from the School Trust Land program. However, currently there is not enough information to determine the revenue offset.

0190-85

No changes are made to the EIS in response to this comment.

0190-86

This comment is incorporated into Chapters 5 and 6 of the EIS.

0190-87

0190-88

Section 5.3.2.1 provides a general overview of typical stray voltage effects in livestock facilities based on publicly available information and then discusses project-specific information to conclude that there would not be stray voltage effects associated with the project at those facilities identified in the ROI.

0190-89

No changes are made to the EIS in response to this comment.

0190-87

This comment is incorporated into Section 5.3.2.2 of the EIS.

0190-91

This comment is incorporated into Section 5.3.2.2 of the EIS.

0190-92

This comment is incorporated into Section 5.3.2.2 of the EIS.

0190-89

Text in Chapter 5 is generally comparing the potential impacts to wildlife from the creation of a new corridor in an unfragmented forest. Impacts are expected to be greater (extensive, i.e. cover a larger area) in an unfragmented forest. Chapter 6 is comparing the

0190

impacts across routes, while incorporating proximity to wildlife resources (i.e. WMAs). In comparing routes, while fragmenting a forest would have extensive (greater area) impacts, those impacts are minimal because there is a significant amount of habitat available.

No changes are made to the EIS in response to this comment.

0190-90

As indicated in this sentence, it is unlikely, not impossible. Text is present in Chapter 6 because it is a "potential" impact.

No changes are made to the EIS in response to this comment.

0190-91

This comment is incorporated into Section 5.3.7 of the EIS.

0190-92

This comment is incorporated into Section 5.3.7 of the EIS.

0190-93

This comment is incorporated into Section 5.3.7 of the EIS.

5	5.3.7	195	<p>"...so the analysis for the proposed Project would be on a case-by-case basis by the Applicant based on NERC standards." This analysis is not based solely on NERC standards. The following qualifying information would be helpful: "...so the analysis for the proposed Project would be on a case-by-case basis by the Applicant based on the applicable NERC standards as well as the purpose and expected performance of the Project and the adjacent transmission line."</p> <p>"When the proposed Project parallels an existing transmission line, the Applicant is proposing to offset the proposed transmission line by 50 feet from the ROW of the existing transmission line." This is poorly worded. Suggest the following correction: "When the proposed Project parallels an existing transmission line, the Applicant is proposing to offset the alignment of the proposed transmission line by 250 feet from the alignment of the existing transmission line."</p> <p>"...can be reduced by maintaining the proposed 50 foot offset between ROWs..." See above comment. Suggest the following correction: "...can be reduced by maintaining an appropriate offset between the two transmission lines..."</p> <p>"Therefore, the reliability impacts in the U.S. of an unexpected simultaneous outage of both the proposed and existing 500 kV tie transmission lines... would largely be addressed by these measures in conjunction with the proposed special protections system and corresponding power transfer reductions." MP suggests adding the following qualifying statement to the end of the paragraph: "Even so, the fact that all of these considerations must be discussed as a result of corridor sharing with the existing 500 kV transmission line illustrates that fact that corridor sharing causes real electrical reliability concerns. Therefore, routes and variations that increase the parallel distance or number of crossings with the Project and the existing 500 kV line should be considered to have a negative impact on electrical system reliability."</p>
5	5.3.7	195	
5	5.3.7.2	197	
6	6.4.1.1	534	<p>"Not including residences, the proposed routes and variation would affect similar numbers of aesthetic resources, with the Proposed Blue Route affecting 11, the Proposed Orange Route affecting 12, and the Effie Variation affecting 11." This is inconsistent with a statement elsewhere in the DEIS:</p> <p>"In total, the proposed routes and variation would affect similar numbers of aesthetic resources, with the Proposed Blue Route affecting nine, the Proposed Orange Route affecting 10, and the Effie Variation affecting 11."</p>
6	6.4.3.7	584	ESR
6	6.7.1.2	651	<p>"The configuration may decrease the reliability of the proposed Project... Adverse impacts are possible as a result of the construction and operation of three high-voltage transmission lines under one variation in the East Section." Reliability effects depend on the function and purpose of the lines. In this case, co-locating the Project with the two existing 115 kV lines would pose little to no reliability concern because the Project and the 115 kV lines serve vastly different purposes. See MP's general comments on electrical reliability.</p> <p>Says could contrast strongly w/ its surroundings. Has potential to result in significant aesthetic impacts. Could argue that residence is 0.4 miles north – and is already looking at T-line. If substation is on south side of existing and propose route would not "contrast strongly" with surroundings. (another reason to use MP route)</p>
6	6.7.1.2	651	<p>FYI - Says Hwy 71 sites (orange and blue route) are in MBS Bio Sig sites (unknown rank) Blue Hwy 71 alt site isn't in wetland or MBS site..</p> <p>Please work with MP to update the audible noise information presented in this appendix. Much of it is inaccurate.</p>
App H			
App I			
App I			
App I			

0190-94

Thank you for your comment.

No changes are made to the EIS in response to this comment.

0190-95

0190-95

The Applicant provided the shapefiles used in the EIS analysis for their Proposed Blue Route, Proposed Orange Route, C2 Segment Option Variation, and J2 Segment Option Variation. In addition, the Applicant provided a memo with design changes (December 1, 2014) which assumed a 250 foot separation between the anticipated alignments when paralleling existing 500 kV transmission line.

0190-96

0190-97

The shapefiles provided by the Applicant show that where their proposed alternatives parallel the existing 500 kV transmission line, there is a separation of 250 feet between the anticipated alignments. However, in the shapefile, where the proposed alternatives parallel the existing 230 kV transmission lines, the distance between the anticipated alignments is 150 feet. And where the proposed alternatives parallel an existing 115 kV transmission line, there is a separation of 150-300 feet between the anticipated alignments.

0190-98

No changes are made to the EIS in response to this comment.

0190-99

0190-96

This comment is incorporated into Section 5.3.7 of the EIS.

0190-100

0190-97

Thank you for your comment, these concerns will be reduced by maintaining appropriate offsets.

No changes are made to the EIS in response to this comment.

0190-101

0190-102

0190-103

0190-104

0190-105

This comment is incorporated into Section 6.4.1.1 of the EIS.

0190-99

The following text is added to Section 2.8.3 of the EIS: According to

the Applicant, the electrical reliability impacts of establishing a parallel transmission line corridor depend primarily on the purpose and expected performance of the transmission lines. None of the alternatives that parallel existing corridors with 69 kV, 115 kV, or 230 kV transmission lines that do not connect Manitoba and the United States would impact electrical system reliability.

If the proposed Project parallels the existing 230 kV tie line corridor the impact of a simultaneous, unexpected outage of the two facilities on electrical reliability would be minimal, but still notable because the lines would share a common purpose of transferring power from Manitoba to the United States. If the Proposed Project parallels the existing 500 kV tie line corridor, a simultaneous unexpected outage would have a greater impact on electrical system reliability because the transmission lines not only share a common load, but would also carry similar (and greater) amounts of power.

If three transmission lines (i.e., the Proposed Project, 500 kV tie line, and 230 kV tie line) are located in parallel corridors, a simultaneous unexpected outage of the Proposed Project and two tie lines could have the greatest impact to electrical reliability.

0190-100

The aesthetic impact of the 500 kV series compensation station is not solely determined based on the nearest residence and the EIS acknowledges that the impact is dependent on the actual location, and therefore the compensation station could contrast strongly with its surroundings.

No changes are made to the EIS in response to this comment.

0190-101

The EIS text is correct - Section 6.7.2.1 states that the Hwy 71 regeneration station (option 1) is located in a wetland (per the NWI shapefile) and within an MBS SBS site (per the preliminary MBS SBS data we received from the MnDNR on 12/10/2014). The Hwy 71 regeneration station (option 2) is not located in a wetland (per the NWI shapefile) and is not located within an MBS SBS site (per the preliminary MBS SBS data we received from the MnDNR on 12/10/2014).

No changes are made to the EIS in response to this comment.

0190-102

Appendix H of the EIS is updated with information provided by the Applicant.

0190-103

Appendix I and Section 5.2.1.2 of the EIS is updated based on the information provided by the Applicant.

0190-104

Appendix I and Section 5.2.1.2 of the EIS is updated based on the information provided by the Applicant.

0190-105

Appendix I and Section 5.2.1.2 of the EIS is updated based on the information provided by the Applicant.

0190-106 0190-106

App N					Some of the photo sims (most obviously the Highway 11 crossings) show incorrect structure heights & conductor to ground clearances. These simulations give a highly inaccurate picture of what the Project may look like once it's built. Please work with MP to update these photo sims so they present a fair and accurate depiction of the Project
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This structure heights and conductor to ground clearances used in the photosimulations were provided by the Applicant. Information was reviewed and provided to the Applicant for their consideration. Upon review of the information by the Applicant, they decided that no additional photosimulations or viewshed analysis would be required for the Final EIS. No changes are made to the EIS in response to this comment from the Applicant.

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Ray	Kirsch	Raymond.Kirsch@state.mn.us	Department of Commerce	85 7th Place E Ste 500 St. Paul, MN 55101	Electronic Service	No	SPL_SL_14-21_Agency Repts 14-21
Stacy	Koch	Stacy.Koch@state.mn.us	MINNESOTA DEPARTMENT OF TRANSPORTATION	395 John Ireland Blvd. St. Paul, MN 55155	Electronic Service	No	SPL_SL_14-21_Agency Repts 14-21
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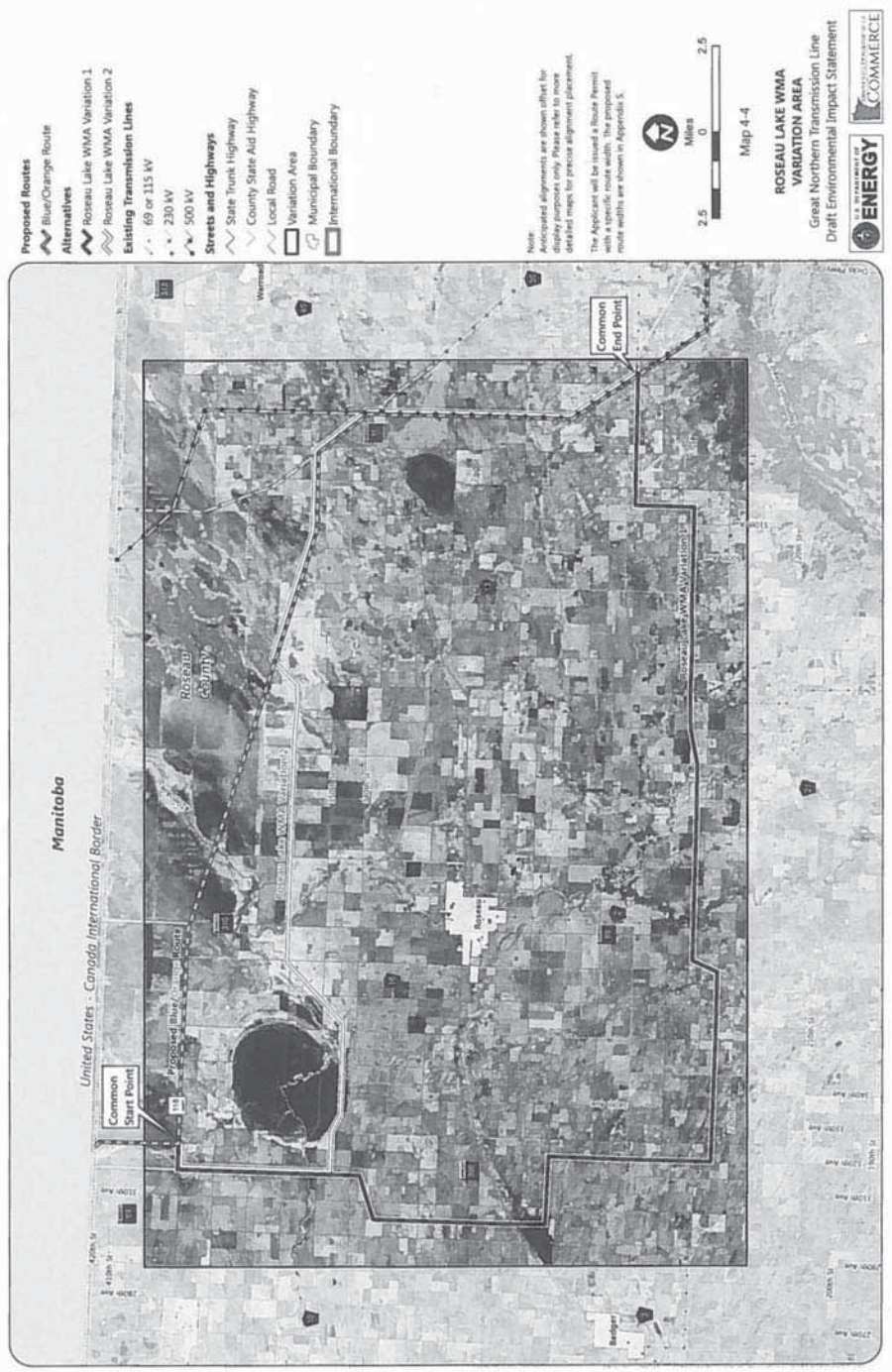
0191-1

The relative merits table provided by the Applicant used different methodology than the relative merit tables in the EIS and is included in the comment appendix of the EIS. However, additional information is included in the Final EIS to introduce the relative merit tables and the relative merits tables are updated throughout the Final EIS. Appendix X includes detailed spreadsheets with the data used to compile the summary relative merits tables for the Final EIS.

Great Northern Transmission Line

Relative Merits Table

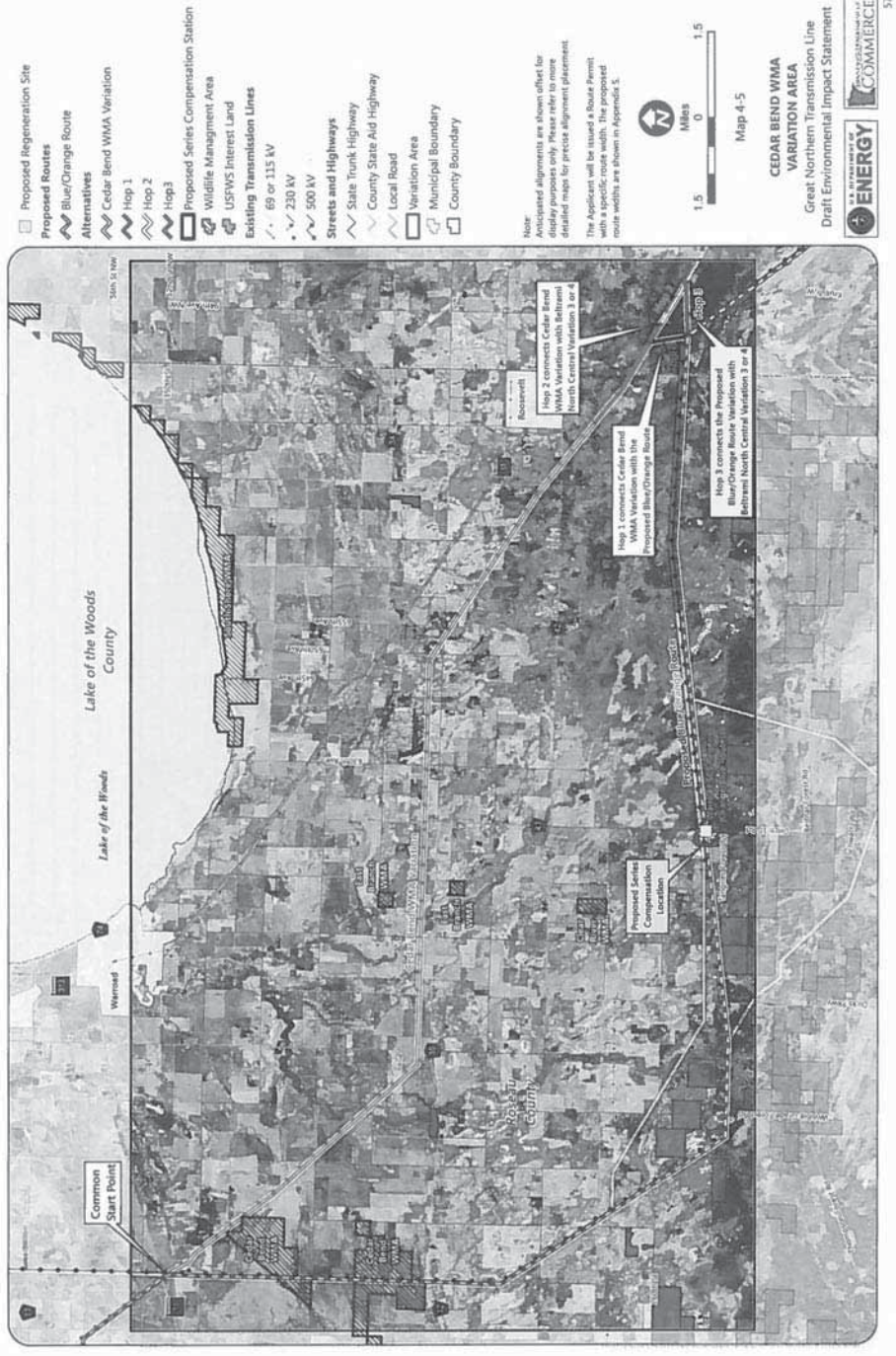
Color		Definition
Green	The alternative will have minimal effects on the resource with the implementation of best management practices, such that no mitigation is required.	
Yellow	The alternative will have minimal to moderate effects on the resource with the implementation of best management practices, such that mitigation is likely to be required.	
	The alternative will have moderate or greater effects on the resource, and those effects cannot be mitigated.	
<p>Some routing factors that are not susceptible to the minimal/moderate/unmitigable system described above. In such cases, Minnesota Power's tables assign colors in the following manner:</p> <p>Green means greater than 80% of the Route or Variation parallels an existing transmission line; yellow means between 10% and 80% of the Route or Variation parallels existing transmission lines; and red means less than 10% of the Route or Variation parallels an existing transmission line.</p> <p>Green represents the costs proposed in Minnesota Power's Certificate of Need application for a particular route segment, or anything less expensive. Yellow represents the costs proposed in Minnesota Power's proposed costs. Red represents anything that costs more than 20% of what Minnesota Power proposed, because anything in excess of that threshold.</p>		
Electrical System Reliability	For electrical system reliability, green means no identifiable impact (does not parallel) or cross any existing Manitoba-Minnesota tie lines); yellow means acceptable impact (impacts to electrical system reliability are moderate and acceptable); red means unacceptable impact (impacts to electrical system reliability are severe and unacceptable). These judgments are based on the expertise of Minnesota Power's engineers, and are further discussed in the company's comments on the DEIS.	
Factor	Element	Footnote
General	Aesthetics	Unless otherwise stated below, the ROIs discussed in Chapters 5 and 6 of the DEIS are used in these comparison tables. Consistent with the comments on the DEIS, Minnesota Power has used alternative ROIs and/or other metrics for assessing effects, as described below, and as further explained in its DEIS comments. Minnesota Power does not have access to the exact methodology or data used in the DEIS. As a result, Minnesota Power compiled these tables by copying and, when necessary or appropriate, interpreting the data used in Chapter 6 of the DEIS.
	Land Use Compatibility	Minnesota Power did not include state forests in its calculation of aesthetic effects. The DEIS already addresses public recreation opportunities within state forests by including trails, campgrounds, and water access points in its list of aesthetic resources. Adding state forests to the list essentially double-counts these public recreational opportunities, while ignoring the fact that the vast state forests in the project area are rarely used as recreational areas.
	Land Ownership	The dominant land cover type is presented in the table to highlight the most abundant resource within the Route/Alternative.
	Public	All public lands are added together for this comparison. Public lands include Federal, State, and County lands.
Human Settlement	Private	Private land is calculated by subtracting public lands from the total number of acres within the ROW for a particular Route/Alternative. A more accurate count of acres of private land and number of private landowners crossed could be made by using County Tax Assessor parcel data.
	Agriculture	Acres of agricultural land within 1,500 feet is used for this comparison to account for effects on agricultural land and practices that would likely occur beyond just the 200-foot ROW. GAP Landcover data was used to determine acres of agriculture because prime farmland soils are less accurate in identifying actual agricultural land uses.
Land-Based Economies	Forestry	Only acres of State Forest land within the ROW is used for these comparisons. It should be noted that corporate lands (such as Blandin) could also be included to the extent they are available.
	Mining & Mineral Leases	There are several occurrences where the acres of mining and mineral leases exceed the total number of acres within the ROW of a particular Route/Alternative. These numbers are highlighted in red in the tables. Minnesota Power is unsure about the source of this error and has not attempted to correct it.
Rare and Unique Natural Resources	Rare Species	Minnesota Power removed aquatic species from this calculation in light of the Chapter 6 text (for each Variation Area) consistently stating that PM, non-PM, trout, and impaired streams will be spanned and no structures will be placed within the waterbodies.
	Rare Communities	Acres of MBS Sites of Biodiversity and MBS Native Plant Communities include only the "high" or "outstanding" values where the data has been finalized. In other areas, the preliminary total of all ranks is used.
Corridor Sharing	Paralleling Existing Infrastructure	Minnesota Power included only existing high-voltage transmission lines in this analysis because they are the only corridor sharing opportunities that would potentially provide any environmental benefit.
	Electrical System Reliability	This assessment of the electrical system reliability impacts of each of the Routes and Variations performed by Minnesota Power's engineers takes into account specifically the locations where the proposed line parallels or crosses existing Manitoba - Minnesota tie lines. For the particular case of the GNTL Project, no other common corridor or line crossing scenarios involving 59 kV, 115 kV, or 230 kV lines that do not connect Manitoba and the United States has any significant impact on electrical system reliability, regardless of how many transmission lines are involved.



Factor	Relative Merits		Roseau Lake WMA Variations				Notes		
	Element	ROI	Proposed Blue / Orange Route (30.7 miles)		Roseau Lake WMA Variation 1 (44.1 miles)			Roseau Lake WMA Variation 2 (37.5 miles)	
			Count / Acres	Percent of ROI	Count / Acres	Percent of ROI		Count / Acres	Percent of ROI
Human Settlement	Aesthetics								
	Residences	1,500 feet	12	-	50	-	23	-	Roseau Lake WMA Variation 1 could potentially impact more than four times as many residences as the Blue/Orange Route.
	Historic Architectural Sites	5,280 feet	0	-	1	-	2	-	The Blue/Orange Route would not impact any known architectural sites within 5,280.
	State Scenic Byways	1,500 feet	1	-	1	-	1	-	All Alternatives would cross State Highway 11 - Waters of the Dancing Sky Scenic Byway.
	Trails		1	-	1	-	1	-	All Alternatives would cross one snowmobile trail.
Human Settlement	Land Use Compatibility								
	Dominant Land Cover Type	1,500 feet	7,350 ac of Forested and/or Swamp	64.9%	12,616 ac of Agricultural Land	78.2%	5,793 ac of Agricultural Land	63.8%	The Blue/Orange Route's major land cover type is Forested and/or Swamp which would result in a long-term change in land use for areas currently forested and/or swamp land, but these changes would be limited in extent, and there would still be extensive forest and swamp lands in the surrounding area; so these changes are expected to have a minimal impact on land use (pg. 272). The Variations' major land cover type is Agriculture.
	Land Ownership		744 acres total		1,068 acres total		909 acres total		The Blue/Orange Route contains more acres of public land but would potentially impact the fewest private landowners.
	Public	200 feet	453	60.9%	6	0.6%	145	15.9%	
	Private		291	39.1%	1,053	99.4%	764	84.0%	
Land-Based Economies	Agriculture	1,500 feet	3,384	29.7%	12,616	78.2%	8,783	63.6%	Variation 1 would potentially impact four times as many acres of agricultural land than the Blue/Orange Route.
	Forestry		334	44.9%	6	0.6%	52	5.7%	The Blue/Orange Route contains more acres of State Forest land.
	Mining & Mineral Leases	200 feet	0	0.0%	0	0.0%	0	0.0%	No Alternatives would impact any mining or mineral leases.
Archaeology and Historic Architectural Resources	Historic Architectural Sites	5,280 feet	0	-	1	-	2	-	The Blue/Orange Route would not impact any known architectural sites within 5,280 nor would it impact any known archaeological sites within 1,500 feet.
	Archaeological Sites	1,500 feet	0	-	3	-	3	-	
	PWU Waters		2	-	10	-	3	-	All Alternatives would cross a number of waterbodies; however, it is anticipated that these crossings are spannable (crossings would be less than the average spanning length of 1,250 feet) and structures would not be placed in them.
Water Resources	Non-PWU Waters		23	-	38	-	33	-	
	Impaired Waters		1	-	2	-	2	-	
	Floodplains	Crossings or 200 feet	321	43.1%	202	18.9%	307	33.8%	All Alternatives contain a similar number of acres of FEMA-designated floodplains and all will require structure placement within floodplains.

Relative Merits		Roseau Lake WMA Variations						Notes
Factor	Element	Proposed Blue / Orange Route (30.7 miles)		Roseau Lake WMA Variation 1 (44.1 miles)		Roseau Lake WMA Variation 2 (37.5 miles)		
	ROI	Count / Acres	Percent of ROI	Count / Acres	Percent of ROI	Count / Acres	Percent of ROI	
Vegetation	200 feet	547	73.5%	102	9.5%	272	29.9%	The Blue/Orange Route would potentially impact twice as many acres of NW-mapped wetlands as Variation 2. While direct, adverse impacts to forested and shrub wetlands are permanent and may change wetland functions within the ROW, they are expected to be minimal because of the amount of surrounding forested and shrub wetlands in the region (pg. 279).
		398	52.1%	61	5.7%	185	18.1%	
		73	8.8%	30	2.8%	57	6.3%	
		199	26.3%	999	81.0%	531	58.4%	
		87	11.7%	112	10.5%	156	17.2%	
60	9.3%	0	0.0%	44	4.8%			
Wildlife	200 feet	131	17.8%	40	3.7%	220	24.2%	The Blue/Orange Route contains a greater amount of forest land; the two Variations contain a greater amount of herbaceous agricultural vegetative cover. While direct, adverse impacts to forested areas would be long-term, contiguous forest is abundant in the region surrounding the Project (pg. 280).
Rare and Unique Natural Resources	1 mile (aquatic species not included)	7	-	2	-	3	-	The Blue/Orange Route and Variation 2 contain similar acres of WMA. Variation 2 contains the most acres of Grassland Bird Conservation Areas; however, ongoing vegetation management of the ROW in early successional vegetative stands would be compatible with grassland bird species' habitat requirements (pg. 282).
Corridor Sharing	Paralleling Existing Infrastructure		33.0%		2.0%		27.0%	The Blue/Orange Route parallels existing transmission lines for approximately 1/3rd of its length.

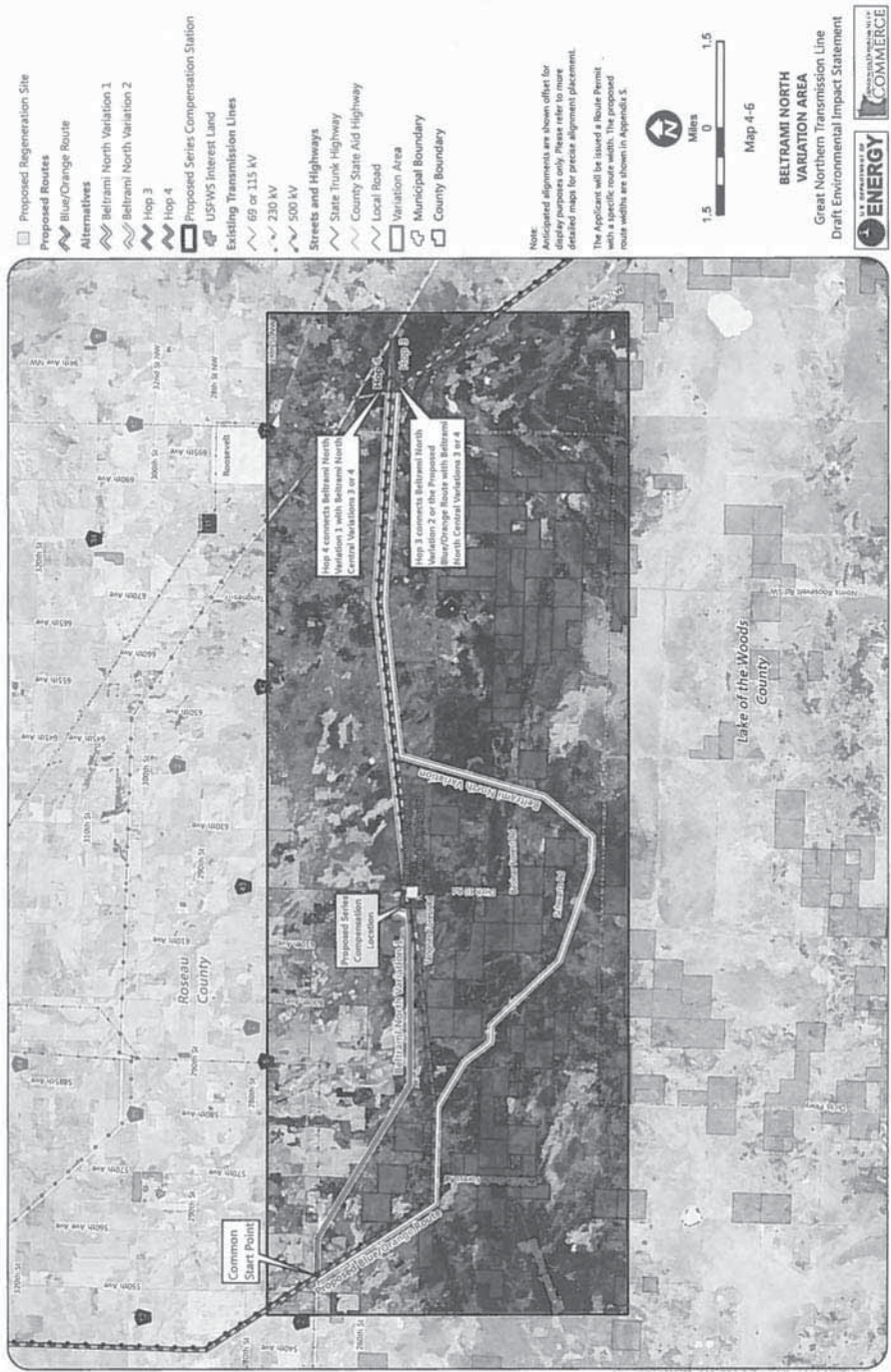
Factor	Element	ROI	Relative Merits						Notes
			Proposed Blue / Orange Route (30.7 miles)		Roseau Lake WMA Variation 1 (44.1 miles)		Roseau Lake WMA Variation 2 (37.5 miles)		
			Count / Acres	Percent of ROI	Count / Acres	Percent of ROI	Count / Acres	Percent of ROI	
Electrical System Reliability		-	-	-	-	-	-	-	The Blue/Orange Route and Variation 2 both parallel one existing Manitoba - Minnesota tie line for part of their length, while Variation 1 does not parallel any existing Manitoba - Minnesota tie lines.
Cost	Total Cost	-	-	\$33,247,000	-	-	-	-	Variation 1 would cost the most to construct.



Relative Merits		Cedar Bend WMA Variation				Notes	
Factor	Element	ROI	Proposed Blue / Orange Route (24.7 miles)		Cedar Bend WMA Variation (19.6 miles)		
			Count / Acres	Percent of ROI	Count / Acres		Percent of ROI
Human Settlement	Aesthetics						
	Residences	1,500 feet (within ROW)	11 (0)	-	107 (0)	-	The Cedar Bend WMA Variation would potentially impact ten times as many residences as the Blue/Orange Route and contains 4 homes within the ROW.
	Historic Architectural Sites	5,280 feet	0	-	8	-	The Cedar Bend WMA Variation has a higher potential to impact eight known architectural sites within 5,280 feet; however, the permitted Route width will be less than 5,280 feet so some sites may not be impacted.
	State Scenic Byways	1,500 feet	1	-	1	-	Both Alternatives would cross State Highway 11 - Waters of the Dancing Sky Scenic Byway. Both Alternatives would cross the scenic byway adjacent to existing transmission lines of similar design.
	Trails		2	-	2	-	Both Alternatives would cross two snowmobile trails.
	Land Use Compatibility						
	Dominant Land Cover Type	1,500 feet	6,045 ac	88.1%	4,180 ac	57.3%	Both Alternatives' major land cover type is Forested and/or Swamp. Both Alternatives would result in a long-term change in land use for areas currently forested and/or swamp land, but these changes would be limited in extent, and there would still be extensive forest and swamp lands in the surrounding area, so these changes are expected to have a minimal impact on land use (pg. 291).
	Land Ownership		599 acres total		475 acres total		The Blue/Orange Route contains more than five times as many acres of public land; however, it would potentially impact the fewest private land owners.
	Public	200 feet	447	74.6%	84	17.7%	
	Private		152	25.4%	391	82.3%	
Land-Based Economies	Agriculture	1,500 feet	844	9.2%	2,625	36.0%	The Cedar Bend WMA Variation would potentially impact three times as many acres of agricultural land than the Blue/Orange Route.
	Forestry		372	62.1%	78	16.4%	The Blue/Orange Route contains more than four times as many acres of State Forest land than the Variation.
	Mining & Mineral Leases	200 feet	97	16.2%	0	0.0%	The Blue/Orange Route would potentially impact more mining and mineral lease lands.
	Historic Architectural Sites	5,280 feet	0	-	8	-	The Cedar Bend WMA Variation has a higher potential to impact eight known architectural sites within 5,280 feet; however, the permitted Route width will be less than 5,280 feet so some sites may not be impacted. The Cedar Bend WMA Variation also has a higher potential to impact two known archaeological sites within 1,500 feet.
	Archaeological Sites	1,500 feet	0	-	2	-	
Archaeology and Historic Architectural Resources	PWI Waters		4	-	5	-	Both Alternatives would cross a number of waterbodies; however, it is anticipated that these crossings are spannable (crossings would be less than the average spanning length of 1,250 feet) and structures would not be placed in them.
	Non-PWI Waters		12	-	11	-	
	Impaired Waters		2	-	3	-	

Relative Merits		Cedar Bend WMA Variation				Notes
Factor	Element	Proposed Blue / Orange Route (24.7 miles)	Cedar Bend WMA Variation (19.5 miles)	Cedar Bend WMA Variation (19.5 miles)		
	ROI	Count / Acres	Percent of ROI	Count / Acres	Percent of ROI	
Water Resources	Floodplains	0	0.0%	32	6.7%	The Cedar Bend WMA Variation would potentially impact a FEMA-designated floodplain as it would require construction and placement of transmission structures within Zone A of two floodplain areas. Impacts to floodplains are expected to be minimal (pg. 298).
	NWI Wetlands	466	77.8%	154	32.4%	The Blue/Orange Route would potentially impact three times as many acres of NWI-mapped wetlands and the Cedar Bend WMA Variation. While direct, adverse impacts to forested and shrub wetlands are permanent and may change wetland functions within the ROW, they are expected to be minimal because of the amount of surrounding forested and shrub wetlands in the region (pg. 299).
Vegetation	Boreal Flooded & Swamp Forest	338	56.4%	117	24.6%	The Blue/Orange Route contains a greater amount of forest land and Cedar Bend Variation contains a greater amount of agricultural land. While direct, adverse impacts to forested areas would be long-term, contiguous forest is abundant in the region surrounding the Project (pg. 300).
	Boreal Forest	110	16.4%	57	12.0%	
	Cool Temperate Forest	57	6.2%	28	5.9%	
	Eastern Flooded & Swamp Forest	56	9.7%	64	13.5%	
	Herbaceous Agricultural	41	6.8%	186	39.1%	
	Other	15	2.5%	23	4.8%	
Wildlife	WMA's	44	7.3%	0	0.0%	The Blue/Orange Route contains more acres of WMA and crosses one DNR state lake. Both Alternatives contain similar amounts of Grassland Bird Conservation Areas, however, ongoing vegetation management of the ROW in early successional vegetative state, would be compatible with grassland bird species habitat requirements (pg. 302).
	Shallow Lakes	1	0.2%	0	0.0%	
	Grassland Bird Conservation Areas	50	8.4%	10	2.1%	
Rare and Unique Natural Resources	Rare Species	2	-	0	-	The Blue/Orange Route is located within one mile of two documented vascular plants. Surveys will be performed on the final 200-foot ROW to determine if any of these species are present within the permitted ROW. Any indirect impacts to rare species from the proposed Project are expected to be minimal because of the amount of surrounding forested habitat and woody vegetation. Through use of Applicant proposed avoidance and minimization measures, direct impacts to rare species are not expected (pg. 304).
	State Rare Communities MBS Sites of Biodiversity High Conservation Value Forest	43	7.2%	0	0.0%	The Blue/Orange Route contains the most MBS Sites of Biodiversity, HCVF, and MBS Native Plant Communities.
	200 feet	8	1.3%	0	0.0%	

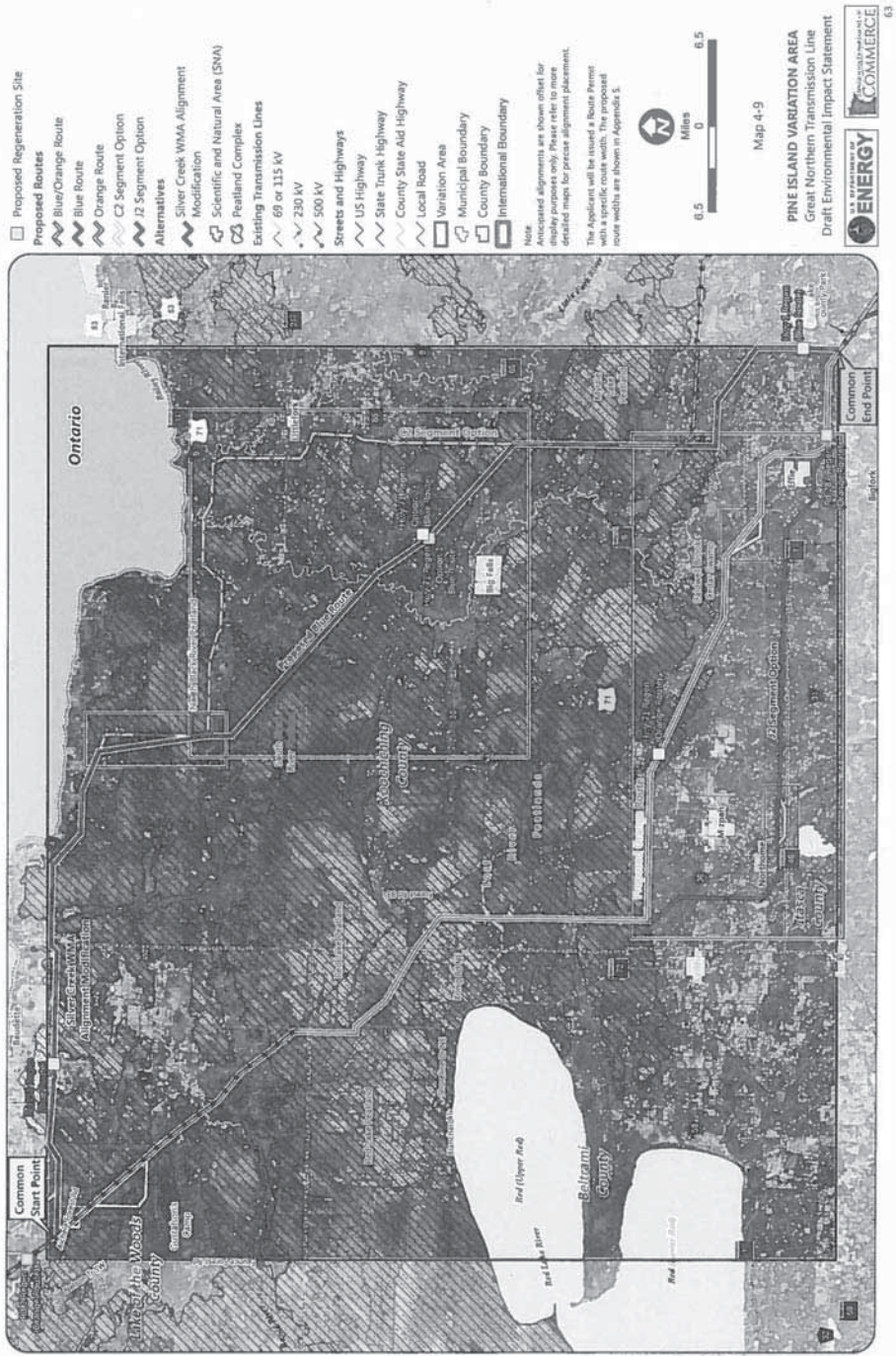
Relative Merits		Cedar Bend WMA Variation				Notes
Factor	Element	Proposed Blue / Orange Route (24.7 miles)		Cedar Bend WMA Variation (19.5 miles)		
		Count / Acres	Percent of ROI	Count / Acres	Percent of ROI	
Corridor Sharing	MBS Native Plant Communities	22	3.7%	0	0.0%	
	Paralleling Existing Infrastructure	-	100.0%	-	100.0%	Both Alternatives parallel existing transmission lines for 100% of their lengths.
Electrical System Reliability						Both Alternatives parallel one existing Manitoba — Minnesota tie line for their entire length, but the Cedar Bend WMA Variation would establish two new crossings of the existing 500 kV tie line that are not necessary for the Blue/Orange Route and is also routed unacceptably close to at least two existing transmission substations.
						The Blue/Orange Route would cost the most to construct. Cost for the Cedar Bend WMA have been updated since the initial data request.
Cost	Total Cost	\$27,107,650	-	\$23,202,312	-	



Factor	Relative Merits		Beltrami North Variations						Notes
	Element	ROI	Proposed Blue / Orange Route (16.5 miles)		Beltrami North Variation 1 (15.8 miles)		Beltrami North Variation 2 (19.7 miles)		
			Count / Acres	Percent of ROI	Count / Acres	Percent of ROI	Count / Acres	Percent of ROI	
Aesthetics	Residences	1,500 feet	3	-	6	-	1	-	Variation 1 would potentially impact more residences than the other Alternatives.
	Historic Architectural Sites	5,280 feet	0	-	0	-	2	-	Variation 2 has a higher potential to impact 2 known architectural sites within 5,280 feet; however, the permitted Route width will be less than 5,280 feet so some sites may not be impacted.
	Trails	1,500 feet	2	-	2	-	2	-	All Alternatives would cross two snowmobile trails.
	Land Use Compatibility								
Human Settlement	Dominant Land Cover Type	1,500 feet	5,961 ac	97.0%	5,391 ac	91.4%	7,190 ac	98.5%	All Alternatives' major land cover type is Forested and/or Swamp. All Alternatives would result in a long-term change in land use for areas currently forested and/or swamp land, but these changes would be limited in extent, and there would still be extensive forest and swamp lands in the surrounding area, so these changes are expected to have a minimal impact on land use (pg. 311).
	Land Ownership	200 feet	400 acres total		383 acres total		478 acres total		Variation 2 contains more acres of public land than the other Alternatives and the fewest acres of private land.
	Private		372	93.0%	287	77.5%	462	96.7%	
Land-Based Economies	Agriculture	1,500 feet	84	1.4%	358	6.1%	22	0.3%	Variation 1 would potentially impact four times as many acres of agricultural land than the Blue/Orange Route.
	Forestry		372	93.0%	291	76.0%	462	96.7%	Variation 2 contains the most acres of State Forest; Variation 1 contains the fewest.
	Mining & Mineral Leases	200 feet	97	24.3%	97	25.3%	152	31.6%	Variation 2 would potentially impact more mining and mineral lease lands than the Blue/Orange Route and Variation 1.
Archaeology and Historic Architectural Resources	Historic Architectural Sites	5,280 feet	0	-	0	-	2	-	Variation 2 has a higher potential to impact two known architectural sites within 5,280 feet; however, the permitted Route width will be less than 5,280 feet so some sites may not be impacted. Variation 2 also has a higher potential to impact two known archaeological sites within 1,500 feet.
	Archaeological Sites	1,500 feet	0	-	0	-	2	-	
	PWI Waters		4	-	9	-	3	-	All Alternatives would cross a number of waterbodies; however, it is anticipated that these crossings are spannable (crossings would be less than the average spanning length of 1,250 feet) and structures would not be placed in them.
Water Resources	Non-PWI Waters		7	-	4	-	12	-	
	Impaired Waters		2	-	6	-	2	-	
	Floodplains	Crossings or 200 feet	0	0.0%	0	0.0%	0	0.0%	No Alternatives would impact FEMA-designated floodplains.
	NWI Wetlands		323	80.8%	294	76.8%	381	81.9%	All Alternatives would potentially impact a similar amount of NWI-mapped wetlands. While direct, adverse impacts to forested and shrub wetlands are permanent and may change wetland functions within the ROW, they are expected to be minimal because of the amount of surrounding forested and shrub wetlands in the region (pg. 316).

Factor	Relative Merits Element	ROI	Beltrami North Variations						Notes
			Proposed Blue / Orange Route (16.5 miles)		Beltrami North Variation 1 (16.8 miles)		Beltrami North Variation 2 (19.7 miles)		
			Count / Acres	Percent of ROI	Count / Acres	Percent of ROI	Count / Acres	Percent of ROI	
Vegetation	North American Boreal Flooded & Swamp Forest	200 feet	242	60.5%	221	57.7%	300	62.8%	All Alternatives would potentially impact a similar amount of forested land. While direct, adverse impacts to forested areas would be long-term, contiguous forest is abundant in the region surrounding the Project (pg. 316).
	North American Boreal Forest		94	23.5%	84	21.9%	117	24.5%	
	Eastern North American Cool Temperate Forest		27	6.8%	24	6.3%	21	4.4%	
	Eastern North American Flooded & Swamp Forest		26	6.5%	36	9.9%	35	7.3%	
	Other		11	2.8%	54	14.1%	40	8.4%	
	Shallow Lakes		1	-	0	-	1	-	
Wildlife	Important Bird Areas	200 feet	0	0.0%	0	0.0%	23	4.8%	Variation 2 contains more acres of land designated as an Important Bird Area and the Blue/Orange Route and Variation 2 both cross one DNR Shallow Lake. Short-term indirect impacts are expected to be minimal because of the large amount of similar habitat in the surrounding region, and the long-term direct impacts are expected to be minimized through use of Applicant-proposed minimization measures (Section 2.13) (pg. 319).
	Rare Species	1 mile (aquatic species not included)	2	-	1	-	7	-	Variation 2 is located within one mile of seven documented vascular plants. Surveys will be performed on the final 200-foot ROW to determine if any of these species are present within the permitted ROW. Any indirect impacts to rare species from the proposed Project are expected to be minimal because of the amount of surrounding forested habitat and woody vegetation. Through use of Applicant proposed avoidance and minimization measures, direct impacts to rare species are not expected (pg. 322).
Rare and Unique Natural Resources	State Rare Communities		0	0.0%	6	1.6%	30	6.3%	Variation 2 contains the most amount of MBS Sites of Biodiversity; Blue/Orange has the fewest. All Alternatives contain relatively few or no acres of HCYF and MBS Native Plant Communities.
	MBS Sites of Biodiversity		8	2.0%	0	0.0%	8	1.7%	
	High Conservation Value Forest		0	0.0%	0	0.0%	8	1.7%	
	MBS Native Plant Communities		0	0.0%	0	0.0%	8	1.7%	

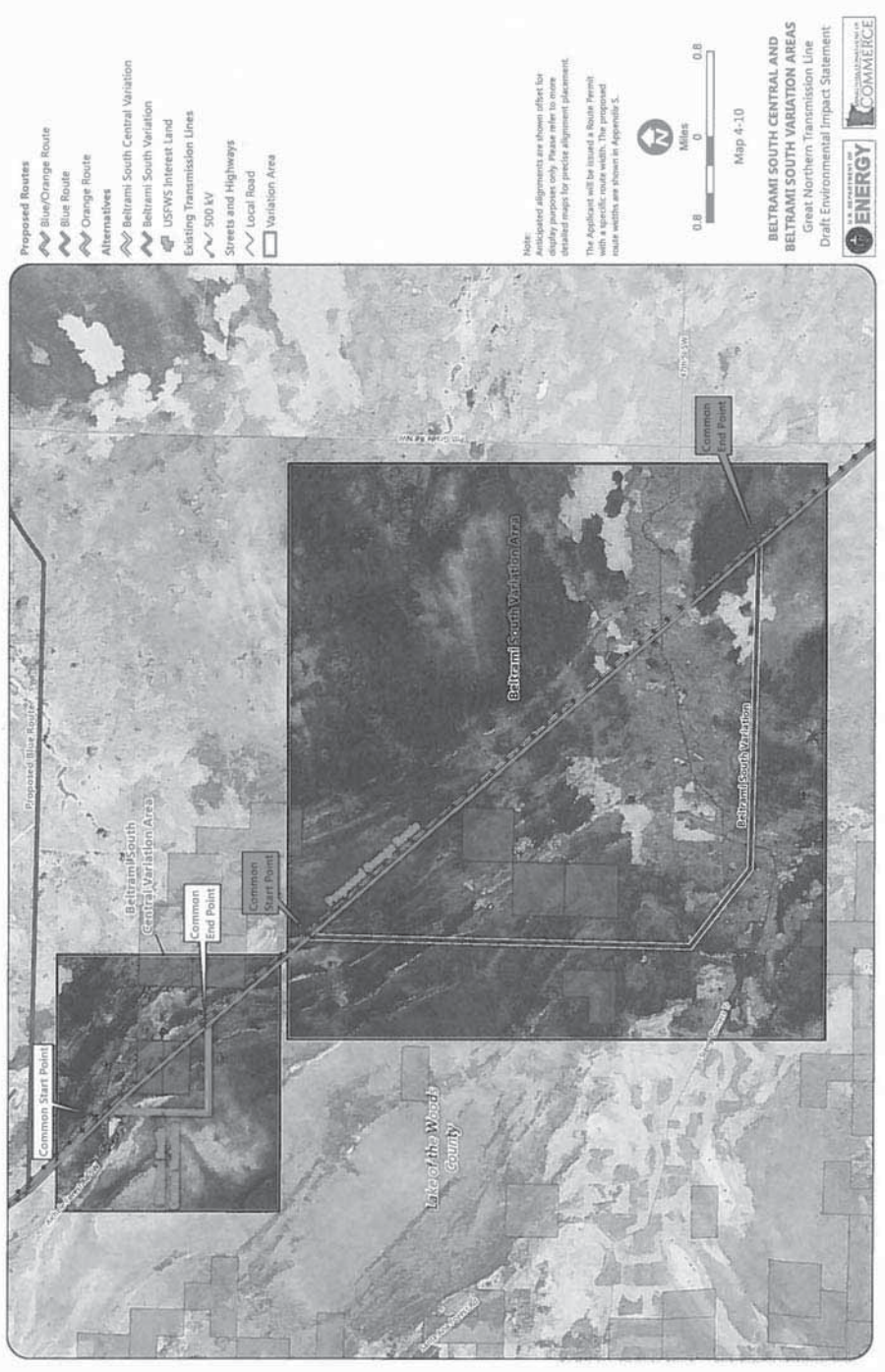
Relative Merits		Beltrami North Variations						Notes
Factor	Element	Proposed Blue / Orange Route (16.6 miles)	Beltrami North Variation 1 (15.6 miles)	Beltrami North Variation 2 (19.7 miles)	Beltrami North Variation 1 (15.6 miles)	Beltrami North Variation 2 (19.7 miles)		
	ROI	Count / Acres	Count / Acres	Count / Acres	Percent of ROI	Percent of ROI	Percent of ROI	
Corridor Sharing	-	-	-	-	100.0%	72.0%	53.0%	The Blue/Orange Route parallels existing transmission lines for 100% of its length; Variation 1 for 72%; and Variation 2 for 53%. All three Alternatives share a similar corridor for most of their lengths; when that similar corridor is removed from consideration; Variation 2 would not parallel any existing transmission lines.
Electrical System Reliability	-	-	-	-	-	-	-	All Alternatives all parallel one existing Manitoba - Minnesota tie line for a significant part of their length.
Cost	-	\$18,054,370	\$19,591,609	\$23,531,072	-	-	-	Variation 2 would cost the most to construct. Cost for Variation 1 have been updated since the initial data request.



Factor	Relative Merits		Pine Island Variation Area				Notes
	Element	ROI	Proposed Blue Route (109.8 miles)		Proposed Orange Route (105.4 miles)		
			Count / Acres	Percent of ROI	Count / Acres	Percent of ROI	
	Aesthetics						
	Residences	1,500 feet	14	-	2	-	The Blue Route would potentially impact more residences than the Orange Route.
	Historic Architectural Sites	5,280 feet	2	-	7	-	The Orange Route has a higher potential to impact known historic architectural sites within 5,280 feet; however, the permitted Route width will be less than 5,280 feet so some sites may not be impacted.
	Trails		5		6		Both Alternatives would cross one state trail and one water trail. The Orange Route would cross one more snowmobile trail than the Blue Route.
Human Settlement	Land Use Compatibility						
	Dominant Land Cover Type	1,500 feet	38,203 ac	95.4%	37,665 ac	98.0%	Both Alternatives' major land cover type is Forested and/or Swamp. Both Alternatives would result in a long-term change in land use for areas currently forested and/or swamp land, but these changes would be limited in extent, and there would still be extensive forest and swamp lands in the surrounding area, so these changes are expected to have a minimal impact on land use (pg. 384-385).
	Land Ownership	200 feet	2,862 acres total		2,555 acres total		Both Alternatives contain similar amounts of public and private lands.
	Public	2,299	86.4%	2,328	91.0%		
Private	363	13.6%	229	9.0%			
Land-Based Economies	Agriculture	1,500 feet	985	2.5%	305	0.8%	The Blue Route would potentially impact almost three times as many acres of agricultural land.
	Forestry	200 feet	2,291	86.1%	1,960	77.5%	Both Routes contain similar amounts of State Forest lands.
	Mining & Mineral Leases	200 feet	1,205	45.3%	370	14.5%	The Blue Route would potentially impact over three times as many acres of mining and mineral leases than the Orange Route.
	Historic Architectural Sites	5,280 feet	2	-	7	-	The Orange Route has a higher potential to impact known historic architectural sites within 5,280 feet; however, the permitted Route width will be less than 5,280 feet so some sites may not be impacted. The Blue Route is within 1,500 feet of a known archaeological site.
Archaeology and Historic Architectural Resources	Archaeological Sites	1,500 feet	1	-	0	-	
	PVI Waters		18	-	25	-	Both Alternatives would a similar number of PVI, non-PVI, and impaired waters; however, it is anticipated that these crossings are spannable (crossings would be less than the average spanning length of 1,250 feet) and structures would not be placed in them.
	Non-PVI Waters		48	-	48	-	
	Impaired Waters		1	-	1	-	
Water Resources	Trout Stream		1	-	0	-	
	Floodplains	Crossings or 200 feet	20	-	11	-	Both Routes would cross FEMA-designated floodplains; however, crossings would be less than the average spanning length of 1,250 feet and structures would not be placed in them.

Relative Merits		Pine Island Variation Area				Notes	
Factor	Element	ROI	Proposed Blue Route (109.8 miles)	Proposed Orange Route (105.4 miles)			
			Count / Acres	Percent of ROI	Count / Acres	Percent of ROI	
Vegetation	NWI Wetlands	200 feet	2,102	76.0%	1,875	73.4%	The Orange Route would potentially impact slightly more acres of NWI-mapped wetlands than the East Bear Lake Variation. While direct, adverse impacts to forested and shrub wetlands are permanent and may change wetland functions within the ROW, they are expected to be minimal because of the amount of surrounding forested and shrub wetlands in the region. (pg. 381)
			1,372	51.5%	1,323	51.8%	
			785	29.5%	789	30.1%	
			396	13.8%	359	14.0%	
Wildlife	WMA's	200 feet	138	5.2%	1,232	48.2%	Both Alternatives would potentially impact a similar amount of forested land. While direct, adverse impacts to forested areas would be long-term, contiguous forest is abundant in the region surrounding the Project (pg. 383).
			49	1.8%	274	10.7%	
			1,405	52.8%	1,722	67.4%	
Rare and Unique Natural Resources	Rare Species	1 mile (aquatic species not included)	6	-	13	-	The Orange Route is within one mile of more than twice as many documented rare species than the Blue Route. Surveys will be performed on the final 200-foot ROW to determine if any rare species are present within the permitted ROW. Any indirect impacts to rare species are expected to be minimal because of the amount of the surrounding habitat. Through use of Applicant-proposed avoidance and minimization measures, direct impacts to rare species are not expected (pg. 387).
			29	1.1%	5	0.2%	
Corridor Sharing	Ecologically Important Lowland Conifers	200 feet	1,514	56.9%	1,639	64.1%	Both Routes contain similar amounts of MBS Sites of Biodiversity Paralleling Existing Infrastructure
			-	39.0%	-	23.0%	

Relative Merits		Pine Island Variation Area				
Factor	Element	Proposed Blue Route (109.8 miles)		Proposed Orange Route (106.4 miles)		Notes
		Count / Acres	Percent of ROI	Count / Acres	Percent of ROI	
Electrical System Reliability		-	-	-	-	Both proposed routes parallel one existing Manitoba - Minnesota line for a significant part of their length. The Blue Route also establishes two new crossings of the existing 500 kV tie line that are not necessary for the Orange Route.
Cost	Total Cost	\$118,676,237	-	\$118,672,041	-	The Blue Route would cost the most to construct. The cost of the Blue Route has been updated since the initial data request.

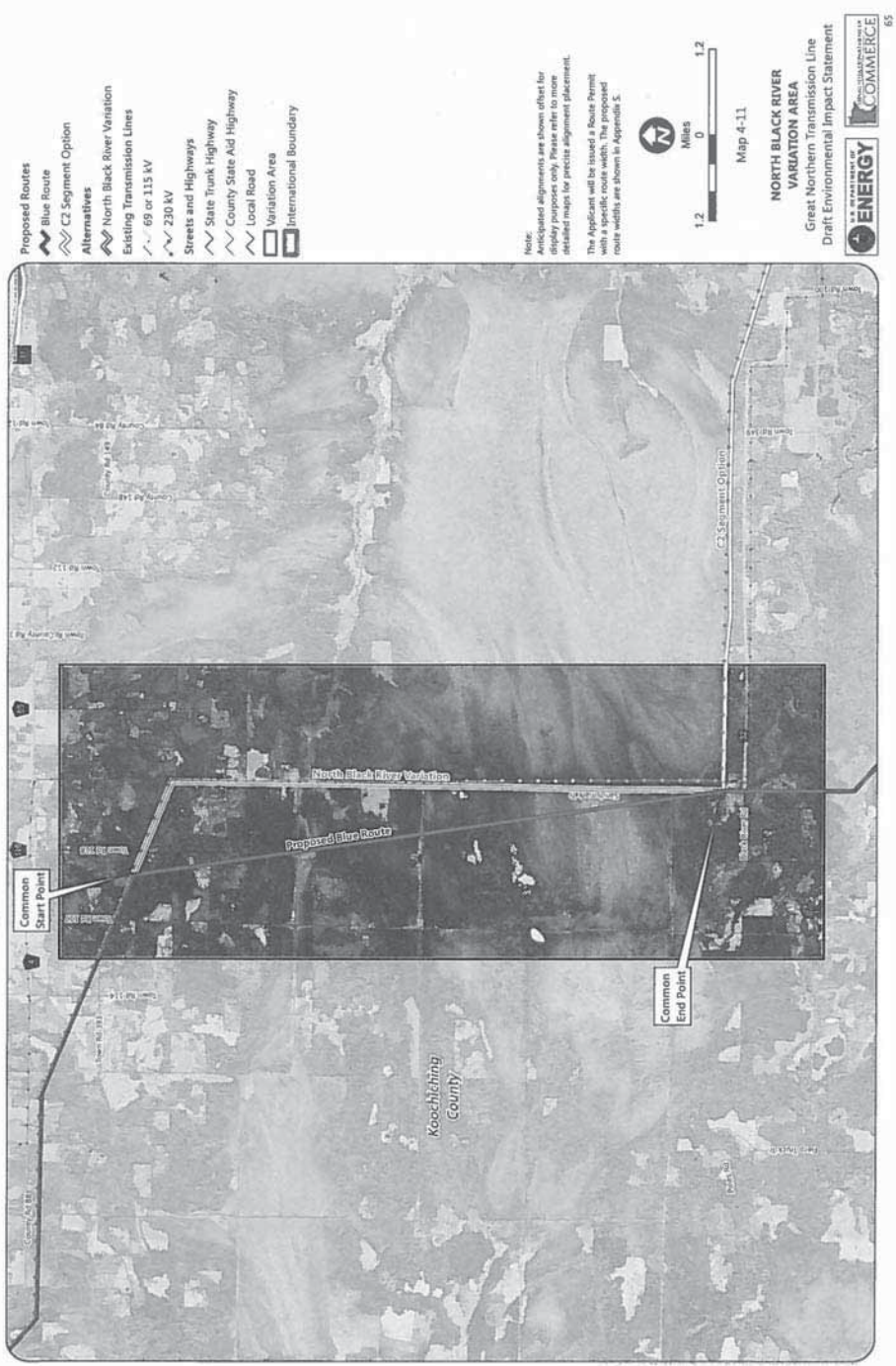


Factor	Element	ROI	Proposed Orange Route (1.2 miles)		Beltrami South Central Variations		Notes
			Count / Acres	Percent of ROI	Count / Acres	Percent of ROI	
Aesthetics	Residences	1,500 feet	0	-	0	-	Neither Alternative would impact residences within 1,500 feet.
	Historic Architectural Sites	5,280 feet	0	-	0	-	Neither Alternative would impact any known architectural sites within 5,280 feet.
	Trails	1,500 feet	1	-	1	-	Both Alternatives would cross one snowmobile trail.
Human Settlement	Land Use Compatibility						
	Dominant Land Cover Type	1,500 feet	598 ac	98.8%	779 ac	99.2%	Both Alternatives' major land cover type is Forested and/or Swamp. Both Alternatives would result in a long-term change in land use for areas currently forested and/or swamp land, but these changes would be limited in extent, and there would still be extensive forest and swamp lands in the surrounding area, so these changes are expected to have a minimal impact on land use (pg. 402).
Land-Based Economies	Land Ownership	200 feet	29 acres total		41 acres total		Both Alternatives are entirely located within public lands and neither would impact private land owners.
	Public		30	103.1%	43	104.4%	
	Private		0	0.0%	0	0.0%	
Archaeology and Historic Architectural Resources	Forestry	1,500 feet	30	103.1%	43	104.4%	Neither Alternative would impact agricultural land. Both Alternatives are entirely located within State Forest lands.
	Mining & Mineral Leases	200 feet	0	0.0%	0	0.0%	Neither Alternative would impact any mining or mineral leases.
	Historic Architectural Sites	5,280 feet	0	-	0	-	Neither Alternative would impact any known historic architectural sites or archaeological sites.
Water Resources	Archaeological Sites	1,500 feet	0	-	0	-	
	PWI Waters		0	-	0	-	
	Non-PWI Waters		0	-	0	-	Neither Alternative would cross any PWI, non-PWI, or impaired waters.
Vegetation	Impaired Waters		0	-	0	-	
	Floodplains	Crossings or 200 feet	0	-	0	-	Neither Alternative would impact FEMA-designated floodplains.
	NWI Wetlands		30	103.1%	43	104.4%	Both Alternatives would potentially impact a similar amount of NWI-mapped wetlands. While direct, adverse impacts to forested and shrub wetlands are permanent and may change wetland functions within the ROW, they are expected to be minimal because of the amount of surrounding forested and shrub wetlands in the region (pg. 405).
Other	North American Boreal Flooded & Swamp Forest	200 feet	24	82.5%	32	77.7%	Both Alternatives would potentially impact similar amounts of forest land. While direct, adverse impacts to forested areas would be long-term, contiguous forest is abundant in the region surrounding the Project (pg. 406).
	Other		5	17.2%	9	21.8%	

Relative Merits		Beltrami South Central Variations				Notes
Factor	Element	Proposed Orange Route (1.2 miles)	Beltrami South Central Variation (1.7 miles)	Percent of ROI	Count / Acres	
Wildlife	Important Bird Areas	30	43	104.4%	43	Both Alternatives are entirely located within lands designated as Important Bird Areas. Short-term indirect impacts are expected to be minimal because of the large amount of similar habitat in the surrounding region, and the long-term direct impacts are expected to be minimized through use of Applicant-proposed minimization measures (Section 2.13) (pg. 408).
	Rare Species	4	4	-	4	Both Alternatives would be located within one mile of four vascular plants. Surveys will be performed on the final 200-foot ROW to determine if any rare species are present within the permitted ROW. Any indirect impacts to rare species are expected to be minimal because of the amount of the surrounding habitat. Through use of Applicant-proposed avoidance and minimization measures, direct impacts to rare species are not expected (pg. 408).
Rare and Unique Natural Resources	State Rare Communities	30	43	104.4%	43	Both Alternatives contain similar amounts of MBS Sites of Biodiversity.
	MBS Sites of Biodiversity	-	-	100.0%	-	The Orange Route parallels existing transmission lines for 100% of its length.
Corridor Sharing	Paralleling Existing Infrastructure	-	-	-	-	The Orange Route parallels one existing Manitoba - Minnesota tie line for its entire length while the Variation does not parallel any existing Manitoba - Minnesota tie lines.
	Electrical System Reliability	-	-	-	-	Beltrami South Central Variation would cost the most to construct. These costs have been updated since the initial information request.
Cost	Total Cost	\$1,214,573	\$1,440,123	-	-	

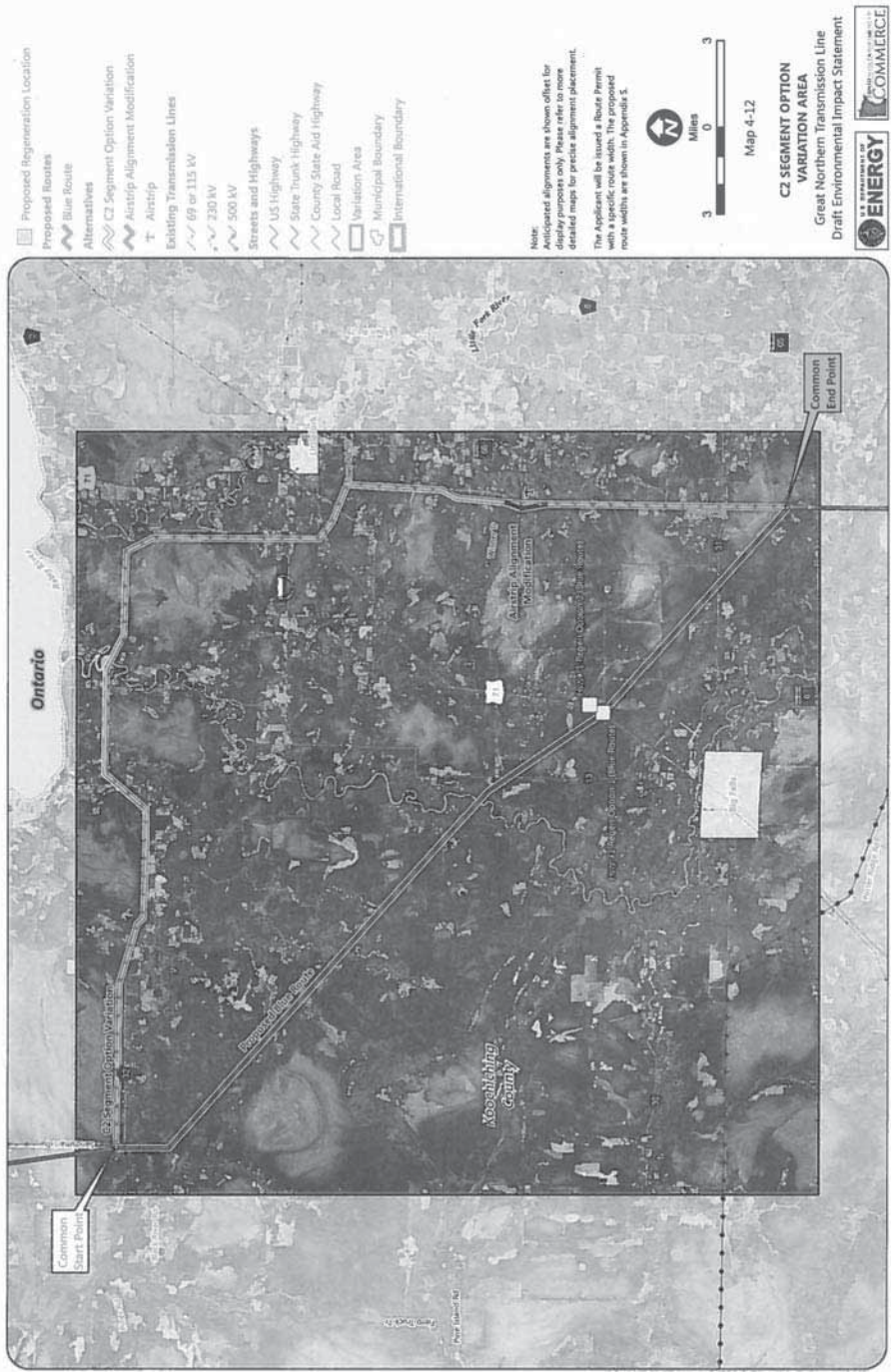
Factor	Relative Merits Element	ROI	Proposed Orange Route: Beltrami South Variation (5.6 miles)				Beltrami South Variations (7.5 miles)				Notes
			Count / Acres		Percent of ROI		Count / Acres		Percent of ROI		
Human Settlement	Aesthetics										
	Residences	1,500 feet	0	-	-	0	-	-	-	Neither Alternative would impact residences within 1,500 feet.	
	Historic Architectural Sites	5,280 feet	0	-	-	0	-	-	-	Neither Alternative would impact any known architectural sites within 5,280 feet.	
	Trails	1,500 feet	0	-	-	0	-	-	-	Neither Alternative would cross any trails.	
Land Use Compatibility											
	Dominant Land Cover Type	1,500 feet	2,185 ac	99.5%	2,887 ac	99.7%	2,887 ac	99.7%	99.7%	Both Alternatives' major land cover type is Forested and/or Swamp. Both Alternatives would result in a long-term change in land use for areas currently forested and/or swamp land, but these changes would be limited in extent, and there would still be extensive forest and swamp lands in the surrounding area, so these changes are expected to have a minimal impact on land use (pg. 415).	
	Land Ownership	200 feet	136 acres total		182 acres total					Both Alternatives are entirely located within public lands and neither would impact private land owners.	
	Public Private		136	100.1%	183	100.7%	0	0.0%	0.0%		
Land-Based Economies	Agriculture Forestry	1,500 feet	136	100.1%	183	100.7%	0	0.0%	0.0%	Neither Alternative would impact agricultural land. Both Alternatives are entirely located within State Forest lands.	
	Mining & Mineral Leases	200 feet	56	42.7%	287	157.9%				There are more acres of mineral leases within Beltrami South Variation than the total number of acres within the ROW. Regardless, the Beltrami South Variation would potentially impact more mining and mineral leases than the Orange Route.	
	Historic Architectural Sites	5,280 feet	0	-	0	-				Neither Alternative would impact any known historic architectural sites or archaeological sites.	
	Archaeological Sites	1,500 feet	0	-	0	-					
Water Resources	PWI Waters		0	-	0	-					
	Non-PWI Waters		0	-	0	-				Neither Alternative would cross any PWI, non-PWI, or impaired waters.	
	Impaired Waters		0	-	0	-					
	Floodplains	Crossings or 200 feet	0	-	0	-				Neither Alternative would impact FEMA-designated floodplains. Both Alternatives would potentially impact a similar amount of NW-mapped wetlands. While direct, adverse impacts to forested and shrub wetlands are permanent and may change wetland functions within the ROW, they are expected to be minimal because of the amount of surrounding forested and shrub wetlands in the region (pg. 418).	
Water Resources	NWI Wetlands		136	100.1%	183	100.7%					

Relative Merits		Beltrami South Variations				Notes
Factor	Element	Proposed Orange Route (5.6 miles)	Beltrami South Variation (7.5 miles)	Beltrami South Variation (7.5 miles)	Notes	
	ROI	Count / Acres	Percent of ROI	Count / Acres	Percent of ROI	
Vegetation	200 feet	114	89.9%	139	76.5%	Both Alternatives would potentially impact similar amounts of forest land. While direct, adverse impacts to forested areas would be long-term, contiguous forest is abundant in the region surrounding the Project (pg. 420).
		16	11.8%	35	19.3%	
		22	16.2%	43	23.7%	
Wildlife	200 feet	136	100.1%	183	100.7%	Both Alternatives are entirely located on lands designated as Important Bird Areas. Short-term indirect impacts are expected to be minimal because of the large amount of similar habitat in the surrounding region, and the long-term direct impacts are expected to be minimized through use of Applicant-proposed minimization measures (Section 2.13) (pg. 420).
		1	-	2	-	Beltrami South Variation is within one mile of two vascular plants; the Orange Route is within one mile of one vascular plant. Surveys will be performed on the final 200-foot ROW to determine if any rare species are present within the permitted ROW. Any indirect impacts to rare species are expected to be minimal because of the amount of the surrounding habitat. Through use of Applicant-proposed avoidance and minimization measures, direct impacts to rare species are not expected (pg. 422).
Rare and Unique Natural Resources	1 mile (aquatic species not included)	120	88.4%	161	88.6%	Both Alternatives contain similar amounts of MBS Sites of Biodiversity.
		-	100.0%	-	-	The Orange Route parallels existing transmission lines for 100% of its length.
Corridor Sharing	-	-	-	-	-	The Orange Route parallels one existing Manitoba – Minnesota tie line for its entire length while the Beltrami South Variation does not parallel any existing Manitoba – Minnesota tie lines.
		\$5,600,518	-	\$4,177,955	-	Beltrami South Variation would cost the most to construct. These costs have been updated since the initial information request.
Cost	Total Cost					



Relative Merits		North Black River Variations				Notes
Factor	Element	ROI	Proposed Blue Route (8.4 miles) Count / Acres	North Black River Variation (9.2 miles) Count / Acres	Percent of ROI	
Aesthetics	Residences	1,500 feet	1	5	-	North Black River Variation would potentially impact more residences than the Blue Route.
	Historic Architectural Sites	5,280 feet	0	0	-	Neither Alternative would impact any known architectural sites within 5,280 feet.
	Trails	1,500 feet	2	2	-	Both Alternatives would cross two snowmobile trails.
Human Settlement	Land Use Compatibility					
	Dominant Land Cover Type	1,500 feet	5,190 ac	3,296 ac	84.3%	Both Alternatives' major land cover type is Forested and/or Swamp. Both Alternatives would result in a long-term change in land use for areas currently forested and/or swamp land, but these changes would be limited in extent, and there would still be extensive forest and swamp lands in the surrounding area, so these changes are expected to have a minimal impact on land use (pg. 428).
	Land Ownership	200 feet	204 acres total	223 acres total		Both Alternatives contain a similar amount of public lands; however, the Blue Route would not impact any private land owners.
	Private		188	158	70.9%	
Land-Based Economies	Public		16	65	29.1%	
	Agriculture	1,500 feet	0	69	2.0%	The Blue Route would not impact agricultural land.
	Forestry		188	156	70.0%	Both Alternatives contain a similar amount of State Forest land.
	Mining & Mineral Leases	200 feet	405	362	182.3%	There are more acres of mineral leases within both Alternatives than the total number of acres within the 200-foot ROW.
Archaeology and Historic Architectural Resources	Historic Architectural Sites	5,280 feet	0	0	-	Neither Alternative would impact any known historic architectural sites or archaeological sites.
	Archaeological Sites	1,500 feet	0	0	-	
	PWV Waters		0	0	-	
	Non-PWV Waters		4	4	-	Both Alternatives would cross few non-PWV waters; however, it is anticipated that these crossings are spannable (crossings would be less than the average spanning length of 1,250 feet) and structures would not be placed in them.
Water Resources	Impaired Waters		0	0	-	
	Floodplains	Crossings or 200 feet	0	0	-	Neither Alternative would impact FEMA-designated floodplains.
	NWV Wetlands		193	198	88.8%	Both Alternatives would potentially impact a similar amount of NWV-mapped wetlands. While direct, adverse impacts to forested and shrub wetlands are permanent and may change wetland functions within the ROW, they are expected to be minimal because of the amount of surrounding forested and shrub wetlands in the region (pg. 434).

Relative Merits		North Black River Variations				Notes
Factor	Element	Proposed Blue Route (0.4 miles) Count / Acres	Percent of ROI	North Black River Variation (9.2 miles) Count / Acres	Percent of ROI	
Vegetation	North American Boreal Flooded & Swamp Forest	144	70.7%	114	51.1%	Both Alternatives would potentially impact a similar amount of forest land. While direct adverse impacts to forested areas would be long-term, contiguous forests is abundant in the region surrounding the Project (pg. 435).
	North American Boreal Forest	47	23.1%	49	22.0%	
	Eastern North American Flooded Swamp & Forest	12	5.9%	29	13.0%	
	Other	60	29.5%	109	48.9%	
Wildlife	Important Bird Areas	191	93.8%	214	96.0%	Both Alternatives contain a similar amount of land designated as an Important Bird Area. Short-term indirect impacts are expected to be minimal because of the large amount of similar habitat in the surrounding region, and the long-term direct impacts are expected to be minimized through use of Applicant-proposed minimization measures (Section 2.13) (pg. 436).
	Rare Species	0	-	0	-	Neither Alternative is located within one mile of a documented rare species. Surveys will be performed on the final 200-foot ROW to determine if any rare species are present within the permitted ROW. Any indirect impacts to rare species are expected to be minimal because of the amount of the surrounding habitat. Through use of Applicant-proposed avoidance and minimization measures, direct impacts to rare species are not expected (pg. 437).
Rare and Unique Natural Resources	Slate Rare Communities	165	81.0%	109	48.9%	Both Alternatives contain similar amounts of MBS Sites of Biodiversity.
	MBS Sites of Biodiversity	-	0.0%	-	100.0%	The North Black River Variations parallels existing transmission lines for 100% of its length.
Corridor Sharing	Paralleling Existing Infrastructure	-	-	-	-	The North Black River Variation parallels one existing Manitoba - Minnesota tie line for its entire length while the Blue Route does not parallel any existing Manitoba - Minnesota tie lines.
	Electrical System Reliability	\$9,893,560	-	\$10,552,560	-	The North Black River Variations would cost the most to construct. This cost has been updated since the initial information request.
Cost	Total Cost:	\$9,893,560	-	\$10,552,560	-	



Factor	Relative Merits		C2 Segment Option Variation Area				Notes
	Element	ROI	Proposed Blue Route (32.8 miles)		C2 Segment Option (46 miles)		
			Count / Acres	Percent of ROI	Count / Acres	Percent of ROI	
Aesthetics	Residences	1,500 feet	0	-	20	-	C2 would potentially impact 20 more residences than the Blue Route.
	Historic Architectural Sites	5,280 feet	0	-	0	-	Neither Alternative would impact any known architectural sites within 5,280 feet.
	Trails	1,500 feet	4	-	3	-	Both Alternatives would cross one water trail and one slate trail. The Blue Route would cross one more snowmobile trail than C2.
Human Settlement	Land Use Compatibility						
	Dominant Land Cover Type	1,500 feet	11,922 ac	98.5%	16,121 ac	95.5%	Both Alternatives' major land cover type is Forested and/or Swamp. Both Alternatives would result in a long-term change in land use for areas currently forested and/or swamp land, but these changes would be limited in extent, and there would still be extensive forest and swamp lands in the surrounding area, so these changes are expected to have a minimal impact on land use (pg. 441-442).
Land-Based Economies	Land Ownership		765 acres total		1,115 acres total		Both Alternatives contain a similar amount of public lands; however, the Blue Route would not impact any private land owners.
	Public	200 feet	797	100.2%	854	58.6%	
	Private	200 feet	0	0.0%	461	41.4%	
Land-Based Economies	Agriculture		0	0.0%	167	1.0%	The Blue Route would not impact agricultural lands whereas C2 would potentially impact 167 acres.
	Forestry	1,500 feet	797	100.2%	274	24.6%	The Blue Route is located entirely within State Forest land.
	Mining & Mineral Leases	200 feet	16	2.0%	67	6.0%	C2 would potentially impact four lines as many mining and mineral leases than the Blue Route.
Archaeology and Historic Architectural Resources	Historic Architectural Sites		0	-	0	-	Neither Alternative would impact any known historic architectural sites or archaeological sites.
	Archaeological Sites	1,500 feet	0	-	0	-	
	PWI Waters	Crossings or 200 feet	5	-	3	-	Both Alternatives would cross a number of PWI, non-PWI, and impaired waterways, however, it is anticipated that these crossings are spannable (crossings would be less than the average spanning length of 1,250 feet) and structures would not be placed in them.
Water Resources	Non-PWI Waters		12	-	5	-	
	Impaired Waters	Crossings or 200 feet	1	-	2	-	
	Floodplains	Crossings or 200 feet	8	-	28	-	C2 would potentially impact more acres of FEMA-designated floodplain; however, both Alternatives would require construction and placement of transmission structures in Zone A floodplains of the Black and Big Fork Rivers, respectively (pg. 448).
Water Resources	NWI Wetlands		728	91.5%	829	74.3%	Both Alternatives would potentially impact similar amounts of NWI-mapped wetlands. While direct adverse impacts to forested and shrub wetlands are permanent and may change wetland functions within the ROW, they are expected to be minimal because of the amount of surrounding forested and shrub wetlands in the region (pg. 449).

Relative Merits		C2 Segment Option Variation Area				Notes
Factor	Element	Proposed Blue Route (32.8 miles)		C2 Segment Option (46 miles)		
	ROI	Count / Acres	Percent of ROI	Count / Acres	Percent of ROI	
Vegetation	North American Boreal Flooded & Swamp Forest	484	80.9%	728	65.3%	C2 impacts almost twice as many acres of forest land than the Blue Route. While direct, adverse impacts to forested areas would be long-term, contiguous forest is abundant in the region surrounding the Project (pg. 450).
	North American Boreal Forest	248	31.2%	162	14.5%	
	Eastern North American Flooded Swamp & Forest	50	7.0%	185	16.6%	
	Other	3101	38.1%	397	34.7%	
Wildlife	Important Bird Areas	489	58.0%	406	36.4%	Both Alternatives contain a similar amount of land designated as an Important Bird Area. Short-term indirect impacts are expected to be minimal because of the large amount of similar habitat in the surrounding region, and the long-term direct impacts are expected to be minimized through use of Applicant-proposed minimization measures (Section 2.13) (pg. 452).
	Rare Species	0	-	2	-	C2 is within one mile of two document rare species. Surveys will be performed on the final 200-foot ROW to determine if any rare species are present within the permitted ROW. Any indirect impacts to rare species are expected to be minimal because of the amount of the surrounding habitat. Through use of Applicant-proposed avoidance and minimization measures, direct impacts to rare species are not expected (pg. 453).
Rare and Unique Natural Resources	State Rare Communities					
	Ecological Important Lowland Corridors	7	0.9%	6	0.5%	Both Routes would potentially impact similar amounts of the same DNR Ecologically Important Lowland Corridor stand.
	MBS Sites of Biodiversity	642	80.7%	510	45.7%	Both Alternatives contain similar amounts of MBS Sites of Biodiversity, the Blue Route contains slightly more acres than C2
Corridor Sharing	Paralleling Existing Infrastructure	-	0.0%	-	81.0%	The Blue Route does not parallel existing transmission lines whereas C2 parallels existing transmission for 81% of its length.
	Electrical System Reliability	-	-	-	-	C2 parallels one existing Manitoba - Minnesota tie line for its entire length. The Blue Route does not parallel any existing Manitoba - Minnesota tie lines.
Cost	Total Cost	\$35,769,239	-	-	-	C2 Segment would cost the most to construct.



Factor	Relative Merits Element	J2 Segment Option Variation Area				Notes
		Proposed Orange Route (42.2 miles)		J2 Segment Option (45.2 miles)		
		Count / Acres	Percent of ROI	Count / Acres	Percent of ROI	
Aesthetics	Residences	0	-	6	-	J2 would potentially impact six more residences than the Orange Route.
	Historic Architectural Sites	2	-	7	-	J2 would potentially impact more known historical architectural sites; however, the permitted Route width will be less than 5,280 feet so some sites may not be impacted.
	Scenic Byway	0	-	2	-	J2 would cross Scenic Byways 46 and 58.
	Trails	3	-	5	-	Both Alternatives would cross one state trail; J2 would cross four knowable trails and the Orange Route would cross two.
	Land Use Compatibility					
	Dominant Land Cover Type	15,110 ac	97.4%	15,860 ac	94.1%	Both Alternatives' major land cover type is Forested and/or Swamp. Both Alternatives would result in a long-term change in land use for areas currently forested and/or swamp land, but these changes would be limited in extent, and there would still be extensive forest and swamp lands in the surrounding area, so these changes are expected to have a minimal impact on land use (pg. 459).
	Land Ownership	1,023 acres total		1,096 acres total		Both Alternatives are primarily located on public lands; however, J2 would potentially impact almost three times as many acres of private land than would the Orange Route.
	Public	945	92.4%	968	79.2%	
	Private	78	7.6%	228	20.8%	
	Land-Based Economies	1,500 feet	1.0%	164	1.0%	Both Alternatives contain similar amounts of agricultural lands.
Forestry	851	83.2%	715	65.2%	Both Alternatives contain similar amounts of State Forest lands.	
Mining & Mineral Leases	82	8.0%	73	6.7%	Both Alternatives would potentially impact a similar amount of mining and mineral lease land.	
Archaeology and Historic Architectural Resources	Historic Sites	2	-	7	-	J2 would potentially impact more known historical architectural sites; however, the permitted Route width will be less than 5,280 feet so some sites may not be impacted. Neither Alternative would impact any known archaeological sites.
	Archaeological Sites	0	-	0	-	
	PWI Waters	0	-	3	-	Both Alternatives would cross a number of PWI and non-PWI waters; however, it is anticipated that these crossings are spannable (crossings would be less than the average spanning length of 1,250 feet) and structures would not be placed in them.
Water Resources	Non-PWI Waters	24	-	36	-	
	Impaired Waters	0	-	0	-	
	Floodplains	3	-	0	-	The Orange Route would cross a Zone A floodplain; however, crossings would be less than the average spanning length of 1,250 feet and structures would not be placed in them.
	NWI Wetlands	509	49.8%	353	32.2%	The Orange Route would potentially impact slightly more acres of NWI-mapped wetlands than J2. While direct, adverse impacts to forested and shrub wetlands are permanent and may change wetland functions within the ROW, they are expected to be minimal because of the amount of surrounding forested and shrub wetlands in the region (pg. 466).

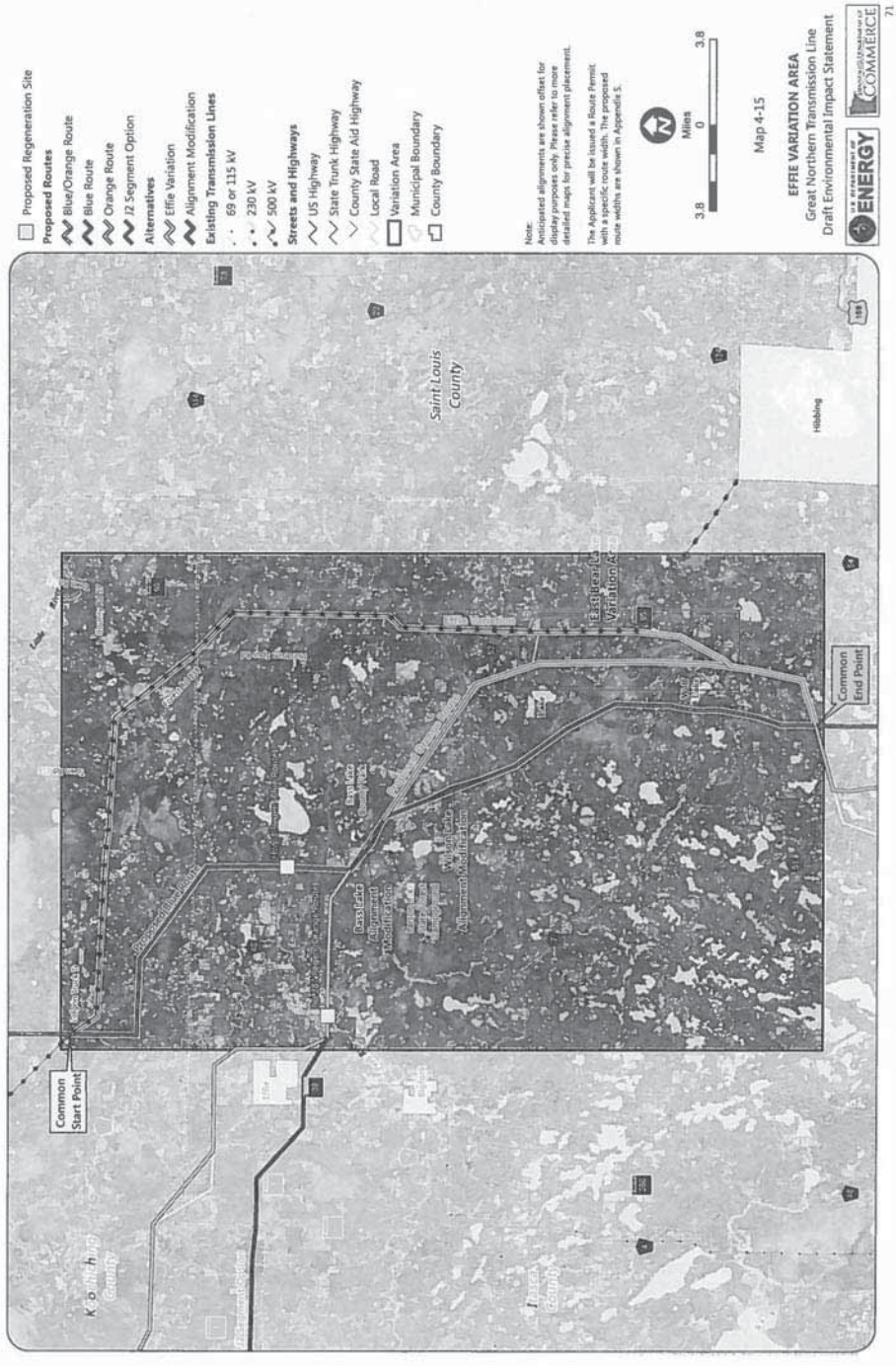
Relative Merits		Proposed Orange Route (42.2 miles)			J2 Segment Option (45.2 miles)			J2 Segment Option - Variation Area		
Factor	Element	ROI	Count / Acres	Percent of ROI	Count / Acres	Percent of ROI	Count / Acres	Percent of ROI	Notes	
Vegetation	North American Boreal Flooded & Swamp Forest		319	31.2%	124	11.3%			Both Alternatives would potentially impact a similar amount of forest land. While direct, adverse impacts to forested and shrub wetlands are permanent and may change wetland functions within the ROW, they are expected to be minimal because of the amount of surrounding forested and shrub wetlands in the region (pg. 467).	
	North American Boreal Forest		477	46.6%	650	59.3%				
	Eastern North American Flooded Swamp & Forest	200 feet	176	17.2%	191	17.4%				
	Eastern North American Cool Temperate Forest		38	3.5%	89	9.0%				
	Other		704	68.8%	972	88.7%				
Wildlife	Important Bird Areas	200 feet	282	25.6%	72	6.6%			The Orange Route contains more acres of land designated as an Important Bird Area. Short-term indirect impacts are expected to be minimal because of the large amount of similar habitat in the surrounding region, and the long-term direct impacts are expected to be minimized through use of Applicant-proposed minimization measures (Section 2.13) (pg. 466).	
Rare and Unique Natural Resources	Rare Species	1 mile (aquatic species not included)	3	-	2	-			The Orange Route is within one mile of three vascular plant species whereas J2 is within one mile of one vascular plant species and one colonial water bird nesting site (animal assemblage). Surveys will be performed on the final 200-foot ROW to determine if any rare species are present within the permitted ROW. Any indirect impacts to rare species are expected to be minimal because of the amount of the surrounding habitat. Through use of Applicant-proposed avoidance and minimization measures, direct impacts to rare species are not expected (pg. 470).	
Corridor Sharing	State Rare Communities	200 feet	486	47.8%	185	16.9%			The Orange Route would potentially impact more acres of MBS Sites of Biodiversity Significance.	
	MBS Sites of Biodiversity		-	0.0%	-	0.0%			Neither Alternative parallels existing transmission lines.	
Electrical System Reliability	Paralleling Existing Infrastructure	-	-	-	-	-			Neither Alternative parallels or crosses any existing Manitoba - Minnesota tie lines.	
	Electrical System Reliability	-	-	-	-	-			J2 Segment would cost the most to construct.	
Cost	Total Cost	-	\$48,708,641	-	\$52,128,879	-				

Factor	Element	ROI	Northhome Variation Area				Notes
			J2 Segment Option (3.7)		Northhome Variation (4)		
			Count/ Acres	Percent of ROI	Count/ Acres	Percent of ROI	
Human Settlement	Aesthetics						
	Residences	1,500 feet	0	-	0	-	Neither Alternative would impact any residences within 1,500 feet.
	Historic Architectural Sites	5,280 feet	0	-	0	-	Neither Alternative would impact any known architectural sites within 5,280 feet.
	Scenic Byway	1,500 feet	0	-	0	-	Neither Alternative would cross a Scenic Byway.
	Trails	1,500 feet	0	-	0	-	Neither Alternative would cross any trails.
	Land Use Compatibility						
	Land Cover of Forested and/or Swamp	1,500 feet	1,418 ac	83.1%	1,555 ac	95.3%	Both Alternatives' major land cover type is Forested and/or Swamp. Both Alternatives would result in a long-term change in land use for areas currently forested and/or swamp land, but these changes would be limited in extent, and there would still be extensive forest and swamp lands in the surrounding area, so these changes are expected to have a minimal impact on land use (pg. 474).
	Land Ownership	200 feet	90 acres total		97 acres total		The Northhome Variation contains more public lands than private lands; J2 contains more acre of private lands than Northhome Variation.
	Public		67	74.7%	81	83.5%	
	Private		23	25.9%	16	16.5%	
Land-Based Economies	Agriculture	1,500 feet	64	4.2%	0	0.0%	J2 would impact few acres of agricultural land whereas the Northhome Variation does not impact agricultural lands.
	Forestry	200 feet	0	0.0%	0	0.0%	Neither Alternative contains State Forest lands.
	Mining & Mineral Leases	200 feet	0	0.0%	0	0.0%	Neither Alternative would impact mining or mineral leases.
	Historic Architectural Sites	5,280 feet	0	-	0	-	Neither Alternative would impact any known architectural sites.
Archaeology and Historic Architectural Resources	Archaeological Sites	1,500 feet	0	-	1	-	Northhome Variation would potentially impact one archaeological site; however, the permitted Route width will be less than 5,280 feet so some sites may not be impacted.
	PWI Waters		0	-	1	-	Both Alternatives would cross very few PWI and non-PWI waters; however, it is anticipated that these crossings are spannable (crossings would be less than the average spanning length of 1,250 feet) and structures would not be placed in them.
	Non-PWI Waters		6	-	1	-	
Water Resources	Impaired Waters		0	-	0	-	Neither Alternative would impact FEMA-designated floodplains.
	Floodplains		0	-	0	-	Both Alternatives would potentially impact very few acres of NWI-mapped wetlands. While direct, adverse impacts to forested and shrub wetlands are permanent and may change wetland functions within the ROW, they are expected to be minimal because of the amount of surrounding forested and shrub wetlands in the region (pg. 479).
	Crossings or 200 feet		23	25.6%	14	14.4%	
	NWI Wetlands						

Relative Merits		Northorne Variation Area				Notes	
Factor	Elmrent	ROI	J2 Segment Option (3.7 miles)		Northorne Variation (4 miles)		Notes
			Count / Acres	Percent of ROI	Count / Acres	Percent of ROI	
Vegetation	North American Boreal Forest	200 feet	71	79.2%	81	85.5%	Both Alternatives would potentially impact a similar amount of forested land. While direct, adverse impacts to forested areas would be long-term, contiguous forest is abundant in the region surrounding the proposed Project (pg. 480).
	Eastern North American Cool Temperate Forest		10	11.1%	10	10.3%	
	Other		19	21.2%	10	16.5%	
Wildlife	Shallow Lakes	200 feet	0	-	1	-	The Northorne Variation would cross one DNR Shallow Lake.
Rare and Unique Natural Resources	Rare Species	1 mile (aquatic species not included)	1	-	2	-	One colonial waterbird nesting site is listed within one mile of J2 and two nesting sites are listed within one mile of the Northorne Variation. Surveys will be performed on the final 200-foot ROW to determine if any rare species are present within the permitted ROW. Any indirect impacts to rare species are expected to be minimal because of the amount of the surrounding habitat. Through use of Applicant-proposed avoidance and minimization measures, direct impacts to rare species are not expected (pg. 482).
	Slate Rare Communities	200 feet	0	0.0%	0	0.0%	There are no MBS Sites of Biodiversity within either Alternative.
Corridor Sharing	MBS Sites of Biodiversity						
	Paralleling Existing Infrastructure			0.0%		0.0%	Neither Alternative parallels existing transmission lines.
Electrical System Reliability							Neither Alternative parallels or crosses any existing Manitoba - Minnesota tie lines.
	Total Cost		\$4,192,842		\$5,332,111		The Northorne Variation would cost the most to construct.

Factor	Element	ROI	Proposed Orange Route (4.2 miles)		Cutfoot Variation (4.8 miles)		Notes
			Count / Acres	Percent of ROI	Count / Acres	Percent of ROI	
Aesthetics	Residences	1,500 feet	0	-	0	-	Neither Alternative would impact any residences within 1,500 feet.
	Historic Architectural Sites	5,280 feet	0	-	0	-	Neither Alternative would impact any known architectural sites within 5,280 feet.
	Scenic Byway Trails	1,500 feet	0	-	0	-	Neither Alternative would cross a Scenic Byway.
	Land Use Compatibility	1,500 feet	0	-	0	-	Neither Alternative would cross any trails.
Human Settlement	Dominant Land Cover Type	1,500 feet	1,652 ac	97.3%	1,874 ac	98.3%	Both Alternatives' major land cover type is Forested and/or Swamp. Both Alternatives would result in a long-term change in land use for areas currently forested and/or swamp land, but these changes would be limited in extent, and there would still be extensive forest and swamp lands in the surrounding area, so these changes are expected to have a minimal impact on land use (pg. 485).
	Land Ownership	200 feet	102 acres total	-	116 acres total	-	Both Alternatives are located entirely within public land.
Land-Based Economies	Public	1,500 feet	103	101.2%	116	98.7%	Neither Alternative would impact agricultural land.
	Private	1,500 feet	0	0.0%	0	0.0%	Both Alternatives are entirely located within State Forest lands.
	Forestry	1,500 feet	103	101.2%	116	98.7%	The Orange Route contains more acres of mining and mineral leases than the Cutfoot Variation; however both would impact aggregate mining resources.
Archaeology and Historic Architectural Resources	Mining & Mineral Leases	200 feet	29	28.5%	4	3.4%	Neither Alternative would impact any known historic architectural or archaeological sites.
	Historic Architectural Sites	5,280 feet	0	-	0	-	The Orange Route would cross very few, if any, PMW and non-PMW waters; however, it is anticipated that these crossings are spannable (crossings would be less than the average spanning length of 1,250 feet) and structures would not be placed in them.
	Archaeological Sites	1,500 feet	0	-	0	-	The Cutfoot Variation would not cross any waterbodies.
Water Resources	PMW Waters	Crossings or 200 feet	0	-	0	-	Neither Alternative would impact FEMA-designated floodplains.
	Non-PMW Waters	Crossings or 200 feet	2	-	0	-	Both Alternatives would potentially impact very few acres of NWI-mapped wetlands. While direct adverse impacts to forested and shrub wetlands are permanent and may change wetland functions within the ROW, they are expected to be minimal because of the amount of surrounding forested and shrub wetlands in the region (pp. 480).
	Impaired Wetters Floodplains	Crossings or 200 feet	0	-	0	-	
Water Resources	NWI Wetlands	Crossings or 200 feet	57	56.0%	67	57.6%	

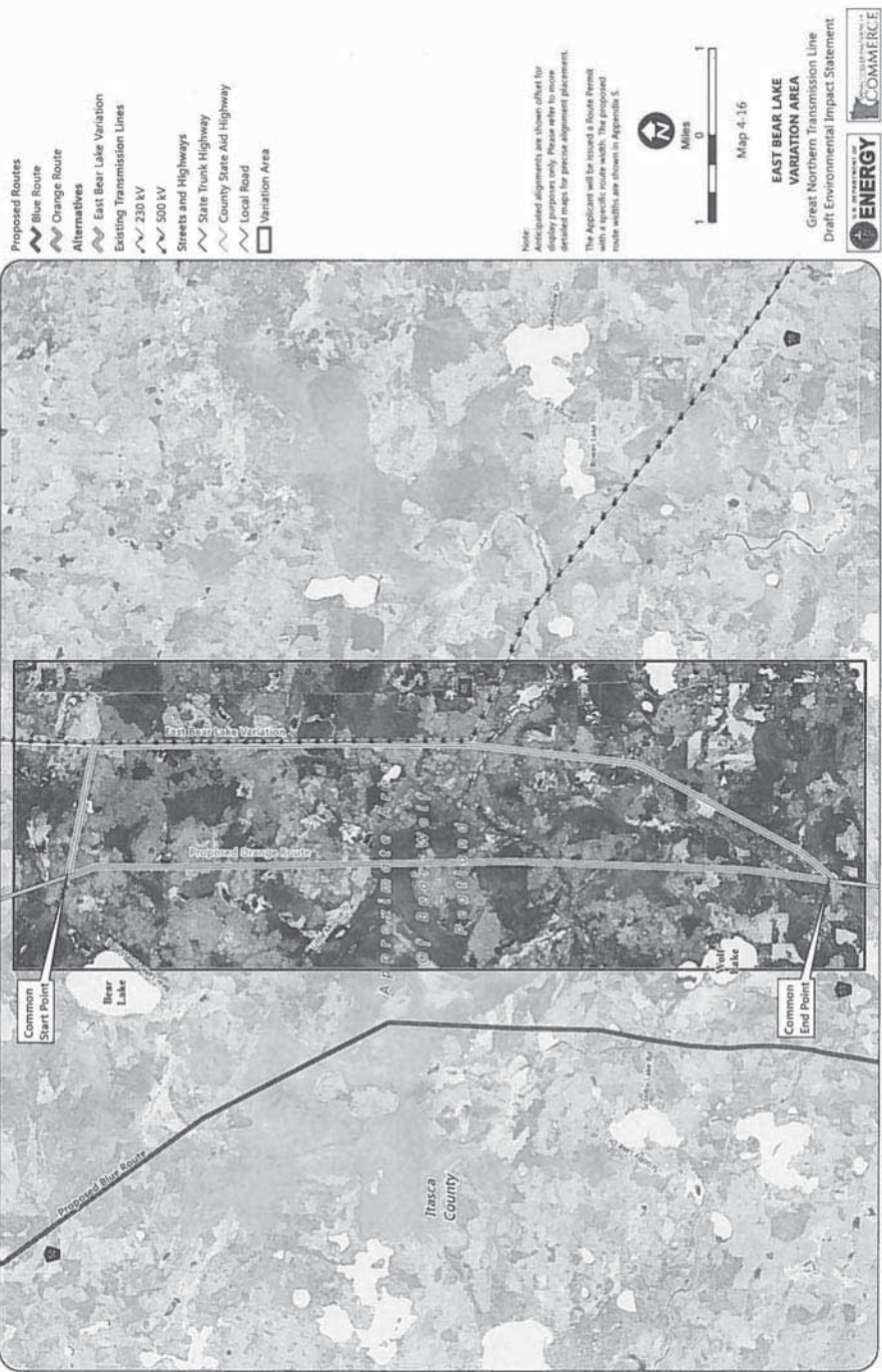
Factor	Relative Merits		Proposed Orange Route (4.2 miles)		Cutoff Variation (4.8 miles)		Notes
	Element	ROI	Count / Acres	Percent of ROI	Count / Acres	Percent of ROI	
Vegetation	North American Boreal Flooded & Swamp Forest	200 feet	28	27.5%	30	25.8%	Both Alternatives would potentially impact a similar amount of forest land. While direct, adverse impacts to forested areas would be long-term, contiguous forest is abundant in the region surrounding the Project (pg. 492).
	North American Boreal Forest		30	29.5%	64	55.0%	
	Eastern North American Flooded & Swamp Forest		39	38.3%	20	17.2%	
	Other		74	72.7%	86	73.9%	
Wildlife	All/Any	200 feet	0	0.0%	0	0.0%	Neither Alternative would impact recognized wildlife resource areas.
Rare and Unique Natural Resources	Rare Species	1 mile (aquatic species not included)	0	-	0	-	Neither Alternative is located within one mile of a documented rare species.
	State Rare Communities	200 feet	43	42.2%	60	51.5%	Both Alternatives would potentially impact similar amounts of MBS Sites of Biodiversity.
Corridor Sharing	MBS Sites of Biodiversity		-	0.0%	-	0.0%	Neither Alternative parallels existing transmission lines.
	Paralleling Existing Infrastructure		-	-	-	-	Neither Alternative parallels or crosses any existing Manitoba - Minnesota tie lines.
Electrical System Reliability			\$5,940,638	-	\$6,222,257	-	The Cutoff Variation would cost the most to construct.
Cost							



Factor	Relative Merits		Effie Variation						Notes
	Element	ROI	Proposed Blue Route (41.1 miles)		Proposed Orange Route (44.6 miles)		Effie Variation (49.8 miles)		
			Count / Acres	Percent of ROI	Count / Acres	Percent of ROI	Count / Acres	Percent of ROI	
Aesthetics	Residences	1,500 feet	4	-	5	-	14	-	The Effie Variation impacts generally three times as many residences as the Blue or Orange Routes.
	Historic Architectural Sites	5,280 feet	1	-	1	-	3	-	Both the Blue and Orange Routes would potentially impact one historic architectural site within 5,280 feet. The Effie Variation would potentially impact three sites; however, the permitted Route width will be less than 5,280 feet so some sites may not be impacted.
	Perks	1,500 feet	1	-	1	-	0	-	Both the Blue and Orange Routes would potentially impact one County Park; the Effie Variation would not.
	Trails	1,500 feet	6	-	7	-	5	-	All Alternatives would cross at least five state or snowmobile trails.
	Water Access	1,500 feet	0	-	0	-	1	-	The Blue and Orange Routes would not impact any water access points; the Effie Variation would potentially impact one water access.
	Land Use Compatibility								
Human Settlement	Dominant Land Cover Type	1,500 feet	14,723 ac	97.6%	15,801 ac	96.7%	17,696 ac	96.8%	All Alternatives' major land cover type is Forested and/or Swamp. All Alternatives would result in a long-term change in land use for areas currently forested and/or swamp land, but these changes would be limited in extent, and there would still be extensive forest and swamp lands in the surrounding area, so these changes are expected to have a minimal impact on land use (pg. 485, 555).
	Land Ownership	200 feet	966 acres total		1,061 acres total		1,207 acres total		All Alternatives are almost entirely located on public lands. The Effie Variation contains the most acres of private land.
	Public		819	92.2%	862	89.0%	1,086	90.0%	
	Private		77	7.7%	119	11.0%	121	10.0%	
Land-Based Economies	Agriculture	1,500 feet	0	0.0%	0	0.0%	0	0.0%	None of the Alternatives would impact agricultural land.
	Forestry	200 feet	909	91.2%	958	88.6%	1,086	90.0%	All Alternatives are mostly located within State Forests; the Effie Variation would potentially impact the most acres of State Forest.
	Mining & Mineral Leases	200 feet	647	64.9%	819	75.7%	824	68.3%	All Alternatives contain numerous acres of mining and mineral leases; the Effie Variation contains the most acres of mining and mineral leases.
Archaeology and Historic Architectural Resources	Historic Architectural Sites	5,280 feet	1	-	1	-	3	-	Both the Blue and Orange Routes would potentially impact one historic architectural site within 5,280 feet. The Effie Variation would potentially impact three sites; however, the permitted Route width will be less than 5,280 feet so some sites may not be impacted. The Blue and Orange Routes would not impact any known archaeological sites; the Effie Variation would potentially impact two sites.
	Archaeological Sites	1,500 feet	0	-	0	-	2	-	
	PWI Waters		10	-	13	-	13	-	All Alternatives will require crossing a number of waterbodies; however, it is anticipated that these crossings are spannable (crossings would be less than the average spanning length of 1,250 feet) and structures would not be placed in them.
	Non-PWI Waters		9	-	11	-	15	-	
	Impaired Waters		0	-	0	-	0	-	

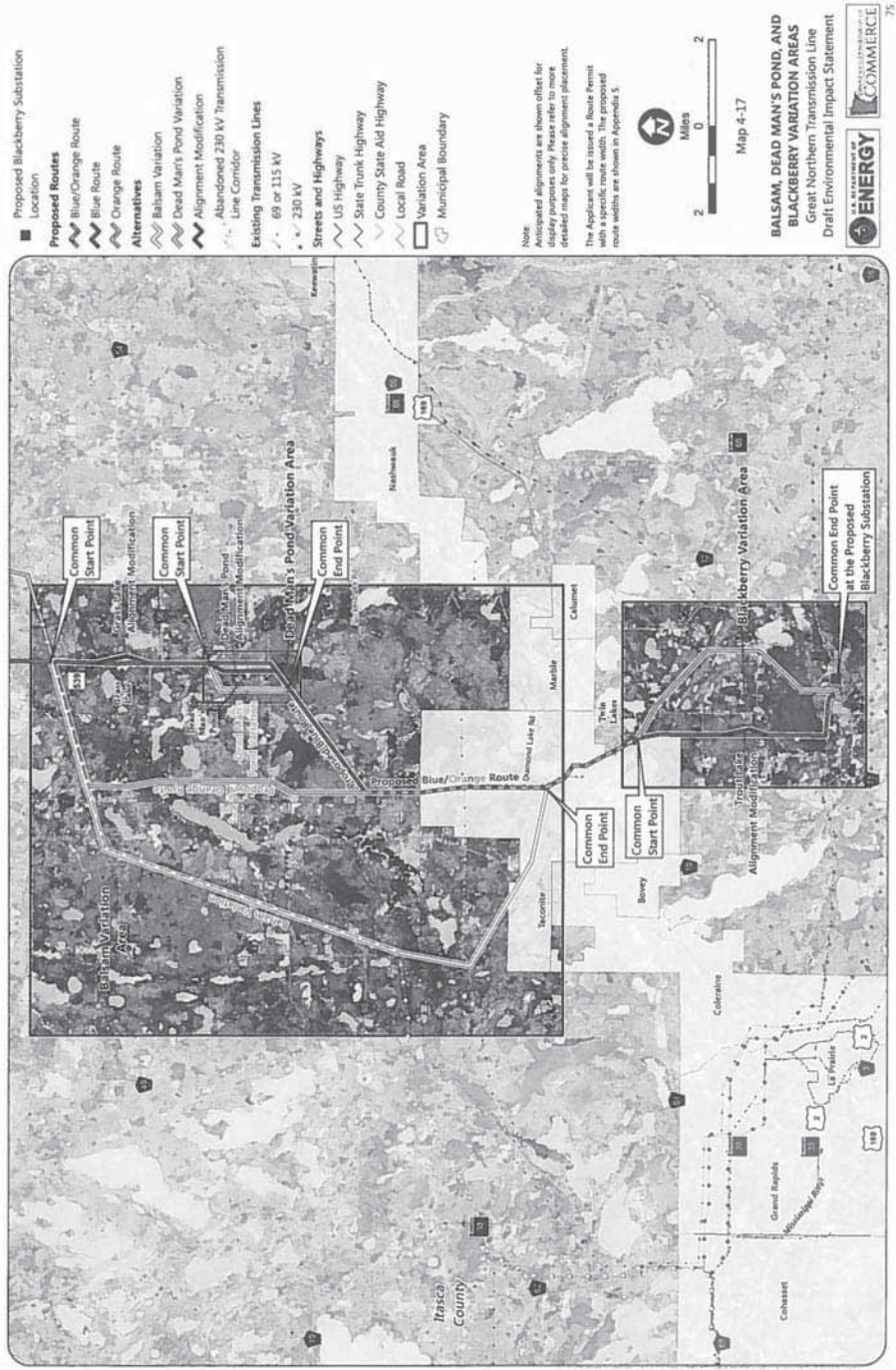
Factor	Relative Merits		Effie Variation						Notes
	Element	ROI	Proposed Blue Route (41.1 miles) Count/ Acres	Percent of ROI	Proposed Orange Route (44.6 miles) Count/ Acres	Percent of ROI	Effie Variation (49.8 miles) Count/ Acres	Percent of ROI	
Water Resources	Floodplains	Crossings of 200 feet	3	0.3%	3	0.3%	0	0.0%	The Effie Variation would not impact any FEMA-designated floodplains. The Blue and Orange Routes would cross a Zone A floodplain, however, the crossings would be less than the average spanning length of 1,250 feet. Therefore, it would be expected that the floodplain crossings would be spanned and transmission structures would not be placed in them (pg. 544).
	NWI Wetlands		443	44.5%	391	36.2%	413	34.2%	
Vegetation	North American Boreal Forest		473	47.5%	569	52.6%	550	46.1%	All Alternatives would potentially impact similar acres of NWI-mapped wetlands. While direct, adverse impacts to forested and shrub wetlands are permanent and may change wetland functions within the ROW, they are expected to be minimal because of the amount of surrounding forested and shrub wetlands in the region (pg. 544).
	North American Boreal Flooded & Swamp Forest		369	40.0%	339	31.4%	364	30.1%	
	Eastern North American Cool Temperate Forest	200 feet	25	2.5%	40	3.7%	35	2.9%	
	Eastern North American Flooded & Swamp Forest		81	8.1%	99	9.2%	208	17.2%	
	Other		18	1.8%	133	12.3%	252	20.9%	
Wildlife	Important Bird Areas	200 feet	69	-	69	-	0	-	The Blue and Orange Routes contain 69 acres of land designated as an Important Bird Area. Short-term indirect impacts are expected to be minimal because of the large amount of similar habitat in the surrounding region, and the long-term direct impacts are expected to be minimized through use of Applicant-proposed minimization measures (Section 2.13) (pg. 547).
Rare and Unique Natural Resources	Rare Species	1 mile (aquatic species not included)	3	-	4	-	2	-	All Alternatives are within one mile of a colonial waterbird nesting site and at least one vascular plant. The Orange Route is within one mile of the greatest number of species. Surveys will be performed on the final 200-foot ROW to determine if any rare species are present within the permitted ROW. Any indirect impacts to rare species are expected to be minimal because of the amount of the surrounding habitat. Through use of Applicant-proposed avoidance and minimization measures, direct impacts to rare species are not expected (pg. 550).
	State Rare Communities MBS Sites of Biodiversity	200 feet	422	42.4%	490	45.3%	427	35.4%	All Alternatives would potentially impact a similar number of acres of MBS Sites of Biodiversity, the Orange Route would pass through the most acres (pg. 551).

Relative Merits		Effie Variation						
Factor	Element	Proposed Blue Route (41.1 miles)		Proposed Orange Route (44.6 miles)		Effie Variation (48.8 miles)		Notes
		Count / Acres	Percent of ROI	Count / Acres	Percent of ROI	Count / Acres	Percent of ROI	
Corridor Sharing	Paralleling Existing Infrastructure	-	0.0%	-	0.0%	-	80.0%	The Blue and Orange Routes would not parallel any existing transmission lines; however the Effie Variation would parallel two existing transmission line for approximately 80% of its length.
		-	-	-	-	-	-	The Blue and Orange Routes do not parallel any existing Manitoba - Minnesota tie lines. The Blue Route would establish one new crossing of the existing 500 kV tie line. The Effie Variation would establish one new crossing of the existing 500 kV tie line and, more significantly, parallel both the 500 kV tie line and the 230 kV tie line in the same corridor for a significant part of its length, which would result in unacceptable risk to northern Minnesota loads.
Cost	Total Cost	\$46,649,600	-	\$49,486,323	-	\$17,852,345	-	Both the Orange Route and Effie Variation would cost more to construct than the Blue Route.



Factor	Relative Merits Element	East Bear Lake Variation Area				Notes
		Proposed Orange Route (8.3 miles)		East Bear Lake Variation (10.5 miles)		
		Count / Acres	Percent of ROI	Count / Acres	Percent of ROI	
Aesthetics	Residences	0	-	0	-	Neither Alternative would impact any residences.
	Historic Architectural Sites	0	-	0	-	Neither Alternative would impact any known historic architectural sites.
	Scenic Byway	0	-	0	-	Neither Alternative would impact any Scenic Byways.
	Trails	4	-	4	-	Both Alternatives would potentially impact one state trail and three snowmobile trails.
	Water Access Points	0	-	1	-	The East Bear Lake Variation would potentially impact one water access point.
	Land Use Compatibility					
Human Settlement	Dominant Land Cover Type	3,381 ac	99.2%	3,910 ac	98.2%	Both Alternatives' major land cover type is Forested and/or Swamp. Both Alternatives would result in a long-term change in land use for areas currently forested and/or swamp land, but these changes would be limited in extent, and there would still be extensive forest and swamp lands in the surrounding area, so these changes are expected to have a minimal impact on land use (pg. 555).
	Land Ownership	216 acres total		255 acres total		
	Public	217	100.0%	256	100.0%	Both Alternatives are entirely located within public lands.
Land-Based Economies	Private	0	0.0%	0	0.0%	
	Agriculture	0	0.0%	0	0.0%	Neither Alternative would impact agricultural land.
	Forestry	217	100.0%	256	100.0%	Both Alternatives are entirely located within State Forest lands.
Archaeology and Historic Architectural Resources	Mining & Mineral Leases	96	44.5%	193	75.6%	The East Bear Lake Variation would potentially impact nearly double the acres of mining and mineral leases than the Orange Route.
	Historic Architectural Sites	0	-	0	-	Neither Alternative would impact any known historic architectural or archaeological sites.
	Archaeological Sites	0	-	0	-	
Water Resources	PWI Waters	4	-	2	-	Both Alternatives would cross a small number of PWI and non-PWI waters; however, it is anticipated that these crossings are spannable (crossings would be less than the average spanning length of 1,250 feet) and structures would not be placed in them.
	Non-PWI Waters	0	-	3	-	
	Impaired Waters	0	-	0	-	
	Floodplains	0	-	0	-	Neither Alternative would impact any FEMA-designated floodplains.
	Crossings or 200 feet	0	-	0	-	

Relative Merits		East Bear Lake Variation Area				Notes
Factor	Element	Proposed Orange Route (8.9 miles)	East Bear Lake Variation (10.5 miles)	ROI		
		Count / Acres	Percent of ROI	Count / Acres	Percent of ROI	
Vegetation	NW Wetlands	104	48.2%	89	35.0%	The Orange Route would potentially impact slightly more acres of NW-mapped wetlands than the East Bear Lake Variation. While direct, adverse impacts to forested and shrub wetlands are permanent and may change wetland functions within the ROW, they are expected to be minimal because of the amount of surrounding forested and shrub wetlands in the region (pg. 561).
	North American Boreal Forest	103	47.7%	140	55.0%	
	North American Boreal Flooded & Swamp Forest	84	43.6%	77	30.3%	Both Alternatives would potentially impact a similar amount of forested land. While direct, adverse impacts to forested areas would be long-term, contiguous forest is abundant in the region surrounding the Project (pg. 562).
	Other	113	52.4%	115	45.2%	
Wildlife	All/Any	0	0.0%	0	0.0%	Neither Alternative would impact recognized wildlife resource areas.
	Rare Species	1	-	1	-	Both Alternatives would be located within one mile of a state-listed special concern vascular plant. Surveys will be performed on the final 200-foot ROW to determine if any rare species are present within the permitted ROW. Any indirect impacts to rare species are expected to be minimal because of the amount of the surrounding habitat. Through use of Applicant-proposed avoidance and minimization measures, direct impacts to rare species are not expected (pg. 564).
Rare and Unique Natural Resources	State Rare Communities					
	MBS Sites of Biodiversity	217	100.6%	255	100.2%	Both Alternatives are entirely located within MBS Sites of Biodiversity; the East Bear Lake Variation would pass through more MBS Sites (pg. 565).
Corridor Sharing	Paralleling Existing Infrastructure	3	0.0%	-	42.0%	The East Bear Lake Alternative parallels existing transmission line for approximately 4.2% of its length.
	Electrical System Reliability					The Orange Route does not parallel any existing Manitoba - Minnesota tie lines. The East Bear Lake Variation would parallel both the 500 KV tie line and the 230 KV tie line in the same corridor for a significant part of its length, which would result in unacceptable risk to northern Minnesota loads.
Cost	Total Cost	\$87,387,900	-	\$87,387,900	-	The East Bear Lake Variation would cost the most to construct.



Factor	Element	ROI	Balsam Variation Area						Notes
			Proposed Blue Route (12.9 miles)		Proposed Orange Route (13.7 miles)		Balsam Variation (17.3 miles)		
			Count / Acres	Percent of ROI	Count / Acres	Percent of ROI	Count / Acres	Percent of ROI	
Aesthetics	Residences	1,500 feet	7	-	21	-	11	-	The Orange Route has the highest potential to impact residences; the Balsam Variation has 11 residences within 1,500 feet and the Blue Route has the lowest potential impact to residences.
	Historic Architectural Sites	5,280 feet	13	-	24	-	28	-	The Orange Route and Balsam Variation have the highest potential to impact architectural sites; however, the permitted Route width will be less than 5,280 feet so some sites may not be impacted.
	Scenic Byway	1,500 feet	0	-	0	-	0	-	No Alternatives would impact Scenic Byways.
	Trails	1,500 feet	2	-	2	-	3	-	The Blue and Orange Routes would potentially impact two snowmobile trails; Balsam Variation would impact three.
Human Settlement	Land Use Compatibility								
	Land Cover of Forested and/or Swamp	1,500 feet	4,541 ac	93.5%	4,829 ac	94.1%	6,189 ac	93.2%	All Alternatives' major land cover type is Forested and/or Swamp. All Alternatives would result in a long-term change in land use for areas currently forested and/or swamp land, but these changes would be limited in extent, and there would still be extensive forest and swamp lands in the surrounding area, so these changes are expected to have a minimal impact on land use (pg. 572).
	Land Ownership	200 feet	313 acres total		332 acres total		432 acres total		All Alternatives are generally located on a majority of private lands. The Balsam Variation would potentially impact the most acres of private land.
	Private		67	21.4%	53	16.0%	107	24.8%	The Blue Route would potentially impact the fewest acres of agricultural land; the Balsam Variation would impact the most.
Land-Based Economies	Agriculture	1,500 feet	4	0.1%	70	1.4%	72	1.1%	No Alternatives would be located in State Forest lands.
	Forestry		0	0.0%	0	0.0%	0	0.0%	The Blue and Orange Routes would not impact mining and mineral leases; the Balsam Variation would potentially impact 89 acres. It should be noted that an active mine would impede the construction and operation of the Balsam Variation and therefore it is no longer feasible.
	Mining & Mineral Leases	200 feet	0	0.0%	0	0.0%	0	0.0%	The Orange Route and Balsam Variation have the highest potential to impact known architectural sites. The Blue and Orange Routes would not impact any known archaeological sites; however, the permitted Route width will be less than 5,280 feet so some sites may not be impacted.
	Historic Architectural Sites	5,280 feet	13	-	24	-	28	-	All Alternatives would cross a small number of PWI and non-PWI waters; however, it is anticipated that these crossings are spannable (crossings would be less than the average spanning length of 1,250 feet) and structures would not be placed in them.
Archaeology and Historic Architectural Resources	Archaeological Sites	1,500 feet	0	-	0	-	1	-	
	PWI Waters		7	-	5	-	4	-	
	Non-PWI Waters		1	-	4	-	3	-	
Impaired Waters	Impaired Waters		0	-	0	-	0	-	

Relative Merits		Proposed Blue Route (12.9 miles)				Proposed Orange Route (13.7 miles)				Balsam Variation Area (17.8 miles)				Notes
Factor	Element	ROI	Count / Acres	Percent of ROI	Count / Acres	Percent of ROI	Count / Acres	Percent of ROI	Count / Acres	Percent of ROI	Count / Acres	Percent of ROI		
Water Resources	Floodplains	Crossings or 200 feet	0	-	26	-	22	-	The Blue Route would not impact FEMA-designated floodplains whereas the Orange Route and Balsam Variation would require construction and placement of transmission structures within Zone A floodplain.					
	NWI Wetlands		54	17.3%	69	20.8%	96	22.2%	The Balsam Variation would potentially impact the most acres of NWI-mapped wetlands. While direct, adverse impacts to forested and shrub wetlands are permanent and may change wetland functions within the ROW, they are expected to be minimal because of the amount of surrounding forested and shrub wetlands in the region. (pg. 578)					
	Vegetation	200 feet	205	65.6%	208	82.6%	234	54.2%	The Balsam Variation would pass through more forested land than the Blue and Orange Routes. While direct, adverse impacts to forested areas would be long-term, contiguous forest is abundant in the region surrounding the Project (pg. 580).					
Wildlife	Eastern North American Cool Temperate Flooded & Swamp Forest		12	3.8%	15	4.5%	40	9.3%						
	Other		53	16.9%	47	14.2%	60	13.9%						
	All/Any	200 feet	29	9.3%	47	14.2%	68	15.8%						
Rare and Unique Natural Resources	Rare Species	1 mile (aquatic species not included)	100	34.5%	124	37.3%	199	45.9%	No Alternatives would impact recognized wildlife resource areas.					
	State Rare Communities		0	0.0%	0	0.0%	0	0.0%	The Blue Route is located within one mile of a state-listed special concern vascular plant. Surveys will be performed on the final 200-foot ROW to determine if any rare species are present within the permitted ROW. Any indirect impacts to rare species are expected to be minimal because of the amount of the surrounding habitat. Through use of Applicant-proposed avoidance and minimization measures, direct impacts to rare species are not expected (pg. 582).					
	MBS Sites of Biodiversity	200 feet	1	-	0	0.0%	0	-	The Orange Route would potentially impact the most acres of MBS Sites of Biodiversity; the Blue Route would potentially impact the fewest.					
Corridor Sharing	Paralleling Existing Infrastructure		78	24.9%	105	31.6%	95	22.0%	The Blue and Orange Routes would parallel existing transmission lines for 15 and 14% of their lengths, respectively; the Balsam Variation would not parallel existing transmission lines.					
			-	15.0%	-	14.0%	-	0.0%						

Factor	Relative Merits		Balsam Variation Area				Notes
	Element	ROI	Proposed Blue Route (12.9 miles) Count / Acres	Proposed Orange Route (13.7 miles) Count / Acres	Balsam Variation (17.8 miles) Count / Acres	Percent of ROI	
Electrical System Reliability		-	-	-	-	-	No Alternatives parallel or cross any existing Manitoba – Minnesota line lines.
Cost	Total Cost	-	\$15,121,021	\$16,018,490	\$19,022,477	-	Both the Orange and the Balsam Variation would cost more to construct than the Blue Route.

Factor	Relative Merits	Element	ROI	Proposed Blue Route (2.2 miles)			Dead Man's Pond Variation Area			Notes
				Count / Acres	Percent of ROI	Count / Acres	Count / Acres	Percent of ROI		
Human Settlement	Aesthetics	Residences	1,500 feet	2	-	4	-	Dead Man's Pond Variation would potentially impact more residences within 1,500 feet.		
		Historic Architectural Sites	5,280 feet	1	-	1	-	Both Alternatives would potentially impact a historic architectural site within 5,280 feet; however, the permitted Route width will be less than 5,280 feet so some sites may not be impacted.		
		Scenic Byway	1,500 feet	0	-	0	-	Neither Alternative would cross a Scenic Byway.		
		Trails	1,500 feet	0	-	0	-	Neither Alternative would cross any trails.		
	Land Use Compatibility	Dominant Land Cover Type	1,500 feet	905 ac	84.2%	925 ac	93.7%	Both Alternatives' major land cover type is Forested and/or Swamp. Both Alternatives would result in a long-term change in land use for areas currently forested and/or swamp land, but these changes would be limited in extent, and there would still be extensive forest and swamp lands in the surrounding area; so these changes are expected to have a minimal impact on land use (Pg. 588).		
		Land Ownership	200 feet	53 acres total		59 acres total		The Blue Route is mostly located on private land whereas the Dead Man's Pond Variation is mostly located on public land.		
		Public		19	35.6%	37	66.3%			
		Private		34	63.6%	19	34.1%			
		Agriculture	1,500 feet	0	0.0%	2	0.2%	The Blue Route would not impact agricultural land.		
		Forestry		0	0.0%	0	0.0%	Neither Alternative would impact State Forest lands.		
Land-Based Economies	Mining & Mineral Leases	200 feet	0	0.0%	0	0.0%	Neither Alternative would impact any mining or mineral leases.			
	Historic Architectural Sites	5,280 feet	1	-	1	-	Both Alternatives would potentially impact a historic architectural site within 5,280 feet; however, the permitted Route width will be less than 5,280 feet so some sites may not be impacted. There are no known archaeological sites within one mile of either Alternative.			
	Archaeological Sites	1,500 feet	0	-	0	-				
	PWI Waters		0	-	0	-	Neither Alternative would cross any PWI, non-PWI, or impaired waters.			
Water Resources	Non-PWI Waters		0	-	0	-				
	Impaired Waters		0	-	0	-				
	Floodplains	Crossings or 200 feet	0	-	0	-	Neither Alternative would impact FEMA-designated floodplains.			
	NWI Wetlands		14	26.3%	4	7.2%	Both Alternatives would potentially impact very few acres of NWI-mapped wetlands. While direct, adverse impacts to forested and shrub wetlands are permanent and may change wetland functions within the ROW, they are expected to be minimal because of the amount of surrounding forested and shrub wetlands in the region (pg. 592).			

Factor	Relative Merits		Dead Man's Pond Variation Area				Notes
	Element	ROI	Proposed Blue Route (2.2 miles)		Dead Man's Pond Variation (2.3 miles)		
			Count / Acres	Percent of ROI	Count / Acres	Percent of ROI	
Vegetation	North American Boreal Forest	200 feet	34	63.6%	43	77.1%	Both Alternatives would potentially impact a similar amount for forested land. While direct, adverse impacts to forested areas would be long-term, contiguous forest is abundant in the region surrounding the proposed Project (pg. 593).
	Eastern North American Cool Temperate Forest		14	26.3%	0	10.8%	
	Other		19	35.6%	19	23.3%	
	AU/Any		0	0.0%	0	0.0%	
Wildlife	AU/Any	200 feet	0	0.0%	0	0.0%	Neither Alternative would impact recognized wildlife resource areas.
	Rare Species	1 mile (aquatic species not included)	0	-	0	-	Neither Alternative is located within one mile of a documented rare species.
	State Rare Communities	200 feet	0	-	0	-	
Rare and Unique Natural Resources	MBS Sites of Biodiversity	200 feet	0	0.0%	0	0.0%	There are no MBS Sites of Biodiversity within either Alternative.
	Paralleling Existing Infrastructure	-	-	0.0%	-	0.0%	Neither Alternative parallels existing transmission lines.
Corridor Sharing	Existing Infrastructure	-	-	-	-	-	Neither Alternative parallels or crosses any existing Manitoba - Minnesota tie lines.
	Reliability	-	-	-	-	-	The Dead Man's Pond Variation would cost the most to construct.
Cost	Total Cost	-	\$2,673,223	-	\$4,709,347	-	

Relative Merits		Blackberry Variation Area				Notes	
Factor	Element	ROI	Proposed Blue Route (5.4 miles)	Proposed Orange Route (6.1 miles)	Percent of ROI		
			Count / Acres	Count / Acres	Percent of ROI		
Human Settlement	Aesthetics						
	Residences	1,500 feet	11	22	-	The Orange Route has twice as many homes (22) within 1,500 feet as the Blue Route (11).	
	Historic Architectural Sites	5,280 feet	6	1	-	The Blue Route has a higher potential to impact historic architectural sites within 5,280 feet; however, the permitted Route width will be less than 5,280 feet so some sites may not be impacted.	
	Scenic Byway Trails	1,500 feet 1,500 feet	0 1	0 1	-	Neither Route would cross a Scenic Byway. Both Routes would cross one snowmobile trail.	
	Land Use Compatibility						
	Dominant Land Cover Type	1,500 feet	2,004 ac	1,962 ac	84.2%	84.2%	Both Routes' major land cover type is Forested and/or Swamp. Both Routes would result in a long-term change in land use for areas currently forested and/or swamp land, but these changes would be limited in extent, and there would still be extensive forest and swamp lands in the surrounding area, so these changes are expected to have a minimal impact on land use (pg. 599).
	Land Ownership	200 feet	131 acres total	148 acres total			Both Routes contain a similar number of acres of public and private lands.
	Public		41	54	31.3%	36.5%	
	Private		90	94	66.8%	63.6%	
	Agriculture	1,500 feet	50	192	2.4%	8.2%	The Blue Route would potentially impact fewer acres of agriculture than the Orange Route.
Land-Based Economies	Forestry	200 feet	0	0	0.0%	0.0%	Neither Route would potentially impact a similar acres of mining and mineral leases.
	Mining & Mineral Leases	200 feet	37	33	28.3%	22.3%	
Archaeology and Historic Architectural Resources	Historic Architectural Sites	5,280 feet	0	1	-	-	The Blue Route has a higher potential to impact historic architectural sites within 5,280 feet; however, the permitted Route width will be less than 5,280 feet so some sites may not be impacted. There are no known archaeological sites within one mile of either Route.
	Archaeological Sites	1,500 feet	0	0	-	-	
	PWI Waters		0	0	-	-	Both Routes would cross a small number non-PWI and impaired waters; however, it is anticipated that these crossings are spannable (crossings would be less than the average spanning length of 1,250 feet) and structures would not be placed in them (pg. 603-604).
Water Resources	Non-PWI Waters		1	3	-	-	
	Impaired Waters		1	1	-	-	
	Floodplains	Crossings or 200 feet	0	0	-	-	Neither Route would impact FEMA-designated floodplains.
	NWI Wetlands		51	40	36.0%	27.0%	Both Routes would potentially impact very few acres of NWI-mapped wetlands. While direct, adverse impacts to forested and shrub wetlands are permanent and may change wetland functions within the ROW, they are expected to be minimal because of the amount of surrounding forested and shrub wetlands in the region (pg. 604).

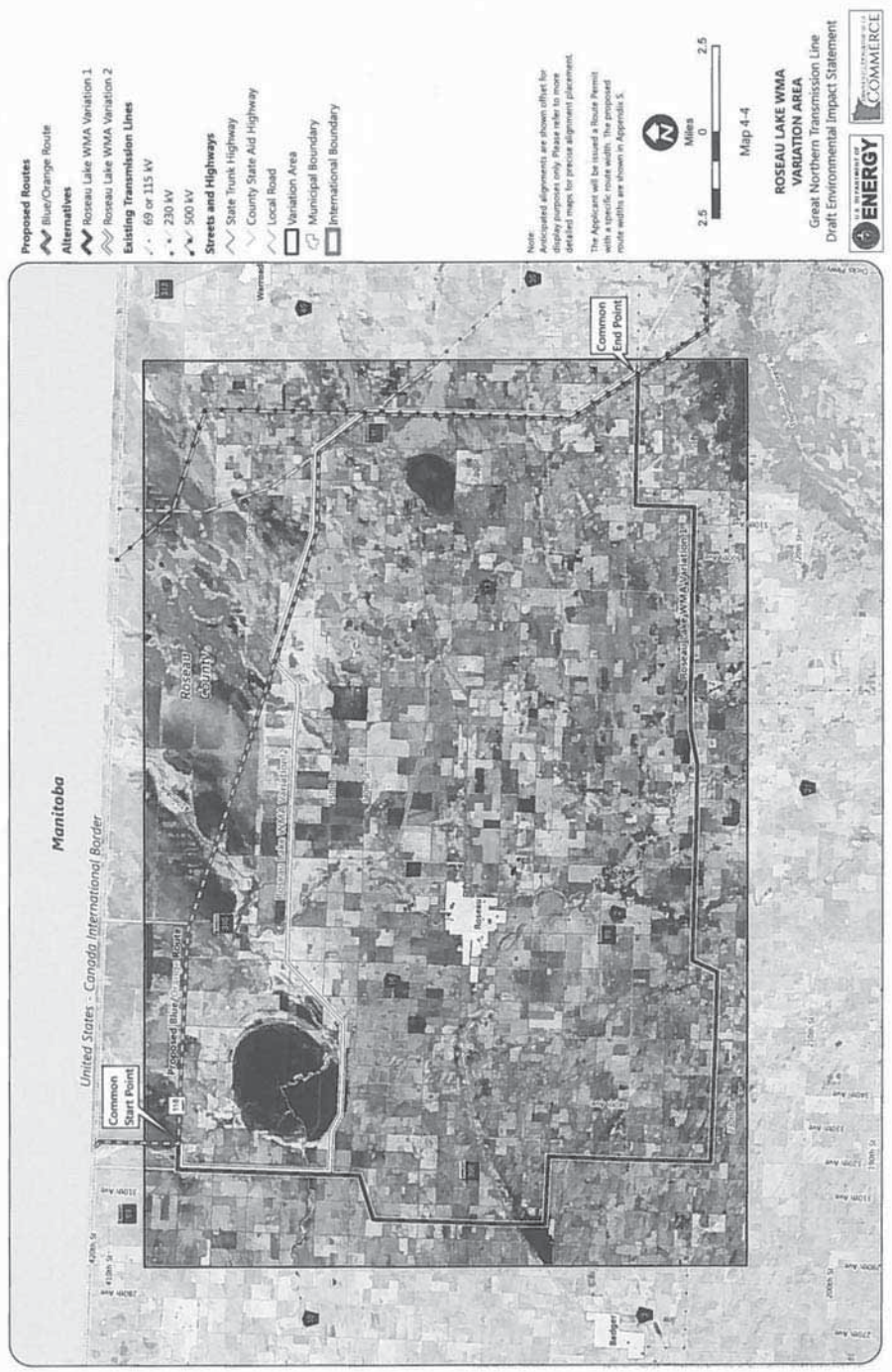
Relative Merits		Blackberry Variation Area					
Factor	Element	ROI	Proposed Blue Route (5.4 miles)		Proposed Orange Route (6.1 miles)		Notes
			Count / Acres	Percent of ROI	Count / Acres	Percent of ROI	
Vegetation	North American Boreal Forest	200 feet	60	45.8%	52	35.2%	The Blue and Orange Routes would pass through a similar amount of forested land. While direct, adverse impacts to forested areas would be long-term, contiguous forest is abundant in the region surrounding the Project (pg. 606).
	North American Boreal Flooded & Swamp Forest		30	22.8%	26	17.6%	
	Eastern North American Cool Temperate Forest		33	25.2%	49	33.1%	
	Other		71	54.2%	66	64.6%	
Wildlife	All/Any	200 feet	0	0.0%	0	0.0%	Neither Route would impact recognized wildlife resource areas.
Rare and Unique Natural Resources	Rare Species	1 mile (aquatic species not included)	2	-	3	-	Both Routes are within one mile of two threatened vascular plants; the Orange Route is within one mile of a special-concern bird listing. Surveys will be performed on the final 200-foot ROW to determine if any rare species are present within the permitted ROW. Any indirect impacts to rare species are expected to be minimal because of the amount of the surrounding habitat. Through use of Applicant-proposed avoidance and minimization measures, direct impacts to rare species are not expected (pg. 606).
	State Rare Communities	200 feet	57	43.5%	79	53.4%	Loss or conversion of native vegetation would likely be similar between the Blue and Orange Routes (pg. 606).
Corridor Sharing	Existing Infrastructure	-	-	20.0%	-	-	The Orange Route parallels existing transmission lines for 37% of its length; the Blue Route parallels existing transmission lines for 20%.
Electrical System Reliability		-	-	-	-	-	Neither Alternative parallels or crosses any existing Manitoba - Minnesota tie lines.
Cost	Total Cost		\$3,380,680	-		-	The Orange Route would cost the most to construct.

0192-1
DUPLICATE

Great Northern Transmission Line

Relative Merits Table

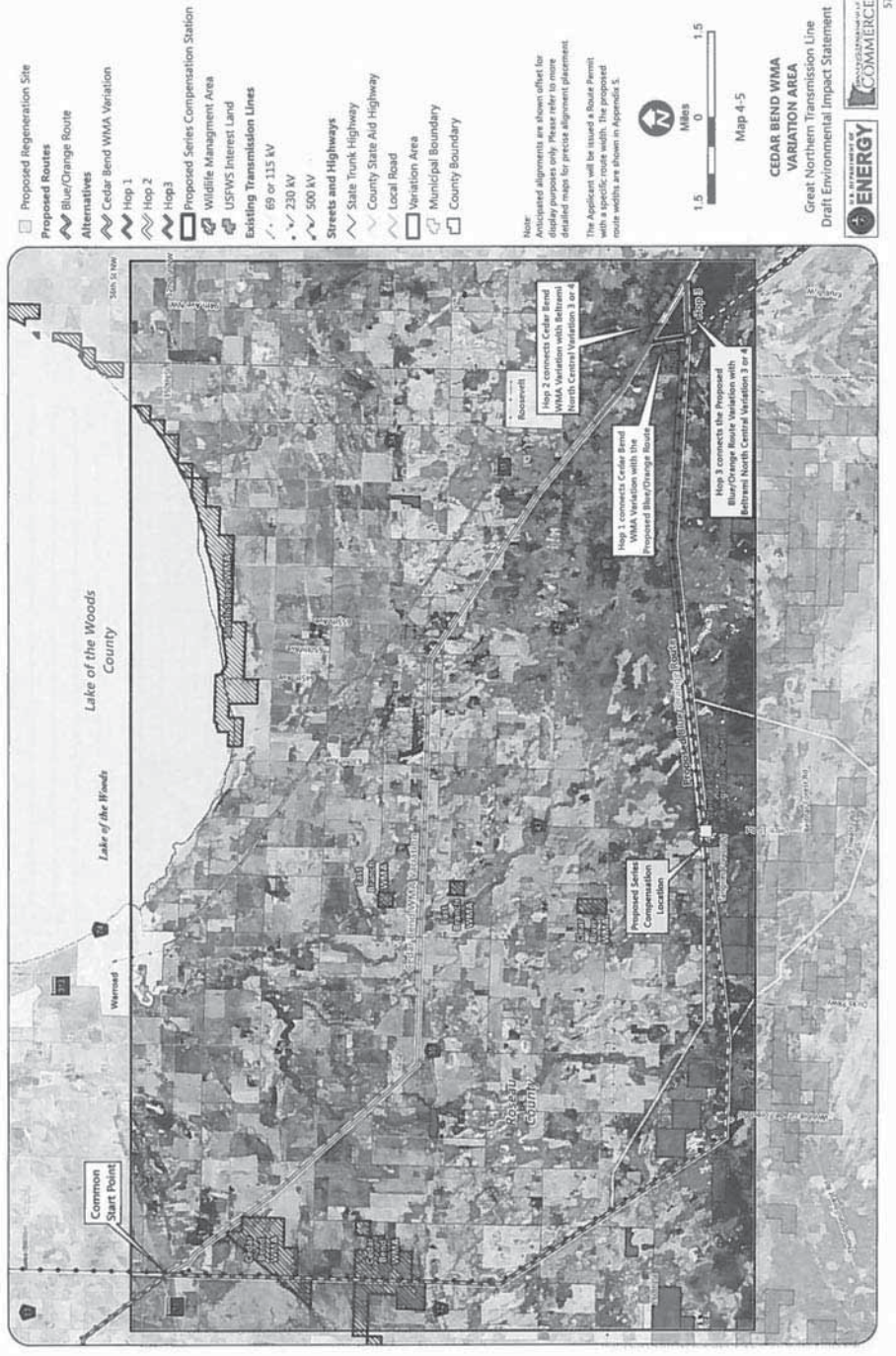
Color		Definition
Green	The alternative will have minimal effects on the resource with the implementation of best management practices, such that no mitigation is required.	
Yellow	The alternative will have minimal to moderate effects on the resource with the implementation of best management practices, such that mitigation is likely to be required.	
	The alternative will have moderate or greater effects on the resource, and those effects cannot be mitigated.	
Some routing factors that are not susceptible to the minimal/moderate/unmitigable system described above. In such cases, Minnesota Power's tables assign colors in the following manner:		
Corridor-Sharing	Green means greater than 80% of the Route or Variation parallels an existing transmission line; yellow means between 10% and 80% of the Route or Variation parallels existing transmission lines; and red means less than 10% of the Route or Variation parallels an existing transmission line.	
Costs	Green represents the costs proposed in Minnesota Power's Certificate of Need application for a particular route segment, or anything less expensive. Yellow represents the costs proposed in Minnesota Power's proposed costs. Red represents anything that costs more than 20% of what Minnesota Power proposed, because anything in excess of that threshold.	
Electrical System Reliability	For electrical system reliability, green means no identifiable impact (does not parallel) or cross any existing Manitoba-Minnesota tie lines); yellow means acceptable impact (impacts to electrical system reliability are moderate and acceptable); red means unacceptable impact (impacts to electrical system reliability are severe and unacceptable). These judgments are based on the expertise of Minnesota Power's engineers, and are further discussed in the company's comments on the DEIS.	
Factor	Element	Footnote
General		Unless otherwise stated below, the ROIs discussed in Chapters 5 and 6 of the DEIS are used in these comparison tables. Consistent with the comments on the DEIS, Minnesota Power has used alternative ROIs and/or other metrics for assessing effects, as described below, and as further explained in its DEIS comments. Minnesota Power does not have access to the exact methodology or data used in the DEIS. As a result, Minnesota Power compiled these tables by copying and, when necessary or appropriate, interpreting the data used in Chapter 6 of the DEIS.
	Aesthetics	Minnesota Power did not include state forests in its calculation of aesthetic effects. The DEIS already addresses public recreation opportunities within state forests by including trails, campgrounds, and water access points in its list of aesthetic resources. Adding state forests to the list essentially double-counts these public recreational opportunities, while ignoring the fact that the vast state forests in the project area are rarely used as recreational areas.
	Land Use Compatibility Land Ownership	The dominant land cover type is presented in the table to highlight the most abundant resource within the Route/Alternative.
	Public	All public lands are added together for this comparison. Public lands include Federal, State, and County lands.
Human Settlement	Private	Private land is calculated by subtracting public lands from the total number of acres within the ROW for a particular Route/Alternative. A more accurate count of acres of private land and number of private landowners crossed could be made by using County Tax Assessor parcel data.
	Agriculture	Acres of agricultural land within 1,500 feet is used for this comparison to account for effects on agricultural land and practices that would likely occur beyond just the 200-foot ROW. GAP Landcover data was used to determine acres of agriculture because prime farmland soils are less accurate in identifying actual agricultural land uses.
Land-Based Economies	Forestry	Only acres of State Forest land within the ROW is used for these comparisons. It should be noted that corporate lands (such as Blandin) could also be included to the extent they are available.
	Mining & Mineral Leases	There are several occurrences where the acres of mining and mineral leases exceed the total number of acres within the ROW of a particular Route/Alternative. These numbers are highlighted in red in the tables. Minnesota Power is unsure about the source of this error and has not attempted to correct it.
Rare and Unique Natural Resources	Rare Species	Minnesota Power removed aquatic species from this calculation in light of the Chapter 6 text (for each Variation Area) consistently stating that PM, non-PM, trout, and impaired streams will be spanned and no structures will be placed within the waterbodies.
	Rare Communities	Acres of MBS Sites of Biodiversity and MBS Native Plant Communities include only the "high" or "outstanding" values where the data has been finalized. In other areas, the preliminary total of all ranks is used.
Corridor Sharing	Paralleling Existing Infrastructure	Minnesota Power included only existing high-voltage transmission lines in this analysis because they are the only corridor sharing opportunities that would potentially provide any environmental benefit.
	Electrical System Reliability	This assessment of the electrical system reliability impacts of each of the Routes and Variations performed by Minnesota Power's engineers takes into account specifically the locations where the proposed line parallels or crosses existing Manitoba - Minnesota tie lines. For the particular case of the GNTL Project, no other common corridor or line crossing scenarios involving 59 kV, 115 kV, or 230 kV lines that do not connect Manitoba and the United States has any significant impact on electrical system reliability, regardless of how many transmission lines are involved.



Factor	Relative Merits		Roseau Lake WMA Variations				Notes		
	Element	ROI	Proposed Blue / Orange Route (30.7 miles)		Roseau Lake WMA Variation 1 (44.1 miles)			Roseau Lake WMA Variation 2 (37.5 miles)	
			Count / Acres	Percent of ROI	Count / Acres	Percent of ROI		Count / Acres	Percent of ROI
Human Settlement	Aesthetics								
	Residences	1,500 feet	12	-	50	-	23	-	Roseau Lake WMA Variation 1 could potentially impact more than four times as many residences as the Blue/Orange Route.
	Historic Architectural Sites	5,280 feet	0	-	1	-	2	-	The Blue/Orange Route would not impact any known architectural sites within 5,280.
	State Scenic Byways	1,500 feet	1	-	1	-	1	-	All Alternatives would cross State Highway 11 - Waters of the Dancing Sky Scenic Byway.
	Trails		1	-	1	-	1	-	All Alternatives would cross one snowmobile trail.
Land-Based Economies	Land Use Compatibility								
	Dominant Land Cover Type	1,500 feet	7,350 ac of Forested and/or Swamp	64.9%	12,616 ac of Agricultural Land	78.2%	5,793 ac of Agricultural Land	63.8%	The Blue/Orange Route's major land cover type is Forested and/or Swamp which would result in a long-term change in land use for areas currently forested and/or swamp land, but these changes would be limited in extent, and there would still be extensive forest and swamp lands in the surrounding area; so these changes are expected to have a minimal impact on land use (pg. 272). The Variations' major land cover type is Agriculture.
	Land Ownership		744 acres total		1,069 acres total		909 acres total		The Blue/Orange Route contains more acres of public land but would potentially impact the fewest private landowners.
	Public	200 feet	453	60.9%	6	0.6%	145	15.9%	
	Private		291	39.1%	1,053	99.4%	764	84.0%	
Archaeology and Historic Architectural Resources	Agriculture	1,500 feet	3,384	29.7%	12,616	78.2%	8,783	63.6%	Variation 1 would potentially impact four times as many acres of agricultural land than the Blue/Orange Route.
	Forestry		334	44.9%	6	0.6%	52	5.7%	The Blue/Orange Route contains more acres of State Forest land.
	Mining & Mineral Leases	200 feet	0	0.0%	0	0.0%	0	0.0%	No Alternatives would impact any mining or mineral leases.
	Historic Architectural Sites	5,280 feet	0	-	1	-	2	-	The Blue/Orange Route would not impact any known architectural sites within 5,280 nor would it impact any known archaeological sites within 1,500 feet.
	Archaeological Sites	1,500 feet	0	-	3	-	3	-	
Water Resources	PWI Waters		2	-	10	-	3	-	All Alternatives would cross a number of waterbodies; however, it is anticipated that these crossings are spannable (crossings would be less than the average spanning length of 1,250 feet) and structures would not be placed in them.
	Non-PWI Waters		23	-	38	-	33	-	
	Impaired Waters		1	-	2	-	2	-	
	Floodplains	Crossings or 200 feet	321	43.1%	202	18.9%	307	33.6%	All Alternatives contain a similar number of acres of FEMA-designated floodplains and all will require structure placement within floodplains.

Relative Merits		Roseau Lake WMA Variations						Notes
Factor	Element	Proposed Blue / Orange Route (30.7 miles)	Roseau Lake WMA Variation 1 (44.1 miles)	Roseau Lake WMA Variation 2 (37.5 miles)	Count / Acres	Percent of ROI		
Vegetation	Wetlands	Count / Acres	Count / Acres	Count / Acres	Count / Acres	Percent of ROI	The Blue/Orange Route would potentially impact twice as many acres of NW-mapped wetlands as Variation 2. While direct, adverse impacts to forested and shrub wetlands are permanent and may change wetland functions within the ROW, they are expected to be minimal because of the amount of surrounding forested and shrub wetlands in the region (pg. 279).	
		547	102	272	26.9%			
Vegetation	North American Boreal Flooded & Swamp Forest	Count / Acres	Count / Acres	Count / Acres	Count / Acres	Percent of ROI	The Blue/Orange Route contains a greater amount of forest land; the two Variations contain a greater amount of herbaceous agricultural vegetative cover. While direct, adverse impacts to forested areas would be long-term, contiguous forest is abundant in the region surrounding the Project (pg. 280).	
		398	61	185	18.1%			
		73	30	57	6.3%			
		199	969	531	58.4%			
		87	112	156	17.2%			
Wildlife	Grassland Bird Conservation Areas	Count / Acres	Count / Acres	Count / Acres	Count / Acres	Percent of ROI	The Blue/Orange Route and Variation 2 contain similar acres of WMA. Variation 2 contains the most acres of Grassland Bird Conservation Areas; however, ongoing vegetation management of the ROW in early successional vegetative stands would be compatible with grassland bird species' habitat requirements (pg. 282).	
		131	40	220	24.2%			
		60	0	44	4.8%			
Rare and Unique Natural Resources	Rare Species	Count / Acres	Count / Acres	Count / Acres	Count / Acres	Percent of ROI	The Blue/Orange Route is located within one mile of seven documented rare species. Surveys will be performed on the final 200-foot ROW to determine if any of these species are present within the permitted ROW. Any indirect impacts to rare species from the proposed Project are expected to be minimal because of the amount of surrounding forested habitat and woody vegetation. Through the use of Applicant proposed avoidance and minimization measures, direct impacts to rare species are not expected (pg. 284).	
		7	2	3	-			
	State Rare Communities	Count / Acres	Count / Acres	Count / Acres	Count / Acres	Percent of ROI	The Blue/Orange Route contains more acres of MBS Sites of Biodiversity, HCVF, and MBS Native Plant communities.	
		107	7	77	8.5%			
		22	6	6	0.7%			
Corridor Sharing	Paralleling Existing Infrastructure	Count / Acres	Count / Acres	Count / Acres	Count / Acres	Percent of ROI	The Blue/Orange Route parallels existing transmission lines for approximately 1/3rd of its length.	
		-	-	-	27.0%			

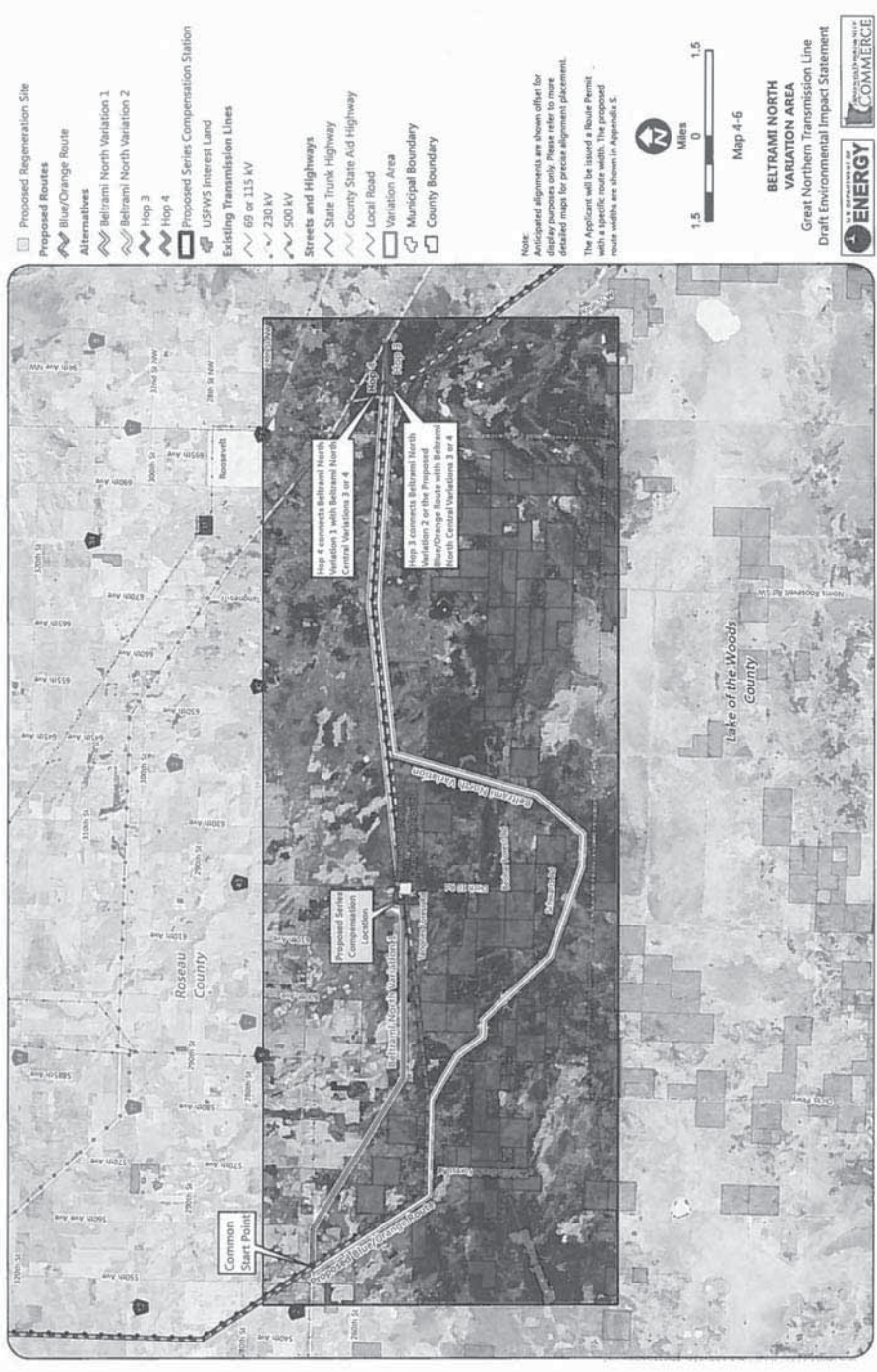
Factor	Element	ROI	Rosesau Lake WMA Variations						Notes
			Proposed Blue / Orange Route (30.7 miles)		Rosesau Lake WMA Variation 1 (44.1 miles)		Rosesau Lake WMA Variation 2 (37.5 miles)		
			Count / Acres	Percent of ROI	Count / Acres	Percent of ROI	Count / Acres	Percent of ROI	
Electrical System Reliability		-		-		-		-	The Blue/Orange Route and Variation 2 both parallel one existing Manitoba - Minnesota tie line for part of their length, while Variation 1 does not parallel any existing Manitoba - Minnesota tie lines.
Cost	Total Cost	-	\$33,247,000	-	-	-	-	-	Variation 1 would cost the most to construct.



Factor	Relative Merits		Cedar Bend WMA Variation				Notes
	Element	ROI	Proposed Blue / Orange Route (24.7 miles)		Cedar Bend WMA Variation (19.6 miles)		
			Count / Acres	Percent of ROI	Count / Acres	Percent of ROI	
Human Settlement	Aesthetics						
	Residences	1,500 feet (within ROW)	11 (0)	-	107 (0)	-	The Cedar Bend WMA Variation would potentially impact ten times as many residences as the Blue/Orange Route and contains 4 homes within the ROW.
	Historic Architectural Sites	5,280 feet	0	-	8	-	The Cedar Bend WMA Variation has a higher potential to impact eight known architectural sites within 5,280 feet; however, the permitted Route width will be less than 5,280 feet so some sites may not be impacted.
	State Scenic Byways	1,500 feet	1	-	1	-	Both Alternatives would cross State Highway 11 - Waters of the Dancing Sky Scenic Byway. Both Alternatives would cross the scenic byway adjacent to existing transmission lines of similar design.
	Trails		2	-	2	-	Both Alternatives would cross two snowmobile trails.
	Land Use Compatibility						
	Dominant Land Cover Type	1,500 feet	6,045 ac	88.1%	4,180 ac	57.3%	Both Alternatives' major land cover type is Forested and/or Swamp. Both Alternatives would result in a long-term change in land use for areas currently forested and/or swamp land, but these changes would be limited in extent, and there would still be extensive forest and swamp lands in the surrounding area, so these changes are expected to have a minimal impact on land use (pg. 291).
	Land Ownership		599 acres total		475 acres total		The Blue/Orange Route contains more than five times as many acres of public land; however, it would potentially impact the fewest private land owners.
	Public	200 feet	447	74.6%	84	17.7%	
	Private		152	25.4%	391	82.3%	
Land-Based Economies	Agriculture	1,500 feet	844	9.2%	2,625	36.0%	The Cedar Bend WMA Variation would potentially impact three times as many acres of agricultural land than the Blue/Orange Route.
	Forestry		372	62.1%	78	16.4%	The Blue/Orange Route contains more than four times as many acres of State Forest land than the Variation.
	Mining & Mineral Leases	200 feet	97	16.2%	0	0.0%	The Blue/Orange Route would potentially impact more mining and mineral lease lands.
	Historic Architectural Sites	5,280 feet	0	-	8	-	The Cedar Bend WMA Variation has a higher potential to impact eight known architectural sites within 5,280 feet; however, the permitted Route width will be less than 5,280 feet so some sites may not be impacted. The Cedar Bend WMA Variation also has a higher potential to impact two known archaeological sites within 1,500 feet.
	Archaeological Sites	1,500 feet	0	-	2	-	
Archaeology and Historic Architectural Resources	PWI Waters		4	-	5	-	Both Alternatives would cross a number of waterbodies; however, it is anticipated that these crossings are spannable (crossings would be less than the average spanning length of 1,250 feet) and structures would not be placed in them.
	Non-PWI Waters		12	-	11	-	
	Impaired Waters		2	-	3	-	

Relative Merits		Cedar Bend WMA Variation				Notes
Factor	Element	Proposed Blue / Orange Route (24.7 miles)	Cedar Bend WMA Variation (19.5 miles)	Cedar Bend WMA Variation (19.5 miles)		
	ROI	Count / Acres	Percent of ROI	Count / Acres	Percent of ROI	
Water Resources	Floodplains	0	0.0%	32	6.7%	The Cedar Bend WMA Variation would potentially impact a FEMA-designated floodplain as it would require construction and placement of transmission structures within Zone A of two floodplain areas. Impacts to floodplains are expected to be minimal (pg. 298).
	NWI Wetlands	466	77.8%	154	32.4%	The Blue/Orange Route would potentially impact three times as many acres of NWI-mapped wetlands and the Cedar Bend WMA Variation. While direct, adverse impacts to forested and shrub wetlands are permanent and may change wetland functions within the ROW, they are expected to be minimal because of the amount of surrounding forested and shrub wetlands in the region (pg. 299).
Vegetation	Boreal Flooded & Swamp Forest	338	56.4%	117	24.6%	The Blue/Orange Route contains a greater amount of forest land and Cedar Bend Variation contains a greater amount of agricultural land. While direct, adverse impacts to forested areas would be long-term, contiguous forest is abundant in the region surrounding the Project (pg. 300).
	Boreal Forest	110	16.4%	57	12.0%	
	Cool Temperate Forest	57	6.2%	28	5.9%	
	Eastern Flooded & Swamp Forest	56	9.7%	64	13.5%	
	Herbaceous Agricultural	41	6.8%	186	39.1%	
	Other	15	2.5%	23	4.8%	
Wildlife	WMA's	44	7.3%	0	0.0%	The Blue/Orange Route contains more acres of WMA and crosses one DNR state lake. Both Alternatives contain similar amounts of Grassland Bird Conservation Areas, however, ongoing vegetation management of the ROW in early successional vegetative state, would be compatible with grassland bird species habitat requirements (pg. 302).
	Shallow Lakes	1	0.2%	0	0.0%	
	Grassland Bird Conservation Areas	50	8.4%	10	2.1%	
Rare and Unique Natural Resources	Rare Species	2	-	0	-	The Blue/Orange Route is located within one mile of two documented vascular plants. Surveys will be performed on the final 200-foot ROW to determine if any of these species are present within the permitted ROW. Any indirect impacts to rare species from the proposed Project are expected to be minimal because of the amount of surrounding forested habitat and woody vegetation. Through use of Applicant proposed avoidance and minimization measures, direct impacts to rare species are not expected (pg. 304).
	State Rare Communities MBS Sites of Biodiversity High Conservation Value Forest	43	7.2%	0	0.0%	The Blue/Orange Route contains the most MBS Sites of Biodiversity, HCVF, and MBS Native Plant Communities.
	200 feet	8	1.3%	0	0.0%	

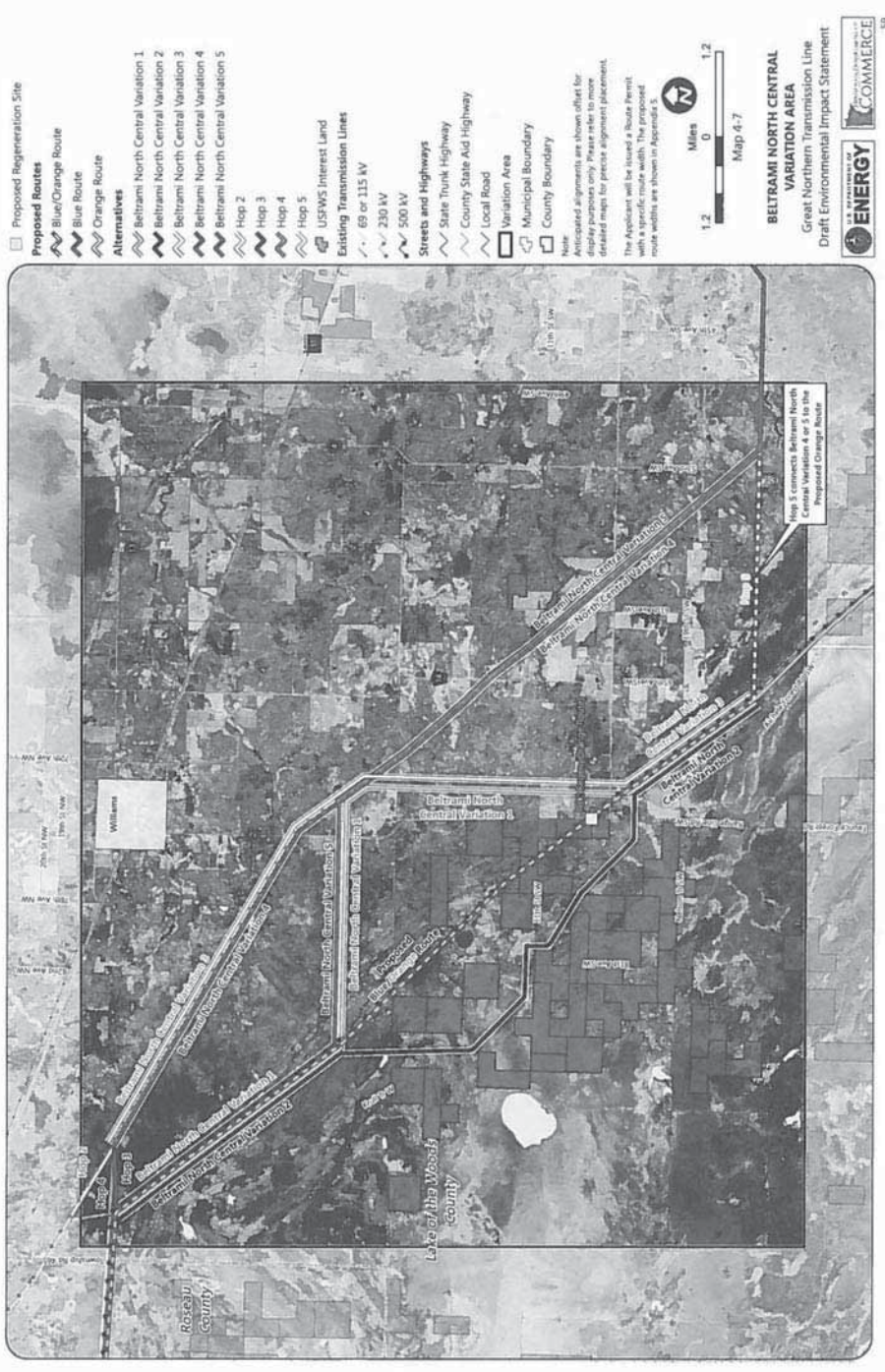
Relative Merits		Cedar Bend WMA Variation				Notes
Factor	Element	Proposed Blue / Orange Route (24.7 miles)		Cedar Bend WMA Variation (19.5 miles)		
		Count / Acres	Percent of ROI	Count / Acres	Percent of ROI	
Corridor Sharing	MBS Native Plant Communities	22	3.7%	0	0.0%	
	Paralleling Existing Infrastructure	-	-100.0%	-	100.0%	Both Alternatives parallel existing transmission lines for 100% of their lengths.
Electrical System Reliability						Both Alternatives parallel one existing Manitoba — Minnesota tie line for their entire length, but the Cedar Bend WMA Variation would establish two new crossings of the existing 500 kV tie line that are not necessary for the Blue/Orange Route and is also routed unacceptably close to at least two existing transmission substations.
						The Blue/Orange Route would cost the most to construct. Cost for the Cedar Bend WMA have been updated since the initial data request.
Cost	Total Cost	\$27,107,650	-	\$23,202,312	-	



Factor	Relative Merits		Beltrami North Variations						Notes
	Element	ROI	Proposed Blue / Orange Route (16.5 miles)		Beltrami North Variation 1 (15.8 miles)		Beltrami North Variation 2 (19.7 miles)		
			Count / Acres	Percent of ROI	Count / Acres	Percent of ROI	Count / Acres	Percent of ROI	
Aesthetics	Residences	1,500 feet	3	-	6	-	1	-	Variation 1 would potentially impact more residences than the other Alternatives.
	Historic Architectural Sites	5,280 feet	0	-	0	-	2	-	Variation 2 has a higher potential to impact 2 known architectural sites within 5,280 feet; however, the permitted Route width will be less than 5,280 feet so some sites may not be impacted.
	Trails	1,500 feet	2	-	2	-	2	-	All Alternatives would cross two snowmobile trails.
	Land Use Compatibility								
Human Settlement	Dominant Land Cover Type	1,500 feet	5,961 ac	97.0%	5,391 ac	91.4%	7,190 ac	98.5%	All Alternatives' major land cover type is Forested and/or Swamp. All Alternatives would result in a long-term change in land use for areas currently forested and/or swamp land, but these changes would be limited in extent, and there would still be extensive forest and swamp lands in the surrounding area, so these changes are expected to have a minimal impact on land use (pg. 311).
	Land Ownership	200 feet	400 acres total		383 acres total		478 acres total		Variation 2 contains more acres of public land than the other Alternatives and the fewest acres of private land.
	Private		372	93.0%	287	77.5%	462	96.7%	
Land-Based Economies	Agriculture	1,500 feet	84	1.4%	358	6.1%	22	0.3%	Variation 1 would potentially impact four times as many acres of agricultural land than the Blue/Orange Route.
	Forestry	200 feet	372	93.0%	291	76.0%	462	96.7%	Variation 2 contains the most acres of State Forest; Variation 1 contains the fewest.
	Mining & Mineral Leases	200 feet	97	24.3%	97	25.3%	152	31.6%	Variation 2 would potentially impact more mining and mineral lease lands than the Blue/Orange Route and Variation 1.
Archaeology and Historic Architectural Resources	Historic Architectural Sites	5,280 feet	0	-	0	-	2	-	Variation 2 has a higher potential to impact two known architectural sites within 5,280 feet; however, the permitted Route width will be less than 5,280 feet so some sites may not be impacted. Variation 2 also has a higher potential to impact two known archaeological sites within 1,500 feet.
	Archaeological Sites	1,500 feet	0	-	0	-	2	-	
	PWI Waters		4	-	9	-	3	-	All Alternatives would cross a number of waterbodies; however, it is anticipated that these crossings are spannable (crossings would be less than the average spanning length of 1,250 feet) and structures would not be placed in them.
Water Resources	Non-PWI Waters		7	-	4	-	12	-	
	Impaired Waters		2	-	6	-	2	-	
	Floodplains	Crossings or 200 feet	0	0.0%	0	0.0%	0	0.0%	No Alternatives would impact FEMA-designated floodplains.
	NWI Wetlands		323	80.8%	294	76.8%	381	81.9%	All Alternatives would potentially impact a similar amount of NWI-mapped wetlands. While direct, adverse impacts to forested and shrub wetlands are permanent and may change wetland functions within the ROW, they are expected to be minimal because of the amount of surrounding forested and shrub wetlands in the region (pg. 316).

Factor	Relative Merits Element	ROI	Beltrami North Variations						Notes
			Proposed Blue / Orange Route (16.5 miles)		Beltrami North Variation 1 (16.8 miles)		Beltrami North Variation 2 (19.7 miles)		
			Count / Acres	Percent of ROI	Count / Acres	Percent of ROI	Count / Acres	Percent of ROI	
Vegetation	North American Boreal Flooded & Swamp Forest	200 feet	242	60.5%	221	57.7%	300	62.8%	All Alternatives would potentially impact a similar amount of forested land. While direct, adverse impacts to forested areas would be long-term, contiguous forest is abundant in the region surrounding the Project (pg. 318).
	North American Boreal Forest		94	23.5%	84	21.9%	117	24.5%	
	Eastern North American Cool Temperate Forest		27	6.8%	24	6.3%	21	4.4%	
	Eastern North American Flooded & Swamp Forest		26	6.5%	36	9.9%	35	7.3%	
	Other		11	2.8%	54	14.1%	40	8.4%	
	Shallow Lakes		1	-	0	-	1	-	
Wildlife	Important Bird Areas	200 feet	0	0.0%	0	0.0%	23	4.8%	Variation 2 contains more acres of land designated as an Important Bird Area and the Blue/Orange Route and Variation 2 both cross one DNR Shallow Lake. Short-term indirect impacts are expected to be minimal because of the large amount of similar habitat in the surrounding region, and the long-term direct impacts are expected to be minimized through use of Applicant-proposed minimization measures (Section 2.13) (pg. 319).
	Rare Species	1 mile (aquatic species not included)	2	-	1	-	7	-	Variation 2 is located within one mile of seven documented vascular plants. Surveys will be performed on the final 200-foot ROW to determine if any of these species are present within the permitted ROW. Any indirect impacts to rare species from the proposed Project are expected to be minimal because of the amount of surrounding forested habitat and woody vegetation. Through use of Applicant proposed avoidance and minimization measures, direct impacts to rare species are not expected (pg. 322).
Rare and Unique Natural Resources	State Rare Communities		0	0.0%	6	1.6%	30	6.3%	Variation 2 contains the most amount of MBS Sites of Biodiversity; Blue/Orange has the fewest. All Alternatives contain relatively few or no acres of HCYF and MBS Native Plant Communities.
	MBS Sites of Biodiversity		8	2.0%	0	0.0%	8	1.7%	
	High Conservation Value Forest		0	0.0%	0	0.0%	8	1.7%	
	MBS Native Plant Communities		0	0.0%	0	0.0%	8	1.7%	

Relative Merits		Beltrami North Variations						Notes
Factor	Element	Proposed Blue / Orange Route (16.6 miles)	Beltrami North Variation 1 (15.6 miles)	Beltrami North Variation 2 (19.7 miles)	Beltrami North Variation 1 (15.6 miles)	Beltrami North Variation 2 (19.7 miles)	Notes	
		Count / Acres	Count / Acres	Count / Acres	Percent of ROI	Percent of ROI	Percent of ROI	
Corridor Sharing	Paralleling Existing Infrastructure	-	-	-	100.0%	72.0%	53.0%	The Blue/Orange Route parallels existing transmission lines for 100% of its length; Variation 1 for 72%; and Variation 2 for 53%. All three Alternatives share a similar corridor for most of their lengths; when that similar corridor is removed from consideration; Variation 2 would not parallel any existing transmission lines.
Electrical System Reliability		-	-	-	-	-	-	All Alternatives all parallel one existing Manitoba - Minnesota tie line for a significant part of their length.
Cost	Total Cost	\$18,054,370	\$19,591,609	\$23,531,072	-	-	-	Variation 2 would cost the most to construct. Cost for Variation 1 have been updated since the initial data request.



Factor	Element	ROI	Beltrami North Central Variations						Notes						
			Proposed Blue Orange Route (11.6 miles)	Beltrami North Central Variation 1 (13.7 miles)	Beltrami North Central Variation 2 (12.6 miles)	Beltrami North Central Variation 3 (12.2 miles)	Beltrami North Central Variation 4 (13.5 miles)	Beltrami North Central Variation 5 (15.9 miles)							
			Count/Acres	Percent of ROI	Count/Acres	Percent of ROI	Count/Acres	Percent of ROI	Count/Acres	Percent of ROI	Count/Acres	Percent of ROI			
Human Settlement	Aesthetics	1,500 feet	3	-	2	-	4	-	10	-	8	-	Beltrami North Variation 4 would potentially impact the most residences within 1,500 feet.		
	Historic Architectural	5,280 feet	0	-	0	-	0	-	1	-	1	-	Variations 4 and 5 have a potential to impact one known historic site within 5,280 feet; however, the permitted Route width will be within 5,280 feet to known sites may not be impacted.		
	Land Use Compatibility	1,500 feet	1	-	1	-	1	-	1	-	1	-	All Alternatives would cross one known historic site.		
	Dominant Land Cover Type	1,500 feet	4,304 ac	98.7%	5,005 ac	97.7%	4,533 ac	98.8%	4,480 ac	97.2%	4,974 ac	92.0%	6,219 ac	92.9%	All Alternatives major land cover type is Forested and/or Swamp. All Alternatives would result in a long-term change in land use for areas currently forested and/or swamp land, but these changes would be limited in extent, and there would still be extensive forest cover. The amount of forest cover that would be impacted is expected to have a minimal impact on land use (pg. 336).
	Land Ownership	200 feet	281 acres total	332 acres total	332 acres total	296 acres total	327 acres total	364 acres total	354 acres total	327 acres total	354 acres total	364 acres total	354 acres total	All Alternatives contain similar amounts of public land.	
	Public	200 feet	242	86.1%	237	71.4%	56	83.8%	184	62.2%	178	54.4%	230	63.3%	
	Private	200 feet	39	13.9%	95	28.6%	50	18.4%	112	37.9%	149	45.5%	154	42.4%	
	Agriculture	1,500 feet	1	0.0%	49	1.0%	0	0.0%	49	1.1%	276	5.4%	277	4.9%	The BlueOrange Route and Variation 2 would potentially impact the fewest acres of agricultural land whereas Variations 4 and 5 would impact the most acres of agricultural land.
	Forestry	200 feet	224	79.7%	237	71.4%	53	83.5%	184	62.2%	178	54.4%	230	63.3%	All Alternatives contain similar amounts of State Forest land.
	Mineral Leases	200 feet	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	No Alternatives would impact any mining or mineral leases.
Historic Architectural	5,280 feet	0	-	0	-	0	-	0	-	1	-	1	-	Variations 4 and 5 have a potential to impact one known historic site within 5,280 feet; however, the permitted Route width will be within 5,280 feet to known sites may not be impacted.	
Archaeological	1,500 feet	0	-	0	-	0	-	0	-	0	-	0	-	All Alternatives would impact any known archaeological sites within 1,500 feet.	
Stress	1,500 feet	0	-	0	-	0	-	0	-	0	-	0	-	All Alternatives would cross a number of waterbodies; however, it is anticipated that these crossings are spammable (crossings would be less than the average spanning length of 1,250 feet) and structures would not be placed in them.	
			3	-	4	-	3	-	4	-	7	-	All Alternatives would cross FEMA-designated floodplains; however, these crossings are spammable and structures would not be placed within the floodplain.		
			1	0.4%	2	0.6%	3	-	3	-	3	0.6%	All Alternatives would cross a number of waterbodies; however, it is anticipated that these crossings are spammable (crossings would be less than the average spanning length of 1,250 feet) and structures would not be placed within the floodplain.		
			200	96.7%	191	94.5%	108	94.5%	108	94.5%	108	92.7%	All Alternatives would potentially impact a similar amount of NOD-eligible wetlands. While direct adverse impacts to forested areas within the ROW, they are expected to be minimal because of the amount of surrounding forested and shrub wetlands in the region (pg. 337).		
			107	62.9%	160	62.9%	178	62.9%	160	62.9%	160	44.6%	All Alternatives would potentially impact similar amounts of forested land. While direct adverse impacts to forested areas would be long-term, contiguous forest is abundant in the region surrounding the Project (pg. 338).		
			88	23.5%	138	31.3%	78	23.5%	103	23.5%	115	31.6%			
			28	10.7%	34	10.2%	42	10.2%	34	10.2%	68	15.1%			
			3	2.6%	1	4.2%	7	2.6%	15	4.2%	31	8.1%			

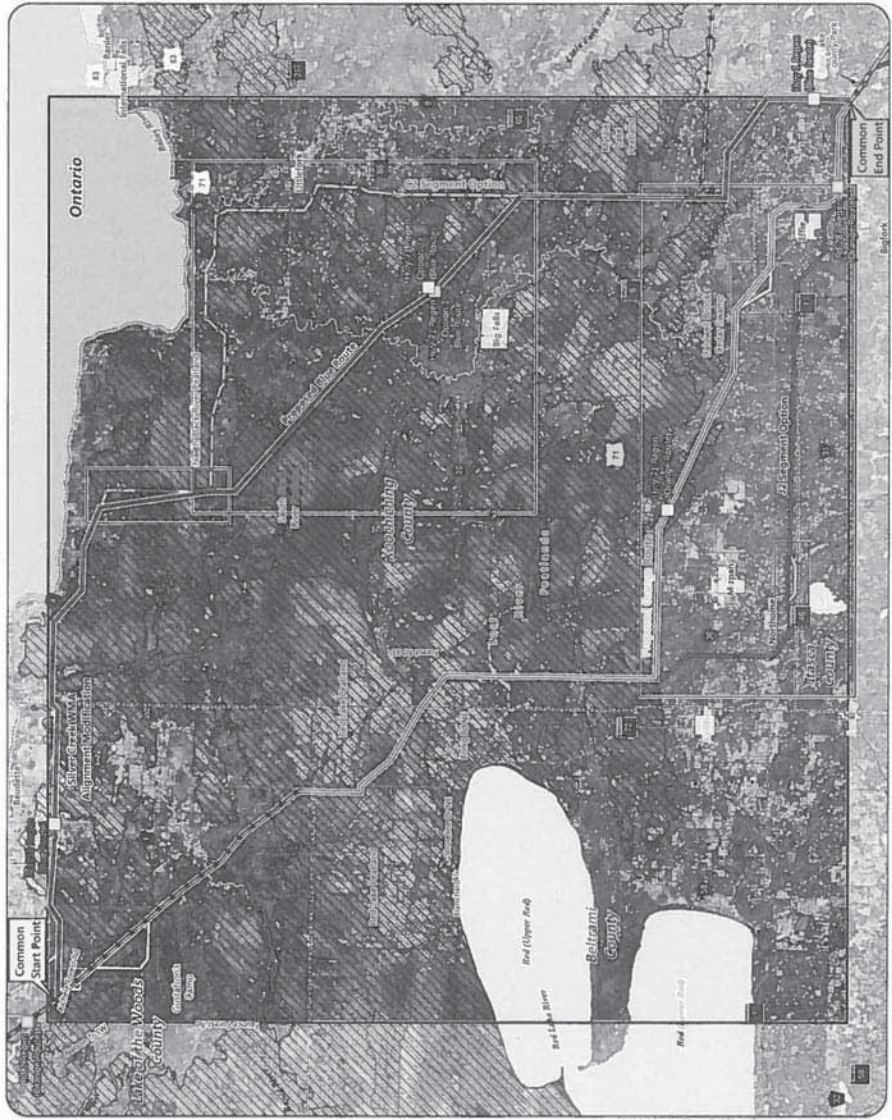
- Proposed Regeneration Site
- Proposed Routes**
- Blue/Orange Route
- Blue Route
- Orange Route
- C2 Segment Option
- J2 Segment Option
- Alternatives**
- Silver Creek WMA Alignment Modification
- Scientific and Natural Area (SNA)
- Peatland Complex
- Existing Transmission Lines
- 69 or 115 kV
- 230 kV
- 500 kV
- Streets and Highways
- US Highway
- State Trunk Highway
- County State Aid Highway
- Local Road
- Variation Area
- Municipal Boundary
- County Boundary
- International Boundary

Note:
Anticipated alignments are shown offset for display purposes only. Please refer to more detailed maps for precise alignment placement.
The Applicant will be issued a Route Permit with a specific route width. The proposed route widths are shown in Appendix 3.



Map 4-9

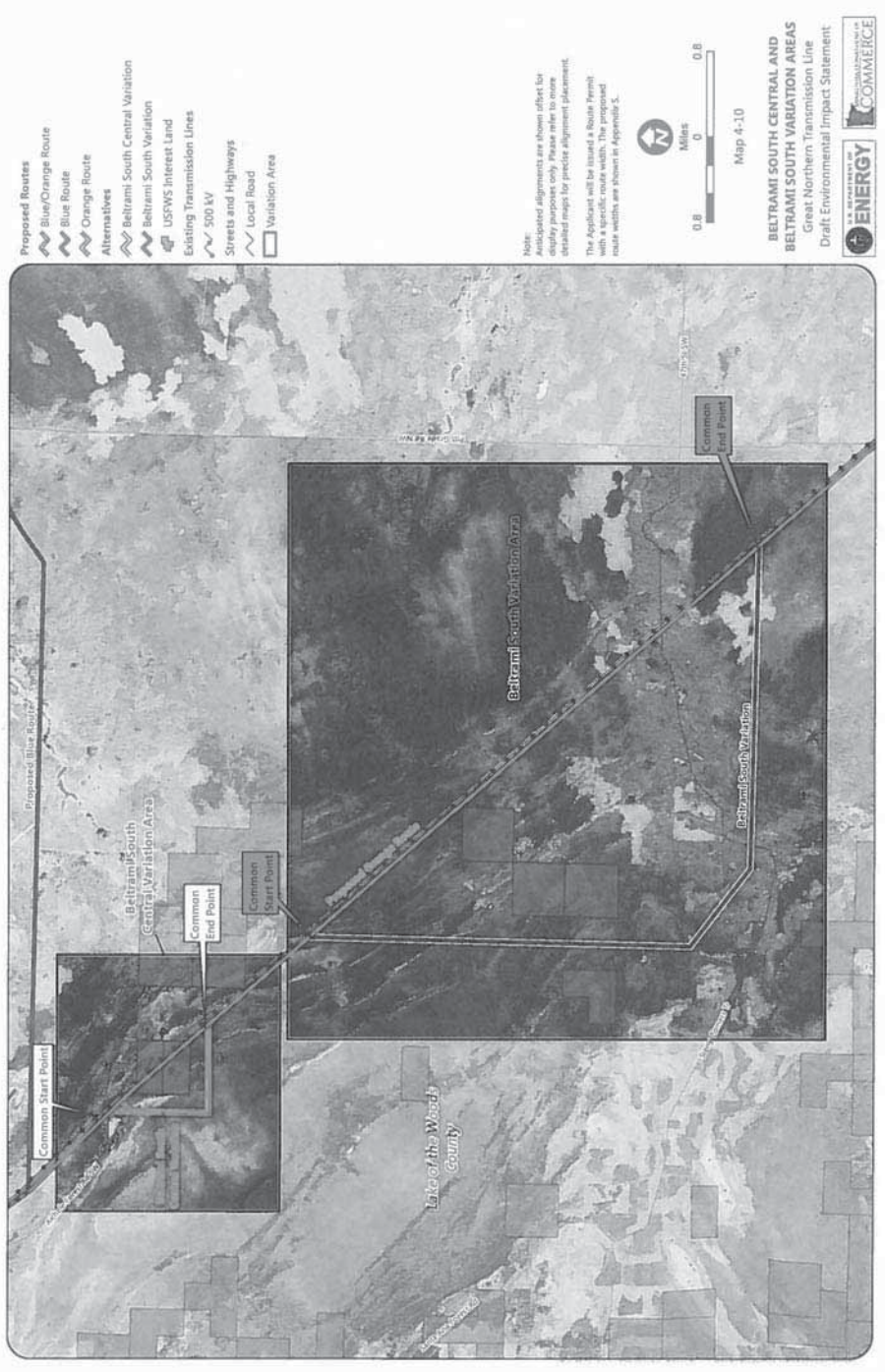
PINE ISLAND VARIATION AREA
Great Northern Transmission Line
Draft Environmental Impact Statement



Factor	Relative Merits		Pine Island Variation Area				Notes
	Element	ROI	Proposed Blue Route (109.8 miles)		Proposed Orange Route (105.4 miles)		
			Count / Acres	Percent of ROI	Count / Acres	Percent of ROI	
	Aesthetics						
	Residences	1,500 feet	14	-	2	-	The Blue Route would potentially impact more residences than the Orange Route.
	Historic Architectural Sites	5,280 feet	2	-	7	-	The Orange Route has a higher potential to impact known historic architectural sites within 5,280 feet; however, the permitted Route width will be less than 5,280 feet so some sites may not be impacted.
	Trails		5		6		Both Alternatives would cross one state trail and one water trail. The Orange Route would cross one more snowmobile trail than the Blue Route.
Human Settlement	Land Use Compatibility						
	Dominant Land Cover Type	1,500 feet	38,203 ac	95.4%	37,665 ac	98.0%	Both Alternatives' major land cover type is Forested and/or Swamp. Both Alternatives would result in a long-term change in land use for areas currently forested and/or swamp land, but these changes would be limited in extent, and there would still be extensive forest and swamp lands in the surrounding area, so these changes are expected to have a minimal impact on land use (pg. 384-385).
	Land Ownership	200 feet	2,862 acres total		2,555 acres total		Both Alternatives contain similar amounts of public and private lands.
	Public		2,299	86.4%	2,328	91.0%	
	Private		363	13.6%	229	9.0%	
	Agriculture	1,500 feet	985	2.5%	305	0.8%	The Blue Route would potentially impact almost three times as many acres of agricultural land.
	Forestry	200 feet	2,291	86.1%	1,960	77.5%	Both Routes contain similar amounts of State Forest lands.
	Mining & Mineral Leases	200 feet	1,205	45.3%	370	14.5%	The Blue Route would potentially impact over three times as many acres of mining and mineral leases than the Orange Route.
	Historic Architectural Sites	5,280 feet	2	-	7	-	The Orange Route has a higher potential to impact known historic architectural sites within 5,280 feet; however, the permitted Route width will be less than 5,280 feet so some sites may not be impacted. The Blue Route is within 1,500 feet of a known archaeological site.
	Archaeological Sites	1,500 feet	1	-	0	-	
Water Resources	PVI Waters		18	-	25	-	Both Alternatives would a similar number of PVI, non-PVI, and impaired waters; however, it is anticipated that these crossings are spannable (crossings would be less than the average spanning length of 1,250 feet) and structures would not be placed in them.
	Non-PVI Waters		48	-	48	-	
	Impaired Waters		1	-	1	-	
	Trout Stream		1	-	0	-	
	Floodplains	Crossings or 200 feet	20	-	11	-	Both Routes would cross FEMA-designated floodplains; however, crossings would be less than the average spanning length of 1,250 feet and structures would not be placed in them.

Relative Merits		Pine Island Variation Area				Notes	
Factor	Element	ROI	Proposed Blue Route (109.8 miles)		Proposed Orange Route (105.4 miles)		
			Count / Acres	Percent of ROI	Count / Acres	Percent of ROI	
Vegetation	NWI Wetlands	200 feet	2,102	76.0%	1,875	73.4%	The Orange Route would potentially impact slightly more acres of NWI-mapped wetlands than the East Bear Lake Variation. While direct, adverse impacts to forested and shrub wetlands are permanent and may change wetland functions within the ROW, they are expected to be minimal because of the amount of surrounding forested and shrub wetlands in the region. (pg. 381)
			1,372	51.5%	1,323	51.8%	
			785	29.5%	789	30.1%	
			396	13.8%	359	14.0%	
Wildlife	WMA's	200 feet	138	5.2%	1,232	48.2%	The Blue Route contains fewer acres of WMA than the Orange Route. Both Alternatives contain a similar amount of land designated as an Important Bird Area. Short-term indirect impacts are expected to be minimal because of the large amount of similar habitat in the surrounding region, and the long-term direct impacts are expected to be minimized through use of Applicant-proposed minimization measures. (Section 2.13 (pp. 385). The Orange Route is within one mile of more than twice as many documented rare species than the Blue Route. Surveys will be performed on the final 200-foot ROW to determine if any rare species are present within the permitted ROW. Any indirect impacts to rare species are expected to be minimal because of the amount of the surrounding habitat. Through use of Applicant-proposed avoidance and minimization measures, direct impacts to rare species are not expected (pg. 387).
			49	1.8%	274	10.7%	
			1,405	52.8%	1,722	67.4%	
Rare and Unique Natural Resources	Rare Species	1 mile (aquatic species not included)	6	-	13	-	Both Routes contain few acres of Ecologically Important Lowland Conifers; however, the Blue Route would pass through more acres than the Orange Route. Both Routes contain similar amounts of MBS Sites of Biodiversity The Blue Route parallels existing transmission lines for 39% of its length; the Orange Route for 23% of its length.
			29	1.1%	5	0.2%	
Corridor Sharing	Slate Rare Communities Ecologically Important Lowland Conifers MBS Sites of Biodiversity Paralleling Existing Infrastructure	-	1,514	56.9%	1,639	64.1%	
			-	39.0%	-	23.0%	

Relative Merits		Pine Island Variation Area				
Factor	Element	Proposed Blue Route (109.8 miles)		Proposed Orange Route (106.4 miles)		Notes
		Count / Acres	Percent of ROI	Count / Acres	Percent of ROI	
Electrical System Reliability		-	-	-	-	Both proposed routes parallel one existing Manitoba - Minnesota line for a significant part of their length. The Blue Route also establishes two new crossings of the existing 500 kV tie line that are not necessary for the Orange Route.
Cost	Total Cost	\$118,676,237	-	\$118,672,041	-	The Blue Route would cost the most to construct. The cost of the Blue Route has been updated since the initial data request.

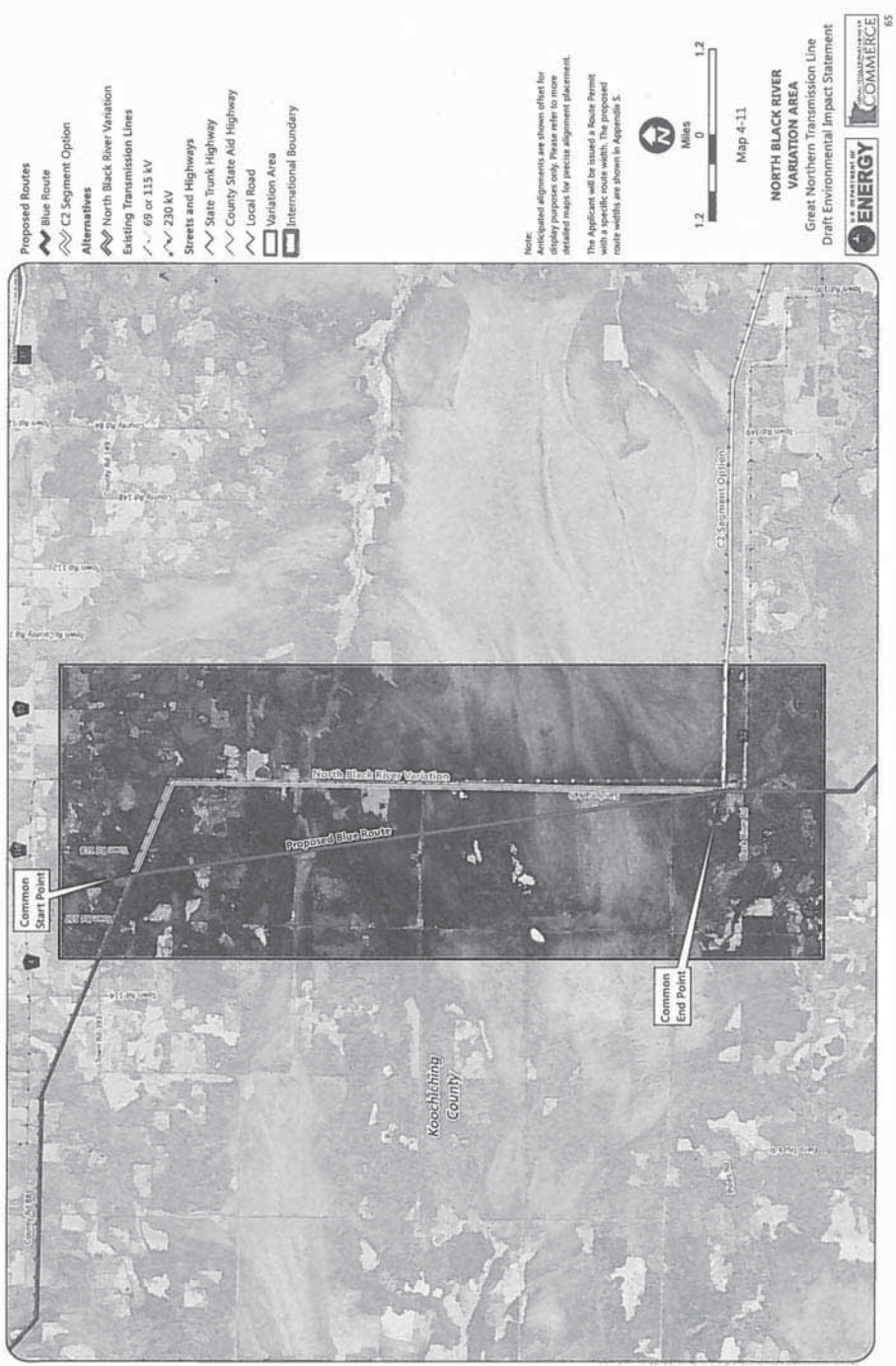


Factor	Element	ROI	Proposed Orange Route (1.2 miles)		Beltrami South Central Variations		Notes
			Count / Acres	Percent of ROI	Count / Acres	Percent of ROI	
Aesthetics	Residences	1,500 feet	0	-	0	-	Neither Alternative would impact residences within 1,500 feet.
	Historic Architectural Sites	5,280 feet	0	-	0	-	Neither Alternative would impact any known architectural sites within 5,280 feet.
	Trails	1,500 feet	1	-	1	-	Both Alternatives would cross one snowmobile trail.
Human Settlement	Land Use Compatibility						
	Dominant Land Cover Type	1,500 feet	598 ac	98.8%	779 ac	99.2%	Both Alternatives' major land cover type is Forested and/or Swamp. Both Alternatives would result in a long-term change in land use for areas currently forested and/or swamp land, but these changes would be limited in extent, and there would still be extensive forest and swamp lands in the surrounding area, so these changes are expected to have a minimal impact on land use (pg. 402).
Land-Based Economies	Land Ownership	200 feet	29 acres total		41 acres total		Both Alternatives are entirely located within public lands and neither would impact private land owners.
	Public		30	103.1%	43	104.4%	
	Private		0	0.0%	0	0.0%	
Land-Based Economies	Agriculture	1,500 feet	0	0.0%	0	0.0%	Neither Alternative would impact agricultural land.
	Forestry		30	103.1%	43	104.4%	Both Alternatives are entirely located within State Forest lands.
	Mining & Mineral Leases	200 feet	0	0.0%	0	0.0%	Neither Alternative would impact any mining or mineral leases.
Archaeology and Historic Architectural Resources	Historic Architectural Sites	5,280 feet	0	-	0	-	Neither Alternative would impact any known historic architectural sites or archaeological sites.
	Archaeological Sites	1,500 feet	0	-	0	-	
	PWI Waters		0	-	0	-	
Water Resources	Non-PWI Waters		0	-	0	-	Neither Alternative would cross any PWI, non-PWI, or impaired waters.
	Impaired Waters		0	-	0	-	
	Floodplains	Crossings or 200 feet	0	-	0	-	Neither Alternative would impact FEMA-designated floodplains.
Vegetation	NWI Wetlands		30	103.1%	43	104.4%	Both Alternatives would potentially impact a similar amount of NWI-mapped wetlands. While direct, adverse impacts to forested and shrub wetlands are permanent and may change wetland functions within the ROW, they are expected to be minimal because of the amount of surrounding forested and shrub wetlands in the region (pg. 405).
	North American Boreal Flooded & Swamp Forest	200 feet	24	82.5%	32	77.7%	Both Alternatives would potentially impact similar amounts of forest land. While direct, adverse impacts to forested areas would be long-term, contiguous forest is abundant in the region surrounding the Project (pg. 406).
	Other		5	17.2%	9	21.8%	

Relative Merits		Beltrami South Central Variations			Notes
Factor	Element	Proposed Orange Route (1.2 miles) Count / Acres	Beltrami South Central Variation (1.7 miles) Count / Acres	Percent of ROI	
Wildlife	Important Bird Areas	30	43	104.4%	Both Alternatives are entirely located within lands designated as Important Bird Areas. Short-term indirect impacts are expected to be minimal because of the large amount of similar habitat in the surrounding region, and the long-term direct impacts are expected to be minimized through use of Applicant-proposed minimization measures (Section 2.13) (pg. 408).
	Rare Species	4	4	-	
Rare and Unique Natural Resources	1 mile (aquatic species not included)	4	4	-	Both Alternatives would be located within one mile of four vascular plants. Surveys will be performed on the final 200-foot ROW to determine if any rare species are present within the permitted ROW. Any indirect impacts to rare species are expected to be minimal because of the amount of the surrounding habitat. Through use of Applicant-proposed avoidance and minimization measures, direct impacts to rare species are not expected (pg. 408).
	State Rare Communities	30	43	104.4%	
Corridor Sharing	MBS Sites of Biodiversity	-	-	100.0%	Both Alternatives contain similar amounts of MBS Sites of Biodiversity. The Orange Route parallels existing transmission lines for 100% of its length. The Orange Route parallels one existing Manitoba – Minnesota tie line for its entire length while the Variation does not parallel any existing Manitoba – Minnesota tie lines. Beltrami South Central Variation would cost the most to construct. These costs have been updated since the initial information request.
	Paralleling Existing Infrastructure	-	-	-	
Electrical System Reliability	Paralleling Existing Infrastructure	-	-	-	
	Total Cost	\$1,214,573	\$1,440,123	-	

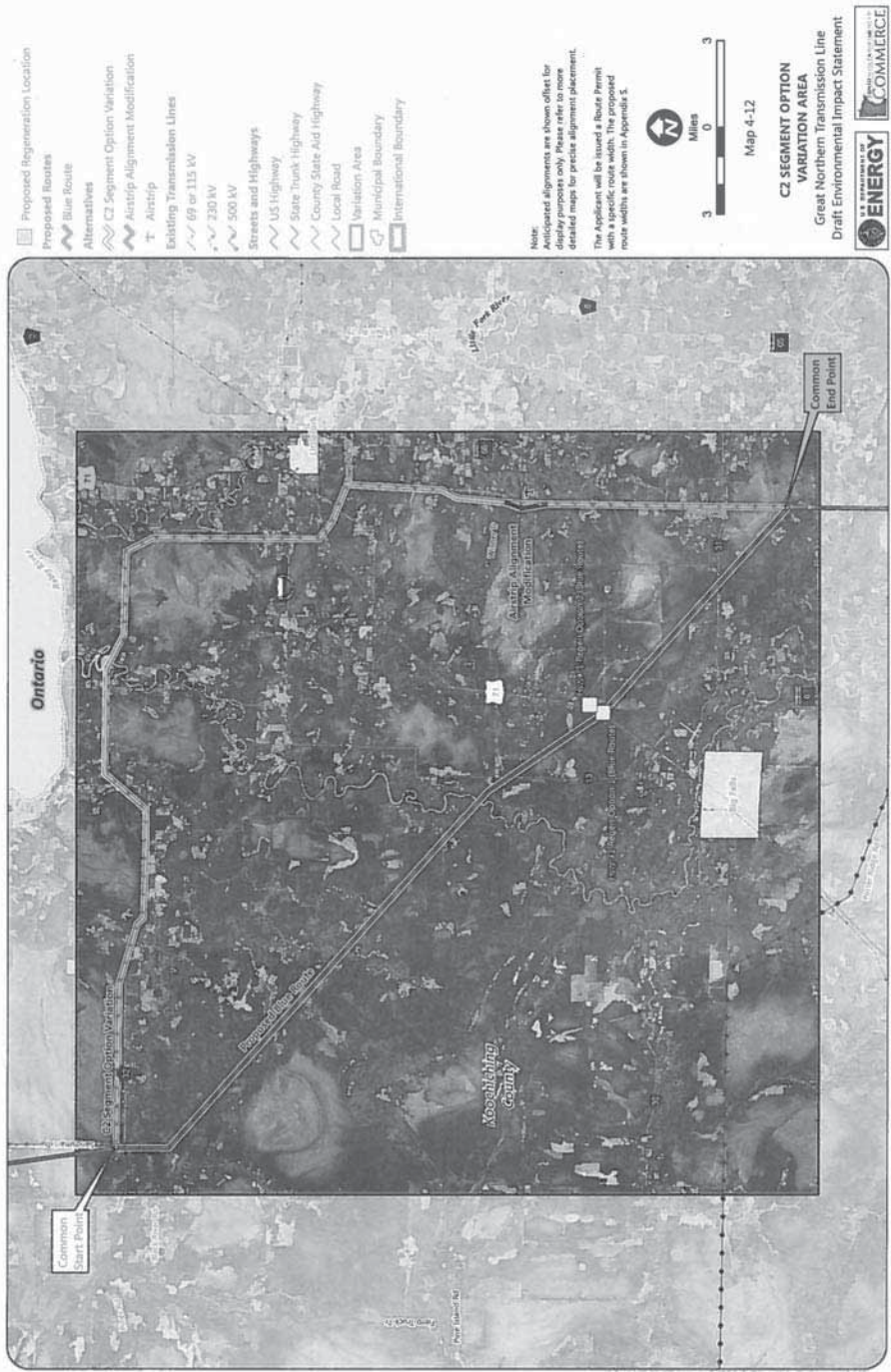
Factor	Relative Merits		Beltrami South Variations				Notes
	Element	ROI	Proposed Orange Route (5.6 miles)		Beltrami South Variation (7.5 miles)		
			Count / Acres	Percent of ROI	Count / Acres	Percent of ROI	
Human Settlement	Aesthetics						
	Residences	1,500 feet	0	-	0	-	Neither Alternative would impact residences within 1,500 feet.
	Historic Architectural Sites	5,280 feet	0	-	0	-	Neither Alternative would impact any known architectural sites within 5,280 feet.
	Trails	1,500 feet	0	-	0	-	Neither Alternative would cross any trails.
	Land Use Compatibility						
	Dominant Land Cover Type	1,500 feet	2,185 ac	99.5%	2,887 ac	99.7%	Both Alternatives' major land cover type is Forested and/or Swamp. Both Alternatives would result in a long-term change in land use for areas currently forested and/or swamp land, but these changes would be limited in extent, and there would still be extensive forest and swamp lands in the surrounding area, so these changes are expected to have a minimal impact on land use (pg. 415).
Land-Based Economies	Land Ownership	200 feet	136 acres total		182 acres total		Both Alternatives are entirely located within public lands and neither would impact private land owners.
	Public		136	100.1%	183	100.7%	
	Private		0	0.0%	0	0.0%	
	Agriculture Forestry	1,500 feet	136	100.1%	183	100.7%	Neither Alternative would impact agricultural land. Both Alternatives are entirely located within State Forest lands.
	Mining & Mineral Leases	200 feet	56	42.7%	287	157.9%	There are more acres of mineral leases within Beltrami South Variation than the total number of acres within the ROW. Regardless, the Beltrami South Variation would potentially impact more mining and mineral leases than the Orange Route.
Archaeology and Historic Architectural Resources	Historic Architectural Sites	5,280 feet	0	-	0	-	Neither Alternative would impact any known historic architectural sites or archaeological sites.
	Archaeological Sites	1,500 feet	0	-	0	-	
	PWI Waters		0	-	0	-	
Water Resources	Non-PWI Waters		0	-	0	-	Neither Alternative would cross any PWI, non-PWI, or impaired waters.
	Impaired Waters		0	-	0	-	
	Floodplains	Crossings or 200 feet	0	-	0	-	Neither Alternative would impact FEMA-designated floodplains.
	NWI Wetlands		136	100.1%	183	100.7%	Both Alternatives would potentially impact a similar amount of NWI-mapped wetlands. While direct, adverse impacts to forested and shrub wetlands are permanent and may change wetland functions within the ROW, they are expected to be minimal because of the amount of surrounding forested and shrub wetlands in the region (pg. 418).

Relative Merits		Beltrami South Variations				Notes
Factor	Element	Proposed Orange Route (5.6 miles)	Beltrami South Variation (7.5 miles)	Beltrami South Variation (7.5 miles)	Notes	
	ROI	Count / Acres	Percent of ROI	Count / Acres	Percent of ROI	
Vegetation	200 feet	114	89.9%	139	76.5%	Both Alternatives would potentially impact similar amounts of forest land. While direct, adverse impacts to forested areas would be long-term, contiguous forest is abundant in the region surrounding the Project (pg. 420).
		16	11.8%	35	19.3%	
		22	16.2%	43	23.7%	
Wildlife	200 feet	136	100.1%	183	100.7%	Both Alternatives are entirely located on lands designated as Important Bird Areas. Short-term indirect impacts are expected to be minimal because of the large amount of similar habitat in the surrounding region, and the long-term direct impacts are expected to be minimized through use of Applicant-proposed minimization measures (Section 2.13) (pg. 420).
		1	-	2	-	Beltrami South Variation is within one mile of two vascular plants; the Orange Route is within one mile of one vascular plant. Surveys will be performed on the final 200-foot ROW to determine if any rare species are present within the permitted ROW. Any indirect impacts to rare species are expected to be minimal because of the amount of the surrounding habitat. Through use of Applicant-proposed avoidance and minimization measures, direct impacts to rare species are not expected (pg. 422).
Rare and Unique Natural Resources	1 mile (aquatic species not included)	120	88.4%	161	88.6%	Both Alternatives contain similar amounts of MBS Sites of Biodiversity.
		-	100.0%	-	-	The Orange Route parallels existing transmission lines for 100% of its length.
Corridor Sharing	-	-	-	-	-	The Orange Route parallels one existing Manitoba – Minnesota tie line for its entire length while the Beltrami South Variation does not parallel any existing Manitoba – Minnesota tie lines.
		\$5,600,518	-	\$4,177,955	-	Beltrami South Variation would cost the most to construct. These costs have been updated since the initial information request.
Cost	Total Cost					



Factor	Element	ROI	North Black River Variations				Notes
			Proposed Blue Route (8.4 miles)		North Black River Variation (9.2 miles)		
			Count / Acres	Percent of ROI	Count / Acres	Percent of ROI	
Human Settlement	Aesthetics						
	Residences	1,500 feet	1	-	5	-	North Black River Variation would potentially impact more residences than the Blue Route.
	Historic Architectural Sites	5,280 feet	0	-	0	-	Neither Alternative would impact any known architectural sites within 5,280 feet.
	Trails	1,500 feet	2	-	2	-	Both Alternatives would cross two snowmobile trails.
	Land Use Compatibility						
	Dominant Land Cover Type	1,500 feet	3,190 ac	96.4%	3,296 ac	94.3%	Both Alternatives' major land cover type is Forested and/or Swamp. Both Alternatives would result in a long-term change in land use for areas currently forested and/or swamp land, but these changes would be limited in extent, and there would still be extensive forest and swamp lands in the surrounding area, so these changes are expected to have a minimal impact on land use (pg. 428).
	Land Ownership	200 feet	204 acres total		223 acres total		Both Alternatives contain a similar amount of public lands; however, the Blue Route would not impact any private land owners.
	Public		188	92.3%	158	70.9%	
	Private		16	7.9%	65	29.1%	
	Agriculture	1,500 feet	0	0.0%	69	2.0%	The Blue Route would not impact agricultural land.
Land-Based Economies	Forestry	200 feet	188	92.3%	156	70.0%	Both Alternatives contain a similar amount of State Forest land.
	Mining & Mineral Leases	200 feet	405	188.9%	362	162.3%	There are more acres of mineral leases within both Alternatives than the total number of acres within the 200-foot ROW.
	Historic Architectural Sites	5,280 feet	0	-	0	-	Neither Alternative would impact any known historic architectural sites or archaeological sites.
	Archaeological Sites	1,500 feet	0	-	0	-	
Archaeology and Historic Architectural Resources	PWV Waters		0	-	0	-	Both Alternatives would cross few non-PWV waters; however, it is anticipated that these crossings are spannable (crossings would be less than the average spanning length of 1,250 feet) and structures would not be placed in them.
	Non-PWV Waters		4	-	4	-	
	Impaired Waters		0	-	0	-	
	Floodplains		0	-	0	-	Neither Alternative would impact FEMA-designated floodplains.
	NWI Wetlands		193	94.8%	198	88.8%	Both Alternatives would potentially impact a similar amount of NWI-mapped wetlands. While direct, adverse impacts to forested and shrub wetlands are permanent and may change wetland functions within the ROW, they are expected to be minimal because of the amount of surrounding forested and shrub wetlands in the region (pg. 434).
Water Resources	Crossings or 200 feet						

Relative Merits		North Black River Variations				Notes
Factor	Element	Proposed Blue Route (8.4 miles)		North Black River Variation (9.2 miles)		Notes
		Count / Acres	Percent of ROI	Count / Acres	Percent of ROI	
Vegetation	North American Boreal Flooded & Swamp Forest	144	70.7%	114	51.1%	Both Alternatives would potentially impact a similar amount of forest land. While direct adverse impacts to forested areas would be long-term, contiguous forests is abundant in the region surrounding the Project (pg. 435).
	North American Boreal Forest	47	23.1%	49	22.0%	
	Eastern North American Flooded Swamp & Forest	12	5.9%	29	13.0%	
	Other	60	29.5%	109	48.9%	
Wildlife	Important Bird Areas	191	93.8%	214	96.0%	Both Alternatives contain a similar amount of land designated as an Important Bird Area. Short-term indirect impacts are expected to be minimal because of the large amount of similar habitat in the surrounding region, and the long-term direct impacts are expected to be minimized through use of Applicant-proposed minimization measures (Section 2.13) (pg. 436).
	Rare Species	0	-	0	-	Neither Alternative is located within one mile of a documented rare species. Surveys will be performed on the final 200-foot ROW to determine if any rare species are present within the permitted ROW. Any indirect impacts to rare species are expected to be minimal because of the amount of the surrounding habitat. Through use of Applicant-proposed avoidance and minimization measures, direct impacts to rare species are not expected (pg. 437).
Rare and Unique Natural Resources	Slate Rare Communities	165	81.0%	109	48.9%	Both Alternatives contain similar amounts of MBS Sites of Biodiversity.
	MBS Sites of Biodiversity	-	0.0%	-	100.0%	The North Black River Variations parallels existing transmission lines for 100% of its length.
Corridor Sharing	Paralleling Existing Infrastructure	-	-	-	-	The North Black River Variation parallels one existing Manitoba - Minnesota tie line for its entire length while the Blue Route does not parallel any existing Manitoba - Minnesota tie lines.
	Electrical System Reliability	\$9,893,560	-	\$10,552,560	-	The North Black River Variations would cost the most to construct. This cost has been updated since the initial information request.
Cost	Total Cost:	\$9,893,560	-	\$10,552,560	-	



Factor	Relative Merits		C2 Segment Option Variation Area				Notes
	Element	ROI	Proposed Blue Route (32.8 miles)		C2 Segment Option (46 miles)		
			Count / Acres	Percent of ROI	Count / Acres	Percent of ROI	
Aesthetics	Residences	1,500 feet	0	-	20	-	C2 would potentially impact 20 more residences than the Blue Route.
	Historic Architectural Sites	5,280 feet	0	-	0	-	Neither Alternative would impact any known architectural sites within 5,280 feet.
	Trails	1,500 feet	4	-	3	-	Both Alternatives would cross one water trail and one slate trail. The Blue Route would cross one more snowmobile trail than C2.
Human Settlement	Land Use Compatibility						
	Dominant Land Cover Type	1,500 feet	11,922 ac	98.5%	16,121 ac	95.5%	Both Alternatives' major land cover type is Forested and/or Swamp. Both Alternatives would result in a long-term change in land use for areas currently forested and/or swamp land, but these changes would be limited in extent, and there would still be extensive forest and swamp lands in the surrounding area, so these changes are expected to have a minimal impact on land use (pg. 441-442).
Land-Based Economies	Land Ownership		765 acres total		1,115 acres total		Both Alternatives contain a similar amount of public lands; however, the Blue Route would not impact any private land owners.
	Public	200 feet	797	100.2%	854	58.6%	
	Private	200 feet	0	0.0%	461	41.4%	
Land-Based Economies	Agriculture		0	0.0%	167	1.0%	The Blue Route would not impact agricultural lands whereas C2 would potentially impact 167 acres.
	Forestry	1,500 feet	797	100.2%	274	24.6%	The Blue Route is located entirely within State Forest land.
	Mining & Mineral Leases	200 feet	16	2.0%	67	6.0%	C2 would potentially impact four lines as many mining and mineral leases than the Blue Route.
Archaeology and Historic Architectural Resources	Historic Architectural Sites		0	-	0	-	Neither Alternative would impact any known historic architectural sites or archaeological sites.
	Archaeological Sites	1,500 feet	0	-	0	-	
	PWI Waters		5	-	3	-	Both Alternatives would cross a number of PWI, non-PWI, and impaired waterways, however, it is anticipated that these crossings are spannable (crossings would be less than the average spanning length of 1,250 feet) and structures would not be placed in them.
Water Resources	Non-PWI Waters		12	-	5	-	
	Impaired Waters		1	-	2	-	
	Floodplains	Crossings or 200 feet	8	-	28	-	C2 would potentially impact more acres of FEMA-designated floodplain; however, both Alternatives would require construction and placement of transmission structures in Zone A floodplains of the Black and Big Fork Rivers, respectively (pg. 448).
NW Wetlands		728	91.5%	829	74.3%	Both Alternatives would potentially impact similar amounts of NWH-mapped wetlands. While direct adverse impacts to forested and shrub wetlands are permanent and may change wetland functions within the ROW, they are expected to be minimal because of the amount of surrounding forested and shrub wetlands in the region (pg. 449).	

Relative Merits		C2 Segment Option Variation Area				Notes
Factor	Element	Proposed Blue Route (32.8 miles)		C2 Segment Option (46 miles)		
	ROI	Count / Acres	Percent of ROI	Count / Acres	Percent of ROI	
Vegetation	North American Boreal Flooded & Swamp Forest	484	80.9%	728	65.3%	C2 impacts almost twice as many acres of forest land than the Blue Route. While direct, adverse impacts to forested areas would be long-term, contiguous forest is abundant in the region surrounding the Project (pg. 450).
	North American Boreal Forest	248	31.2%	162	14.5%	
	Eastern North American Flooded Swamp & Forest	50	7.0%	185	16.6%	
	Other	3101	38.1%	397	34.7%	
Wildlife	Important Bird Areas	489	59.0%	406	36.4%	Both Alternatives contain a similar amount of land designated as an Important Bird Area. Short-term indirect impacts are expected to be minimal because of the large amount of similar habitat in the surrounding region, and the long-term direct impacts are expected to be minimized through use of Applicant-proposed minimization measures (Section 2.13) (pg. 452).
	Rare Species	0	-	2	-	C2 is within one mile of two document rare species. Surveys will be performed on the final 200-foot ROW to determine if any rare species are present within the permitted ROW. Any indirect impacts to rare species are expected to be minimal because of the amount of the surrounding habitat. Through use of Applicant-proposed avoidance and minimization measures, direct impacts to rare species are not expected (pg. 453).
Rare and Unique Natural Resources	State Rare Communities					
	Ecological Important Lowland Corridors	7	0.9%	6	0.5%	Both Routes would potentially impact similar amounts of the same DNR Ecologically Important Lowland Corridor stand.
	MBS Sites of Biodiversity	642	80.7%	510	45.7%	Both Alternatives contain similar amounts of MBS Sites of Biodiversity, the Blue Route contains slightly more acres than C2
Corridor Sharing	Paralleling Existing Infrastructure	-	0.0%	-	81.0%	The Blue Route does not parallel existing transmission lines whereas C2 parallels existing transmission for 81% of its length.
	Electrical System Reliability	-	-	-	-	C2 parallels one existing Manitoba - Minnesota tie line for its entire length. The Blue Route does not parallel any existing Manitoba - Minnesota tie lines.
Cost	Total Cost	\$35,769,239	-	-	-	C2 Segment would cost the most to construct.



Factor	Relative Merits Element	J2 Segment Option Variation Area				Notes
		Proposed Orange Route (42.2 miles)		J2 Segment Option (45.2 miles)		
		Count / Acres	Percent of ROI	Count / Acres	Percent of ROI	
Aesthetics	Residences	0	-	6	-	J2 would potentially impact six more residences than the Orange Route.
	Historic Architectural Sites	2	-	7	-	J2 would potentially impact more known historical architectural sites; however, the permitted Route width will be less than 5,280 feet so some sites may not be impacted.
	Scenic Byway	0	-	2	-	J2 would cross Scenic Byways 46 and 58.
	Trails	3	-	5	-	Both Alternatives would cross one state trail; J2 would cross four knowable trails and the Orange Route would cross two.
	Land Use Compatibility					
	Dominant Land Cover Type	15,110 ac	97.4%	15,860 ac	94.1%	Both Alternatives' major land cover type is Forested and/or Swamp. Both Alternatives would result in a long-term change in land use for areas currently forested and/or swamp land, but these changes would be limited in extent, and there would still be extensive forest and swamp lands in the surrounding area, so these changes are expected to have a minimal impact on land use (pg. 459).
	Land Ownership	1,023 acres total		1,096 acres total		Both Alternatives are primarily located on public lands; however, J2 would potentially impact almost three times as many acres of private land than would the Orange Route.
	Public	945	92.4%	868	79.2%	
	Private	78	7.6%	228	20.8%	
	Land-Based Economies	Agriculture	153	1.0%	164	1.0%
Forestry	851	83.2%	715	65.2%	Both Alternatives contain similar amounts of State Forest lands.	
Mining & Mineral Leases	82	8.0%	73	6.7%	Both Alternatives would potentially impact a similar amount of mining and mineral lease land.	
Archaeology and Historic Architectural Resources	Historic Architectural Sites	2	-	7	-	J2 would potentially impact more known historical architectural sites; however, the permitted Route width will be less than 5,280 feet so some sites may not be impacted. Neither Alternative would impact any known archaeological sites.
	Archaeological Sites	0	-	0	-	
	PWI Waters	0	-	3	-	Both Alternatives would cross a number of PWI and non-PWI waters; however, it is anticipated that these crossings are spannable (crossings would be less than the average spanning length of 1,250 feet) and structures would not be placed in them.
	Non-PWI Waters	24	-	36	-	
Water Resources	Impaired Waters	0	-	0	-	The Orange Route would cross a Zone A floodplain; however, crossings would be less than the average spanning length of 1,250 feet and structures would not be placed in them.
	Floodplains	3	-	0	-	
	Crossings or 200 feet	509	49.8%	353	32.2%	The Orange Route would potentially impact slightly more acres of forested and shrub wetlands than J2. While direct, adverse impacts to wetland functions within the ROW, they are expected to be minimal because of the amount of surrounding forested and shrub wetlands in the region (pg. 466).
	NWI Wetlands	509	49.8%	353	32.2%	

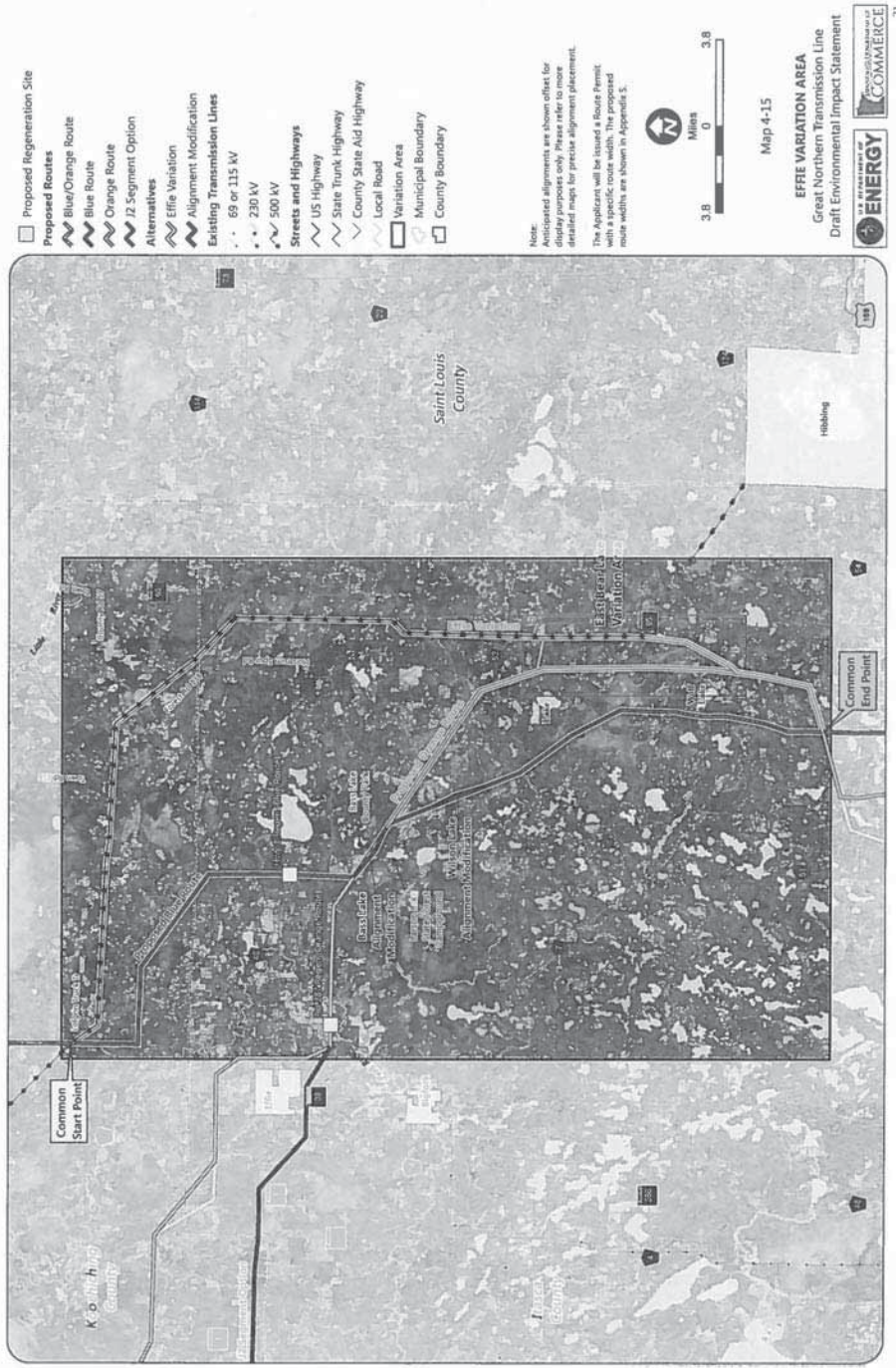
Relative Merits		Proposed Orange Route (42.2 miles)			J2 Segment Option (45.2 miles)			J2 Segment Option - Variation Area		
Factor	Element	ROI	Count / Acres	Percent of ROI	Count / Acres	Percent of ROI	Count / Acres	Percent of ROI	Notes	
Vegetation	North American Boreal Flooded & Swamp Forest		319	31.2%	124	11.3%			Both Alternatives would potentially impact a similar amount of forest land. While direct, adverse impacts to forested and shrub wetlands are permanent and may change wetland functions within the ROW, they are expected to be minimal because of the amount of surrounding forested and shrub wetlands in the region (pg. 467).	
	North American Boreal Forest		477	46.6%	650	59.3%				
	Eastern North American Flooded Swamp & Forest	200 feet	176	17.2%	191	17.4%				
	Eastern North American Cool Temperate Forest		38	3.5%	89	9.0%				
	Other		704	68.8%	972	88.7%				
Wildlife	Important Bird Areas	200 feet	282	25.6%	72	6.6%			The Orange Route contains more acres of land designated as an Important Bird Area. Short-term indirect impacts are expected to be minimal because of the large amount of similar habitat in the surrounding region, and the long-term direct impacts are expected to be minimized through use of Applicant-proposed minimization measures (Section 2.13) (pg. 468).	
Rare and Unique Natural Resources	Rare Species	1 mile (aquatic species not included)	3	-	2	-			The Orange Route is within one mile of three vascular plant species whereas J2 is within one mile of one vascular plant species and one colonial water bird nesting site (animal assemblage). Surveys will be performed on the final 200-foot ROW to determine if any rare species are present within the permitted ROW. Any indirect impacts to rare species are expected to be minimal because of the amount of the surrounding habitat. Through use of Applicant-proposed avoidance and minimization measures, direct impacts to rare species are not expected (pg. 470).	
	State Rare Communities	200 feet	486	47.8%	185	16.9%			The Orange Route would potentially impact more acres of MBS Sites of Biodiversity Significance.	
Corridor Sharing	Existing Infrastructure	-	-	0.0%	-	0.0%			Neither Alternative parallels existing transmission lines.	
	Reliability	-	-	-	-	-			Neither Alternative parallels or crosses any existing Manitoba - Minnesota tie lines.	
Cost	Total Cost	-	\$48,708,641	-	\$52,128,879	-			J2 Segment would cost the most to construct.	

Factor	Element	ROI	Northhome Variation Area				Notes
			J2 Segment Option (3.7)		Northhome Variation (4)		
			Count/ Acres	Percent of ROI	Count/ Acres	Percent of ROI	
Aesthetics	Residences	1,500 feet	0	-	0	-	Neither Alternative would impact any residences within 1,500 feet.
	Historic Architectural Sites	5,280 feet	0	-	0	-	Neither Alternative would impact any known architectural sites within 5,280 feet.
	Scenic Byway	1,500 feet	0	-	0	-	Neither Alternative would cross a Scenic Byway.
	Trails	1,500 feet	0	-	0	-	Neither Alternative would cross any trails.
	Land Use Compatibility						
Human Settlement	Land Cover of Forested and/or Swamp	1,500 feet	1,418 ac	83.1%	1,555 ac	95.3%	Both Alternatives' major land cover type is Forested and/or Swamp. Both Alternatives would result in a long-term change in land use for areas currently forested and/or swamp land, but these changes would be limited in extent, and there would still be extensive forest and swamp lands in the surrounding area, so these changes are expected to have a minimal impact on land use (pg. 474).
	Land Ownership	200 feet	90 acres total		97 acres total		The Northhome Variation contains more public lands than private lands; J2 contains more acre of private lands than Northhome Variation.
Land-Based Economies	Public		67	74.7%	81	83.5%	
	Private		23	25.9%	16	16.5%	
Land-Based Economies	Agriculture	1,500 feet	64	4.2%	0	0.0%	J2 would impact few acres of agricultural land whereas the Northhome Variation does not impact agricultural lands.
	Forestry	200 feet	0	0.0%	0	0.0%	Neither Alternative contains State Forest lands.
Archaeology and Historic Architectural Resources	Mining & Mineral Leases	200 feet	0	0.0%	0	0.0%	Neither Alternative would impact mining or mineral leases.
	Historic Architectural Sites	5,280 feet	0	-	0	-	Neither Alternative would impact any known architectural sites.
Water Resources	Archaeological Sites	1,500 feet	0	-	1	-	Northhome Variation would potentially impact one archaeological site; however, the permitted Route width will be less than 5,280 feet so some sites may not be impacted.
	PWI Waters		0	-	1	-	Both Alternatives would cross very few PWI and non-PWI waters; however, it is anticipated that these crossings are spannable (crossings would be less than the average spanning length of 1,250 feet) and structures would not be placed in them.
Water Resources	Non-PWI Waters		6	-	1	-	
	Impaired Waters		0	-	0	-	
Water Resources	Floodplains	Crossings or 200 feet	0	-	0	-	Neither Alternative would impact FEMA-designated floodplains.
	NWI Wetlands		23	25.6%	14	14.4%	Both Alternatives would potentially impact very few acres of NWI-mapped wetlands. While direct, adverse impacts to forested and shrub wetlands are permanent and may change wetland functions within the ROW, they are expected to be minimal because of the amount of surrounding forested and shrub wetlands in the region (pg. 479).

Relative Merits		Northorne Variation Area				Notes
Factor	Elmrent	J2 Segment Option (3.7 miles)		Northorne Variation (4 miles)		
	ROI	Count / Acres	Percent of ROI	Count / Acres	Percent of ROI	
Vegetation	North American Boreal Forest	71	79.2%	81	85.5%	Both Alternatives would potentially impact a similar amount of forested land. While direct, adverse impacts to forested areas would be long-term, contiguous forest is abundant in the region surrounding the proposed Project (pg. 480).
	Eastern North American Cool Temperate Forest	10	11.1%	10	10.3%	
	Other	19	21.2%	10	16.5%	
Wildlife	Shallow Lakes	0	-	1	-	The Northorne Variation would cross one DNR Shallow Lake.
Rare and Unique Natural Resources	Rare Species	1	-	2	-	One colonial waterbird nesting site is listed within one mile of J2 and two nesting sites are listed within one mile of the Northorne Variation. Surveys will be performed on the final 200-foot ROW to determine if any rare species are present within the permitted ROW. Any indirect impacts to rare species are expected to be minimal because of the amount of the surrounding habitat. Through use of Applicant-proposed avoidance and minimization measures, direct impacts to rare species are not expected (pg. 482).
	State Rare Communities	0	0.0%	0	0.0%	There are no MBS Sites of Biodiversity within either Alternative.
Corridor Sharing	MBS Sites of Biodiversity	-	0.0%	-	0.0%	Neither Alternative parallels existing transmission lines.
	Paralleling Existing Infrastructure	-	-	-	-	Neither Alternative parallels or crosses any existing Manitoba - Minnesota tie lines.
Electrical System Reliability						The Northorne Variation would cost the most to construct.
Cost		\$4,192,842	-	\$5,332,111	-	

Factor	Element	ROI	Proposed Orange Route (4.2 miles)		Cutfoot Variation (4.8 miles)		Notes
			Count / Acres	Percent of ROI	Count / Acres	Percent of ROI	
Aesthetics	Residences	1,500 feet	0	-	0	-	Neither Alternative would impact any residences within 1,500 feet.
	Historic Architectural Sites	5,280 feet	0	-	0	-	Neither Alternative would impact any known architectural sites within 5,280 feet.
	Scenic Byway Trails	1,500 feet	0	-	0	-	Neither Alternative would cross a Scenic Byway.
	Land Use Compatibility	1,500 feet	0	-	0	-	Neither Alternative would cross any trails.
Human Settlement	Dominant Land Cover Type	1,500 feet	1,652 ac	97.3%	1,874 ac	98.3%	Both Alternatives' major land cover type is Forested and/or Swamp. Both Alternatives would result in a long-term change in land use for areas currently forested and/or swamp land, but these changes would be limited in extent, and there would still be extensive forest and swamp lands in the surrounding area, so these changes are expected to have a minimal impact on land use (pg. 485).
	Land Ownership	200 feet	102 acres total	-	116 acres total	-	Both Alternatives are located entirely within public land.
Land-Based Economies	Public	1,500 feet	103	101.2%	116	98.7%	Neither Alternative would impact agricultural land.
	Private	1,500 feet	0	0.0%	0	0.0%	Both Alternatives are entirely located within State Forest lands.
	Forestry	1,500 feet	103	101.2%	116	98.7%	The Orange Route contains more acres of mining and mineral leases than the Cutfoot Variation; however both would impact aggregate mining resources.
Archaeology and Historic Architectural Resources	Mining & Mineral Leases	200 feet	29	28.5%	4	3.4%	Neither Alternative would impact any known historic architectural or archaeological sites.
	Historic Architectural Sites	5,280 feet	0	-	0	-	The Orange Route would cross very few, if any, PMW and non-PMW waters; however, it is anticipated that these crossings are spannable (crossings would be less than the average spanning length of 1,250 feet) and structures would not be placed in them. The Cutfoot Variation would not cross any waterbodies.
Water Resources	PMW Waters	Crossings or 200 feet	0	-	0	-	Neither Alternative would impact FEMA-designated floodplains.
	Non-PMW Waters	Crossings or 200 feet	2	-	0	-	Both Alternatives would potentially impact very few acres of NWI-mapped wetlands. While direct adverse impacts to forested and shrub wetlands are permanent and may change wetland functions within the ROW, they are expected to be minimal because of the amount of surrounding forested and shrub wetlands in the region (pp. 480).
	Impaired Wetlands	Crossings or 200 feet	0	-	0	-	
Water Resources	Floodplains	Crossings or 200 feet	0	-	0	-	
	NWI Wetlands	Crossings or 200 feet	57	56.0%	67	57.6%	

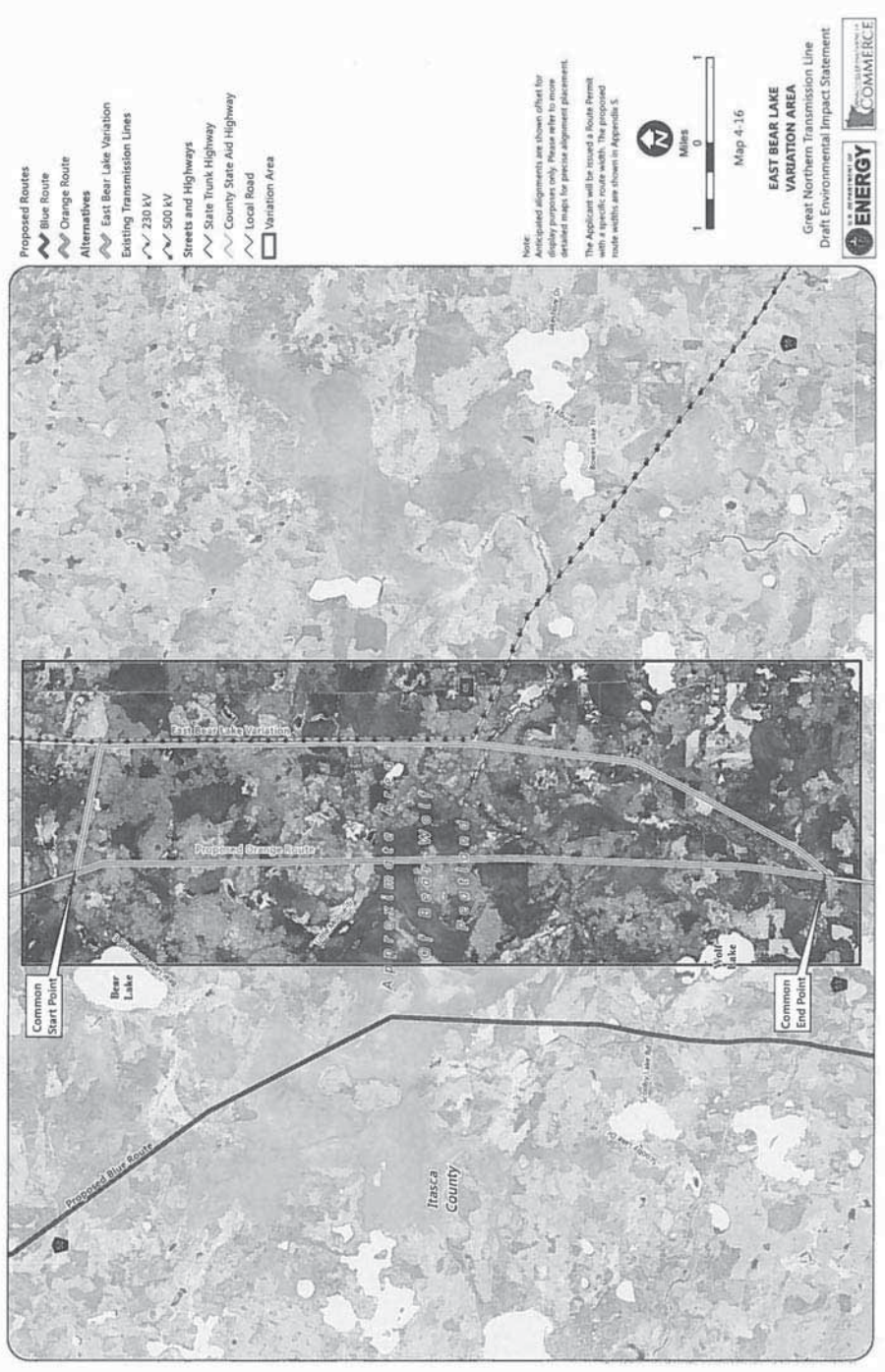
Factor	Relative Merits		Proposed Orange Route (4.2 miles)		Cutoff Variation (4.8 miles)		Notes
	Element	ROI	Count / Acres	Percent of ROI	Count / Acres	Percent of ROI	
Vegetation	North American Boreal Flooded & Swamp Forest	200 feet	28	27.5%	30	25.8%	Both Alternatives would potentially impact a similar amount of forest land. While direct, adverse impacts to forested areas would be long-term, contiguous forest is abundant in the region surrounding the Project (pg. 492).
	North American Boreal Forest		30	29.5%	64	55.0%	
	Eastern North American Flooded & Swamp Forest		39	38.3%	20	17.2%	
	Other		74	72.7%	86	73.9%	
	All/Any		0	0.0%	0	0.0%	
Wildlife		200 feet	0	0.0%	0	0.0%	Neither Alternative would impact recognized wildlife resource areas.
Rare and Unique Natural Resources	Rare Species	1 mile (aquatic species not included)	0	-	0	-	Neither Alternative is located within one mile of a documented rare species.
	State Rare Communities	200 feet	43	42.2%	60	51.5%	Both Alternatives would potentially impact similar amounts of MBS Sites of Biodiversity.
Corridor Sharing	MBS Sites of Biodiversity		-	0.0%	-	0.0%	Neither Alternative parallels existing transmission lines.
	Paralleling Existing Infrastructure		-	-	-	-	Neither Alternative parallels or crosses any existing Manitoba - Minnesota tie lines.
Electrical System Reliability			\$5,940,638	-	\$6,222,257	-	The Cutoff Variation would cost the most to construct.
Cost							



Factor	Relative Merits		Effie Variation						Notes
	Element	ROI	Proposed Blue Route (41.1 miles)		Proposed Orange Route (44.6 miles)		Effie Variation (49.8 miles)		
			Count / Acres	Percent of ROI	Count / Acres	Percent of ROI	Count / Acres	Percent of ROI	
Aesthetics	Residences	1,500 feet	4	-	5	-	14	-	The Effie Variation impacts generally three times as many residences as the Blue or Orange Routes.
	Historic Architectural Sites	5,280 feet	1	-	1	-	3	-	Both the Blue and Orange Routes would potentially impact one historic architectural site within 5,280 feet. The Effie Variation would potentially impact three sites; however, the permitted Route width will be less than 5,280 feet so some sites may not be impacted.
	Perks	1,500 feet	1	-	1	-	0	-	Both the Blue and Orange Routes would potentially impact one County Park; the Effie Variation would not.
	Trails	1,500 feet	6	-	7	-	5	-	All Alternatives would cross at least five state or snowmobile trails.
	Water Access	1,500 feet	0	-	0	-	1	-	The Blue and Orange Routes would not impact any water access points; the Effie Variation would potentially impact one water access.
	Land Use Compatibility								
Human Settlement	Dominant Land Cover Type	1,500 feet	14,723 ac	97.6%	15,801 ac	96.7%	17,696 ac	96.8%	All Alternatives' major land cover type is Forested and/or Swamp. All Alternatives would result in a long-term change in land use for areas currently forested and/or swamp land, but these changes would be limited in extent, and there would still be extensive forest and swamp lands in the surrounding area, so these changes are expected to have a minimal impact on land use (pg. 485, 555).
	Land Ownership	200 feet	966 acres total		1,061 acres total		1,207 acres total		All Alternatives are almost entirely located on public lands. The Effie Variation contains the most acres of private land.
	Public		819	92.2%	862	89.0%	1,086	90.0%	
	Private		77	7.7%	119	11.0%	121	10.0%	
Land-Based Economies	Agriculture	1,500 feet	0	0.0%	0	0.0%	0	0.0%	None of the Alternatives would impact agricultural land.
	Forestry	200 feet	909	91.2%	958	88.6%	1,086	90.0%	All Alternatives are mostly located within State Forests; the Effie Variation would potentially impact the most acres of State Forest.
	Mining & Mineral Leases	200 feet	647	64.9%	819	75.7%	824	68.3%	All Alternatives contain numerous acres of mining and mineral leases; the Effie Variation contains the most acres of mining and mineral leases.
	Historic Architectural Sites	5,280 feet	1	-	1	-	3	-	Both the Blue and Orange Routes would potentially impact one historic architectural site within 5,280 feet. The Effie Variation would potentially impact three sites; however, the permitted Route width will be less than 5,280 feet so some sites may not be impacted. The Blue and Orange Routes would not impact any known archaeological sites; the Effie Variation would potentially impact two sites.
Archaeology and Historic Architectural Resources	Archaeological Sites	1,500 feet	0	-	0	-	2	-	
	PWI Waters		10	-	13	-	13	-	All Alternatives will require crossing a number of waterbodies; however, it is anticipated that these crossings are spannable (crossings would be less than the average spanning length of 1,250 feet) and structures would not be placed in them.
	Non-PWI Waters		9	-	11	-	15	-	
	Impaired Waters		0	-	0	-	0	-	

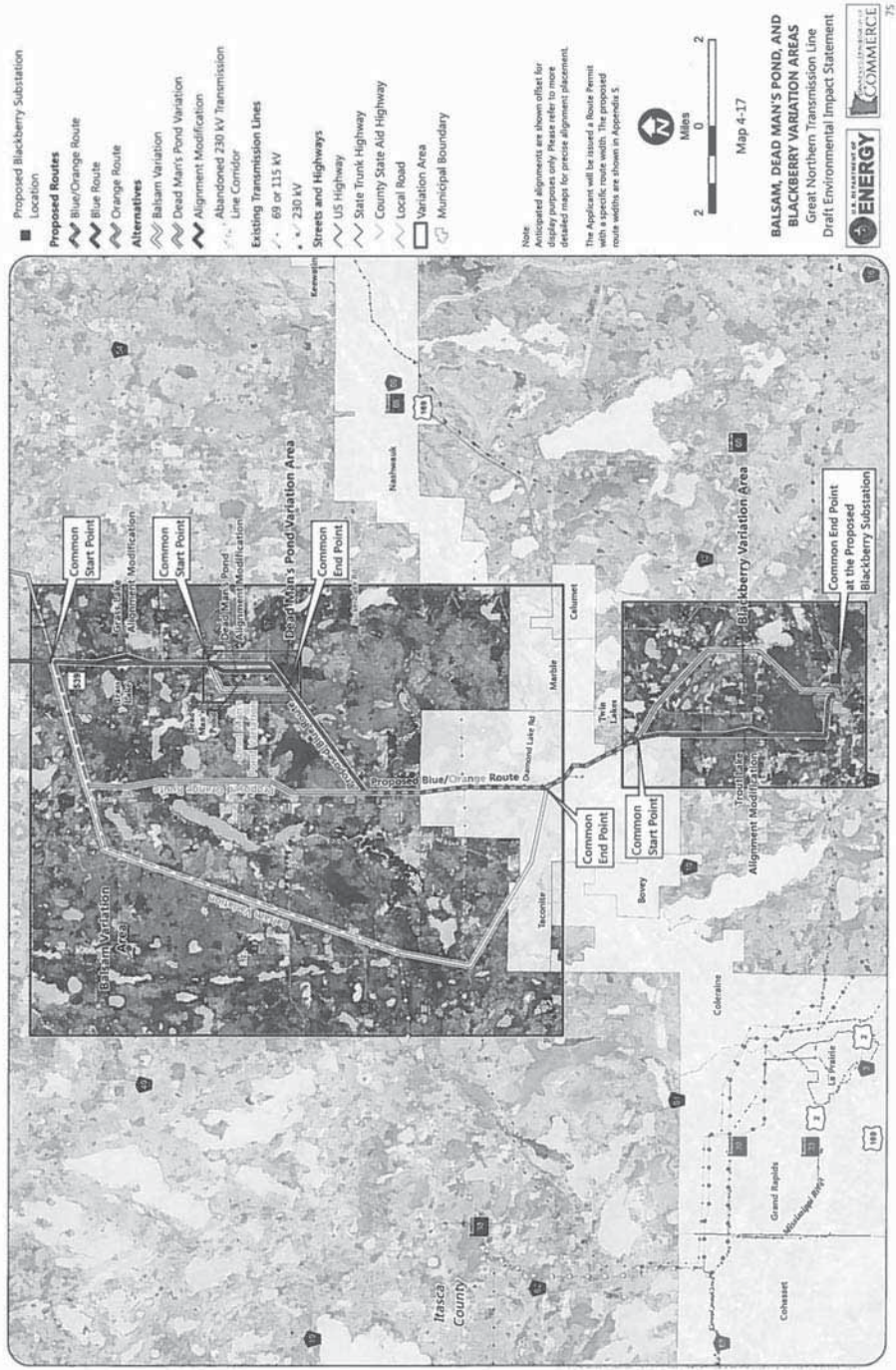
Factor	Relative Merits		Effie Variation						Notes
	Element	ROI	Proposed Blue Route (41.1 miles) Count/ Acres	Percent of ROI	Proposed Orange Route (44.6 miles) Count/ Acres	Percent of ROI	Effie Variation (49.8 miles) Count/ Acres	Percent of ROI	
Water Resources	Floodplains	Crossings of 200 feet	3	0.3%	3	0.3%	0	0.0%	The Effie Variation would not impact any FEMA-designated floodplains. The Blue and Orange Routes would cross a Zone A floodplain, however, the crossings would be less than the average spanning length of 1,250 feet. Therefore, it would be expected that the floodplain crossings would be spanned and transmission structures would not be placed in them (pg. 544).
	NWI Wetlands		443	44.5%	391	36.2%	413	34.2%	
Vegetation	North American Boreal Forest		473	47.5%	569	52.6%	550	46.1%	All Alternatives would potentially impact similar acres of NWI-mapped wetlands. While direct, adverse impacts to forested and shrub wetlands are permanent and may change wetland functions within the ROW, they are expected to be minimal because of the amount of surrounding forested and shrub wetlands in the region (pg. 544).
	North American Boreal Flooded & Swamp Forest		369	40.0%	339	31.4%	364	30.1%	
	Eastern North American Cool Temperate Forest	200 feet	25	2.5%	40	3.7%	35	2.9%	
	Eastern North American Flooded & Swamp Forest		81	8.1%	99	9.2%	208	17.2%	
	Other		18	1.8%	133	12.3%	252	20.9%	
Wildlife	Important Bird Areas	200 feet	69	-	69	-	0	-	The Blue and Orange Routes contain 69 acres of land designated as an Important Bird Area. Short-term indirect impacts are expected to be minimal because of the large amount of similar habitat in the surrounding region, and the long-term direct impacts are expected to be minimized through use of Applicant-proposed minimization measures (Section 2.13) (pg. 547).
	Rare Species	1 mile (aquatic species not included)	3	-	4	-	2	-	
Rare and Unique Natural Resources	State Rare Communities		422	42.4%	490	45.3%	427	35.4%	All Alternatives would potentially impact a similar number of acres of MBS Sites of Bioiversity, the Orange Route would pass through the most acres (pg. 551).
	MBS Sites of Biodiversity	200 feet	422	42.4%	490	45.3%	427	35.4%	

Relative Merits		Effie Variation						Notes
Factor	Element	Proposed Blue Route (41.1 miles)		Proposed Orange Route (44.6 miles)		Effie Variation (48.8 miles)		
		Count / Acres	Percent of ROI	Count / Acres	Percent of ROI	Count / Acres	Percent of ROI	
Corridor Sharing	Paralleling Existing Infrastructure	-	0.0%	-	0.0%	-	80.0%	The Blue and Orange Routes would not parallel any existing transmission lines; however the Effie Variation would parallel two existing transmission line for approximately 80% of its length.
		-	-	-	-	-	-	The Blue and Orange Routes do not parallel any existing Manitoba - Minnesota tie lines. The Blue Route would establish one new crossing of the existing 500 kV tie line. The Effie Variation would establish one new crossing of the existing 500 kV tie line and, more significantly, parallel both the 500 kV tie line and the 230 kV tie line in the same corridor for a significant part of its length, which would result in unacceptable risk to northern Minnesota loads.
Cost	Total Cost	\$46,649,600	-	\$49,486,323	-	\$17,852,345	-	Both the Orange Route and Effie Variation would cost more to construct than the Blue Route.



Factor	Relative Merits Element	East Bear Lake Variation Area				Notes
		Proposed Orange Route (0.3 miles)		East Bear Lake Variation (10.5 miles)		
		Count / Acres	Percent of ROI	Count / Acres	Percent of ROI	
Aesthetics	Residences	0	-	0	-	Neither Alternative would impact any residences.
	Historic Architectural Sites	0	-	0	-	Neither Alternative would impact any known historic architectural sites.
	Scenic Byway	0	-	0	-	Neither Alternative would impact any Scenic Byways
	Trails	4	-	4	-	Both Alternatives would potentially impact one state trail and three snowmobile trails.
	Water Access Points	0	-	1	-	The East Bear Lake Variation would potentially impact one water access point.
	Land Use Compatibility					
Human Settlement	Dominant Land Cover Type	3,381 ac	99.2%	3,910 ac	98.2%	Both Alternatives' major land cover type is Forested and/or Swamp. Both Alternatives would result in a long-term change in land use for areas currently forested and/or swamp land, but these changes would be limited in extent, and there would still be extensive forest and swamp lands in the surrounding area, so these changes are expected to have a minimal impact on land use (pg. 555).
	Land Ownership	216 acres total		255 acres total		
	Public	217	100.0%	256	100.0%	Both Alternatives are entirely located within public lands.
Land-Based Economies	Private	0	0.0%	0	0.0%	
	Agriculture	0	0.0%	0	0.0%	Neither Alternative would impact agricultural land.
	Forestry	217	100.0%	256	100.0%	Both Alternatives are entirely located within State Forest lands.
Archaeology and Historic Architectural Resources	Mining & Mineral Leases	96	44.5%	193	75.6%	The East Bear Lake Variation would potentially impact nearly double the acres of mining and mineral leases than the Orange Route.
	Historic Architectural Sites	0	-	0	-	Neither Alternative would impact any known historic architectural or archaeological sites.
	Archaeological Sites	0	-	0	-	
Water Resources	PWI Waters	4	-	2	-	Both Alternatives would cross a small number of PWI and non-PWI waters; however, it is anticipated that these crossings are spannable (crossings would be less than the average spanning length of 1,250 feet) and structures would not be placed in them.
	Non-PWI Waters	0	-	3	-	
	Impaired Waters	0	-	0	-	
	Floodplains	0	-	0	-	Neither Alternative would impact any FEMA-designated floodplains.
	Crossings or 200 feet	0	-	0	-	

Relative Merits		Proposed Orange Route (8.9 miles)			East Bear Lake Variation (10.5 miles)			Notes
Factor	Element	ROI	Count / Acres	Percent of ROI	Count / Acres	Percent of ROI	Count / Acres	Percent of ROI
Vegetation	NW Wetlands		104	48.2%	89	35.0%		The Orange Route would potentially impact slightly more acres of NW-mapped wetlands than the East Bear Lake Variation. While direct, adverse impacts to forested and shrub wetlands are permanent and may change wetland functions within the ROW, they are expected to be minimal because of the amount of surrounding forested and shrub wetlands in the region (pg. 561).
	North American Boreal Forest		103	47.7%	140	55.0%		
Wildlife	North American Boreal Flooded & Swamp Forest	200 feet	84	43.6%	77	30.3%		Both Alternatives would potentially impact a similar amount of forested land. While direct, adverse impacts to forested areas would be long-term, contiguous forest is abundant in the region surrounding the Project (pg. 562).
	Other		113	52.4%	115	45.2%		
Rare and Unique Natural Resources	All/Any	200 feet	0	0.0%	0	0.0%		Neither Alternative would impact recognized wildlife resource areas.
	Rare Species	1 mile (aquatic species not included)	1	-	1	-		Both Alternatives would be located within one mile of a state-listed special concern vascular plant. Surveys will be performed on the final 200-foot ROW to determine if any rare species are present within the permitted ROW. Any indirect impacts to rare species are expected to be minimal because of the amount of the surrounding habitat. Through use of Applicant-proposed avoidance and minimization measures, direct impacts to rare species are not expected (pg. 564).
Corridor Sharing	State Rare Communities							
	MBS Sites of Biodiversity	200 feet	217	100.6%	255	100.2%		Both Alternatives are entirely located within MBS Sites of Biodiversity; the East Bear Lake Variation would pass through more MBS Sites (pg. 565).
Electrical System Reliability	Paralleling Existing Infrastructure		3	0.0%	-	42.0%		The East Bear Lake Alternative parallels existing transmission line for approximately 4.2% of its length.
								The Orange Route does not parallel any existing Manitoba - Minnesota tie lines. The East Bear Lake Variation would parallel both the 500 KV tie line and the 230 KV tie line in the same corridor for a significant part of its length, which would result in unacceptable risk to northern Minnesota loads.
Cost	Total Cost		\$87,387,900		\$87,387,900			The East Bear Lake Variation would cost the most to construct.



Factor	Element	ROI	Balsam Variation Area						Notes
			Proposed Blue Route (12.9 miles)		Proposed Orange Route (13.7 miles)		Balsam Variation (17.3 miles)		
			Count / Acres	Percent of ROI	Count / Acres	Percent of ROI	Count / Acres	Percent of ROI	
Aesthetics	Residences	1,500 feet	7	-	21	-	11	-	The Orange Route has the highest potential to impact residences; the Balsam Variation has 11 residences within 1,500 feet and the Blue Route has the lowest potential impact to residences.
	Historic Architectural Sites	5,280 feet	13	-	24	-	28	-	The Orange Route and Balsam Variation have the highest potential to impact architectural sites; however, the permitted Route width will be less than 5,280 feet so some sites may not be impacted.
	Scenic Byway	1,500 feet	0	-	0	-	0	-	No Alternatives would impact Scenic Byways.
	Trails	1,500 feet	2	-	2	-	3	-	The Blue and Orange Routes would potentially impact two snowmobile trails; Balsam Variation would impact three.
Human Settlement	Land Use Compatibility								
	Land Cover of Forested and/or Swamp	1,500 feet	4,544 ac	89.5%	4,829 ac	94.1%	6,189 ac	83.2%	All Alternatives' major land cover type is Forested and/or Swamp. All Alternatives would result in a long-term change in land use for areas currently forested and/or swamp land, but these changes would be limited in extent, and there would still be extensive forest and swamp lands in the surrounding area, so these changes are expected to have a minimal impact on land use (pg. 572).
	Land Ownership	200 feet	313 acres total		332 acres total		432 acres total		All Alternatives are generally located on a majority of private lands. The Balsam Variation would potentially impact the most acres of private land.
	Private	200 feet	67	21.4%	53	16.0%	107	24.8%	The Blue Route would potentially impact the fewest acres of agricultural land; the Balsam Variation would impact the most.
Land-Based Economies	Agriculture	1,500 feet	4	0.1%	70	1.4%	72	1.1%	No Alternatives would be located in State Forest lands.
	Forestry	1,500 feet	0	0.0%	0	0.0%	0	0.0%	The Blue and Orange Routes would not impact mining and mineral leases; the Balsam Variation would potentially impact 89 acres. It should be noted that an active mine would impede the construction and operation of the Balsam Variation and therefore it is no longer feasible.
	Mining & Mineral Leases	200 feet	0	0.0%	0	0.0%	0	0.0%	
Archaeology and Historic Architectural Resources	Historic Architectural Sites	5,280 feet	13	-	24	-	28	-	The Orange Route and Balsam Variation have the highest potential to impact known architectural sites. The Blue and Orange Routes would not impact any known archaeological sites; however, the permitted Route width will be less than 5,280 feet so some sites may not be impacted.
	Archaeological Sites	1,500 feet	0	-	0	-	1	-	
	PWI Waters	1,500 feet	7	-	5	-	4	-	All Alternatives would cross a small number of PWI and non-PWI waters; however, it is anticipated that these crossings are spannable (crossings would be less than the average spanning length of 1,250 feet) and structures would not be placed in them.
Impaired Waters	Non-PWI Waters	1,500 feet	1	-	4	-	3	-	
	Impaired Waters	1,500 feet	0	-	0	-	0	-	

Factor	Relative Merits		Balsam Variation Area				Notes	
	Element	ROI	Proposed Blue Route (12.9 miles)		Proposed Orange Route (13.7 miles)			
			Count / Acres	Percent of ROI	Count / Acres	Percent of ROI		
Water Resources	Floodplains	Crossings or 200 feet	0	-	26	-	The Blue Route would not impact FEMA-designated floodplains whereas the Orange Route and Balsam Variation would require construction and placement of transmission structures within Zone A floodplain.	
	NWI Wetlands		54	17.3%	69	20.8%	The Balsam Variation would potentially impact the most acres of NWI-mapped wetlands. While direct, adverse impacts to forested and shrub wetlands are permanent and may change wetland functions within the ROW, they are expected to be minimal because of the amount of surrounding forested and shrub wetlands in the region. (pg. 578)	
Vegetation	North American Boreal Forest		205	65.6%	208	62.6%	234	54.2%
	North American Boreal Flooded & Swamp Forest		12	3.8%	15	4.5%	40	9.3%
	Eastern North American Cool Temperate Forest	200 feet	53	16.9%	47	14.2%	60	13.9%
	Eastern North American Cool Temperate Flooded & Swamp Forest		29	9.3%	47	14.2%	68	15.8%
Wildlife	Other	200 feet	100	34.5%	124	37.3%	199	45.9%
	All/Any		0	0.0%	0	0.0%	0	0.0%
Rare and Unique Natural Resources	Rare Species	1 mile (aquatic species not included)	1	-	0	0.0%	0	-
	State Rare Communities	200 feet	78	24.9%	105	31.6%	95	22.0%
Corridor Sharing	MBS Sites of Biodiversity		-	-	-	-	-	-
	Paralleling Existing Infrastructure		-	15.0%	-	14.0%	-	0.0%

Factor	Relative Merits		Proposed Blue Route (12.9 miles)			Proposed Orange Route (13.7 miles)			Balsam Variation Area			Notes
	Element	ROI	Count / Acres	Percent of ROI	Acres	Count / Acres	Percent of ROI	Count / Acres	Percent of ROI	Count / Acres	Percent of ROI	
Electrical System Reliability		-		-			-		-		-	No Alternatives parallel or cross any existing Manitoba – Minnesota tie lines.
Cost	Total Cost	-	\$15,121,021	-	\$16,018,490	\$19,022,477	-		-		-	Both the Orange and the Balsam Variation would cost more to construct than the Blue Route.

Factor	Element	ROI	Proposed Blue Route (2.2 miles)		Dead Man's Pond Variation (2.5 miles)		Notes
			Count / Acres	Percent of ROI	Count / Acres	Percent of ROI	
	Aesthetics						
	Residences	1,500 feet	2	-	4	-	Dead Man's Pond Variation would potentially impact more residences within 1,500 feet.
	Historic Architectural Sites	5,280 feet	1	-	1	-	Both Alternatives would potentially impact a historic architectural site within 5,280 feet; however, the permitted Route width will be less than 5,280 feet so some sites may not be impacted.
	Scenic Byway	1,500 feet	0	-	0	-	Neither Alternative would cross a Scenic Byway.
	Trails	1,500 feet	0	-	0	-	Neither Alternative would cross any trails.
Human Settlement	Land Use Compatibility						
	Dominant Land Cover Type	1,500 feet	905 ac	84.2%	925 ac	93.7%	Both Alternatives' major land cover type is Forested and/or Swamp. Both Alternatives would result in a long-term change in land use for areas currently forested and/or swamp land, but these changes would be limited in extent, and there would still be extensive forest and swamp lands in the surrounding area; so these changes are expected to have a minimal impact on land use (pg. 588).
Land-Based Economies	Land Ownership	200 feet	53 acres total		59 acres total		The Blue Route is mostly located on private land whereas the Dead Man's Pond Variation is mostly located on public land.
	Public		19	35.6%	37	66.3%	
	Private		34	63.6%	19	34.1%	
	Agriculture	1,500 feet	0	0.0%	2	0.2%	The Blue Route would not impact agricultural land.
Archaeology and Historic Architectural Resources	Forestry	200 feet	0	0.0%	0	0.0%	Neither Alternative would impact State Forest lands.
	Mining & Mineral Leases	200 feet	0	0.0%	0	0.0%	Neither Alternative would impact any mining or mineral leases.
	Historic Architectural Sites	5,280 feet	1	-	1	-	Both Alternatives would potentially impact a historic architectural site within 5,280 feet; however, the permitted Route width will be less than 5,280 feet so some sites may not be impacted. There are no known archaeological sites within one mile of either Alternative.
Water Resources	Archaeological Sites	1,500 feet	0	-	0	-	
	PWI Waters		0	-	0	-	Neither Alternative would cross any PWI, non-PWI, or impaired waters.
	Non-PWI Waters		0	-	0	-	
	Impaired Waters		0	-	0	-	
	Floodplains	Crossings or 200 feet	0	-	0	-	Neither Alternative would impact FEMA-designated floodplains.
	NWI Wetlands		14	26.3%	4	7.2%	Both Alternatives would potentially impact very few acres of NWI-mapped wetlands. While direct, adverse impacts to forested and shrub wetlands are permanent and may change wetland functions within the ROW, they are expected to be minimal because of the amount of surrounding forested and shrub wetlands in the region (pg. 592).

Factor	Relative Merits		Dead Man's Pond Variation Area				Notes
	Element	ROI	Proposed Blue Route (2.2 miles)		Dead Man's Pond Variation (2.3 miles)		
			Count / Acres	Percent of ROI	Count / Acres	Percent of ROI	
Vegetation	North American Boreal Forest	200 feet	34	63.8%	43	77.1%	Both Alternatives would potentially impact a similar amount for forested land. While direct, adverse impacts to forested areas would be long-term, contiguous forest is abundant in the region surrounding the proposed Project (pg. 583).
	Eastern North American Cool Temperate Forest		14	26.3%	6	10.8%	
	Other		19	35.6%	19	23.3%	
Wildlife	AU/Any	200 feet	0	0.0%	0	0.0%	Neither Alternative would impact recognized wildlife resource areas.
Rare and Unique Natural Resources	Rare Species	1 mile (aquatic species not included)	0	-	0	-	Neither Alternative is located within one mile of a documented rare species.
	State Rare Communities	200 feet	0	0.0%	0	0.0%	
	MBS Sites of Biodiversity	200 feet	0	0.0%	0	0.0%	There are no MBS Sites of Biodiversity within either Alternative.
Corridor Sharing	Paralleling Existing Infrastructure	-	-	-	-	-	Neither Alternative parallels existing transmission lines.
Electrical System Reliability		-	-	-	-	-	Neither Alternative parallels or crosses any existing Manitoba - Minnesota tie lines.
Cost	Total Cost	-	\$2,873,223	-	\$4,709,345	-	The Dead Man's Pond Variation would cost the most to construct.

Relative Merits		Blackberry Variation Area				Notes
Factor	Element	ROI	Proposed Blue Route (6.4 miles) Count / Acres	Proposed Orange Route (6.1 miles) Count / Acres	Percent of ROI	
Aesthetics	Residences	1,500 feet	11	22	-	The Orange Route has twice as many homes (22) within 1,500 feet as the Blue Route (11).
	Historic Architectural Sites	5,280 feet	6	1	-	The Blue Route has a higher potential to impact historic architectural sites within 5,280 feet; however, the permitted Route width will be less than 5,280 feet so some sites may not be impacted.
	Scenic Byway Trails	1,500 feet 1,500 feet	0 1	0 1	-	Neither Route would cross a Scenic Byway. Both Routes would cross one snowmobile trail.
	Land Use Compatibility					
	Dominant Land Cover Type	1,500 feet	2,004 ac	1,962 ac	84.2%	84.2%
Land-Based Economies	Land Ownership	200 feet	131 acres total	148 acres total	-	Both Routes contain a similar number of acres of public and private lands.
	Public		41	54	31.3%	36.5%
	Private		90	94	66.8%	63.6%
Land-Based Economies	Agriculture	1,500 feet	50	192	2.4%	8.2%
	Forestry	200 feet	0	0	0.0%	0.0%
	Mining & Mineral Leases	200 feet	37	33	28.3%	22.3%
Archaeology and Historic Architectural Resources	Historic Architectural Sites	5,280 feet	0	1	-	The Blue Route has a higher potential to impact historic architectural sites within 5,280 feet; however, the permitted Route width will be less than 5,280 feet so some sites may not be impacted. There are no known archaeological sites within one mile of either Route.
	Archaeological Sites	1,500 feet	0	0	-	Neither Route would potentially impact a similar acres of mining and mineral leases.
	PWI Waters		0	0	-	The Blue Route would potentially impact a similar acres of mining and mineral leases.
Water Resources	Non-PWI Waters		1	3	-	The Blue Route has a higher potential to impact historic architectural sites within 5,280 feet; however, the permitted Route width will be less than 5,280 feet so some sites may not be impacted. There are no known archaeological sites within one mile of either Route.
	Impaired Waters		1	1	-	Both Routes would cross a small number non-PWI and impaired waters; however, it is anticipated that these crossings are spannable (crossings would be less than the average spanning length of 1,250 feet) and structures would not be placed in them (pg. 603-604).
	Floodplains	Crossings or 200 feet	0	0	-	Neither Route would impact FEMA-designated floodplains.
Water Resources	NWI Wetlands		51	40	36.0%	27.0%

Relative Merits		Blackberry Variation Area					
Factor	Element	ROI	Proposed Blue Route (5.4 miles)		Proposed Orange Route (6.1 miles)		Notes
			Count / Acres	Percent of ROI	Count / Acres	Percent of ROI	
Vegetation	North American Boreal Forest	200 feet	60	45.8%	52	35.2%	The Blue and Orange Routes would pass through a similar amount of forested land. While direct, adverse impacts to forested areas would be long-term, contiguous forest is abundant in the region surrounding the Project (pg. 606).
	North American Boreal Flooded & Swamp Forest		30	22.8%	26	17.6%	
	Eastern North American Cool Temperate Forest		33	25.2%	49	33.1%	
	Other		71	54.2%	66	64.6%	
Wildlife	All/Any	200 feet	0	0.0%	0	0.0%	Neither Route would impact recognized wildlife resource areas.
Rare and Unique Natural Resources	Rare Species	1 mile (aquatic species not included)	2	-	3	-	Both Routes are within one mile of two threatened vascular plants; the Orange Route is within one mile of a special-concern bird listing. Surveys will be performed on the final 200-foot ROW to determine if any rare species are present within the permitted ROW. Any indirect impacts to rare species are expected to be minimal because of the amount of the surrounding habitat. Through use of Applicant-proposed avoidance and minimization measures, direct impacts to rare species are not expected (pg. 606).
	State Rare Communities	200 feet	57	43.5%	79	53.4%	Loss or conversion of native vegetation would likely be similar between the Blue and Orange Routes (pg. 606).
Corridor Sharing	Existing Infrastructure	-	-	20.0%	-	-	The Orange Route parallels existing transmission lines for 37% of its length; the Blue Route parallels existing transmission lines for 20%.
Electrical System Reliability		-	-	-	-	-	Neither Alternative parallels or crosses any existing Manitoba - Minnesota tie lines.
Cost	Total Cost	-	-	\$3,380,680	-	-	The Orange Route would cost the most to construct.

0193-1
The relative merits table provided by the Applicant used different methodology and is included in the comment appendix of the EIS.
No changes are made to the EIS in response to this comment.



August 4, 2015

Eric F. Swanson
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eswanson@winthrop.com

VIA E-FILING

The Honorable Ann O'Reilly
Office of Administrative Hearings
P.O. Box 64620
St. Paul, MN 55164-0620

RE: In the Matter of the Request of Minnesota Power for a Route Permit for the Great Northern Transmission Line
MPUC Docket No. E-015/TL-14-21
OAH Docket No. 65-2500-31637

Dear Judge O'Reilly:

On behalf of Minnesota Power, enclosed please find the Relative Merits Table to be filed in the above-referenced docket. Also attached is our Affidavit of Service.

Very truly yours,

WINTHROP & WEINSTINE, P.A.

/s/ Eric F. Swanson

Eric F. Swanson

Enclosure

10704676v1

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Bret	Etnes	bret.etnes@state.mn.us	Public Utilities Commission	Suite 350 121 7th Place East St. Paul, MN 551012147	Electronic Service	Yes	OFF_SL_14-21_Official CC Service List
Linda	Jensen	linda.s.jensen@ag.state.mn.us	Office of the Attorney General-DOC	1900 BRM Tower 445 Minnesota Street St. Paul, MN 551012134	Electronic Service	Yes	OFF_SL_14-21_Official CC Service List
Michael	Kaluzniak	mika.kaluzniak@state.mn.us	Public Utilities Commission	Suite 350 121 Seventh Place East St. Paul, MN 55101	Electronic Service	Yes	OFF_SL_14-21_Official CC Service List
David	Moeller	dmoeller@alete.com	Minnesota Power	30 W Superior St Duluth, MN 558022083	Electronic Service	No	OFF_SL_14-21_Official CC Service List
Ann	O'Reilly	ann.oreilly@state.mn.us	Office of Administrative Hearings	PO Box 64620 St. Paul, MN 55101	Electronic Service	Yes	OFF_SL_14-21_Official CC Service List
Deborah	Pie	Deborah.Pie@state.mn.us	Department of Commerce	Suite 50085 7th Place East St. Paul, MN 551012198	Electronic Service	Yes	OFF_SL_14-21_Official CC Service List
Janet	Shaddix Elling	jshaddix@janeshaddix.com	Shaddix And Associates	Ste 122 9100 W Bloomington Bloomington, MN 55431	Electronic Service Fwy	Yes	OFF_SL_14-21_Official CC Service List
Tracy	Smetana	tracy.smetana@state.mn.us	Public Utilities Commission	Room 300 121 7th Place East Suite 350 St. Paul, MN 55101	Electronic Service	Yes	OFF_SL_14-21_Official CC Service List
William	Storm	bill.storm@state.mn.us	Department of Commerce	Room 300 121 7th Place East St. Paul, MN 551012198	Electronic Service	Yes	OFF_SL_14-21_Official CC Service List
Eric	Swanson	eswanson@witthrop.com	Witthrop Utilities	225 S 6th St Ste 3500 Commerce Center Minneapolis, MN 554024629	Electronic Service	No	OFF_SL_14-21_Official CC Service List

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Daniel P	Wolf	dan.wolf@state.mn.us	Public Utilities Commission	121 7th Place East Suite 350 St. Paul, MN 551012147	Electronic Service	Yes	OFF SI_M-21_Official CC Service List

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Sarah	Belmers	sarah.belmers@mnhis.org	Minnesota Historical Society	345 Kellogg Boulevard West St. Paul, MN 55102	Electronic Service	No	SPL_SL_14-21_Agency Repts 14-21
Tamara	Cameron	tamara.e.cameron@usaca.army.mil	U.S. Army Corps of Engineers	180 5th St # 700 Saint Paul, MN 55101	Electronic Service	No	SPL_SL_14-21_Agency Repts 14-21
Travis	Germundson	travis.germundson@state.mn.us		Board of Water & Soil Resources 520 Lafayette Rd Saint Paul, MN 55155	Electronic Service	No	SPL_SL_14-21_Agency Repts 14-21
Susan	Helfron	susan.helfron@state.mn.us	MN Pollution Control Agency	520 Lafayette Rd Saint Paul, MN 55155	Electronic Service	No	SPL_SL_14-21_Agency Repts 14-21
Kari	Howe	kari.howe@state.mn.us	DEED	332 Minnesota St, #E200 ST National Bank Bldg St Paul, MN 55101	Electronic Service	No	SPL_SL_14-21_Agency Repts 14-21
Ray	Kirsch	Raymond.Kirsch@state.mn.us	Department of Commerce	65 7th Place E Ste 500 St. Paul, MN 55101	Electronic Service	No	SPL_SL_14-21_Agency Repts 14-21
Stacy	Kolch	Stacy.Kolch@state.mn.us	MINNESOTA DEPARTMENT OF TRANSPORTATION	395 John Ireland Blvd. St. Paul, MN 55155	Electronic Service	No	SPL_SL_14-21_Agency Repts 14-21
Debra	Moynihan	debra.moynihan@state.mn.us	MN Department of Transportation	395 John Ireland Blvd MS 020 St. Paul, MN 55155-1899	Electronic Service	No	SPL_SL_14-21_Agency Repts 14-21
Bob	Patton	bob.patton@state.mn.us	MN Department of Agriculture	625 Robert St N Saint Paul, MN 55155-2538	Electronic Service	No	SPL_SL_14-21_Agency Repts 14-21
Margaret	Rheude	Margaret_Rheude@nws.gov	U.S. Fish and Wildlife Service	Twin Cities Ecological Services Field Office 4101 American Blvd. E. Bloomington, MN 55425	Electronic Service	No	SPL_SL_14-21_Agency Repts 14-21

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Jamie	Schrenzel	Jamie.schrenzel@state.mn.us	Minnesota Department of Natural Resources	500 Lafayette Road Saint Paul, MN 55155	Electronic Service	No	SPL_SL_14-21_Agency Reps 14-21
David	Seykora	dave.seykora@state.mn.us	MIN Department of Transportation	385 John Ireland Boulevard Mail Stop 130 St. Paul, MN 55155-1899	Electronic Service	No	SPL_SL_14-21_Agency Reps 14-21
Bruce	West	Bruce.West@state.mn.us	Department of Public Safety	Box 145 444 Cedar Street St. Paul, MN 55151	Electronic Service	No	SPL_SL_14-21_Agency Reps 14-21
Jonathan	Wolgram	Jonathan.Wolgram@state.mn.us	Department of Public Safety	445 Minnesota Street Suite 147 St. Paul, MN 55101-1547	Electronic Service	No	SPL_SL_14-21_Agency Reps 14-21

MINNESOTA DEPARTMENT OF NATURAL RESOURCES
NORTHEAST REGION
1201 E HWY 2
GRAND RAPIDS, MN 56744
218-327-4455



08/07/2015

Bill Storm, Environmental Review Manager
Minnesota Department of Commerce
85 7th Place East, Suite 500
St. Paul, MN 55101

RE: DNR Comments to the Draft Environmental Impact Statement (DEIS) for the Great Northern Transmission Line. DOE/EIS-0499, E015/TL-14-21

Dear Mr. Storm:

The Minnesota Department of Natural Resources (DNR) has reviewed the Draft Environmental Impact Statement (DEIS) for the Great Northern Transmission Line. The DEIS describes the potential for environmental effects in an objective manner for activities associated with the transmission line thus should provide an example of future energy review in Minnesota. The DNR appreciates the early coordination opportunities that were provided to assist in development of the proposed project. In the early coordination phase, including our most recent August 15, 2014 Scoping/Route Permit comments, we provided information to assist in the adequacy of addressing natural resource impacts. From our review, we believe there remain areas where additional or more representative information would assist in development of the final document. We offer the following suggestions for inclusion in the Final EIS. Future comments to the Office of Administrative Hearings will focus on suggested routing and permit conditions.

Mining and Mineral Resources

Mining and mineral resource topics are found in the Summary section, in most of the Chapters, and in some of the Appendices of the Draft Environmental Impact Statement (DEIS) for the Great Northern High Voltage Transmission Line. The DEIS provides some discussion of mining and mineral resources for route alternatives and variations, and includes a requested comparative analysis for an area in northwest Koochiching County – the North Black River Variation Area.

Overall, simplifying assumptions made in Chapter 5 carry over into the comparative analyses in Chapter 6, into the Route Analysis Data Tables in Appendix E, and into the Summary. The general impression is that the simplifying assumptions made in Chapter 5 over-state risk of mineral resource/transmission line

0194-1
The text is revised to "avoidance of non-ferrous mineral area" in Section 4.4.1.4 of the EIS.

0194-1

co-location in areas having little certainty of mineral occurrence and under-state risk of mineral resource/transmission line colocation in areas containing known mineral occurrence. The comments below tie to specific sections of Chapters 4 and 5 of the DEIS where possible, but carry through to derived analyses and statements in Chapter 6, in Appendix E, and the Summary.

Section 4.3.2.4:

The primary mineral issues identified by commenters in this variation area were, a) potential for electromagnetic fields associated with Blue Route alignment to mask or otherwise prevent geophysical detection of mineral resources in an area already known to contain mineral occurrence; and b) elevated risk of mineral resource/transmission line co-location should mineral-occurrence advance to mineral-development.

The DEIS text misclassifies the level of metallic mineral occurrence in this variation area as "reserves". Text here would be clearer and more accurate if the phrase "...avoidance of non-ferrous mineral reserves..." were replaced with a phrase like "...avoidance of the non-ferrous mineral area..." Application of the term "reserves" at other locations in the DEIS should likewise be revised where appropriate.

Sections 5.3.2, 5.4.2 and 5.5.2

The last sentence in the first paragraph of 5.3.2 might benefit by being identical to similar sentences in 5.4.2 and 5.5.2. As stated in 5.3.2, 5.4.2 and 5.5.2, transmission line structures could affect access to mineral resources. These sections of text should also note that, in addition to the physical structures, electromagnetic fields associated with transmission line operations may mask or prevent geophysical detection of mineral resources.

The simplifying assumption that the "MnDNR Division of Lands and Minerals, All State Mineral Leases mapping" represents mining and mineral resources results in over-statement of mineral resource/transmission line co-location risk in areas having little certainty of mineral occurrence, and results in under-statement of mineral resource/transmission line co-location risk in areas containing known mineral occurrence. State metallic mineral leases are not mineral resources (for instance as stated in Table 6-69 and similar tables "Land-Based Economy Resources"). Terminated state metallic mineral leases are not "inactive" leases (as described in section 6.2.1.2 and similar sections and in the mapping legends). Terminated leases are not "held" by companies (as described in section 6.2.3.2 and similar sections), and the footprint of historical terminated state metallic mineral leases is not "State Mining Land" as described in Figure 6-26 and similar figures. These miscorrelations carry through to affect the characterization of mineral importance in Chapter 6, in Appendix E, in the Summary, and in the red-yellow-green summary tables within the Relative Merits section (for instance section 6.4.6).

Presence of transmission lines proximal to mineral resources can be beneficial so long as they do not interfere with mineral operations. Along most of the route alternatives and variations, the location of undiscovered mineral resources in the landscape is so speculative that selection of one route, variation, or alignment over another does not result in meaningful reduction of co-location risk, or improvement of proximity benefit. At the following three locations, mineral resource information may be important.

0194-2

The text is revised in Sections 5.3.2.3, 5.4.2, and 5.5.2 to be similar and provide information regarding geophysical detection of mineral resources.

0194-3

The MnDNR provided the download URLs (email from Kevin Hanson at the request of Jamie Schrenzel, MnDNR, 12/2/2014) for the GIS data used in this EIS. The downloaded data included the active and expired/terminated leases, exploration and engineering drill core locations store at MN DNR Drill Core Library, areas offered for nonferrous metallic minerals leasing, MGS statewide bedrock geologic map and data. This data is used for the discussion of mineral resources throughout the EIS.

0194-2

This downloaded data was used to develop the acreages in the tables "Land-Based Economy Resources..." In these tables, the text is revised for "State Mineral Leases" to "State Mineral Leases (active and/or expired/terminated)." The text is also updated throughout the Summary, Chapter 6, and the relative merit tables that clarifies if there are active leases in the variation areas.

0194-3

When the MN PUC selects the route, the Applicant will need to coordinate with the MnDNR Land and Minerals to identify and mitigate for the active mineral leases present in the ROW.

0194-4

The text is revised in Sections 5.3.2.3, 5.4.2.3, and 6.2.1.2. The legend for Maps 5-4, 5-11, and 5-18 are revised and the term "inactive" leases is changed to "expired/terminated leases".

0194-5

The text is revised throughout Chapter 6 to remove the reference to expired/terminated leases being "held" by companies.

Tables in Chapter 6 that used the term "State Mineral Leases" are updated to "State Mineral Leases (active and/or expired/terminated)". The text is updated in the summary, Chapter 6, and the relative merit tables for each variation area to identify if

0194

there is any active or expired/terminated leases. Appendix E indicates that total acres of mineral lease lands within the ROW and route width for each alternative.

0194-5

Thank you for your comment. Revisions were made to the EIS as described in Comments 213-6 and 213-7.

0194-6

Text is added to Section 6.4.3.2 of the EIS to address the reduction of geophysical resource detection risk.

0194-6

1.) The North Black River Variation Area comparative analysis was requested for mineral occurrence reasons, as a location where meaningful reduction of geophysical mineral resource detection risk might be achieved by co-locating the route with existing transmission line(s).

0194-7

Text is added to Section S.10.3.2 and 6.4.2.2 to indicate the active state mineral leases for the Proposed Orange Route and the East Bear Lake Variation.

0194-7

2.) In the south half of the Effie Variation Area, the Orange Route and the East Bear Lake Variation intersect active state metallic mineral leases and intersect additional state lands being considered for a fall, 2015 state metallic mineral lease sale. The Blue Route does not presently intersect active state metallic mineral leases or upcoming lease offerings. Where active state metallic mineral leases are present, conditions of the lease carry a requirement for coordination and consultation with lessees and an "undue interference" determination by DNR. The Blue Route is not subject to these requirements since no active state metallic mineral leases are present. The Blue Route does not intersect parcels being considered for metallic mineral lease sale in fall of 2015. The level of resource certainty in the south half of the Effie Area variation is insufficient to favor one route over another from a minerals perspective.

0194-8

When the MN PUC selects the route, the Applicant would coordinate with the MnDNR to discuss the collection of baseline geophysical data.

0194-8

Collection of baseline geophysical data prior to construction and operation of the transmission line may provide a means to partly mitigate risk of transmission line interference with geophysical mineral exploration techniques, particularly where new line segments are not co-located with existing utilities (typically a helicopter-borne geophysical survey). Collection of baseline geophysical data could partly mitigate the State mineral risk imposed by applicant's preferential routing onto state-owned lands.

No changes are made to the EIS in response to this comment.

0194-9

The southern portion of the Balsam Variation crosses know state mineral resources leased by the MnDNR. The area is within the property boundary for Magnetation as shown on the map at <http://www.magnetation.com/home/wp-content/uploads/2014/05/Land-Plant4JLOPropBound300dpi.pdf>. While transmission lines cannot be constructed on active mine features, the 3,000 foot route width could allow flexibility to site the transmission line to avoid the feature. Construction of transmission lines could affect future mining operations if the transmission line or structures encumber the lease or interfere with access to mineable resources or the ability to remove these resources. However, if a conflict were to arise, then the transmission line and structures would need to be relocated to allow access to the mineral resource.

0194-9

3.) Impacts of the proposed Balsam Variation on iron resources in iron-bearing basins and stockpiles needs to be described in the DEIS for the portion of the Balsam Variation located south of the Minnesota Power 28 Line, or roughly the last 4.5 miles of the variation. In this area the DEIS should describe and compare potential for impact on iron resources and access to iron resources.

0194-10

The Blue/Orange route alternatives merge to cross the Mesabi Iron Range as a single route, at a location where state-owned surface and mineral interests are not known to be present. Privately owned surface and mineral interests in the Mesabi Iron Range crossing area may be impacted by transmission line alignment.

The Blue/Orange route alternatives merge to cross the Mesabi Iron Range as a single route, at a location where state-owned surface and mineral interests are not known to be present. Privately owned surface and mineral interests in the Mesabi Iron Range crossing area may be impacted by transmission line alignment.

0194-11

In areas of known mineral resources such as the Mesabi Iron Range, a 200 foot Region of Influence (ROI) (as described in section 5.3.2.3 and similar sections) may not be sufficient for impact analysis. When considering the Mesabi Iron Range crossing, an ROI of 1,000' or more on either side of the alignment may be more appropriate for impact analysis, since equipment and infrastructure presence can impact mining development planning and operations at distances of a quarter mile or more. Section 6.4.3 may also benefit from this comment.

Sections S.10.3.3, 6.4.3.2 and 7.2.2.4 of the EIS are updated with information related to the Balsam Variation and mining.

0194-10

When the MN PUC selects the route, the Applicant would need to coordinate with private landowners as discussed in Section 2.9 of the EIS.

0194-12

No changes are made to the EIS in response to this comment.

Public Waters, Fish and Wildlife and Forestry, General

The document appears to lack additional information for minimizing or mitigating environmental impacts for public waters, fish and wildlife and forestry impacts. The DNR requested this analysis in Scoping/Route Permit comments in our August 15, 2014 letter.

0194-11

Although the EIS uses a 200 foot ROI, Appendix E of the EIS provides the state mineral lease acreage for the 200 foot ROI (also the ROW) as well as the 3,000 foot route width.

0194-12

The Applicant will work with the MnDNR and other appropriate resource agencies through permitting to minimize and/or mitigate potential impacts to public waters, fish and wildlife, and forestry as discussed in Chapters 5 and 6 of the EIS. Table 2-2 provides the Applicant's proposed measures to minimize environmental impacts. In addition, conditions in the MN PUC Route Permit could require the Applicant to prepare plans for vegetation management, etc. as identified in the draft Route Permit in Appendix B of the EIS.

No changes are made to the EIS in response to this comment.

0194-13

The suggested wetland impact minimization methods are included in Chapter 5 of the EIS.

0194-13

A Vegetation Management Plan is not available at this time. Chapter 6 of the EIS identifies that the MN PUC Route Permit could also require the development of a Vegetation Management Plan as a permit condition, which could include plant surveys along the permitted ROW, incorporate vegetation clearing, and management of invasive species. The MN PUC typically requires the Applicant to prepare a plan in coordination with the MnDNR as a condition of the Route Permit.

No changes are made to the EIS in response to this comment.

0194-14

The Applicant will work with the MnDNR and appropriate local governmental units during the permitting phase to ensure compliance with the Wetland Conservation Act regarding native plant communities.

No changes are made to the EIS in response to this comment.

0194-15

The Applicant will also continue to work with Lisa Joyal (MnDNR) regarding potential impacts to rare species and native plant communities.

0194-14

Wetlands, General

Construction activities, including the establishment and use of temporary access roads, staging, and stringing areas, may require access across wetlands and other water resources to facilitate construction of parts of the proposed project that are not easily accessible by public roadways. Preparing the site and installing structures may have short-term impacts on 0.92 acres per structure (200 feet by 200 feet) by soil compaction associated with concentrating surface disturbance and equipment use (Minnesota Power 2014, reference (123)). Impacts in stringing and staging areas will be determined once the final route has been selected by the MN PUC.

The DEIS does not address access across wetlands using matting and equipment that is not low ground pressure in non-frozen conditions. It also does not address what the maximum depth of wetland rutting would be using matting in non-frozen conditions. Impacts to water resources could be minimized or mitigated through use of construction matting to traverse wetlands, limiting crossing of watercourses and using the shortest practical route, timing construction in these areas to take place during frozen conditions, and use of low ground pressure equipment to the extent practical. Construction access through wetlands could also be minimized through the use of helicopters to assist with construction activities, as appropriate. This will help to protect the sites for soil damage, but would also aid in site access. Much of the route crosses classified wetlands, so access during the warm months would be difficult at best for many locations.

The document should include a vegetation plan especially in terms of how damage to peatland vegetation will affect hydrology and peatland quality and mitigation for those effects.

State Approvals, Rare Natural Communities

As stated in the document any native plant community having a conservation status rank of S1, S2, or S3 or any native plant community within a MBS Site of Outstanding or High Biodiversity Significance may qualify as a rare natural community under the Wetland Conservation Act (WCA, see attached). In addition, even though they have not yet been delineated, any native plant community within a preliminary MBS Site of Outstanding or High Biodiversity Significance may also qualify as a rare native plant community under WCA. Because this is a provision of the WCA, it generally applies to wetland native plant communities or other communities affected by activities authorized under or required by a WCA replacement plan. The proposed route will impact Minnesota Biological Survey (MBS) Sites (and Preliminary) of Biodiversity Significance and Old Growth forest. Additional field work will be needed in order to determine potential impacts to native plant communities and to ensure compliance with the Wetland Conservation Act

State-listed species

Please continue to coordinate with Lisa Joyal, Endangered Species Review Coordinator, regarding the proposed surveys for state-listed species.

0194-16

The text referred to in this comment is removed from Section 5.3.2.2 of the EIS.

The Applicant would need to abide by NERC standards. Utilities must certify that vegetative clearance requirements are met annually to insure reliability.

0194-16

Forestry

Section 5.3.2.2. Forestry, General Impacts, page 169-170

In this section, the draft EIS states that, "Impacts to timber harvesting operations could be mitigated by prudent routing (i.e., by selecting routes that avoid forest lands by following existing infrastructure ROWs, access road ROWs, and property lines). ROW maintenance could be managed to reduce impacts on forestry resources. ... In addition, increasing the time between line maintenance in forested areas could result in harvestable products." Also, the project's Right-of-Way fact sheet states that, "trees and shrubs with the potential to exceed 15 feet in height are generally not permitted within the ROW." The draft EIS should not give the impression that right-of-way maintenance may be timed to allow tree species to potentially grow to merchantable size for typical uses in the paper and wood industry. If other harvestable products are possible they should be mentioned and explained. The DNR would also expect compensation or repair to our Forest Road System due to the use of the roads during the construction phase.

Other General Comments

Section S.9.2. Route Specific Impacts to Central Section, page S21.

The area around Larson and Bass Lakes appear to be within 1500 feet of the anticipated alignment. This was not mentioned as part of this section. It would be helpful to add a view-shed for anticipated view impacts Larson (31-0317) and Bass Lakes (31-0316) as well as state and county campground locations.

Section 2.1, Proposed Project, page 15 and Map 2-01.

The DEIS identifies a compensation station that will be located in Roseau County We are unable to determine if this is being proposed to be located on or adjacent to state land. According to the DEIS, the series compensation station will permanently impact approximately 60 acres.

Chapter 5

Chapter 5 discusses the introduction or spread of invasive species and the potential impacts it may have on existing landscapes and new corridors. The DEIS does not address how the project will mitigate the spread of invasive species/noxious weeds especially in peatland watershed protection areas. An Appendix with a Noxious Weed and Invasive Species Control Plan should be part of the Final EIS.

Chapter 6

In viewing the ownership tables and associated figures in Chapter 6, it would be easy to mistakenly conclude that no private lands are intersected by the route alternatives or variations.

In the document, tabular distinction between School Trust land acres, Tax Forfeit land acres, and County Fee land acres would be helpful. "State Forest" is a management category, not an ownership category.

0194-17

Although areas around Larson Lake and Bass Lake appear to be within 1,500 feet of the proposed Orange and Blue routes, the shared alignment of these routes is approximately 1,800 feet from the southern-most shoreline of Bass Lake and approximately 3,000 feet from the northern shoreline of Larson Lake. The Bass Lake Alignment Modification would adjust this alignment approximately 750 feet farther from Bass Lake and the same distance closer to Larson Lake at its farthest distance from the alignment of the proposed Orange and Blue routes. Although it is possible the transmission line would be visible from areas in the vicinity of these lakes, it is likely that dense forest in the area would partially or fully screen views of the transmission line.

0194-17

Viewshed maps for specific areas have not been prepared as part of the EIS. The assessment of visual impacts relies on the idea stated in Section 5.3.1.1 that, "The 1,500 foot ROI for aesthetic resources was identified because the proposed Project is most likely to be visible within this near-foreground distance zone and views of the proposed Project from aesthetic resources within this distance zone have the greatest potential to result in visual impacts for sensitive viewers." Visual simulations, provided in Appendix N, Photo Simulations, of the EIS, were prepared for seven viewpoints within the study area to represent typical views of the proposed Project. These simulations are intended to provide reviewers with a sense of what the transmission line would look like from various distances and in various landscape settings within the study area.

No changes are made to the EIS in response to this comment.

0194-20

0194-18

Maps 6-11 and 6-13 in the EIS show that the compensation station would be adjacent to state lands.

No changes are made to the EIS in response to this comment.

0194-19

0194

Chapter 6 of the EIS identifies that the MN PUC Route Permit could also require the development of a Vegetation Management Plan as a permit condition, which could include plant surveys along the permitted ROW, incorporate vegetation clearing, and management of invasive species. The MN PUC typically requires the Applicant to prepare a plan in coordination with the MnDNR as a condition of the Route Permit.

No changes are made to the EIS in response to this comment.

0194-20

Tables in Chapter 6 of the EIS are updated for clarity.

The document should include a robust wildfire response plan, both during construction and in the future. Minimum Impact Suppression Tactics (MIST) is suggested when fighting fires on peatland SNAs. It would be good for the applicant to reference MIST. The DNR can assist in providing this information.

Please include a definition of *Residence*, whether it refers to full time or seasonal occupancy, or both and whether that distinction affects the outcome of the analysis.

If interphase spacers are used for this project, the document should describe the timing, where and how they will be installed.

The DNR also plans to comment during the next phase of the routing record. We intend to provide more information regarding the routing decision and/or preference as well as routing conditions such as plans needed for permit conditions or other remarks to assure we have provided a complete project review. Thank you for the opportunity to comment on the DEIS for the Great Northern Transmission Line Project and let me know if you have any questions.

Sincerely,

Lori Dowling-Hanson
DNR Northeast Regional Director
1201 East Hwy 2
Grand Rapids, MN 55744
lori.dowling-hanson@state.mn.us

Enclosures: 2

C: Julie Smith, US Department of Energy
Jim Atkinson, Minnesota Power
Greg Nelson, DNR Northwest Region Director

0194-21

The Applicant provided the following response (September 9, 2015): In terms of wildfire management during construction activity, the Applicant expects that the contractor(s) will follow industry standard protocol for fire prevention including but not limited to:

- a. Maintain orderly work sites.
- b. Regularly inform workers on fire danger, particularly in high fire danger seasons and areas.
- c. Identify and communicate emergency contact information for the appropriate work location.
- d. Fire extinguishers available on all equipment.
- e. Fire spotters in place during hot work (welding, grinding, etc.).
- f. Conduct open burning only by and in accordance with burning permit.
- g. Act expeditiously to extinguish wildfires, see excerpt for previous line construction contract: "The Contractor shall do everything reasonably within its power, both independently and on request of any duly-authorized representative of the United States, to prevent and suppress fires on or near the job-site, including making available such construction personnel and equipment as may be reasonably obtainable for the suppression of such fires."

These protocols will be further defined in the project general conditions.

In terms of wildfire management after the line is in service: The Applicant regularly inspects all transmission lines. The Applicant desires to be informed of any wildfire that impacts a transmission right-of-way so that a special inspection can be made to evaluate line integrity. Generally, there is more concern for damage to lines constructed with wood poles; however, all impacted lines should be inspected. If the responding fire department or agency utilizes aerially applied chemical fire retardants to control the fire, the Applicant may request more information on the chemical fire retardants used to evaluate and address possible corrosive effects and insulator contamination issues these agents may have on the transmission facility.

No changes are made to the EIS in response to this comment.

0194-21

0194-22

0194-23

0194-22

For purposes of the EIS, a residence is defined as a structure that is capable of human habitation based on aerial photographs and

public input, irregardless of whether somebody is currently living there.

No changes are made to the EIS in response to this comment.

0194-23

The Applicant provided the following response (September 9, 2015): Generally on transmission voltage level projects, the use of interphase spacers is a remedial action to mitigate an unforeseen conductor problem, not part of the initial design. Interphase spacers are used to maintain phase to phase clearance between conductors, particularly during a wind induced conductor movement phenomenon known as galloping. One of the primary concerns in a galloping event is that, if not properly designed, two phases could contact each other or a ground wire and cause an outage. The proposed Project, and most transmission line designs in general, utilize a combination structure size, phase spacing, insulator configuration, span length, and conductor tension to minimize the probability that conductors will contact during galloping. Installation of interphase spacers on transmission facilities is complicated, expensive, and rare. The use of interphase spacers for the proposed Project is not anticipated or desired. The Applicant may apply interphase spacers or other remedial measures only to mitigate severe problems as necessary; however, the timing, location, and methodology of such remedial measures would be determined during detailed final design.



WETLAND CONSERVATION ACT



Rare Natural Communities

BWSR/DNR Technical Guidance, January 31, 2011

Overview

Rule Reference: MN Rule 8420.0515, Subpart 3.

Applicability: This guidance provides the Department of Natural Resource's (DNR) criteria for identifying rare natural communities insofar as the applicable WCA rule section assigns that responsibility to the DNR. It should be used as a supplement to the WCA rule.

Intended Use: To communicate the DNR's criteria for determining "rare natural communities" to Technical Evaluation Panels (TEPs), Local Government Units (LGUs), landowners, and applicants, and to provide guidance on its application.

Rare natural communities are one of several "Special Considerations" listed in the WCA rules for wetland replacement plans.

Background

Within the general topic of "Wetland Replacement," the rules for the Wetland Conservation Act (WCA) contain the following provision under "Special Considerations":

Minn. Rule 8420.0515 Subp. 3. Rare natural communities. A replacement plan for activities that involve the modification of a rare natural community as determined by the Department of Natural Resources' natural heritage program must be denied if the local government unit determines that the proposed activities will permanently adversely affect the natural community.

The DNR's Natural Heritage and Nongame Research Program (NHNRP), in collaboration with the Minnesota County Biological Survey (MCBS) identifies, describes and maps rare and high quality native plant communities in the Natural Heritage Information System (NHIS).¹ Since the term "rare natural community" is not defined in the WCA rule, this guidance is provided to clarify which native plant communities are applicable to the rule section above. Rare natural communities identified under this WCA rule provision often support endangered and threatened species. However, please note that there is a separate "Special Consideration" in the WCA rules pertaining to listed species (8420.0515, Subpart 2).



Rare natural community example: Ephemeral wetlands associated with a Southern Bedrock Outcrop native plant community.

¹ For additional information, see: <http://www.dnr.state.mn.us/eco/nhnrp/nhis.html>

Criteria for Identifying Rare Natural Communities

Native plant communities. Native plant communities in Minnesota are classified according to the Minnesota Native Plant Community Classification System developed by the DNR.² The DNR's Natural Heritage and Nongame Research Program has determined that the following native plant communities qualify as "rare natural communities" for the purposes of Minn. Rule 8420.0515, Subp. 3.

Rare Natural Communities are:

"Native plant communities having a conservation status rank of S1, S2, or S3 that are mapped or determined by the NHRP or MCBS to be eligible for mapping in the Natural Heritage Information System;

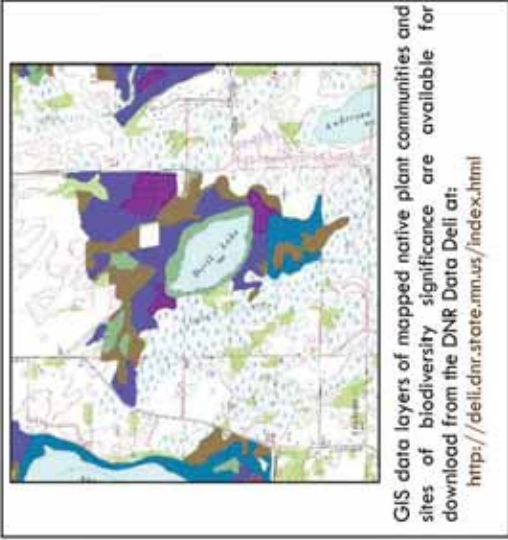
or

Any native plant community that is contained within an area mapped or determined by the MCBS to be eligible for mapping in the Natural Heritage Information System as having an Outstanding or High biodiversity significance ranking."

Conservation status ranks. Conservation status ranks of native plant communities reflect the extent and condition of the community type in Minnesota (shaded rows qualify for "rare natural community" status):

S1	Critically imperiled
S2	Imperiled
S3	Vulnerable to extirpation
S4	Apparently secure, uncommon but not rare
S5	Secure, common, widespread and abundant

A list of native plant communities and their associated conservation status ranks can be found at: http://files.dnr.state.mn.us/natural_resources/npc/s_ranks_npc_types_&_subtypes.pdf



Biodiversity significance ranks. Biodiversity significance ranks are a measure of the statewide importance of MCBS sites for native biological diversity² (shaded rows qualify for "rare natural community" status) :

Outstanding	Sites containing the best occurrences of the rarest species, the most outstanding examples of the rarest native plant communities, and/or the largest, most intact functional landscapes.
High	Sites containing very good quality occurrences of the rarest species, high-quality examples of rare native plant communities, and/or important functional landscapes.
Moderate	Sites containing occurrences of rare species, moderately disturbed native plant communities, and/or landscapes that have a strong potential for recovery.
Below	Sites below the minimum threshold for statewide biodiversity significance; lack occurrences of rare species and natural features.

² For additional information, see: <https://www.dnr.state.mn.us/npc/classification.html>

³ For additional information, see: https://www.dnr.state.mn.us/eco/mcbs/biodiversity_guidelines.html

Guidance on Applying the WCA Rule

How to know if a Rare Natural Community is present.

There are several avenues for determining if a rare natural community is present at a specific site:

1. **GIS Data Layers.** Applicants, LGU staff, and TEP members can consult the publicly available GIS data layers referenced above to determine if any native plant communities or sites of biodiversity significance have been mapped at the site in question. If a native plant community has been mapped, check its conservation status rank at the web site listed previously to see if it has a status rank of S1, S2, or S3.
2. **NHIS Data Request.** Applicants may submit a Natural Heritage Information System search request. The DNR will conduct a search of the NHIS and provide a report of any features present at the site. For information on how to submit such requests, go to: <http://www.dnr.state.mn.us/eco/nhnrp/nhis.html>. There is a fee for having the DNR conduct these searches.
3. **Local Knowledge.** LGU staff and TEP members are encouraged to become familiar with the native plant communities that may be present in their area in order to recognize candidate rare natural communities.⁴ Although the NHIS data layers are useful for determining whether any rare natural communities are present at a specific location; the absence of a mapped feature in the GIS data layers does not necessarily mean that a rare natural community is not present.
4. **DNR Review.** The DNR is on the mailing list to receive WCA notices of application and, based on their review, may notify LGUs of the presence of existing or potential rare natural communities at a site.



Rare natural community example: Northern Wet Prairie in Polk County.

⁴ The DNR's web site at <http://www.dnr.state.mn.us/npc/index.html> is an excellent resource on native plant communities and also contains ordering information for a series of field guides on native plant communities in Minnesota.

What to do if a Rare Natural Community is present.

If a rare natural community is present at a site or a candidate community is present, contact your local DNR TEP representative, the regional DNR environmental assessment ecologist,⁵ or the DNR Division of Ecological and Water Resources Wetland Program Coordinator (651-259-5125). A TEP meeting should be called, with a specific invitation to the DNR to participate. The TEP may want to consider inviting additional DNR representatives that have specific expertise. The DNR will work with the TEP, applicants, and LGUs to assess potential impacts and, if possible, help design projects to avoid permanent adverse effects.

It is the LGU's responsibility to officially determine whether the proposed activity will "permanently adversely affect" the rare natural community. However, the DNR will often submit a written finding or opinion to the LGU. Potential mitigation measures may be considered in the determination of overall effects. If the LGU finds that the rare natural community will be permanently adversely affected, by rule the application must be denied.

The "Special Considerations" provisions in the WCA rule, including the one for Rare Natural Communities, apply to potential impact and wetland replacement sites.

BWSR/DNR Guidance, January 31, 2011

The primary author of this guidance is:

- Doug Norris, Wetlands Program Coordinator, MinDNR, Division of Ecological and Water Resources, 651-259-5125, doug.norris@state.mn.us

This document is available on the BWSR website and may be revised periodically. Check the web site for the most current versions: www.bwsr.state.mn.us/wetlands.

For more information, contact your local Board of Water and Soil Resources wetland specialist or the DNR, Division of Ecological and Water Resources Wetland Program Coordinator.

⁵ http://www.bwsr.state.mn.us/contact/WCA_areas.pdf



August 15, 2014

Bill Storm, Environmental Review Manager
Minnesota Department of Commerce
85 7th Place East, Suite 500
St. Paul MN 55101

Re: In the Matter of the Application of Minnesota Power for a Route Permit for the Great Northern
Transmission Line Public Utilities Commission
(PUC) Docket Number: E-015/TL-14-21
DNR ERDB Number: 20130195

Dear Mr. Storm:

The Minnesota Department of Natural Resources (DNR) has reviewed the Application for a Route Permit for the Great Northern Transmission Line Project and provides the following comments regarding the application content, impact assessment that should be scoped into the upcoming Draft Environmental Impact Statement (DEIS), mineral resources, and route alternatives for further review in the DEIS.

1. Comments on the Route Permit Application

General Comment:

In general, the route permit application was well written in an objective manner and accurately describes most of the impacts associated with construction and maintenance of a high voltage transmission line (HVTL). **The route permit application should be used as a primary source of information in preparing the EIS.** The following specific comments refer to information in the route permit application and include requests for additional analysis in the EIS.

Specific Comments:

3.4.2 State Approvals

This section indicates that the project is expected to be exempt under MN Rule 8420.0420 Subpart 6, yet estimated direct wetland impacts are described as exceeding the minimum .5 acre requirement that must be met in order to qualify for the exemption. Furthermore, wetland impact estimates are based on National Wetlands Inventory Mapping (NWI) mapping and/or other offsite methods which many times underestimate actual areal extent. **The DEIS should describe wetland exemptions requirements that must be met and how the project is expected to meet those requirements.**

Many of the native plant communities in the project area also are considered *rare natural plant communities* under the Wetland Conservation Act (WCA) (MN Rule 8420.0515). Guidance on Rare Natural Plant Communities under the WCA can be found on the Board of Water and Soil Resources - [BWSR webpage](#). **The EIS should assess impacts on rare natural plant communities and compliance with associated WCA provisions.**

4.1.2 Border Crossing Options

This section largely describes informal early coordination efforts between Minnesota Power (the applicant) and Manitoba Hydro and resulting mutual decisions regarding preferred crossing locations. **The EIS should summarize how border crossing alternatives may be affected by Manitoba Hydro and Manitoba/Canadian government decision making and review processes.**

Alternative border crossing locations are included in Section 4 of this letter. We understand that due to constraints at the proposed border crossing, it is possible that other commenters may also provide one or more alternatives for analysis in the EIS. The following features have the possibility of being impacted by routing in the vicinity of the proposed border crossing and should be addressed in the EIS as applicable: SNAs, Watershed Protection Areas associated with SNAs and fens, High Conservation Value Forest within state forest lands, a Great Grey Owl Management Area, WMAs, MBS sites of biodiversity significance, avian impacts, and fragmentation of large block habitats.

6.10.2 Recreation Area Users

Page 6.10-7 mentions potential visual impacts to users of the Big Bog State Recreation Area and that additional study is required to determine potential impacts. DNR agrees and is concerned about visual impacts to users of both the boardwalk and the Big Bog Recreation Area Fire Tower associated with the Orange Route. **A viewshed analysis (with scaled visual renditions of what one would expect to see) should be prepared as part of the EIS for these areas as well as other recognized viewsheds.**

6.17.2 Public Waters

The DEIS should describe short and long-term impacts of crossing streams (trout streams or other) and what measures would be taken to mitigate such impacts. Any plans for alternative construction and/or right-of-way management should also be described. On other projects DNR has recommended that water crossings should be avoided to the extent possible and if they are crossed consider neck downs in clearing widths as well as preservation and maintenance of woody buffers in riparian zones as a means to lessen impacts.

6.18 Wetland Impacts

Section 6.18.2 indicates that peat soils tend to be highly compressible, that compressed peat is slow to regenerate, and that vegetation communities could be impacted if soils are compressed and sunken. The DNR agrees with this. Experience has shown that construction in peat soils often times requires multiple layers of construction matting to create a stable work surface. After these mats are removed, the peat remains sunken/compressed and the area at times re-vegetates to an ecologically unsuitable open water wetland community (many times cattails).

The EIS should describe and account for compression of peat soils in determining impacts (also relates to whether project qualifies for exemption under MN Rule Chapter 8420) and mitigation requirements. Also, these and other types of impacts to vegetation and wetlands should be addressed as part of an overall vegetation management plan and included in the EIS.

This section also mentions that the route options would cross one or more Peatland SNA Watershed Protection Areas (WPAs) and that coordination with DNR will be required to determine whether effects may occur to calcareous fens. Any increase or change in groundwater movement in the WPAs could have significant and deleterious effects upon calcareous fen and SNA integrity. Primary concerns regarding the development of utility corridors within Peatland SNA WPAs include the alteration of hydrological processes during construction/maintenance of the corridor and the introduction of invasive

exotic species into otherwise undisturbed ecosystems. To better inform route decisions and meet the purpose of environmental review, the EIS should include assessments with enough detail to better understand potential impacts to calcareous fens and WPAs.

Section 6.18.3 indicates that the applicant will work with the USACE to develop a mitigation approach that meets compensatory mitigation requirements of the agency. **The EIS should disclose all plans for mitigation and recognize this as an opportunity to mitigate for a variety of ecological functions that will be degraded or lost as a result of the project.**

Section 6.18.3 also indicates that BMPs such as matting, ice roads, and low ground pressure equipment will be used to the extent practical to minimize wetland impacts during construction. **The EIS should include a plan that specifies protocols for usage of matting, ice road, and low ground pressure equipment in wetlands. The plan should also identify times that – due to site conditions – work will be halted to avoid impacts and comply with protocols.**

6.19 Wildlife Impacts

Section 6.19.3 includes several mitigation measures to avoid or minimize impacts to birds. **An Avian Mitigation Plan should be developed and included as an avian impact risk mitigation strategy as part of the EIS. As part of the plan, high risk areas and areas planned for bird diverter line marking should be included.** The EIS should provide a discussion on whether guy wires may also need to be marked.

Section 6.19.3 includes mitigation actions that are currently limited to birds. **The EIS should be expanded to include mitigation items for wildlife (i.e. methods to mitigate habitat loss, conversion, degradation, and fragmentation).**

Routes will fragment large blocks of contiguous habitats, some of which will be in critical deer yard habitat. The DNR has been assisting the applicant by providing potential compensatory wetland mitigation options to offset the functional losses associated with the conversion of forested wetland impacts that will require mitigation by the United States Army Corps of Engineers (USACE) 404 permit. The DNR and Minnesota Power are working together to establish wetland preservation areas adjacent to existing WMA deer wintering areas and the DNR appreciates the applicant's patience as the Department works through the proper internal mechanisms necessary to fulfill our divisional and departmental responsibilities.

6.25 Forestry Impacts

The route permit application describes extensive direct habitat loss and conversion of forests and shrub lands to herbaceous cover (2,745 and 2,680 acres of right-of-way for the Orange and Blue routes respectively) and corresponding changes in wildlife communities. The loss of nearly 4 square miles of forested land is significant and permanent. This should be noted in the Executive Summary as well as analysis of the effect of proposed deforestation on forest industry in MN.

The net loss of these specific habitat cover types is significant. **The EIS should assess way to compensate for what are viewed as significant impacts to forest habitat functions. Following are some potential options that should be included as mitigation options in the EIS:**

- Preservation and Maintenance Options – The EIS should cite specific requirements for HVTL right-of-way maintenance and include additional options that meet minimum requirements and minimize fragmentation and/or edge type effects. Management of the proposed corridor should

be studied to see how leaving small fruiting trees, shrubs, and mechanical versus chemical vegetation management will help mitigate loss of forest cover and forest fragmentation. The DNR can work with the applicant in determining areas to implement different vegetation management concepts.

- The DNR is interested in learning about the length of time between line maintenance in forested areas, to explore the possibility of leaving species long enough to have a harvestable product at the time of maintenance.
- The EIS should include any areas where, due to elevation, a line could be spanned high enough over an area to avoid forest clearing. For example, certain wetland and riparian areas in northern Itasca County are surrounded by elevation changes that may result in a scenario where no trees would need to be cleared. Also, certain species growing in bogs may not grow to a height that requires clearing. The EIS should assess these methods of reducing clearing.
- Replacing or providing substitute habitats - DNR has been assisting the applicant by providing them potential compensatory wetland mitigation options to help offset the functional losses associated with the conversion of forested wetland impacts. This is intended to facilitate what potential United States Army Corps of Engineers (USACE) 404 permit mitigation requirements.
- We believe that the EIS provides an opportunity to identify mitigation that would mutually compensate for the loss of forested wetland functions and the extensive direct habitat loss and conversion of upland forests and shrub lands to herbaceous cover. The EIS should differentiate between the two to determine net functional loss, significance of that loss, and remaining compensatory mitigation needs.

Section 6.25.2 limits the assessment of forestry impacts to acreage lost to conversion of cover type and indicates that impacts will be minor relative to the overall acreage affected. **Since the loss of forest cover will also diminish the long-term production capacity of these lands, loss of forestry revenue should also be assessed in the EIS. This analysis should include impacts to Consolidated Conservation ("Con-Con") Lands and School Trust Lands.**

The DNR also asks that the applicant address "Danger Trees" as soon as possible and account for estimated impacts to forests. These are trees outside of the proposed ROW that may need to be removed. The DNR wishes to avoid writing special permits for removal of trees that may fall into the ROW.

6.26. Mineral Resources

Chapter 6 of the Route Permit Application includes a preliminary discussion of mining existing conditions, transmission line direct and indirect effects on mining, and mitigation (section 6.26 of the application). This section of the EIS might be better titled "Mining and Mineral Resources." The discussion should be expanded to address potential conflict in areas of known but undeveloped mineral occurrence. These potential conflicts include both reduction of development potential where route alternatives intersect inactive or undeveloped resource areas and reduction of mineral exploration effectiveness where high voltage lines interfere with electrical and magnetic survey techniques.

The preferred and alternative routes proposed in the application incur the necessity of crossing the known iron resource area of the Mesabi iron range, the necessity of crossing a zone of known

nonferrous mineral occurrence in NE Itasca County that is undergoing active state metallic mineral leasing and exploration, and deviation from existing corridor in NW Koochiching County to cross another zone of known nonferrous mineral occurrence. Crossings of the Mesabi iron resource area and the two mineral occurrence zones carry elevated risk for eventual mineral resource/transmission line conflict. The risks to both the transmission line applicant and mineral rights owners are significant, carrying exceptional consequence (transmission line re-routing and/or loss of economic resource) in the event of occurrence. The EIS should describe the likelihood and consequence of mineral resource/transmission line conflict for known and undeveloped mineral resource areas. The risk of mineral resource/transmission line conflict should be transferred to the transmission line applicant and not be absorbed by School Trust, Tax Forfeit Trust and other state-owned land beneficiaries. The EIS should describe mechanisms that will be used to ensure that incurred risk is transferred to the transmission line applicant, and mitigation steps (perhaps engineering considerations) that can be used now to minimize conflict in the event that rerouting becomes necessary in the event of mineral development.

Peat, Sand/Gravel Aggregate, Crushed Stone

It is likely that state-owned surface estate mineral resources (peat, sand/gravel aggregate, crushed stone, clay, etc.) may eventually be encumbered by transmission line structures. Best practice will be to avoid unnecessary impact on these resources. Once a route is finalized, state-owned lands affected by the route will be evaluated (at applicant expense) to determine if and where compensation will be required for encumbrance of surface estate mineral resources.

Metallic Minerals Outside the Mesabi Iron Range

In northwestern Koochiching County, a segment of the route (vicinity of Township 159 North, Range 27 West) deviates away from existing corridor and transects an area of recent and historical metallic mineral occurrence, leasing and exploration. Absent more significant siting factors, continuation of the route along existing corridor (Black River comparative alternative) to the southeast corner of Section 10 and then south along existing corridor would be less likely to impede future exploration for metallic mineral resources. We request that this alternative be considered included for comparative analysis in the EIS.

From the vicinity of Effie, and for the next roughly 25 miles to the southeast the preferred route and alternatives (including the Effie alternative) cross a volcanic belt that hosts known metallic mineral occurrences (gold, copper-zinc-lead, iron). All of these routes cross active state metallic mineral leases in zones having high potential to host metallic mineral resources. The zone of high mineral potential generally extends southwest into the Chippewa National Forest and northeast into the Lake Vermillion area. State-issued metallic mineral lease agreements are also surface leases when the state-owned mineral interest is coincident with state-owned surface ownership. State metallic mineral lease agreements allow for state issuance of additional leases, permits or licenses where state surface ownership is present at a mineral lease, provided that the mineral lessee is consulted and that issuance of such additional leases, permits or licenses is determined to not unduly interfere with lessee's exploration or mining development. The Department recommends that transmission line applicant, State, and mineral lessee meet together to better characterize preferred and alternative route impacts in this area and to solicit additional input from the mineral lessee on exploration and development risks, prior to DMR "unduly interfere" determination (MN Rules 6125.07, item number 5). At first glance, the Blue route has the smallest interference footprint for crossing the volcanic belt and lease area. The "Effie" alternative produces a longer interference footprint but is co-located with an existing transmission line.

Mesabi Iron Range

The applicant's route proposal to cross the Mesabi Iron Range does not encumber known state mineral resources.

The Mesabi Iron Range is an area of known iron resources, along a trend of enriched iron formation which at many other locations has been developed into economic resource. The Department would have concerns if alternative routes were proposed that would encumber state-owned mineral resources on the Mesabi Iron Range.

2. Additional impact assessments that should be scoped into the EIS

Large Block Habitats

The Route Permit Application thoroughly describes habitats species usage, direct and indirect habitats loss, habitat scarcity conversion, degradation, fragmentation, and edge effects. However large blocks of contiguous habitats still appear to be impacted. **The DEIS should assess project effects on wildlife areas, lost forested acres, and other natural features as well as describe planned compensatory mitigation measures.**

The DNR understands that some areas of large block habitats are un-avoidable and there are trade-offs with every route. **In addition to mitigation, the proposed route corridor impacts to large block habitats could be lessened with other route alternatives or alignments that utilize existing corridors.** The following resources (MBS Sites, Wildlife and Forestry) relate to large block habitat and describe in more detail our more specific areas of concern and comments.

Minnesota Biological Survey (MBS) Sites of Biodiversity Significance

Proposed routes will impact Minnesota Biological Survey (MBS) Preliminary Sites of Biodiversity Significance and Old Growth forest. The preliminary sites have not been fully designated. The document mentions the impact on Native Plant Communities specifying potential impacts to Ecologically Important Lowland Conifers (EILC); however it is unclear whether Preliminary MBS ranking was used in assessing data or route selection and what mitigation or minimization of impacts will result. **The DNR recommends avoidance of all MBS sites old growth and old growth special management zones (>330' surrounding the entire old growth perimeter) to the extent practical.**

MBS data for much of the project area has yet to be collected or is not yet publically available through the DNR data deli. Earlier correspondence (August 8, 2012 DNR Letter) indicated the DNR Heritage Review Coordinator should be contacted for obtaining any preliminary shapefiles (see attached for MBS data status). MBS Map and Guidelines have also been previously provided to Minnesota Power.

We encourage the applicant to consider project route and alignment alternatives that would avoid direct impacts to these ecologically significant areas. The DNR has offered alternative routes to avoid these areas and offers other alternatives in this review. In some instances there may be an opportunity to place the line closer to the edge of the proposed corridor or provide a slightly wider right of way corridor to minimize impacts.

Additional Recreation Analysis

Anticipated noise levels are not indicated in the document since transformers have not been selected

yet and other engineering considerations have not been determined. Noise levels can be heard in the vicinity of substations. It would be beneficial to know if there are increased noise levels and if audible distance will be increased from the substation as a result of the project.

Proposed routing provides only one alternative near Bass (31-316) and Larson (31-317) lakes in Itasca County. The proposed line would pass between these two lakes which each have public camping facilities. The attraction to this area of the George Washington State Forest is the remoteness, old growth pine un-fragmented forests and secluded lakes. This area is depicted in the mapbook on page 41 of 94. The Executive Summary under Cultural Values indicates that tourism is not likely to be affected by the transmission line; other route alternatives and further analysis of impacts to tourism in this area also should be explained.

Alternatives Screening

Minn. Stat. 116D.04(6): "No state action significantly affecting the quality of the environment shall be allowed, nor shall any permit for natural resources management and development be granted, where such action or permit has caused or is likely to cause pollution, impairment, or destruction of the air, water, land or other natural resources located within the state, so long as there is a feasible and prudent alternative consistent with the reasonable requirements of the public health, safety, and welfare and the state's paramount concern for the protection of its air, water, land and other natural resources from pollution, impairment, or destruction. Economic considerations alone shall not justify such conduct."

MN Environmental Rules require that DNR and other governmental units use environmental documents as guides in issuing permits and carrying out other responsibilities (4410.0300 & 4410.7055).

In order for the EIS to be effective as a guide in decision making (and to assist in documenting compliance with the above mentioned prohibitions); it is important that the EIS clearly document screening criteria used to determine practicality and feasibility of alternatives considered.

Approach to Mitigation of Project Impacts (adapted from CEQ guidelines)

General Comments:

The EIS should describe all impacts described in the application along with additional resource impacts described in this review. For all impacts; the mitigation discussion should be expanded to describe all of the following mitigation principles in descending order of priority (current mitigation discussions in the application focus on 1-3 below):

1. Avoiding the impact altogether by not taking a certain action or parts of an action.
2. Minimizing impacts by limiting the degree or magnitude of the action and its implementation.
3. Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.
4. Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.
5. *Compensating for the impact by replacing or providing substitute resources or environments.

**For impacts considered major/significant*

Specific Comments:

Third Party Independent Monitors

It is our understanding that under the current proposal; only company Environmental Inspectors (EIs) will be used. Ensuring effective communication regarding permit conditions with the various subcontractors and across the multiple spreads is an enormous enterprise.

On past large utility projects, third-party agency monitors have been used to work with and supplementing agency field presence. These monitors would also satisfy reporting expectations, help to ensure that impacts to protected resources are avoided and/or minimized.

The EIS should regard usage of independent third party environmental monitors as an overall mitigation strategy. The DNR is also interested in discussing various models of funding and oversight for a third party monitors during this environmental review and routing process.

Access to DNR Administered Lands

- The EIS should describe any impacts to accessing state administered lands. This transmission line should not affect public / DNR access to state land. Following existing corridors could reduce this problem.
- DNR wild rice leases exist in the vicinity of the Waskish Area. Leaseholders have expressed concern about flights from the local airport being affected. The EIS should assess project impacts on all airport related traffic (e.g. normal flights, agricultural chemical application, etc.).
- Wildfire issues. More power lines running through forest land have a potential for igniting additional wildfires and therefore require a response to control them. The EIS should acknowledge the potential for increased wildfires and necessary response actions.

WMA Impacts

General Impacts:

The route alternative would traverse a number of DNR Wildlife Management Areas (WMAs). The EIS should describe why avoidance of each WMA is not feasible. In order to better inform the DNR licensing process (and better meet the purpose of environmental review), we recommend that the EIS include specific information regarding the feasibility of route alternatives that avoid WMA crossings.

Directly related, the EIS should also discuss how project routes comply with MN Rules 6135, which contain specific standards for route design. For crossings that are determined to be unavoidable (determined there is no feasible alternative route), the EIS should then assess impacts and the need for mitigation for each WMA. Following are a list of general WMA impacts that should be included in the EIS.

- Impacts to fire management/burning – Prescribed fire management is an important tool in maintaining and enhancing habitats on public lands in this area. Section 6.4.2 indicates that controlled burns are used in both Cedar Bend and Carp Swamp WMAs and that maintenance of vegetation would be accomplished by using mechanical methods rather than controlled burns. The EIS should clarify that controlled burns are also used in Roseau Lake WMA and Roseau River WMA. The EIS should also clarify what impact to WMA management would result from the project.

- Recreational usage
- Visual impacts

Specific WMA Uses, Resources and Impacts that should be included in the EIS:

Roseau River WMA

- RRVMA has been acknowledged to be an IBA (Important Bird Area) by Audubon.
- RRVMA contains an area of Preliminary Outstanding Biodiversity (as determined by the MN Biological Survey), which is contained largely within Pool 2 but extends to the eastern boundary or RRVMA. The primary feature of this area of outstanding biodiversity is a large fen complex, which contains rare plant and animal species associated with such habitats.
- An area of Preliminary High Biodiversity is located north and west of RRVMA headquarters. This area was an HCVF candidate, and is comprised of (1) a mix of aspen and jackpine forest with a significant component of oak and (2) a lowland conifer complex consisting of a mix of tamarack, black spruce, and white cedar with shrub inclusions of willow and alder. The proposed route of the transmission line, if within the WMA, would result in forest fragmentation detrimental to various species of forest Wildlife and would introduce invasive plant species where none currently exists.
- Another area of High Biodiversity occurs in Pools 1 East and 1 West. Waterbird assemblages that include up to 5 species of grebes, common loons, and trumpeter swan in open water areas that grade to assemblages of yellow rails and Nelson's sharp-tailed sparrow in the upper reaches of these pools are the primary features of this area. A transmission line near or within these habitats would have a detrimental effect on populations of species using these areas.
- The RRVMA pools are attractive to a number of species of birds during migration. Larger birds that soar into the pools from great distances and heights, such as bald eagles, Canada geese, snow geese, sandhill cranes, and American white pelicans, would be susceptible to mortality from transmission line collisions.
- A moist soils unit consisting of 6 cells containing ~110 acres was developed south and west of the headquarters in recent years. It primarily attracts ducks, geese and shorebirds and has provided a missing habitat component of shallow, food-rich wetlands in proximity to quality nesting cover. Dabbling duck production on Pool 2 has improved ever since the moist soils unit became operational. These benefits would be diminished by a transmission line nearby that would allow perch sites for predators and would fragment the shallow marsh habitat.
- A bald eagle nest exists in the middle of the moist soils unit cited above; the nest has been there for at least 15 years.
- Prescribed fire management is an important tool in maintaining and enhancing habitats on RRVMA. The transmission line would restrict the use of fire under and near the line. It is estimated that the use of fire as a management tool could be curtailed in up to 13 burn units covering ~1500 acres.
- The proposed route of the transmission line, if within the WMA, is in the heart of the most heavily used (all seasons) portion of the WMA. Hunting, deer antler shed hunting, trapping, berry picking, wildlife viewing, hiking, snowmobiling, snowshoeing, and cross-country skiing are among the activities enjoyed by the public. A controlled hunting zone for goose hunting that was developed decades ago exists along the southeastern boundary of the WMA.
- Invasive plant species, few of which are currently on the WMA (the ones that are under control) will increase within a transmission line ROW.

Roseau lake WMA

- Areas within this WMA are being considered for a large wildlife habitat enhancement/flood control project that would partially restore the historic Roseau Lake. Restoration of this lake bed would significantly increase bird and wildlife usage of this unit. Additional migrating birds may also be killed and/or injured by the additional line and tower collisions in this new location. **The EIS should consider impacts to the future planned restoration of the historic Roseau Lake.**

Great Gray Owls

The following information should be used to augment the EIS:

Great Gray Owls (*Strix nebulosa*) have been studied in Northern Roseau County for over 33 years. While not endangered, this owl is a nongame species of significance, both as a migrant and a breeding bird. Both breeding birds and winter visitors are present in greater numbers in this small corner of Minnesota than in any other location in the state.

A management plan was written in 1987 and updated in 2006 that provided management directions for an area that conformed to the Watershed Protection Area (WPA) of the Sprague Creek Peatland Scientific and Natural Area (SNA), and was also located within Lost River State Forest. Management recommendations included: 1) extended rotation in the lowland conifer types, 2) more intensive regular rotation management in traditional managed areas of the WPA, 3) less intensive management close to the SNA, and 4) a "reserve area" where nesting concentration was very high.

Additional information regarding the Roseau Bog Owl Management Unit and Great Gray Owl Reserve Area can be found in plans written by Katie Haws entitled **MANAGEMENT RECOMMENDATIONS FOR THE ROSEAU BOG OWL MANAGEMENT UNIT (1987)** and the **SPRAGUE CREEK PEATLAND WATERSHED PROTECTION AREA INTERIM MANAGEMENT PLAN FOR TIMBER AND GREAT GRAY OWLS (2006, attached).**

Ecologically Important Lowland Conifers (EILCs) and Lowland Conifer Old Growth (LCOG)

The following information should be used to augment the EIS.

Currently the proposed pipeline routes cross at least 8 Ecologically Important Lowland Conifers (EILC) stands in Agassiz Lowlands and Littlefork-Vermillion Uplands Subsections; none in Chippewa Plains nor Pine Moraines subsections. It crosses at least 20 Lowland Conifer Old Growth (LCOG) provisional designated complexes (note, at least seven (7) of these are in WPAs also being crossed at that location).

The Department has a place-holder for old growth conifer forests found in lowlands. It is called Ecologically Important Lowland Conifers (EILC). We are responsible to manage these "placeholder" stands as if they are designated Old Growth (OG). Management in OG is generally not allowed. The exceptions are for management that will maintain the integrity of the old growth stand and its ecological function. Logging activities do not fit that definition and are not allowed. If roads/trails were in place through the OG stand prior to its designation and someone wants to use the road/trail again, then either an interdisciplinary team or the Regional Old Growth team makes a decision on acceptable use.

At this time, the Department is in the process of assessing and designating LCOG, which will replace EILC. Final designations will not likely be complete prior to this project going out for review. Currently, there is a set of provisional designated LCOG complexes. These provisional complexes will be "set-aside" with no management allowed until designations are finalized. Those complexes that become fully designated will follow the management guidelines in place for currently designated OG. Those

complexes that do not get designated will be released back to regular management, including standard forest management practices (unless there are other labels/designations upon these stands). The EIS should include this updated information. Please contact DNR Regional Ecologist Becky Marty at becky.marty@state.mn.us for the most current information about EILC and LCOG.

The DNR will provide a shapefile for EILC in the St. Louis Moraines, areas being considered for LCOG in the Nashwaug Uplands, and LCOG in the Littlefork-Vermillion Uplands.

3. DNR Land and Water Crossing Licenses

The review and issuance of DNR land and water crossing licenses are coordinated by the Division of Lands & Minerals. The proposed project spans five counties in two DNR regions (NW and NE). The Lands & Minerals Regional Supervisor in Itasca and Koochiching County is Joe Rokala (218/999-7894) and the Lands & Minerals Regional Supervisor in the NW Region for Beltrami, Lake of the Woods and Roseau Counties is Cindy Buttleman (218/308-2627). When the route is more certain, we recommend that the project proposer schedule a pre-application meeting with Joe and Cindy to discuss administrative procedures for submitting the land and water crossing applications for this project.

The project proposer should allow adequate time for review and modification of the license applications. For most large projects, applicants submit draft license applications during environmental review and PUC permitting although the licenses will not be issued until those processes are complete.

The following information should be included in the license applications:

1. Length and width of each proposed state land and public water depicted on maps and plan sheets. Each crossing must be identified by legal description to the forty.
2. Clearing activities, construction methods, schedule, and staging of operations including equipment and materials storage proposed on state land or in public waters.
3. Permanent and temporary access routes to the proposed ROW crossing state land or public waters.
4. Temporary work areas on state land adjacent to the ROW that may be needed during construction. These areas should be clearly delineated and identified in the application materials.
5. Location of existing utility lines or transportation ROWs within or near the proposed ROW on state land or in public waters. Provide overview maps identifying the areas of co-location with existing utilities and a detailed map that shows the location of the Great Northern HVTL right-of-way in relation to the existing utility right-of-way on state lands.
6. State trails or Grant in Aid trails proposed to be crossed.
7. Location and design of tower structures including proposed installation methods and proposed plans for disposal of earthen materials resulting from the excavation of the tower footings.

8. Describe the conditions that would require geotechnical evaluations for tower placement on state land or public waters.
9. Construction plans that clearly describe how the licensee proposes to adapt their construction methods and schedule for different seasons and extreme seasonal weather changes in Minnesota such as extremes in snow cover, frozen conditions, extremely low temps, persistence of winter beyond normal ranges and the converse – hot, wet, and dry.
10. Restoration methods including proposed seed mixes and invasive species control measures.
11. Describe measures for minimizing rutting and the protocols for use of matting.
12. Identify the state land and public water crossings where flight diverters will be used and describe the type.
13. ROW maintenance methods and schedule on state land or in public waters.
14. ROW width needs to take into consideration current and future danger tree management.
15. ROW width needs to include the area necessary for guy wire anchors.

In addition, the project proposer should be aware of the following points related to the licensing of state land and public water crossings:

1. The licensee is responsible for invasive species management on the license area for the term of the license (50 years). The licensee must provide a plan for managing invasive species during the construction phase as well as over the license term. Because of the large amount of greenfield proposed to be crossed by this project, introduction of invasive species is a serious concern. The plan should describe methods for inventory, prevention, monitoring, and control on the license area.
2. Certain pesticides are restricted from use on certified forest lands. Written requests for herbicide or pesticide use on state lands is required and only approved herbicides will be allowed.
3. Use of native species for re-vegetation and clean weed free straw for mulch will be required on state land and public water crossings.
4. In-stream work on certain public waters (trout streams, for example) must be avoided at prescribed times to accommodate fish spawning.
5. Active nests or other features that have a no-disturbance window will need to be taken into consideration in the construction schedule.
6. The routes under review cross several types of state land including trust lands. DNR has a fiduciary responsibility to manage trust lands for the benefit of the school trust. The EIS should consider the general economic impact the power line ROW may have on the potential to generate future revenue for the trust.

7. State lands purchased with the assistance of various Federal grant programs will require mandatory federal aid review and approval before the license can be issued. Supplemental information from the applicant may be required for the federal review. If federal approval is required, additional time may be needed to process the application.
8. If a state land parcel becomes isolated due the construction of the ROW, the project proposer must provide access to the isolated state land across the ROW.
9. A monitoring fee will be assessed for DNR Lands & Minerals projected reasonable costs for monitoring the construction of the utility line and preparing special terms and conditions of the license to ensure proper construction. Independent environmental monitors may also be required during construction.
10. Permission for temporary access to the ROW across state land is considered a separate transaction and may be granted through a lease. Requests for temporary access are subject to review and approval, and in some cases may not be granted. Allow adequate time for processing access lease requests.
11. The applicant/licensee will be required to provide the licensor with as built drawings for state land and public water crossings upon completion of initial construction. The drawings for each crossing will be required to have forty lines and descriptions, utility ROW boundaries, structures and other utility improvements located on state land and public water crossings.
12. Site specific surveys and plans may be required if there are site specific resource concerns for certain crossings.

Proposed Public Water Crossings

Under Water Resources and Floodplains in the Executive Summary, the document indicates that Minnesota Power proposes to cross Grass Lake (31-144) in Itasca County and a PWI basin in Roseau County.

"Direct impacts on surface water resources likely will occur at the unnamed PWI basin in Roseau County and at Grass Lake in Itasca County. The span width of the unnamed PWI basing in Roseau County wetland is approximately 2,118 feet wide, which may require one or more structures to be placed within this basin. The span width of Grass Lake in Itasca County will be approximately 1220 feet, which may require one or more structures to be placed within this basin."

Under Minnesota Rules we are to; "avoid lakes, but where there is no feasible and prudent alternative route, minimize the extent of encroachment by crossing under the water." (Also see below).

There are regulations that limit the ability to cross public waters. Please refer to the following that pertains to these concerns. For a complete reference please refer to: LICENSES FOR UTILITY CROSSINGS OF PUBLIC LANDS AND WATERS ACCORDING TO MINNESOTA RULES CHAPTER 6135 [Rules Effective July 1, 2004].

6135.1000 PROTECTING THE ENVIRONMENT.

Subpart 1. **Policy.** It is essential to regulate utility crossings of public lands and waters in order to provide maximum protection and preservation of the natural environment and to minimize any adverse effects which may result from utility crossings. These standards and criteria provide a basic framework of environmental considerations concerning such a proposed crossing. The standards deal with route design, structure design, construction methods, safety considerations, and right-of-way maintenance.

Subpart 2. **Application content.** For each environmental standard listed in these parts, the applicant shall indicate whether the applicant is satisfying the standard, where applicable, or if not, why not. In dealing with route design standards, the application must, where applicable, also supply data on relevant site conditions. Except when the Commissioner determines that it is not feasible and prudent, or not in the best interests of the environment, the applicant shall comply with the following standards in designing, constructing, and maintaining utility crossings.

6135.1100 STANDARDS FOR ROUTE DESIGN.

Subpart 4. **Crossing public waters.** With regard to crossing of public waters:

- A. avoid streams, but if that is not feasible and prudent, cross at the narrowest places wherever feasible and prudent, or at existing crossings of roads, bridges, or utilities; and
- B. Avoid lakes, but where there is no feasible and prudent alternative route, minimize the extent of encroachment by crossing under the water.

Crossings on or under the beds of streams designated by the Commissioner as trout waters shall be avoided unless there is no feasible alternative. When unavoidable, maximum efforts shall be taken to minimize damage to trout habitat.

4. Route Alternatives and Segment Options Recommended for Inclusion in the EIS

As indicated in past correspondence, DNR encourages routing that would have the least amount of impacts to natural resources, outdoor recreation opportunities and sustainable commercial usages of natural resources. DNR also understands that as the MN Public Utilities Commission (PUC) permits specific routes for high voltage transmission line project (HVTLS), the PUC must consider broad range of potential impacts (beyond natural resources) and understands there are impact trades-offs with every route decision.

Prior DNR correspondence to Minnesota Power ALLETE highlighted concerns regarding new greenfield routes that increase impacts to natural resources. The Application for a Route Permit indicates that there has been an effort to avoid resources, for which the DNR is appreciative. However, in some areas it is clear that resources will be significantly impacted along the route. To provide options for mitigating impacts, the DNR provides the following route alternatives to consider for EIS analysis.

Including a variety of routes in the EIS (which provides an alternatives analysis and a way to demonstrate impact avoidance and minimization requirements) will assist decision makers in complying with requirements for avoidance and minimization (MN Stats 116D.04 Subd. 6) as well as requirements for equal consideration of environmental values, economics, and technical aspects in decision making (MN Stats 116D.03). **The DNR recommends the following routes be further analyzed in the EIS. The DNR is not advocating these routes as preferred routes. We wish to review further assessment of these routes in order to fully understand their impacts on natural resources.**

Note that alignments are approximate and the DNR intends that, except where otherwise stated, the customary route width be included in the EIS for analysis and flexibility of siting.

The DNR will provide shapefiles of alternatives to EIS writers. Also, see the attached resource maps showing additional resources not depicted in the figures below.

Co-Location Border Crossing Alternatives

The following figure shows existing border crossing locations for a Minnkota Power 230 kV and an Exce/Manitoba Hydro Interconnect 500 kV line. Use of either of these corridors (or a combination of the two) should be included for assessment in the EIS as they would:

- Reduce overall Greenfield impacts by taking better advantage of existing corridors of disturbance (i.e. co-location).
- Avoid encroachment and associated impacts to the Roseau River and Roseau lake WMAs
- Avoid an Audubon Society Important Bird Area.
- Ecologically Significant Lowland Conifers (EILCs)
- Areas of Preliminary Biodiversity Significance ranked as Outstanding associated with Pine and Sprague Creek Peatland SNA's
- Watershed Protection Areas associated with fens in Pine Creek and Sprague Creek Peatland Scientific and Natural Areas (SNAs)

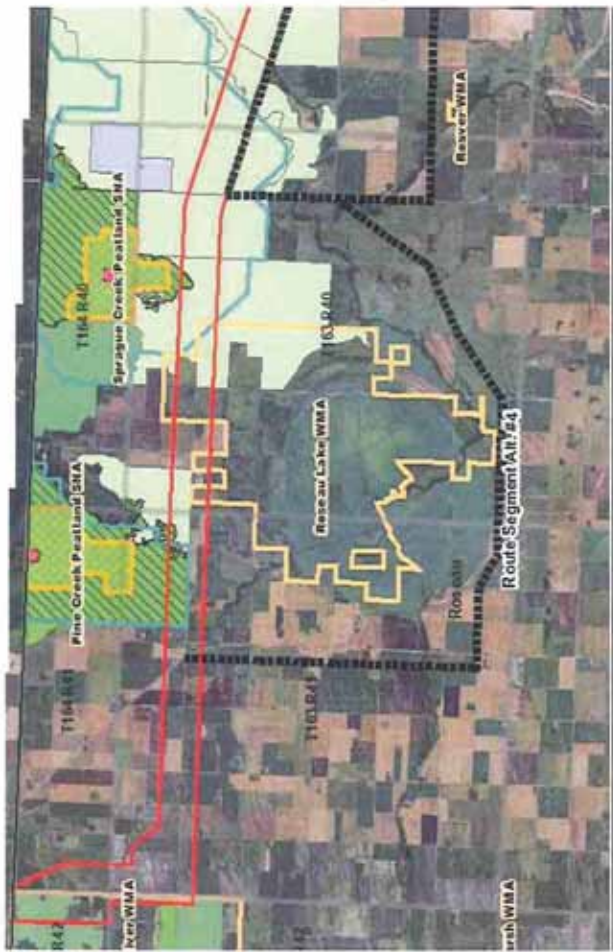


Figure 15 of 26

Route Segment Alternative #1A

This route segment alternative is a variation on Route Segment Alternative #1, and is intended to provide more options in the vicinity of the border crossing to balance natural resource impacts and other important siting criteria. This alternative should be carried forward for additional review in the EIS for the following reasons:

- Minimization of green field routing and associated impacts (e.g. fragmentation, habitat loss, etc.).
- Avoidance of high value resources such as WMAs, Peatland SNA WPAs, Areas of Preliminary Biodiversity Significance, HCVFs, EILCs, etc. (see attached Roseau County Resources Map).



Route Widening Area #1

This alternative should be carried forward for additional review in the EIS for the following reasons:

- Potential avoidance of more than 8 miles of green field routing and associated impacts (e.g. fragmentation, habitat loss, etc.).
- Allow for minimization of impacts to high value resources such Areas of Preliminary Biodiversity Significance (up to 8 miles of avoidance), Sprague Creek Peatland SNA WPA wetlands (1.5 miles), forestry lands, etc. (see attached Roseau County Resources Map).



Route Segment Alt. #2

This route would begin north of Cedar Bend WMA and travel southeasterly along an existing 230kV HVTL to a point near the Roseau County and LOTW County Border. From that point it could continue southeast along route segment #3 (see below) using Route Segment Alt. 2A or re-join the applicant Blue/Orange route. This alternative should be carried forward for additional review in the EIS for the following reasons:

- Allow for minimization of impacts and further fragmentation of high value resources such Areas of Preliminary Biodiversity Significance (areas of outstanding, moderate, and high), wetlands, Cedar Bend WMA, and forestry land (~15 miles).
- An additional co-location option (would co-locate with an existing Minnesota Power 230 kV HVTL)



Route Segment Alt. #2A
Inclusion of the Route Segment Alternative provides flexibility to consideration a combination of route applicant and DNR proposed additional co-location alternatives.

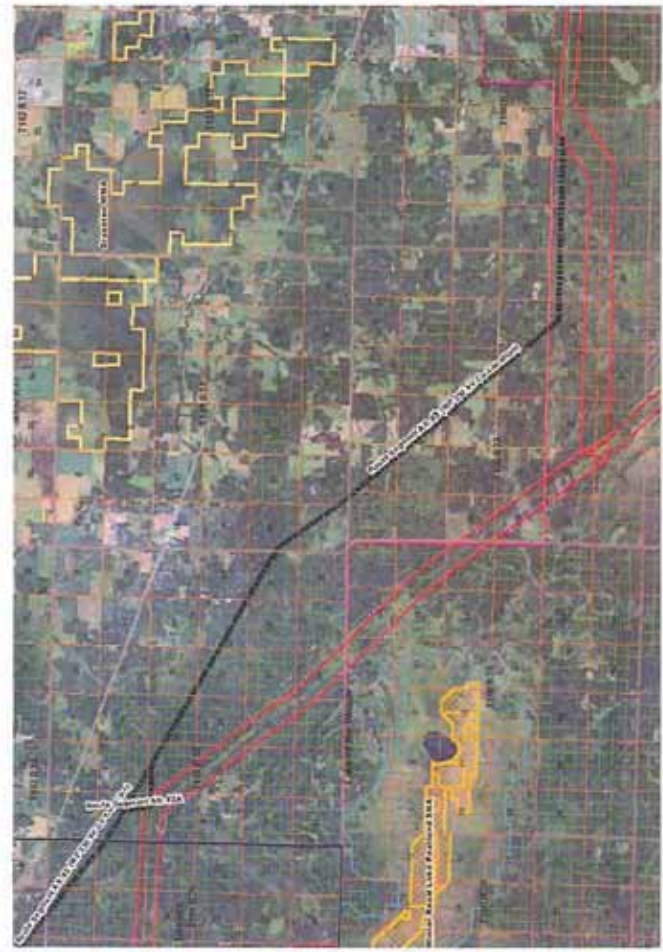


Route Segment Alt. #3

This alternative would either begin near the Roseau County and LOTA County border starting from the applicant's preferred Blue/orange Route or continue on from Route Segment Alt. #2 described above.

This alternative should be carried forward for additional review in the EIS for the following reasons:

- Continuation from Route Segment Alt. 2 into this Route Segment Alternative would avoid approximately 7 miles of green field crossing and associated impacts.
 - Applicants route includes a greenfield crossover in T160N, R33W, Sections 25-29 and T160N, R32W, Sections 28-30
- Using this route segment in combination with segment #2A would avoid approximately 6 miles of green field impacts (route segment 2A would re-introduce approximately 1 mile of greenfield impact).
- Avoidance and minimization of impacts to high value resources such as Important Bird Areas (~4mi. vs. 10 mi.), forestry lands.



The Effie Route

The DNR previously worked with Minnesota Power to review the Effie Route, depicted below, following an existing 230/500 kV transmission line. Minnesota Power did not carry the Effie Route forward to the application due to concerns about greater length and greater environmental impacts than the Orange or Blue routes. The DNR has reviewed a thorough point to point comparison provided by Minnesota Power and has remaining concerns regarding the proposed routes in the application in comparison to the Effie Route. The DNR would like to propose for further analysis the Effie Route discussed during early coordination for the following reasons:

- Though the analysis previously provided describes increased impacts to natural resources and greater length, the results may not fully capture the impacts of the proposed Orange and Blue Routes due to fragmentation.
- Creating a new ROW in the area of the proposed routes may have more impact that increasing the size of the existing ROW along the Effie Route.
- Critical Habitat Impacts - The Effie Route contains the most critical habitat (i.e., this refers to USFWS critical habitat areas identified for the Canada Lynx). However, comparing the acres of critical lynx habitat impacted by each route is not an adequate comparison because the quality of the critical habitat that will be impacted is an important factor. The critical lynx habitat along the Effie Route is already degraded in quality due to the current fragmentation impacts of the existing transmission line. Whereas, the critical lynx habitat in the proposed routes is currently of higher quality because it is intact and not impacted by a transmission line corridor. The impact of a creating a new ROW through critical lynx habitat is greater than the impact of increasing the size of the ROW through critical habitat that is already impacted by a transmission line.
- Wetland Impacts - Early coordination from Minnesota Power indicated that the Blue Route, Orange Route, and Effie Route will cross through 373, 349, and 412 acres of wetlands respectively. However, comparing the acres of wetlands impacted by each route is not an adequate comparison because the type of wetland that will be impacted is an important factor. The wetlands along the Effie Route are already impacted by an existing transmission line so they are already somewhat degraded in quality. Whereas the wetlands in the two proposed routes are currently intact, unfragmented wetlands with no transmission line impacts. Impacts of a new transmission line include fragmentation of habitat, decreased habitat value for wildlife, increased conversion of habitat (i.e., changes from forested wetlands to open or shrub wetlands), and risk of introduction of invasive species. The impact of a new transmission line through intact wetlands may be greater than the impact of adding a transmission line to a wetland that is already impacted by an existing transmission line.
- Old Growth Impacts - Early coordination with Minnesota Power indicated that the Effie Route will impact 41 acres of old growth. The impacts would occur in two separate old growth areas. One old growth area is on the east side of the Effie Route and the other is on the west side of the Effie Route. These old growth areas could be avoided by expanding the ROW in the opposite direction away from the old growth areas.
- Large Blocks of Forest Impacts - Impacts to large blocks of forest would be significantly reduced with the Effie Route. The blocks of forest that the Effie Route passes through are already fragmented due to the existing transmission line. Adding a new transmission line will increase the width of the ROW and the amount of impacted area, but these areas are already degraded

due to the existing transmission line. For the two proposed routes, blocks of forest that are currently not impacted would be opened up to fragmentation and edge effects. Impacts of a new transmission line include fragmentation of habitat, reduction of core habitat in adjacent forests due to edge effects, decreased habitat value for wildlife, increased conversion of habitat (i.e., from forest to grass or shrub areas), and risk of introduction of invasive species. The impact of a new ROW on intact forests may be greater than the impact of increasing the ROW in forests that already are impacted by fragmentation effects.

- **Rare Resource Impacts** - The two proposed routes will cut through two preliminary MBS sites: Coon Creek (Outstanding site) and Bear-Wolf Peatland (High site). These two sites contain significant biodiversity values. MBS sites are identified based on the occurrence of rare species, rare plant communities, and intact and high quality landscapes. The biodiversity significance of these sites will be impacted by the fragmentation impacts of a transmission line.
- **Recreation Impacts** - The proposed route passes near two lakes with public camping facilities (Bass 31-316) and (Larson 31-317 a designated trout lake) in Itasca County.

In summary, after reviewing summaries provided by Minnesota Power and GIS data, the Effie Route, following an existing transmission line, may have less impact on wildlife habitat including, impacts on wetlands, large blocks of forest, and preliminary areas of biodiversity significance. Strictly comparing number of acres impacted does not address the distinction between impacts to acres that are already degraded vs. impacts to acres that are intact and of higher quality. Therefore, the DNR recommends including the Effie Route in the EIS for further comparative analysis with the proposed routes.

The Effie Route would parallel the 230/500kv segment near Effie, Minnesota and connect back to the Orange Route in eastern Itasca County. Note that the connection back to the Orange Route may be slightly different than what was previously analyzed by Minnesota Power because the currently described alternative route attempts to avoid most of the Bear – Wolf Peatland Preliminary Site of Biodiversity as it connects back to the proposed Orange Route.



East Bear Lake Route

Using this connection east of Bear Lake (31-157) would nearly completely avoid a large preliminary MBS Site of high biodiversity significance (Bear-Wolf Peatland). This is approximately a 1 mile cross over to the existing 500/230 kv line and connecting back to proposed orange route right of way as described in the Effie Route alternative. A wide route width corridor is provided for flexibility. The route is in Townships 59 and 60 Range 23.



The North Black River Route

The DNR proposes analysis of the existing Minnkota Power 230 and 69 kv right of way (ROW) to minimize impacts to state owned minerals as well as fragmentation impacts to a nearby Scientific and Natural Area (SNA). The DNR has indicated Mineral concerns in this area and most recently habitat in the Watershed Protection Area in the adjacent SNA. Following the existing transmission route would reduce impacts to these resources.

- A six-township area in the vicinity of Township 159 North, Range 27 West has experienced repeated episodes of mineral leasing and exploration. Within this area the most frequent intercepts of mineralization have been encountered within Township 157 North, Range 27 West, and particularly within Sections 15, 16 and 21 of Township 159N, R27W, where eighteen exploratory boreholes have been drilled in parcels touching the B-O route alternative. These boreholes, the most recent in 2011, have established at least two separate trends of zinc-copper or copper-nickel-platinum mineralization. It is very probable that exploration of these known occurrences will continue. This is the basis for the request to consider using existing corridor a mile further east of this site.

- Watershed Protection Areas (WPA) are important to adjacent SNAs and often contain similar habitat types. The Blue/Orange route crosses important habitats and is within the WPA of the North Black River SNA. The biodiversity significance of these sites would be affected by the fragmentation impacts of a transmission line. The impact of a new ROW on intact forests and wetlands is expected to be greater than the impact of increasing the ROW in areas that already are impacted by fragmentation effects. For these reasons, the DNR proposes analysis of the existing transmission line ROW. This route shown below in yellow.



Thank you for the opportunity to provide comments regarding the Great Northern Transmission Line Project. Please contact me with any questions.

Sincerely,

 Jamie Schrenzel
 Principal Planner
 Environmental Review Unit
 (651) 259-5115

Enclosures: 3

- C: Julie Smith, US Department of Energy
 Christopher Lawrence, US Department of Energy
 Michael Kaluzniak, MN Public Utilities Commission
 Bill Baer, US Army Corps of Engineers
 Jim Atkinson, Minnesota Power

0195-1

As stated in Section 5.3.1.1, "The 1,500 foot ROI for aesthetic resources was identified because the proposed Project is *most likely* to be visible within this near-foreground distance zone and views of the proposed Project from aesthetic resources within this distance zone have the *greatest potential* to result in visual impacts for sensitive viewers" (*emphasis added*). The EIS also states, in Section 5.3.1.1, that "Aesthetic impacts are likely to be greatest for views of the proposed Project in the foreground distant zone (i.e., up to about 0.5 miles from the proposed Project), but impacts can also be substantial for views from greater distances." Thus, 1,500 feet provides a reasonable distance within which aesthetic resources may be identified and compared for the different route variations and modifications to assess potential aesthetic impacts, but the EIS does not identify that aesthetic impacts would only occur within this distance. In addition, while distance is an important factor in determining the level of aesthetic impact, a variety of other factors in combination contribute to determining aesthetic impacts. As stated in Section 5.3.1.1, "Impacts on aesthetics are assessed based on the extent of changes to landscape character and scenic quality, the level of contrast introduced by the proposed Project, its proximity to viewers, and the visual sensitivity related to views of the proposed Project."

In Section 2.13, the EIS identifies Applicant proposed measures to minimize potential environmental impacts, including aesthetic impacts, that could be implemented to minimize aesthetic impacts on Red Lake Tribal lands. These include, among others:

Design to minimize visible impacts at specific sites (e.g., travel ways, recreation sites, Big Bog State Recreation Area, and bodies of water with access and residences);

Shifts in alignment to avoid construction over existing wells, aesthetic impacts, floodplains, wetlands and bird concentration sites to the extent practical and avoidance of cultural resources in accordance with the PA;

Adjustment of span and pole placement to avoid waterways (perpendicularly), wetlands, sensitive resources, and transportation corridors to the extent practical and to avoid of cultural resources in accordance with the PA; and

Agency Coordination in development of the PA with DOE and consulting parties.

Additionally, the PA that is developed for the proposed Project in accordance with Section 106 of the National Historic Preservation Act (NHPA; 36 CFR 800.4(b)(2)) will ensure that the definition of the APE within which cultural resources investigations will be

0195-1

COMMENTS SUBMITTED

RED LAKE BAND OF CHIPPEWA INDIANS

Aesthetics

According to the Draft EIA, the ROI for long-term impacts on aesthetics is 1,500 feet on either side of the anticipated alignment of the proposed routes and variations and within 1,500 feet from the footprint of the proposed Blackberry 500 kV Substation. The estimation of distance is far too lenient in terms of visual disturbances and impacts to region aesthetics.

Studies conducted by the US Bureau of Land Management for other similar projects have shown that facilities for 500kV lattice structures were visible to the unaided eye at a maximum distance of approximately 17 mi (27 km).¹ They also were judged to strongly attract visual attention at distances of up to 3 mi (5 km).² The results of this study have important implications for determining appropriate distances from transmission facilities for visual impact assessments, and for the siting of transmission facilities to reduce visual impacts on visually sensitive lands, such as those Red Lake Tribal lands in the vicinity of the Great Northern Transmission Line. The BLM ultimately recommended a minimum distance for visual impact analysis for 500 kV lattice tower facilities to be 10 mi (16 km), and a more conservative distance would be 12–13 mi (19–21 km).³

Prior to implementation of the project, coordination should be completed with the Red Lake Nation Department of Natural Resources and Tribal Historic Preservation Office to ensure that visual impacts to Tribal lands are mitigated adequately or that in places where visual impacts could have a disturbance that measures are taken to reduce visual elements that would increase contrast and observation of the towers by casual viewers.

¹ BLM, 1986a, Visual Resource Contrast Rating, BLM Manual Handbook 8431-1, Release 8-30, U.S. Department of the Interior, Washington, D.C.

² BLM, 1986b, Visual Resource Inventory, BLM Manual Handbook 8410-1, Release 8-28, U.S. Department of the Interior, Washington, D.C.

³ BLM, 2013, Best Management Practices for Reducing Visual Impacts of Renewable Energy Facilities on BLM-Administered Lands, Bureau of Land Management, Cheyenne, Wyoming, 342pp, April.

0195

conducted to identify cultural resources (including traditional cultural properties), evaluate their NRHP-eligibility, and mitigate any adverse effects on historic properties if appropriate, will include the entire construction footprint for the proposed Project. It is anticipated that through the PA, DOE, the Applicant, and other appropriate parties will continue to coordinate with the Red Lake Nation Department of Natural Resources and Tribal Historic Preservation Office regarding minimizing aesthetic impacts to Tribal lands.

No changes are made to the EIS in response to this comment.

0195-2

Thank you for providing this information. The references are added to Chapter 9 of the EIS. We have reviewed the documents that you referenced regarding ungulates and smaller animals and their use of transmission line corridors. The studies indicate that ungulates cross transmission line corridors unlike road corridors which act as barriers. Predators may use the corridors more often which would deter use by ungulate and other smaller animals. In addition, animals with young will avoid corridors of any type because they don't provide cover for their young to hide from predators. The results are inconclusive for reindeer for the selected study areas - but there were extenuating circumstances (roads and dams) which may limit their need to cross the transmission line corridors. The documents provide some methods to reduce the effects of corridors on ungulates, which primarily involve returning the corridor back to an intermediate level of successional forest that provides more habitat (cover, food, etc.).

Following full review of the studies pointed to by the commenter for any new information relevant to the proposed Project, no changes are made to the EIS in response to this comment.

0195-2

Possible Effects on Game Species (Ungulates)

The Red Lake Band foresees four possible negative influences on ungulates from the established power line: 1) physiological effects from electromagnetic fields; 2) disturbing noise originating from electrical discharge or wind action on lines or masts; 3) frightening visual effects from physical structures and disturbances from installation, monitoring and maintenance work on the lines; and 4) higher incidents of predator takes that could result from access and movement along cleared powerline corridors.

Data supporting these possible effects can be found in research conducted in several European studies, such as one that detailed powerline effects on moose⁴, deer⁵, and other species⁶.

Any (or all) of these factors could affect game movements in areas that could affect the ability of the Red Lake Band of Chippewa and its members to exercise traditional hunting on lands surrounding the Great Northern Transmission Line.

To our knowledge, no observational report exists that records and evaluates the long-term effects of large-scale powerlines on ungulate and other animal species. In view of the plans for new transmission lines and reinforcement of current lines, we believe that such information is urgently needed and may require long-term monitoring. Such monitoring should be noted in the Final EIS and any measures should be coordinated with the Red Lake Band of Chippewa Department of Natural Resources and Minnesota Department of Natural Resources.

The above recommendation should be included as a mitigation measure for Wildlife Resources.

⁴ Bartzke, Gundula S., 2014, Effects of power lines on Moose (Alces alces) habitat selection, movement, and feeding activities, Norwegian University of Science and Technology, Department of Biology, Trondheim.

⁵ Bartzke, Gundula S., 2014, The effects of power lines on ungulates and implications for power line routing and rights-of-way management, Norwegian University of Science and Technology, Department of Biology, Trondheim.

⁶ Bevinger, K., et.al, 2010, Optimal design and routing of powerlines; ecological, technical and economic perspectives, Norwegian Institute for Nature Research, Trondheim.

0195-3

Section 2.13 describes applicant proposed measures to minimize environmental impacts, including restoration measures. As part of the wetland permitting process, USACE and MnDNR typically issue permit conditions that establish a timeframe for which temporary project features, such as access roads, may be left in place.

No changes are made to the EIS in response to this comment.

0195-3

Temporary Access Roads and Staging Areas

It is stated that the Applicant will have to construct temporary access roads outside of the ROW. It should be clearly detailed how the Applicant will ensure that these temporary roads do not become permanent roads that could lead to a change in land use patterns or otherwise affect resources. It must be clearly stated how long “temporary” is (i.e. months? years?).

Plans for mitigation and restoration of these roads back to their previous state should also be discussed. In addition, effects to cultural and natural resources should be addressed through survey and possible mitigation for these temporary roads and staging areas.

0198-1

Thank you for your comment. Once a route is selected and a permit is issued, the Applicant would contact landowners to gather information about their property and their concerns and discuss how the ROW would best proceed across the property.

No changes are made to the EIS in response to this comment.

GTNL website comments report

These comments were submitted via the comment form on Great Northern Transmission Line EIS website[<http://www.greatnorthernreis.org/Home/Comments>]

ID	42
ProjectPhase	DEIS
Comment	I am a landowner located inside of the West Section. Scoping decision route running west to east between highway 89 near Dieter township and 310 in Roseau. The property I own is near CR-123 and 28 including farmland, homes, drying and storage warehouses and an active use Quonset. The current proposed route would affect several of our farming properties including the other structures I have just mentioned and future planned building sites. Please remove this route from consideration as this would greatly effect the operations of our farming including the lives of the people living in the homes at CR-123 and 28. I am proposing that the line either be moved, removed or run east to west further north near the border to minimize private property
File	
FirstName	Terry
LastName	Kveen
Email	terrykveen@yahoo.com
Org	
Title	
Addr1	N69 W20473 Orchard Ct
Addr2	
City	Menomonee Falls
State	WI
Zip	53051
Country	US
ContactPref	Email
Protect	YES
Date	2015-07-09 11:25:51.620

0198-1

0199-1
 The EIS identifies airports and airstrips near the alternatives and potential impacts in Chapter 6.
 No changes are made to the EIS in response to this comment.

GTNL website comments report

These comments were submitted via the comment form on Great Northern Transmission Line EIS website[<http://www.greatnortherneis.org/Home/Comments>]

ID	45
ProjectPhase	DEIS
Comment	Please be aware that the proposed routing nearest Hwy 65 a0pproximately 5 miles south of Littlefork negatively impacts pilots using the private airstrip located there. Any of the routings farther west would be preferable.
File	
FirstName	Mark
LastName	Meester
Email	mmeester@bartlettassociates.com
Org	
Title	
Addr1	501 Third Street
Addr2	
City	INTERNATIONAL FALLS
State	MN
Zip	56649
Country	US
ContactPref	Email
Date	2015-08-10 10:46:58.683

0199-1

0200-1
 Thank you for your comment. Potential impacts to MBS Sites of Biodiversity Significance are discussed in Section 5.3.5.5.
 No changes are made to the EIS in response to this comment.

GTNL website comments report

These comments were submitted via the comment form on Great Northern Transmission Line EIS website[<http://www.greatnorthernreis.org/Home/Comments>]

ID	43
ProjectPhase	DEIS
Comment	With regards to the alignment of the proposed power line in the area east of Wasson Lake (approximately T.59N / R.23W), co-locating the line (Red Route) with the existing line(s) that follows Highway 65 would be the best and least impactful - visually and otherwise. At minimum, I feel that for a modest cost by moving the route from Blue to Orange the protection of a highly significant area of biodiversity (see Map 5-23) can be better served.
File	Thank you.
FirstName	John
LastName	Hoshal
Email	jachmjf@msn.com
Org	
Title	
Addr1	3820 Edmund Blvd.
Addr2	
City	Minneapolis
State	MN
Zip	55406
Country	US
ContactPref	Email
Protect	Yes
Date	2015-08-09 22:56:10.517

0200-1

July 23, 2015

Bill Storm
Environmental Review Manager
MN Department of Commerce
85 7th Place East, Suite 500
St. Paul MN 55101



RE: Great Northern Transmission Line: TL-14-21

Dear Bill Storm

With all due respect, I oppose the Minnesota Public Utility Commission's proposed Balsam Variation alternative route of the Great Northern Transmission Line for the following reasons:

1. The Balsam Variation route is not cost effective compared to Minnesota Power's preferred Blue Line route. The Blue Line route, as you know, is a straight line route. The Balsam Variation route zig-zags to take advantage of a 65 foot right-of-way that currently exists. However, an additional 135 feet of right-of-way will still have to be cleared to accommodate the new transmission line.
2. The Advisory Task Force appointed for this project indicated that minimization of impacts to private land and landowners were a priority and the Balsam Variation route developed during Scooping does not satisfy this recommendation. The Balsam Variation route would impact a lot more private land and landowners than the Blue Line route.
3. Also, the Balsam Community Center, Balsam Volunteer Fire Department, Balsam Bible Chapel, parsonage, community playground, tennis courts, softball/baseball field would all be included in the middle of the Balsam Variation right-of-way.
4. As a part owner of 84 acres of undeveloped property located entirely within the Balsam Variation right-of-way, which includes approximately 3,000 feet of undeveloped lakeshore, I am concerned about the impact this new transmission line would have the valuation of our property.
5. In addition, I would like to know what impact this transmission line would have on our ability to sell our property at fair market value should we decide to sell at some point in the future.
6. Minnesota Power's intent was to design the transmission line route to maximize separation from existing homes and cabins. The Blue Line accomplishes that goal. The Balsam Variation route right-of-way would run right behind my family's hunting shack which is on a hill overlooking Snaptail Lake.
7. The transmission line is capable of producing an audible noise produced by corona discharges from transmission line conductors. Minnesota Power states that this noise, which resembles a subtle crackling sound is typically only within the threshold of human hearing during rainy or foggy conditions. They also stated that during light rain, dense fog, snow and other times there is moisture in

0202-1

The EIS provides cost comparisons for the proposed routes compared to the variations in Chapter 6. Cost or cost effectiveness is not usually treated as an impact in DOE EISs but is used in considering practicability, such as for determining reasonable alternatives. All alternatives will require new ROW for its entire length. While some alternatives parallel existing transmission lines, none of the alternatives share ROWs with existing transmission lines.

No changes are made to the EIS in response to this comment.

0202-2

Comment noted. The EIS analyzes potential impacts to land use and land ownership for each alternative in the range of reasonable alternatives.

No changes are made to the EIS in response to this comment.

0202-3

As shown Map 120 in Appendix S of the EIS, these facilities are located within the Balsam Variation route width, not the ROW.

No changes are made to the EIS in response to this comment.

0202-4

A discussion about the potential effects of transmission lines on property values is included in the EIS in Section 5.2.1.4. This includes a summary of the potential range of property value effects attributed to transmission lines. Further, Appendix J, Property Values Supplement provides a summary of the literature regarding the relationship between transmission lines and property values used to develop the property values analysis in Section 5.2.1.4.

No changes are made to the EIS in response to this comment.

0202-5

Comment noted.

No changes are made to the EIS in response to this comment.

0202-1

0202-2

0202-3

0202-4

0202-5

0202-6

0202-6

Noise levels from corona discharge are discussed in Section 5.2.1.2 of the EIS and would not be expected to adversely impact hunting. Impacts to hunting are not expected to be impacted by the proposed Project. Studies regarding ungulates and smaller animals and their use of transmission line corridors indicate that ungulates cross transmission line corridors unlike road corridors which act as barriers. Predators may use the corridors more often which would deter use by ungulate and other smaller animals. In addition, animals with young will avoid corridors of any type because they don't provide cover for their young to hide from predators. The results are inconclusive for reindeer for the selected study areas - but there were extenuating circumstances (roads and dams) which may limit their need to cross the transmission line corridors. The documents provide some methods to reduce the effects of corridors on ungulates, which primarily involve returning the corridor back to an intermediate level of successional forest that provides more habitat (cover, food, etc.).

No changes are made to the EIS in response to this comment.

0202-6 cont'd

0202-6
Continued

the air, the proposed transmission lines may produce audible noise higher than the background noise levels in some rural areas. Deer hunting on our property has been a tradition for over 50 years and I am concerned how this will impact my family's deer hunting success in the future.

8. From a health and safety point of view, Minnesota Power also refers to "induced voltage", which occurs when an electric field reaches a nearby conductive object, such as a vehicle or metal building and it induces a voltage on the object. Then, if the object is insulated or partially insulated from the ground and a person touches that object, a small current would pass through the person's body to the ground. This might be accompanied by a spark discharge and mild shock, similar to what can occur when a person walks across a carpet and touches an object. Minnesota Power states induced voltage normally is not a problem. Again, this transmission line will impact my family's hunting land due to the fact that it will reduce the amount of land my family will be able to hunt on.

Summarizing noise and potential voltage (shock) issues, we find it hard to believe that these are NOT health issues. One of our deer hunters was never comfortable with the emissions from the old power line and a new higher voltage power line would, in her mind, make that area unusable for anything including deer hunting.

9. When Minnesota Power removed the existing transmission line, they told us we could do whatever we wanted to do with our property, such as plant trees. Trees along with an apple orchard were planted and we had every intention of using our property to its fullest. Now, once again, we face the threat of not being able to use our property the way we want to.

10. There is an existing osprey nest on the property adjoining our property and if you were to drive where roads/highways intersect with the proposed power line right-of-way, you would see a great number of nesting sites.

Based on the reasons stated above, I am respectfully asking you to remove the Balsam Variation from consideration for the Great Northern Transmission Line.

Thank you!



Kathy Krook
2362 Diane Ln
Grand Rapids MN 55744

41259 Scenic Highway
Bovey MN 55709

0202-7

Section 5.2.2.4 in the EIS discusses induced voltage. Section 5.2.1.2 of the EIS presents the estimated audible noise levels from the from the proposed 500 kV transmission lines under rainy conditions (worst case scenario for noise generated from corona effect). Section 5.2.2.8 of the EIS discusses public safety hazards associated with the proposed Project including electrical shocks.

No changes are made to the EIS in response to this comment.

0202-8

As discussed in Section 1.3.1.4 of the EIS, once a route is selected and a permit is issued, the Applicant would contact landowners to gather information about their property and their concerns and discuss how the ROW would best proceed across the property.

No changes are made to the EIS in response to this comment.

0202-8

0202-9

As discussed in Section 2.11.1 of the EIS, the Applicant would incorporate industry best practices to minimize impacts to migratory birds, which are consistent with the Avian Powerline Interaction Committee (APLIC's) 2012 guidelines. In addition, the MN PUC Route Permit could require that the Applicant develop and implement an Avian Protection Plan. The Applicant would coordinate with the MnDNR and other appropriate agencies in the development of an Avian Protection Plan.

0202-9

No changes are made to the EIS in response to this comment.

0203-1

Thank you for your comment. Please refer to comment 0183 for responses to the email on page 2.



Sent: Monday, August 10, 2015 10:31 PM
To: kepeters@midco.net; bill.storm@state.mn.us; Smith, Julie A (OE) <JulieA.Smith@hq.doe.gov>
Cc: don.peterson72@gmail.com; jpeterston2010@gmail.com
Subject: Re: DEIS comments

0203-1

Awesome! great work!

Anne Marguerite Coyle (Margi)

-----Original Message-----
From: [kepeters <kepeters@midco.net>](mailto:kepeters@midco.net)
To: [bill.storm <bill.storm@state.mn.us>](mailto:bill.storm@state.mn.us); [juliea.smith <juliea.smith@hq.doe.gov>](mailto:juliea.smith@hq.doe.gov)
Cc: Anne Marguerite Coyle <flyfreege@aim.com>; Don Peterson <don.peterson72@gmail.com>; Jason Peterson <jpeterston2010@gmail.com>

Sent: Sun, Aug 9, 2015 3:12 pm
Subject: DEIS comments

Hello Mr. Storm and Dr. Smith,

In reference to Docket number TL-14-21 and DOE number EIS-0499.

I have reviewed the DEIS for the Great Northern Transmission Line and offer the following comments:

On Summary page 15- There's a statement that says the line is not expected to affect property values and cites a couple of references. I wonder if these studies included recreational property? From my perspective, the value of my property will be greatly diminished if this power line is constructed on or near my property. Things such as solitude and views unobscured by power lines may be hard to put a value on, but affect the things I value about my property nonetheless. I'd like to see more discussion and recognition of the impacts of the proposed power line on these types of values.

I am most familiar with the area near my property (T. 63 N. R. 27 W, S. 35, SE of SE) as I have recreated in this area for 20 years. A lot of timber has been harvested in this area in the past 15 years, resulting in large blocks of younger aged forest. Much of the remainder is old-growth cedar which provides thermal protection for deer in the winter and moose in the summer. The proposed route (Orange) goes right through one of the largest such stands of cedar in the area. This stand provided critical habitat for deer during the recent harsh winters, in fact was the only place you could find a deer track during the winter months. The Cutfoot variation would save one of these stands, but would impact another equally important stand located just to the south. The statement in S.10.2.8 "...proposed orange route has less potential impact on critical habitat designated for grey wolf " seems based solely on the fact that the Cutfoot variation is slightly longer. Instead, the amount of critical habitat affected by both routes should be measured (quantified) so that a meaningful comparison between the two routes can be made. Taking this a step further, I'd like to see a similar comparison between the Orange and Blue routes (i.e. which route will have more or less impact on old growth cedar stands which provide critical habitat for many species of wildlife including grey wolf.

On summary page 55 S.11.2.4 Natural Resources: In my opinion, the summary understates the localized impacts to wildlife. If critical habitat is lost (e.g. old-growth cedar stands are converted to open right-of-ways which fragment the forest and provide no thermal cover the wildlife that lives there will be negatively impacted. Fewer deer will survive the harsh winters, ultimately resulting in fewer wolves. I'd like more discussion of these potential impacts in the DEIS.

Thank you for the opportunity to comment.

Regards,
Kevin

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DOCKET NUMBER 1421

0204-1

Thank you for your comment. No changes are made to the EIS in response to this comment.

Bill Storm
MN Department Of Commerce
85 7th Place East, Suite 500
St. Paul, MN 55101

Carol Kveen
N69 W20473 Orchard Ct.
Menomonee Falls, WI 53051

Dear Bill Storm,

My Name is Carol Kveen and I am a landowner located within the east to west Scoping Decision Route on and south of the Roseau River near roads 28 and 123. I would ask that my property be removed from the route for consideration. I do however question why the route is being run into the United States in the manner it is. It would seem to me it would be better to run through the land in Canada East to West before needing to be run south through private land in the United States. This would remove the majority of the privately owned land inside the United States and remove a majority of the objections of the landowners affected by this.

I do realize the Advisory Task Force is attempting to minimize the impacts to private landowners and I hope my recommendation assists in this. Under the current route I have several properties, including a Quonset with nearby homes.

Thank you for your consideration,

Carol Kveen



0204-1

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DOCKET NUMBER 142-1

0205-1

Thank you for your comment. No changes are made to the EIS in response to this comment.

Bill Storm
MN Department Of Commerce
85 7th Place East, Suite 500
St. Paul, MN 55101

Tim Kveen
1920 Sunkist Ave
Waukesha, WI 53188

Dear Bill Storm,

My Name is Tim Kveen and I am a landowner located within the east to west Scoping Decision Route on and south of the Roseau River near roads 28 and 123. I would ask that my property be removed from the route for consideration. I do however question why the route is being run into the United States in the manner it is. It would seem to me it would be better to run through the land in Canada East to West before needing to be run south through private land in the United States. This would remove the majority of the privately owned land inside the United States and remove a majority of the objections of the landowners affected by this.

I do realize the Advisory Task Force is attempting to minimize the impacts to private landowners and I hope my recommendation assists in this. Under the current route I have several properties, including a Quonset with nearby homes.

Thank you for your consideration,

Tim Kveen



0205-1

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0206-1

Thank you for your comment and information. Chapter 5 and 6 discussions related to cultural resources, as well as those discussions about traditional and subsistence use of vegetation and wildlife resources, are updated to include this information.

From: Bill latady [mailto:blatady@boisforte-nsn.gov]
Sent: Tuesday, July 21, 2015 09:50 AM
To: Smith, Julie A (OE)
Subject: UTAC Traditional Properties Survey.fml

Julie;

Please find attached three examples of traditional properties surveys conducted by the Bois Forte Band at iron mine extension projects. Two were conducted for MinTac and one for UTac. Both mines are within ceded territory (1854 Treaty). Clearly, the projects are not within any of the proposed GNTL rights-of-way, but as you are aware the concerns expressed by the interviewees extend to any project within ancestral territory. I hope the remainder of your week goes well and the public meetings are well attended. Thanks for coming to Bois Forte to consult with the Bois Forte Band.

Bill

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0206-1

Identification of Historic Properties of
Traditional Religious and Cultural Significance to
The Bois Forte Band in the Minitac Progression Project
Area of Potential Effect

By
William R. Latady
Marybelle Isham

Bois Forte Tribal Historic Preservation Office
1500 Bois Forte Road
Tower, MN 55790

September 2013

Prepared for

United States Steel Corporation
Minnesota Ore Operations
PO Box 417
Mt. Iron, MN 557686
Hoyt Lakes, MN 55750

Introduction

This report presents the results of a survey to identify historic properties of spiritual and cultural significance to the Bois Forte Band within the Minntac Progression project Area of Potential Effect (APE). The survey was conducted by interviewing Bois Forte elders during April and May 2013.

In the fall of 2012, a Programmatic Agreement was developed among the St Paul District Corps of Engineers, the Minnesota State Historic Preservation Office (SHPO), the Bois Forte Band of Ojibwe, the Grand Portage Band of Ojibwe, the Fond du Lac Band of Ojibwe and U.S. Steel concerning the western progression of the Minntac Tacomite Mine to address concerns about Historic Properties that will be affected by the project. The document was signed in December 2012 by the Corps of Engineers and Minnesota SHPO. Work began after the agreement created by the Bois Forte Tribal Historic Preservation Office (THPO) was approved by the Reservation Tribal Council and US Steel in April 2013.

In an effort to help US Steele comply with federal regulations to identify and document historic properties of traditional religious and cultural significance to Tribes, the Bois Forte THPO proposed to document places visited by Band members. The proposal grew out of consultation between the Ojibwe Bands and the US Army Corps of Engineers. The survey was designed to document and evaluate historic properties of significance to the Band within the APE located near Mountain Iron in St Louis County, Minnesota. These properties include, but are not limited to, off-reservation treaty resources within the 1854 Ceded Territory, such as maple sugaring areas, wild rice waters, sites with spiritual significance, trails, village sites, fishing areas and other places where usufructuary rights are practiced.

Project Setting

The project area is located on the southern flank of the Mesabi Iron Range near Mountain Iron in St Louis County. The first surveyors employed by the US Government to survey the area where the Minntac Mine and APE are now located described the Townships as well timbered with aspen, birch, pine, spruce and tamarack. The surveyor's notes go on to state that the land is rolling to broken with swamps between ridges, dense undergrowth and poor soils. The sole exception was T60N, R18W where much of the timber had been destroyed by fires that ravaged the area several years before the survey.

Wildlife typically found in this area includes black bear, white tail deer, ruffed grouse, small mammals and migratory birds including ducks and geese. Water bodies including Sandy Lake, the Dark River and Sand River contain a variety of fish including bluegill, crappie and northern and walleye pike. Many, if not all of the taxa, are economically significant to Bois Forte Band members, and in some instances have special spiritual import. Wild rice was once abundant in Big and Sandy Lakes (Twin Lakes).

Methods

Obtaining information on historic properties of religious and cultural significance to Indian tribes is complex. Sharing information on resources that comprise cultural identity with outsiders is carefully considered by tribal members because history has shown the information may be misused and exploited at the expense of the individual, tribe or resource. In some instances it is taboo to discuss activities with others and considered rude for another to ask. This methodological and sampling challenge results in the under-representation of historic properties of spiritual and cultural significance to Indian tribes in resource inventories.

Twenty elders were contacted following an initial letter to all Bois Forte elders explaining that the Bois Forte THPO wanted to speak with anyone who was willing to share knowledge or information about the project area. Eighteen elders contacted the THPO and provided at least some information about the APE. Two elders who indicated they had information were not interviewed due to project time constraints.

During April and May, 2013 the Bois Forte Tribal Historic Preservation Office conducted interviews of Bois Forte Band members with knowledge of the project area. The actual interviews were carried out by one of the authors, Marybelle Isham, a Band elder, who has worked on similar projects (Latady and Isham 2011, 2012). Interviews were conducted at individuals' homes and recorded when allowed. Six open-ended questions were asked during the course of the interview:

1. Do you know of trails or routes that passed through the area?
2. Did you or anyone in your family use the area for collecting medicinal plants?
3. Can you tell me anything about places used for fishing, sugar bush, gathering bark, ricing or hunting?
4. What kinds of sacred areas have you heard about from the area?
 - How do you remember these ceremonies taking place or changing over time?
5. What stories do you remember about the area?
6. Do you recall traditional names of lakes, streams, outcrops, hills, important views?

In addition to interviews, the authors reviewed the archives at the Bois Forte Heritage Museum, the Gale Family Library at the Minnesota Historical Society and Minnesota Discovery Center archives. Archival research centered on the Trygg Collection at the Heritage Museum and the Minnesota Historical Society and an assortment of legal and background papers related to William Trygg's work as an appraiser for the Indian Claims Commission. Included are tree tallies, land sale information, abstracts from U.S. Land Surveyors' field notes, printed reports, court exhibits and names of native and local informants.

Interviews

American Indians have resided in northeastern Minnesota for time out of mind. Archaeological investigations indicate people arrived in the vanguard of retreating glacier's more than 10,000 years ago. The earliest inhabitants hunted large game and left behind evidence of their lives in the form of beautifully crafted spear points and other stone tools.

The most recent Bands to reside in the project area are the Anishinabe (Ojibwe or Chippewa). The ancestor's of modern Anishinabe living in northeastern Minnesota originated on the east coast and migrated to the area before the United States became a nation. The journey to Minnesota began when the Anishinabe followed the vision received by an elder in a dream warning him to leave the homeland on the east coast (probably at or near the mouth of the St Lawrence River) and journey west to find "the food that grows on water" or manoomin (wild rice). The first historical reference to the Anishinabe in the area appears in the journal of a French Explorer, Pierre de la Verendrye, in which he mentions an encampment of Saultier (French term for Ojibwe encountered at Sault St. Marie) on the Vermilion River in 1731 (Lamppa 1996, Richner 2002).

French Fur Traders referred to the Ojibwe in Northeastern Minnesota as Bois Forte or "strong wood" a reference to the thick, almost impenetrable, forests covering much of the area where these people lived (Richner 2002). An Ojibwe village was probably established at Vermilion Lake around 1800 and by the middle of the century there were hundreds of families in the vicinity who traded almost exclusively with the British Hudson Bay Company (Lamppa, 1996).

Wild Rice was abundant in the shallow bays of Lake Vermilion and along the Pike River and its tributaries—including Twin Lakes. The LaPointe Treaty of 1854 referred to the residents of the area as the "Bois Forte of Vermilion Lake" and granted rights to the lake in addition to yearly annuities in trade goods and provisions, but ceded more than five million acres to the United States including the project area. In 1865 gold was discovered at Vermilion and fears of confrontation between Band members and prospectors lead to the Bois Forte Treaty of 1866. This treaty terminated Band rights to Lake Vermilion and ceded another two million acres to the United States in return for annuities and a 103,000 acre reservation at Nett Lake.

Gold prospectors had left the area by 1868 because there was little of the precious metal to be found and Band members returned to the Lake Vermilion and once again roamed the surrounding forests, streams, rivers and lakes. The Band members living at Lake Vermilion held no legal title to the land, but most refused to leave the lake and move to the Nett Lake Reservation. In 1881 President Chester Arthur signed an Executive Order establishing the Vermilion Lake Reservation which became a gathering place for small bands of Ojibwe living across northern Minnesota.

After 1900, following traditional ways of life became increasingly difficult for Band members; traveling was restricted as land became privately owned. Logging reduced the forests to pitiful remnants and areas formerly used for berry picking, hunting fishing and ricing became

homesteads and lake homes. Limited mobility infringed on basic subsistence practices, which eventually resulted in families leaving the area and scattering to other communities. Some families moved to Nett Lake while others moved to other reservations including across the border into Canada. Many moved to cities and towns and a very few lived comfortably after finding wage work (Lamppa 1996). Those who remained often followed a seasonal round in order to survive; whenever possible gathering wild rice in the fall, berry picking in the summer and sugaring in early spring on and off the reservation. In spite of these and many other challenges, today there are more than 200 people living on the Vermilion Sector and 600 at Nett Lake.

The outline presented above is sketchy, in part because existing documentation on the history of the Bois Forte Band is not well organized and exists as scattered references or the occasional footnote in publications describing the history of Minnesota. The struggle for survival and connections to one another and other communities in the face of rapid change have been overlooked in texts and ignored by the dominant culture. Here we present some of the recollections of the past, the stories told by elders whose interviews and reflections appear below.

Priscilla Morrison

Priscilla spoke of her grandma King picking birch bark. She said she was too young to remember ceremonies and grave sites, but remembers her parents going to gather rice around Ely--how they spoke of portaging into the little lakes up there and where they would camp. "I remember when the mining started, 'cause a lot of guys from here went to work there on the range. The opinion I have, is that they should be very sure they are not destroying any historical sites, whether it be graves or mounds, and that includes any place in Minnesota I know I sound judgmental."

(Marybelle) "How do you see the changes taking place playing a role in the Bands future?"

"Oh I don't know, I think there's going to be more of the modern progress going on-and they are going to keep digging wherever they want to dig regardless of what the find. And there are so many people now a day's way more than there was back then."

Gene Goodsky

"I'm an elder here at Bois Forte, Nett Lake. I've lived here at Sugar Bush all my life. I've done a lot of ricing, but mostly on Nett Lake. We were teenagers in the early fifties--when we riced on Twin Lakes and Big Rice Lake. We would ride back and forth with the old man; his name was Ed Foster, who was a wild rice buyer and processor. We averaged two Bemis bags a day that was a good harvest. We'd go in to get to the lake at the Laurentian Divide. There was always a lot of the Tower people at these little lakes. Berry picking was mostly in the hilly area like the big mountain in Virginia¹, there were a lot of berries of every kind back in them days."

¹ Misabe Widjiv

Justin Boness

“My name is Justin Boness, I’m from the Nett lake reservation, Bois Forte. I’m going to talk about ricing and the lakes in the Virginia area. I’m talking about Big Rice Lake, there used to be a lot of long-kernelled rice there. Now there is nothing on that lake, maybe a patch here and there on the shoreline. And I don’t see a future for that lake to ever produce rice again due to the mining I would say. The mining drain offs onto that lake, and all the little lake around there. Twin Lakes used to be full of rice. Twin Lakes north of Virginia, and there used to be other little lakes in there that had rice, but not anymore. I riced up on Vermilion River, that’s up by Crane Lake, them bays used to be full of rice the outer edges were thick with green rice. It was good ricing in the bays, now it’s green rice in the mouth of the bays. They rice too early there and the white people go and whack it all up so it never gets a chance to ripen up. Birch Lake too used to have rice but there isn’t much, its dwindling around Orr. There was rice in Mud Lake, some in Pelican. I guess that’s the only places I riced: Just west of Virginia and east of Virginia. There’s only weeds now where the rice should be. We would camp a few days when we rode with the rice buyer, Ed Foster, he would carry our boats too.”

Luanne Drift

“My name is Luanne Drift, wife of Justin. I started ricing with Justin about 30 years ago, when we riced in those lakes around Virginia they used to be full of rice, but not anymore. I have nothing else to say.”

Stanley Day

“I was born here in Nett Lake, I am 67 years old. We left the reservation when I was 15 years old. We lived in Sand Lake near Virginia for a few years. There were lakes there in that vicinity southwest of Sand Lake that had wild rice, we riced on these Lakes, especially one in particular, one that was hard to find, it was eight to nine miles from where we lived. This lake had real good rice. I need to find out the name of that lake. My father and mother who are both Bois Forte band members, they both spoke Ojibwe as their first language, for unknown reasons, they did not teach us. We riced a lot of lakes in that area, at Big Rice Lake which was north of that area and at Echo Trail and the Boundary Waters area. I can recall getting a lot of rice which was for our winter use for food. There was always berries we picked to put away. They were always plentiful.”

(Marybelle) “Were there plants that were gathered for medicine or spiritual use?”

“That would have been from a generation before me, but there weren’t many areas that wouldn’t have these sacred plants used for medicines and people that knew where to get what they needed.”

Ronald King

“My name is Ronald King, my father and mother were Luverne and Gwendolyn King. I lived in Nett Lake briefly as a small child, but basically grew up in Virginia, Minnesota. I remember when they would go ricing on Nett Lake. I personally have riced on Pike River near Biwabik, Big Rice Lake, another lake just out of Ely. I did a lot of hunting over by the Laurentian Divide by Big Rice Lake. Now I’m fifty-seven years old and no longer rice there. I don’t know if it was the way the crop was beat up so bad, but I haven’t went back, maybe fifteen years now. I still rice on the Vermilion River. There’s a site at the Laurentian Divide where there is a rock right next to the freeway where my father would put out tobacco whenever he made a trip whether it be a plane, road trip, train or whatever and I have had people who I loved and honored who went to this place to put tobacco.”

(Marybelle) “How do you see the area playing a role in the Band’s future?”

“I know a lot of Kings that were still workers, a lot of guys that have worked in the mines have gotten sick from the dust, mesothelioma, when I was young. I worked with Johnny Matson who is a logger; we went in to clear cut before the mining started. There was a lot of animals, deer, wolves, beaver, because no one could hunt there, so it created a place where the animals couldn’t be bothered. The animals left when the trees were cleared away, wet lands were gone, where the holes were made. The holes have water now, but they are too deep. The population has changed; land is gone where the homes were removed. Re-routing highway 53, which is a good possibility that it will take out Midway. The population there will have to move. It’s going to destroy the business in that area because people will by-pass those places, so it’s ruining the economy. I think it’s just a greed thing; the mining company needs more money. This affects hundreds of miles, when they set the dynamite off the wind catches the dust and goes many, many miles, it settles in the lakes that in turn destroys part of our rice crop. It’s not global warming, we get plenty of rain; it’s the mining company.”

Alma Lumbar

“Hello—I’m Alma Lumbar, and I want to say a little bit of the ricing long ago. We riced at Twin Lakes, two little lakes and Big Rice Lake. We used to travel with Ed Foster; he would take people to go ricing carrying our canoes so he could buy our rice and we’d get enough rice, some to eat and some to sell, so we could buy groceries or things we needed. We would go out all day long, but we’d come back each day, he had a pick-up truck and a trailer to carry our boats. The amount of rice we got usually depended on the weather. We’d get back to his store about six or seven and we would parch rice maybe a little that evening or next day, whenever we could. Then we’d be back out there ricing again until it was too beaten up. Anyway, it was a lot of fun when the rice was good; people had rice.”

(Marybelle) “Do you remember any ceremonies taking place at that time?”

“No, just in the early morning, my grandpa would put tobacco in the water and say a prayer in Indian before we went out. That’s all I know.”

Rick Anderson

“My grandmother Mary was born in 1899 or 1900 on Burntside Lake, where she lived all of her life-died 1999. She would tell us how her family would travel to Big Lake every fall to hunt and gather wild rice in LaPond and Big Rice Lakes near Big Lake. My father and I continued this ricing tradition into the 1960’s, when we quit going by the early ‘70’s because the rice crop was so greatly diminished.”

“The last time I went into these lakes was about 20 years ago, just to check them out for rice and to look for some decoys that my grandfather and father had stashed on Big Rice lake in the early 1940’s before my dad went to serve in WWII-didn’t find them! There was literally no rice on either LaPond or Big Rice. Water levels were high, many beaver houses. I went back again about 15 years ago moose hunting; again, no rice on these lakes. There were once very productive rice lakes full of ducks, as far as I know; they were very unproductive for rice.”

Tim O’Leary

“I am Tim O’Leary. My native background goes back many years in this area. My father was Donald O’Leary, my mother was Sharon Poynter. Our family has picked wild rice since time began. Since mining has began here in this part of the world, our rice lakes have been becoming fewer and fewer, even since I have been a child. If this continues our generations in years to come may lose this great right and ability.”

“It is a great concern of mine that if higher standards of water stability isn’t met we will lose wild rice as well as drinking water. Without good water our land is worth nothing. Please take great concern and voice our safety and safety of our little ones.”

Eileen Villebrun Barney

“We riced Big Rice Lake near Virginia when I was about 18-19. We had to carry our canoes about a mile to the lake. There was so many people there. We didn’t get much rice, not enough to barely cover our expenses. Lots of people didn’t know how to rice and ruined it. We used to get about 30 cents a lb.”

“We riced other lakes in the area. Most of these lakes didn’t have much, maybe because they opened the lake too early and the rice was green.”

John Day

“When I riced with my mom, she would talk about ricing in the Boundary Waters. They would move all the way south down to the area near Virginia; Big Rice, Twin Lakes and all the local lakes-then towards Grand Rapids.”

Karen Drift

“The only thing I remember about when I was eight years old, I was taken along when my mom & dad riced on Big Rice Lake-Herbert and Emma Strong were there, we’d camp there so we would wait all day until they came in. They would sell their rice, someone would come by

with beer that they could buy, and they would get drunk. I didn't like it there. We would go to Twin Lakes too. I seen your sister Obbic there, they must have brought her along to cook she was cooking over an open fire."

Lester Drift

"My parents were Raymond and (Jessie) Margaret Drift. I remember going to them lakes with my mom and dad when they were ricing. More than that -when I went to college and learned about this area, what I learned that any lake that had wild rice in it was sacred to the American Indian. We camped at Twin Lake for maybe a week. I learned that the trail of the Mii-gi-zi goes through that arrowhead region. So there might be a trail. It would be a good idea to send someone to Washington, or the Haskell Institute to check out this area here to see if there is sacred ground that was there even before any of us were here. When I was younger and going to college I was on the tribal council, I wanted to go to Kansas to research treaties and land held in trust by the United States Government. And at one time I believe all the lakes had wild rice on them, we would move from lake to lake and set up a camp, until we found Nett Lake and because of the reservation we were put on, we stayed here-but during the winter like it is now, we moved away from Nett Lake. That big swamp that's around here, that swamp goes from Lost River down to Mallard Bay. That was once part of Nett Lake so we are actually sitting on an island and thousands of years ago that swamp was a lake. I learned that in biology when I was in college, so we are sitting on that missing island, but there are some sacred trails that the Indians followed to go from Twin Lakes up to Nett Lake up toward Deer Creek that way. There were a lot of sacred trails that were used by American Indians and each one of them had a camp up there, or they would camp along the way, so we had blueberry camps in the area, winter camps, ricing camps, all them kinds of camps. There would be ceremonies there."

(Marybelle) "What do you know about plants being gathered for medicinal use?"

"Yes, there were many plants all over this area, there were plants we would go to get around Tower, MN that was used for heart medicine long time ago. It was called Ca-ke-ga-bug. There's a lot of medicines around here that Karen knows about-she uses it yet for certain ailments. I think each one of these lakes there's certain medicines. Trees that were used for making medicine, so this is a sacred area-we believed back then. We didn't own the earth, the earth owned us, because we are never going to leave here. And that's why we never put a value on anything, gold, copper, iron ore-anything like that, few cares then. Now we are able to get to these lakes and drive back the same day. Financially, no one had much money back then either - technology would be another-aluminum boats making life easier.

(Marybelle) "Can you talk more about trails?"

"There was a trail between Orr and Pelican Lake. It comes out in the swamp back here; it was used to go to Orr or maybe to the camp at Gheen Hill-the Sioux and the Chippewa had a fight up there-there is a battle ground there. There's another battle ground out here from the Palmquist homestead site to the sawmill. My uncle John Strong said there was bodies laying all over out there. So, a lot of this area is sacred, because we traveled to wherever there was wild

rice and picked seasonal berries and medicinal plants. I used to say this when we had meetings with St. Louis County and Human Services, I bet all the big shots that are running the mining companies never once put out tobacco to thank mother earth. But we're paying for it now by being hard hit economically. Even the spring where we get spring water for drinking is sacred, because Karen puts out tobacco and says thank you whenever we take the water. That makes it a sacred place. All of the little lakes where we got wild rice is a sacred place to Native Americans. If we look close we would find trail all over or old roads where people hunted or went from place to place. So, I think no matter how many surveys are done and all the people say no, money is going to speak louder than our traditions, and they will go ahead and mine there anyway-so it doesn't make any difference, money will win out."

Sandy Walter

"In the area of the Laurentian Divide where my grandmother, my dad, Eugene Walter's mother would take us on, we would walk back in the woods I can't remember how far, she would catch water that was coming out of a pipe out of the rocks on the cliff face and we'd take some to the lake, and some to her house in Parkville and my grandfather, my dad's father, would take and walk to their cabin to their lake cabin in Parkville and he would walk through the woods, through where Minntac is now, and walked all the way to the cabin. He also walked from Parkville to the mines outside of Virginia to work almost every day. They hunted and fished most of the lakes around here including almost up to Rainy Lake. I never got to go ricing myself, but before my uncle Warner Wirta was enrolled, he was invited by the people of Bois Forte in Nett Lake to be a guest and go ricing on Nett Lake. My brother's got fortunate enough to take a week off of school-that's what the native kids got then-so he got to go ricing. I think he was probably about ten or twelve. That was quite an adventure for him, he really enjoyed that."

(Marybelle) "Can you tell me how you would ride on your horse over the hills before mining began?"

"When I was a kid off of old hwy 169, my dad had a junk yard before he passed and my Mom started buying horses for us kids. I used to ride my horse bare back, barefoot through the woods, on deer trails-through the woods, almost to Sandy Lake, where the quarry was out at Minntac, which is now under water. I got kicked out many times for riding in their tailings' pond. I used to go to Buhl, Kinny, Parkville, Eveleth area through the woods on my horse. But now that's impossible I believe, with all the mines around now. I would stop in a meadow and lie down and let my horse graze just enjoying a nice afternoon. Now those meadows no longer exist. Just the mines-maybe someone lived there years and years before to have cleared the land. There was wild carrots we ate those, thorn apples, lots and lots of huge strawberries, raspberries, black berries-pretty good size crab apples, a few regular apple trees, wild plums, we found a lot of things back there; also, a lot of bears and mink. Oh! I used to see a lot of red fox they were beautiful, the first time I saw a possum I thought it was the hugest rat I ever saw. It's probably the best thing my ma did for me-was to buy those horses, it was the best part of childhood."

(Marybelle) "Was there any other Native American families around there?"

“Yes, the Francis Jordains and the DeSotos lived there, the Neson family also; there was the Roy family too.”

(Marybelle) “Was there traditional ceremonies done there?”

“No, in the time I grew up if you were Native American you were pretty much nothing. We took a lot of garbage from other kids in school.”

(Marybelle) “You told me all your adventurous times were on your horse-the hills were your playground.”

“Yes, sometimes I would leave before it got light outside.”

(Marybelle) “Did your family make Indian home remedies from plants that grew in the area?”

“No, my mom, that’s where my Indian blood comes from, her mom died when she was eleven or so, she didn’t have a lot of time with her mom to learn anything.”

(Marybelle) “Well thank you Sandy for the nice recollection of your childhood in a place where it is no more.”

“Yeah, when I drive through there now it makes me feel bad. I feel bad now.”

Bernard O’Leary

“As you know, my mom and dad, Susie and Tom O’Leary lived at Nett Lake most of their lives. My Dad hunted and fished this area for many years, and every fall they went ricing. They riced for anywhere from 3 to 4 and maybe even 5 weeks every year. They processed their rice by hand. No machining was done. They riced at all of the area lakes-Big Rice, Twin Lakes, and Vermilion River, sometimes they would camp at one of these lakes for up to 7 days. Dad had a pick-up truck with a home-made rack on the back for hauling the canoe and camping gear.

These lakes close to home had some of the best rice beds almost every year. And the rice was real good to eat. They also riced on some lakes down by Aiken, Minnesota; Aiken Lake and Big Sandy Flowage, and even Mille Lacs Lake. This was a time when ricing was good all over this area from the late 40’s to middle 50’s. I understand now that it is all gone. No rice in big rice and a lot of lakes around here. Our whole family depended on having wild rice for food year round. We also picked a lot of wild berries. Sometimes my mother would can 80 or 90 quarts of blueberries and 20 quarts of strawberries; we also picked pin cherries and chokecherries. Back then, I remember, there was a great abundance of these things. We also hunted in Nett Lake, riced and picked a lot of berries. In the late fall, we had wild mallards with wild rice for supper, but now, with the wild rice going away, so are the ducks. My daughter and I still pick rice together, but there’s not much left.”

Jim Gawboy

“I am 77 years old, I will be talking about the Indians using the land around here. This is according to what my father and grandfather told me, so it may be a little mixed up. I’ll talk a little about the maple sugaring. Some of the Indians on the reservation used to go to Big Rice Lake to make maple sugar in the spring. Our side of the family the Gawboy’s used to go up the

Embarrass River to make maple sugar up there--I never went, I was too little--but I suppose that would be around Giant's Ridge. There's a lot of maple trees up there and people still go to make maple sugar, but when the trains came through, the passenger train came. I remember my mother and father would get on the passenger train, and go to the Mesabi location which is north of Hoyt Lakes, just a few miles, and get off there where there's a good stand of trees there. They would just camp there until it was done. They brought everything back as sugar, which was much easier to keep. So, that area just north of that is taken up by a mine, I don't even know the name of it. The mine keeps changing hands; it was Erie when I worked up there. Then during ricing all the lake around here were where they riced. Big Rice Lake, Sandy Lake, now Twin Lakes, I remember it was about 1946, my father, my older brother and I, camped right between the two lakes--other Indians were also camped there. My Grandfather, Anna Knott, Joe Knott, and three of their teen-age kids, they had a wigwam put up, with tar paper over, we just had a tent that we slept in. Then there was an Indian woman that was with a white guy. We stayed there almost two weeks, some days we didn't pick at all; we'd decide to let it rest. Some of the rice was processed right there. They would parch the rice and jig it out--remove the hulls. The Knotts had a threshing machine that was made out of a fifty-five gallon drum. They would take off the back wheel of their car and attach the drum to the differential --they could thresh a lot of rice and threshed a lot for us too! We didn't have a threshing machine until the following year when John Whiteman of Nett Lake made one for us--then we were able to go into some pretty heavy threshing. So we just camped there, rested, cooked and ate. We wouldn't go out each day until the rice got dry.

Sometimes we didn't go out for a few days, the committee, or the people that camped there would come to the decision. They talked about where the camp was before, but it was generally in the same place, but I would guess they've gone in there so long that there were quite a few old camps right in the two peninsulas mostly on the eastern peninsula is where the camps were. But the eastern end of the little narrow inlet between the two lakes, according to their talk they had used the lakes and camps for many years."

"A lot of people think the Indians just stayed in one place for a long time but when I was young I remembered we were always moving. I talked about going one place for rice, one for maple sugar. Of course they knew where everything was; going one place to another according to the seasons. Just before ricing on the Vermilion Reservation you'd see people loading up to go. When they were asked where they were going they would say "to the lake"--they would be going to the Trout Lake area. When they came back they had big baskets of berries and I mean big baskets full. Then they would wait for the wild rice season to open. After that they would prepare for hunting and trapping season, and because that was done away from the reservation they would go to the north side of Vermilion. My father used to take a dog up there; we had one giant dog that could pull four deer on a toboggan all at one time. A big black dog named 'Pluto' guard of the underworld because he was so black. He also carried the supplies and bait for the traps, the dogs had to be taught to leave the bait on the traps alone. In the spring they went to a different part of the lake to net fish, but they were moving all the time. Then there was talk they were going up the Pike River to get some birch bark then they were gone for two days to get a

large sample of birch bark. Whenever they went anywhere they traveled light-most of the food they needed was gotten along the way. Even on the portages they planted potatoes that were planted in the spring-when they came back from blueberry picking the potatoes would be ready. They just moved all the time, as a matter of fact, one of the reasons Nett Lake was made a reservation was because they were camped there making rice when someone said, do you live here? Someone answered, sure I live here, so they made a circle and the person said okay that's where you live, that's your reservation. And the people in Tower were supposed to go to Nett Lake too, but they wouldn't go. They said we're going to stay here although a lot of them weren't from there. Historically, my parents were from the Rainy Lake area then some of the people there were from the Burnside area on the Tower reservation, everyone seemed to be moving. There were small Indian trails and big Indian trails that were worthy of being put on a map."

Edward Isham 5/31/13

"It was about the year of 1985 and again in 1987 I riced at Big Rice Lake. There was not a very large rice area. One bay had rice, but a couple little patches were already riced out. I never seen such poor ricing conditions. Other people, some with three in a boat, were all whacking away at the rice. It didn't take long to beat it all down. We went back in again, maybe, in the 90's - we went back there wasn't any rice there at all then."

Marybelle Connor Isham

When I started this survey, I knew it was going to be a difficult task to find information about the project area. The people who really knew are no longer here. So I targeted people born in the 1930's through 1950's. The main activity talked about was harvesting wild rice, each change in the season causes a flurry of excitement with the Ojibwe people, in preparation of berry picking, gathering medicinal plants, harvesting birch bark and wild rice, duck hunting, preparation of getting enough wood for winter use, not forgetting meat for the freezer and of course trapping. At one time I was a participant in the traveling, caravan style, with my mom and dad in a big old bus with boats tied to a trailer behind, I was in my late teens, already married, my husband Ed and I were considered to be seasoned ricers because we could keep right up with the best ricers and we were very competitive. This was in the late 1950's. The lakes where we harvested wild rice are those within the potential affected area of the Minntac mine, Twin Lakes also known as Big Sandy and Little Sandy Lakes, Big Rice Lake and Hay Lake had rice growing in them. They are also within lands ceded by the Bands in the Treaty of September 30, 1854 at La Pointe, Wisconsin.

In reading the "Trygg files," I learned some of the history and origins of our ancestors. What we see as terrible hardship was their way of life, which probably made them stronger and the way it is intended to be. The leaders made decisions with wisdom and generosity that affects us today. I hope we can be as brave and dignified when dealing with change as they were.

Results

The interviews indicate that through the early 1980's vestiges of the ancient Ojibwe settlement and subsistence pattern were pursued to the extent possible. Admittedly, patterns had been extensively disrupted by changes in landownership, poverty, reservation life and the lack of economic opportunity. However when feasible, Band members followed traditional behavior through hunting and gathering of seasonably available resources both on and off the reservation.

Reviewing the interviews in the context of resource availability, access and use, the interviewees provided information about the project area and utilization by Band members until almost 30 years ago, when resources critical to Band members were no longer available or accessible within the APE. Two Band members noted that trails were used for travel to specific locales for hunting, fishing and plant gathering. Lester Drift, mentioned trails several times during his interview, describing a specific trail, the "Mii-gi-zi that goes through that arrowhead region" and may be one of the trails depicted by Trygg (1966). He also noted there were a number of sacred trails that were used to access resources such as blueberries and rice, but also led to camps. More importantly, or probably more accurately, he notes ceremonies were also performed in conjunction with subsistence activities or camping. Jim Gawboy notes there were both large and small "Indian Trails" important enough to be put on a map. He is referring to the GLO maps which were used by Bill Trygg when compiling the information that appears on the composite maps published in 1966. Gawboy also indicates that traditional routes of travel such as waterways were abandoned, at least by his family, when going to and from the sugar bush. Extrapolation of this information suggests that some traditional means of access were used less frequently once other modes of transportation became available. By the time many of the elders interviewed during the course of this project were born, the traditional routes were used sparingly, if at all, which probably helps explain the lack of specifics on trail location and specific function (other than for travel).

Subsistence activities; hunting, fishing and plant gathering, were noted by everyone. Many recalled use of the project area by themselves and relatives. Specific activities such as making rice in the lakes north of Virginia, including Twin Lakes, were mentioned. Some spoke of gathering and hunting in the general area specifically noting maple sugar, berries, and birch bark. Most indicated that resources were obtained during day trips, but a few described camping overnight. Jim Gawboy was the only one who remarked upon staying at Twin Lakes while ricing with his family. He noted where the family and others camped and also explained that the ricers took time off from gathering the rice so that it could recover before the harvest resumed. Evidence of his family's camp (and those of other ricers) between the two lakes may still be extant despite high water levels that are probably due to the construction of a large tailings basin concurrent with building of the U.S Steel Minntac plant. Evidence of use of Twin Lakes by Band members in addition to specific reference to the locations where families camped indicates the Twin Lakes (Little Sandy Lake and Sandy Lake) meet the definition of a Traditional Cultural Property established by the National Park Service in Bulletin 38.

Other support for practicing usufructuary rights within the project area occurs in a particularly poignant account by Sandy Walter who spoke of her childhood and grandparent's residence in Parkville. She describes her grandfather walking through the woods where Minntac is now located. Her grandparents and parents hunted and fished most of the lakes around Virginia, but she was never able to join them due to her youth. She further relates how she used to ride her horse through the project area on deer trails and at times rode to Buhl, Kinny, Parkville and the Eveleth area. These excursions lead to being "kicked out many times" for riding in Minntac's tailings pond. The areas where she used to ride no longer exist as they have been replaced by the mines. The woods, animals, meadows, berries and fruit trees exist now only in her childhood memories.

The topic of ceremonies was addressed by three interviewees. The sacred nature of the land was acknowledged and described by Lester Drift and two others who described offering tobacco before undertaking an activity as substantive acknowledgement of the spiritual connection of the Ojibwe to this area. Gene Goodsky referred to picking berries on Misabi Widju

Not surprisingly, the subject of graves was mentioned in only the most general terms and by only one person, Priscilla Morrison. Burials are an extremely sensitive issue and specific information on grave locations would only be revealed if the informant was certain that the knowledge would not be exploited and/or lead to desecration of the graves. It is unclear if Ms. Morrison knows specific grave locations, but she is adamant that they should be avoided.

Discussion

The survey of Band members with knowledge of historic use of cultural resources within the APE of the proposed Minntac Mine Progression Project provided information about the area and how and where usufructuary rights were practiced. The THPO was fortunate to learn the names of a number of families with ties to the area. Undoubtedly, had we been able to interview elders a generation or two prior to this one there would have been considerably more information.

The interviewees identified a number of activities that occurred in the area ranging from subsistence to spiritual. Band members identified medicinal plant gathering, harvesting wild rice, hunting and fishing as having occurred within the APE by relatives other Band members, and often themselves. Sacred/spiritual activities were also identified and included offering tobacco to gathering medicinal plants. The single reference to graves did not include a location. However, graves are often proximal to settlements, including campsites.

The Twin Lakes (Sandy and Little Sandy Lakes) is a Traditional Cultural Property and eligible for inclusion in the National Register of Historic Places as it is a tangible property associated with events that have made a significant contribution to the broad patterns of US history – in this case reservation period life ways of the Bois Forte Band (criterion a). In addition, the Twin Lakes Site also has yielded or is likely to yield information important in history (criterion d). Numerous references by informants to harvesting wild rice at these lakes

until a generation ago indicate this was a primary area for the practice of cultural activities related to subsistence and spirituality. Manoomin (wild rice) is not only an important food, but also the center of Ojibwe life as it is the reason for the westward migration, which for Bois Forte culminated in their arrival in northeastern Minnesota. Manoomin appeared in the vision received by an elder on the east coast that initiated the Anishinabe migration to find the food that grows on water. Furthermore one informant described in detail the location of his family's camp when they harvested wild rice and an inventory of the lakeshore would undoubtedly reveal the location of this camp as well as others that may exist.

Due to the limited time frame for this project and the length of winter and concomitant snow cover within the project area, the Bois Forte THPO was unable to ground check the trail noted on the 1882 GLO plat of T59N, R18W and plotted on the (1966) Trygg composite map. Despite this lack of ground verification, the Bois Forte THPO suggests the trail corridor is significant and eligible to the NRHP under criterion a. To the Ojibwe, trails are deeply imbedded in their culture and by extension, the individual. The trail was used by Band members and also by early European settlers as evidenced by cabins plotted on the 1882 GLO plat map. Clearly field work is necessary to determine if the trail is discernible within the APE and constitutes a contributing segment.

One unanticipated outcome was the lack of specific information about areas in the western APE. Many interviewees mentioned Twin Lakes specifically. During discussions with the Corps of Engineers, before the project was initiated, the Bois Forte THPO and representatives from other Bands thought the Dark River and Dark Lake would have attracted Band members given these water bodies are tributaries of the Little Fork River—a well-documented travel corridor in the 18th and 19th centuries (and by extension used for many centuries before). Ms. Morrison describes her family hunting and fishing in an area extending from Parkville almost to Rainy Lake and one can infer that the Dark River and Dark Lake would have been included in that area.

Several individuals expressed concern and disappointment, indeed disgust, about the lack of rice in lakes where it was once abundant. Twin Lakes within the APE and Big Rice Lake six miles northeast on the old trail, but outside of the APE were cited as particular examples. The decline in rice was attributed to the actions of beaver and non-American Indians who did not know how to properly pick rice. At least one alluded to the mine's changing the landscape and thus impacting Band members ability to pursue their usufructuary rights within the ceded territory.

The loss of traditional life ways within the 1854 Ceded Territory is seen as not only affecting this generation, but also future generations. It is the responsibility of today's Band members to make decisions that will guarantee that seven generations in the future will have the means to not only survive, but prosper. The loss of rice waters affects all of us. However, the loss for the Ojibwe is considerably more significant, as manoomin provides physical and spiritual sustenance. Improper monitoring of the Minntac Western Progression Project will negatively affect not only water quality, but every living organism in the vicinity, including wild rice. The

loss of rice and everything connected with it will eventually result in the abrogation of treaty rights to hunt, fish and gather.



Figure 1. Illustration of the trails and homesteads (cabins) documented on Trygg (1966) Composite Map (Sheet 18) for T59N R18W and mapped on 2010 aerial photograph of Minntac Mine (Compiled by H. Fox).

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Identification of Historic Properties of
Traditional Religious and Cultural Significance to
The Bois Forte Band in the Minntac Extension Project
Area of Potential Effect

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Introduction

This report presents the results of a survey to identify historic properties of spiritual and cultural significance to the Bois Forte Band within the Minntac Extension Project Area of Potential Effect (APE). This document builds upon findings described in the Minntac Progression project report (Latady and Isham 2013) and results from plans by US Steel to expand operations at its Minntac facility located north of Mountain Iron in St Louis County (Figure 1).

In an effort to help US Steel comply with federal regulations to identify and document historic properties of traditional religious and cultural significance to Tribes, the Bois Forte THPO proposed to document places visited by Band members. The proposal grew out of consultation between the Ojibwe Bands and the US Army Corps of Engineers. The survey was designed to document and evaluate historic properties of significance to the Band within the APE located near Mountain Iron in St Louis County, Minnesota. These properties include, but are not limited to, off-reservation treaty resources within the 1854 Ceded Territory, such as maple sugaring areas, wild rice waters, sites with spiritual significance, trails, village sites, fishing areas and other places where usufructuary rights are practiced.

Work began after the agreement created by the Bois Forte Tribal Historic Preservation Office (THPO) was approved by the Reservation Tribal Council and US Steel in May 2014. The survey was conducted through interviews of Bois Forte elders in May, June and July 2014.

Project Setting (Latady and Isham 2013)

The project area is located on the southern flank of the Mesabi Iron Range and the Laurentian Divide near Mountain Iron in St Louis County. The first surveyors employed by the US Government to survey the area where the Minntac Mine and APE are now located, described the Townships as well timbered with aspen, birch, pine, spruce and tamarack. The surveyor's notes go on to state that the land is rolling to broken with swamps between ridges, dense undergrowth and poor soils. The sole exception was T60N, R18W where much of the timber had been destroyed by fires that ravaged the area several years before the survey.

Wildlife typically found in this area includes black bear, white tail deer, ruffed grouse, small mammals and migratory birds including ducks and geese. Water bodies including Sandy Lake, the Dark River and Sand River contain a variety of fish including bluegill, crappie and northern and walleye pike. Many, if not all of the taxa, are economically significant to Bois Forte Band members, and in some instances have special spiritual import. Wild rice was once abundant in Big and Sandy Lakes.

American Indians have resided in northeastern Minnesota for time out of mind. Archaeological investigations indicate people arrived in the vanguard of retreating glacier's more than 10,000 years ago. The earliest inhabitants hunted large game and left behind evidence of their lives in the form of magnificently crafted spear points and other stone tools.

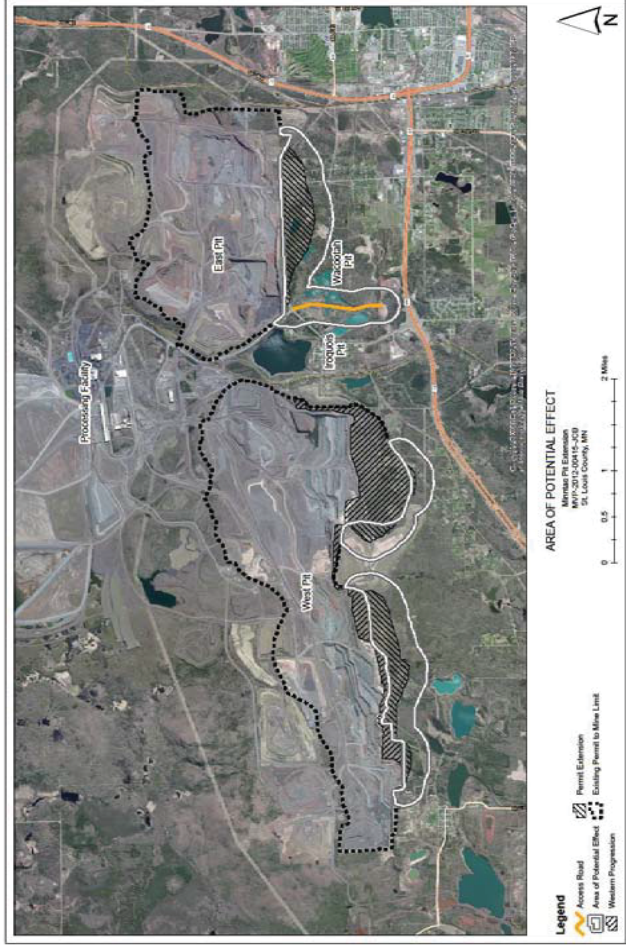


Figure 1. Location of project area.

The most recent Bands to reside in the project area are the Anishinabe (Ojibwe or Chippewa). The ancestor's of modern Anishinabe living in northeastern Minnesota originated on the east coast and migrated to the area before the United States became a nation. The journey to Minnesota began when the Anishinabe followed the vision received by an elder in a dream warning him to leave the homeland on the east coast (probably at or near the mouth of the St. Lawrence River) and journey west to find “the food that grows on water” or manoomin (wild rice). The first historical reference to the Anishinabe in the area appears in the journal of a French Explorer, Pierre de la Verendrye, in which he mentions an encampment of Saultier (French term for Ojibwe encountered at Sault-St. Marie) on the Vermilion River in 1731 (Lamppa 1996, Richner 2002).

French Fur Traders referred to the Ojibwe in Northeastern Minnesota as Bois Forte or “strong wood” a reference to the thick, almost impenetrable, forests covering much of the area where these people lived (Richner 2002). An Ojibwe village was probably established at Vermilion Lake around 1800 and by the middle of the century there were hundreds of families in the vicinity who traded almost exclusively with the British Hudson Bay Company (Lamppa, 1996).

Wild Rice was abundant in the shallow bays of Lake Vermilion and along the Pike River and its tributaries—including Twin Lakes. The LaPointe Treaty of 1854 referred to the residents of the area as the “Bois Forte of Vermilion Lake” and granted rights to the lake in addition to yearly annuities in trade goods and provisions, but ceded more than five million acres to the United States including the project area. In 1865 gold was discovered at Vermilion and fears of confrontation between Band members and prospectors lead to the Bois Forte Treaty of 1866. This treaty terminated Band rights to Lake Vermilion and ceded another two million acres to the United States in return for annuities and a 103,000 acre reservation at Nett Lake.

Gold prospectors had left the area by 1868 because there was little of the precious metal to be found and Band members returned to Lake Vermilion and once again roamed the surrounding forests, streams, rivers and lakes. The Band members living at Lake Vermilion held no legal title to the land, but most refused to leave the lake and move to the Nett Lake Reservation. In 1881 President Chester Arthur signed an Executive Order establishing the Vermilion Lake Reservation which became a gathering place for small bands of Ojibwe living across northern Minnesota.

After 1900, following traditional ways of life became increasingly difficult for Band members; traveling was restricted as land became privately owned. Logging reduced the forests to pitiful remnants and areas formerly used for berry picking, hunting fishing and ricing became homesteads and lake homes. Limited mobility infringed on basic subsistence practices, which eventually resulted in some families leaving the area and scattering to other communities. A number moved to Nett Lake and others moved to reservations, including across the border into Canada, where extended family resided. Many moved to cities and towns and a very few lived comfortably after finding wage work (Lamppa 1996). Those who remained often followed a seasonal round in order to survive; whenever possible gathering wild rice in the fall at area lakes

berry picking in the summer and sugaring in early spring on and off the reservation. In spite of these and many other challenges, today there are more than 200 people living on the Vermilion Sector and 600 at Nett Lake.

The outline presented above is sketchy, in part because existing documentation on the history of the Bois Forte Band is not well organized and exists as scattered references or the occasional footnote in publications describing the history of Minnesota. The struggle for survival and connections to one another and other communities in the face of rapid change have been overlooked in texts and ignored by the dominant culture. Here we present some of the recollections of the past, the stories told by elders whose interviews and reflections appear below.

Methods

Obtaining information on historic properties of religious and cultural significance to Indian tribes is complex. Sharing information on resources that comprise cultural identity with outsiders is carefully considered by tribal members because history has shown the information may be misused and exploited at the expense of the individual, tribe or resource. In some instances it is taboo to discuss activities with others and considered rude for another to ask. This methodological and sampling challenge results in the under-representation of historic properties of spiritual and cultural significance to Indian tribes in resource inventories.

Eighteen elders were contacted including two who were unable to contribute to the first Minnatac traditional properties documentation survey, following a letter to all Bois Forte elders explaining that the Bois Forte THPO wanted to speak with anyone who was willing to share knowledge or information about the project area. Twelve elders contacted the THPO and provided at least some information about the area.

During May, June and July 2013 the Bois Forte Tribal Historic Preservation Office conducted interviews of Bois Forte Band members with knowledge of the project area. The interviews were conducted by Marybelle Isham, a Band elder and co-author of this report, who has worked on similar projects (Latady and Isham 2011, 2012, 2013). Interviews were conducted at individuals' homes and recorded when allowed. Six open-ended questions were asked during the course of the interview and contained in the letter requesting elder's participation:

1. Do you know of trails or routes that passed through the area?
2. Did you or anyone in your family use the area for collecting medicinal plants?
3. Can you tell me anything about places used for fishing, sugar bush, gathering bark, ricing or hunting?
4. What kinds of sacred areas have you heard about from the area?
 - How do you remember these ceremonies taking place or changing over time?
5. What stories do you remember about the area?
6. Do you recall traditional names of lakes, streams, outcrops, hills, important views?

Additional questions were sometimes asked in order to elucidate details or clarify points made by the interviewees, such as “did you or members of your family live in Parkview?”

In addition to interviews, the authors previously reviewed the archives at the Bois Forte Heritage Museum, the Gale Family Library at the Minnesota Historical Society and Minnesota Discovery Center (Latady and Isham 2013). Archival research centered on the Trygg Collection at the Heritage Museum and the Minnesota Historical Society and an assortment of legal and background papers related to William Trygg’s work as an appraiser for the Indian Claims Commission. Included are tree tallies, land sale information, abstracts from U.S. Land Surveyors’ field notes, printed reports, court exhibits and names of native and local informants.

In addition, avocational historians Todd Lindahl and Don Menuay of Two Harbors were consulted on July 25, 2014 regarding trails and other historic features in the project area. Both have spent years searching for historic features on the Iron Range and researching documents preserved in local historical societies. They have reported their findings to archaeologists from the Superior National Forest and the Minnesota Department of Natural Resources.

Interviews

Twelve elders were interviewed and their recollections appear below. Marybelle Isham, a coauthor of this and earlier reports, added her recollections.

Loren L. Connor

“I went ricing on Twin Lakes when I was very young, 11 or 12. I went with my step-father, Eugene Boshey Sr., Clyde Day, my uncle and Robert Ottertail. We drove there by car & boats. This was a good lake to rice on. We didn’t have very far to get to the rice bed. It was dark outside the morning we left. We did pretty good for the time we had on the lake. I’m sorry for not remembering the roads we took. All I know is that we were going to rice on Twin Lakes. All the other guys passed away now. This was about 51 or 52 years ago.”

Sandy Walter

“I lived outside of Mt. Iron which was Kimross, all five of us kids used to play and run in the woods right where Minntac is now. Minntac you know, is tearing up all that land up there and heading toward Sandy Lake and Sand Lake, I think now they’re just a few miles from Sandy Lake aren’t they, from Little Sandy? My cousin Rick Gibson said that Minntac now has eaten up a good portion outside of Buhl and around Kinney too, and Hibtac now is closing in coming close to Kinney so Minntac and Hibtac are getting pretty close together now. I hate seeing that, kinda makes me sad to think about that especially when I used to play in tree houses, ride horses, and hunt and play in the streams; can’t do that anymore. I stopped there last summer and checked out the streams that aren’t too far off the highway, the water in them is green, full of algae. They used to be clear and clean streams when I was a kid. They’re nasty now; they’re poisoned from the mine (Sorry for my tears). It always makes me feel bad when I talk about that. Sand Lake

north shore that's changing its gotten so loaded down with people that I don't know, too much construction, too much pollution, the last time I was up there the lake was full of weeds it didn't look safe to swim in, and that's still a little ways away from where Minntac is, I'm not sure what Sandy Lake looks like, I haven't been there for years."

(Marybelle) "I'd like to know about the area of expansion, which would be south and some time back the mine bought the little town of Parkville. What do you know about that?"

"They've been buying that up for a long time. My brother Victor told me the part that was absorbed by the mining company is chain linked off. They chain linked it off to stop people like me, Victor, and Janet. We were going in to rescue plants in old gardens, that's where I got my rhubarb from and rose bushes, lilies, iris, but now that is chain linked off, we can't go in there anymore."

(Marybelle) "Did you know of other Native American families that lived in Parkville?"

"There were Natives living there, but they weren't band members, there was Jordaines they were full blood, but not band members. They lived on the other side of Mt. Iron and DeSotos, I think they were half. They were not enrolled either. The Nelson kids, I don't think they were enrolled either. The Roy family lived right across from us. I think they had seven children. There are a few of these people still around, that I see once in awhile?"

(Marybelle) "Looking at this Trygg map, do you recognize any trails?"

She recalled the trail going through where the mine is now. "Parkville was such a nice little town my dad's parents lived there and that's where I grew up. And we lived across the street from them. It was a nice safe little town. Grandpa Wirta used to cook at the camps so he, a short talking person, didn't say much, he was all Finn. My grandma was all native. But everyone would come when he'd make a big meal, making bread and all. He'd call each one and just say 'come to supper tomorrow' real short. He added this huge room onto the main house, and had this huge long table about twenty some feet long, so everybody could sit down. He'd invite you over to eat chicken only to find out it was really rabbit. You probably know this, my grandmother had died when my Mom was eleven, but her husband was a game warden and he was a lot of the time at the Iron Rail where he worked also. I think parts of that homestead is still there, it's a marker. I have some of his paperwork (something I'd like to submit to the Heritage Center too) commendation from the state and everything as a game warden. Some of that paperwork are the original copies of the book that was written about John Linklater and his dealings with the state as a game warden."

(Marybelle) "Was Warner a native from Bois Forte?"

"Yes, he and my mother were half. The Wirtanen farm from Wirta, my mother's father, is one of the historical sites the 'Wirtanen Farm.' He had his name shortened from Wirtanen to Wirta, so it's the family history in these parts, in Northern Minnesota lots. Grandpa Wirta came from the old country, from Finland. I think he said he was sixteen when he came here. He landed at Ellis Island. He started working in the camps and saved his money to buy his farm. He raised turkeys and chickens and later on a few cattle and grain. So Mom grew up, and Warner, in a hard

like and the kids, farm kids, very hard workers, tough people--not very lovable, but hard working."

"Did you see the book that was written about the Linklatters?"

(Marybelle) "No, I didn't."

"I'll bring the papers out and let you see some of that; pretty interesting reading, pretty much his history. There's photos and there's sketches drawn by Warner's daughter for the book. It's just incredible what she did. Warner and some man had written it. The book is just a small paperback not very thick. I have one copy here. I don't know how many he had made and I have the original copies of the transcripts for the book. There could be a lot of information about his tracking around through northern Minnesota and he had something to do with Canada too. I'm not really sure. There's a lot of information we didn't get. What we got from Warner was what he wanted to feed out, what he wanted to write down. He talked and he took in a lot of things, but I think there's a lot of things he forgot, he never got to share with the family. He was so busy digging history, that he lost history, you know, because he dug into this family background for probably close to fifty years. That's a long time. He did interviews with people if people moved to another place, he went there and contacted them and got them documented, certified documentation. He did a lot of work, a lot of travel to get the information that's in that book."

(Marybelle) "There was probably more to Warner Wirta than most people will ever know."

"Yeah, Warner was such a great part of my life, he was like a replacement after my Dad died you know. He and my Uncle Bob were the only good male figures we had. So when Uncle Bob went, soon after Dad, Warner and all the things he's told us over the years, the places he's gone, information about other people and how they belong to Bois Forte, or are related. But everything he brought up, was something I'd never heard yet. His head was so full of information I hope somewhere it's in writing or recorded. Same time he'd be talking and say-oh here's something I wanted to tell you kids, and it would be something I had never heard before."

"The end for now."

Gordon Adams, Jr.

"My name is Gordon Adams, Jr. I've lived all my life on the Nett Lake sector of the Bois Forte reservation. I have been married to my wife, Kathleen (Patsy) Adams for thirty some years now. I have three children, Rebecca age twenty-eight and Gordy age twenty four and Tyla age seventeen who is still in high school."

"Today's date is May 18, 2014 and we are at Marybelle Isham's residence which is smack right in the middle of Nett Lake. When I was growing up in the early seventies, my mother was related to Mrs. Secola who resided in Parkville, Minnesota right next to the highway and right across the highway was the Minntac mine. At the time, being young, I never thought of any harmful effects or effects it would have on future developments or relating back to anything regarding the historical preservation act or anything in the Graves Native American Protection Act. What I know about the area is what I had learned from my mother, who was a very traditional Indian and which was related to Mrs. Secola and which they were both talking in the

Indian language and they truly enjoyed doing. Back then I remember those mine pits were off limits to just about anybody and everybody, but we used to go back there to explore, with Keith and his brothers when we were there to visit. And they would show us some of the deepest pits and ravines and a lot of places where the water collected. So that was quite limited, 'cause being a young boy didn't realize the full impact of what I was looking at or what impacts it would have on this generation and future generations."

"I'm looking at the map now of the proposed mine expansion it looks like it is really intruding on the Parkville area and some of the trails we used to walk and ride bikes on. I don't know the historical significance of those areas right now to me, but I do know that according to the Historical Preservation Act, that there should be someone doing test pits in these areas to find out what kind of historical significance are in the ground. By that I mean any clay pottery findings from the Clovis people, and fire pits, or anything of historical significance that would trigger the Historical Preservation Act to come into play and either limit, curtail or stop the pit extension proposed that is being forwarded to us. That would be my main opinion or request that something like that be done before this project continues."

"Many times over and through historical facts and history, the non-native people have infringed upon Native lands and native burial sites, significant historical sites, so on and so forth. This right here is no different. We, as an Indian people, need to find out where and what historical significance is, if any are located in this area. And the way to do this is to do some test digging with a shovel, two feet or three it doesn't need to be a giant hole. I think what they need to see is if there were any presence of Native Americans in that area, prior I believe, to the arrival of the Chippewa which would have been Sioux descendants. Prior to the Sioux descendants would have been far back. Five thousand years ago would have been the Clovis people who lived here long before the Sioux and long, long before the Ojibwe people. In which, we here in Nett Lake have presented evidence of Clovis culture that resided here even on the reservation and if they resided here, that tells me that they resided throughout Minnesota as well, and how the land looked prior to the excavation of these mines from the air. I'll tell you it would change your mind about mining and what the impact that those mines have done to the area there."

"I believe to me again, the Historical Preservation Act should have kicked in or was it bypassed, or maybe not even thought of back then. I think maybe it just came into law in the seventies or eighties. But again, it's my opinion because of my experiences dealing with historical preservation and NAGPRA laws and things of that nature. I do believe that before any expansion is done, they need to really thoroughly comply with the American Preservation Act and also the NAGPRA Act, especially if they find any human remains of our ancestors, or of the Sioux people, or of the Clovis people if they can preserve that far back. I think that should automatically trigger NAGPRA into action to say, look this has to stop until we find the historical significance of these remains, where they came from and who they belong to, if possible. I believe that should be part of this. I don't know if that has been done and completed, if there has been test sites that have checked out. I just don't know the status of that. But, again

I'm of the opinion that entire Minnesota was occupied either by the Clovis people or the Sioux people prior to our arriving at some point in time. As Chippewa people and when we came, we came from the North and so that would be my recommendation; that the test sites be done and completed. If there are any findings I believe that should trigger other mechanisms within those two laws to investigate."

(Marybelle) "Do you know of any fishing, trapping, etc. done in that area?"

"This whole area prior to mining, whatever year that was, maybe the 20's, was open to hunting and fishing, not only families that resided in that area, but in the advent of mining and the establishment of huge mining companies claiming their stakes to this property pretty much just brushed aside those Indian families, back then. I know that we didn't all live on a reservation way back then, we lived as families we lived according to the time of the year, whether it be spring camps, summer camps, fall or winter. At one point in time must have been occupied, especially the lake areas, that these lakes were used for fishing or whatever native people did back then. I'm of the opinion that there was significant movement, camp grounds, travel routes throughout this entire area, but when the mining companies came in none of this was taken into consideration they just started mining these big areas out and pretty much forced any Indian families out of the area."

"I do believe these areas do have some significant evidence that our people occupied that area for hunting and for fishing. Indian people back then were very connected with the Great Spirit in which these ceremonies were conducted. Again during all times of the year, the four seasons of the year in which also, if there were camps there that's where they would bury their relatives, or bury people that died in these camps, back then they didn't bury people six feet into the ground, because of the lack of shovels or digging instruments, they used anything they had; where it be animal bones or antlers of whatever. They had to get them into the ground, so the graves weren't very deep and to me, a bulldozer wouldn't have no problem just pushing these graves over and not even realizing what they were doing. Yes, these trails and campsites did have religious significance to them in addition to also burying family members all throughout these whole campground site areas again, whether, summer, spring, fall or winter. That's where they were buried and remembered. I'm of the opinion that there has to be un-marked sites and graves throughout the whole area."

"I think the Federal Government in its complexity and its enormity, it has to pay specific and particular attention to the NAGPRA laws and also to the Historical Preservation Act laws which prevent this kind of thing that's happening. They are encroaching upon our sacred sites our ceremonial sites, our ancestral lands, our hunting and fishing areas. It's a continual encroachment and expansion on those lands. Indian people need to stand up and make a stand. We need to defend those lands and those sites because of their historical significance. I believe the law should be carried out all the way around by everybody."

Bernard O'Leary

"My name is Bernard O'Leary. My parents were Thomas O'Leary and Susan. I am

seventy-three years old. I am a Bois Forte band member. I used to live at the old CC Camp, out there we did a lot of hunting. My parents were really good ricers and they riced a lot. I guess we want to talk about natural resources, so I'll say the ricing, hunting and fishing were all a big part of what my parents and even today, what I and my kids do to help make a living. I have three kids, they all like to hunt; fish, moose, grouse, venison, ducks, because we believe this meat is more healthy than what we buy in the super markets. So that's really important to all of us at Bois Forte."

"I guess I can say my parents participated in harvesting wild rice, they went to all the lakes, Big Rice Lake, Twin Lakes, Vermilion River, Nett Lake, East Lake, they'd go to Cut Foot Sioux, Four mile lake, up the North Shore, just about every place that wild rice grew. They would pick rice all fall and sometimes we had a thousand pounds, even eleven hundred pounds and that was all hand finished by my mom and dad. And I still hand finish all my wild rice to this day. It seems it's no longer easy to get a deer, or what we need to eat. There is a lot less wild rice in the lakes. Some of these lakes are depleted, Big Rice Lake. I don't know what happened to that lake, but there's hardly any there if any, at all. Twin Lakes, I guess there is none at all. Even the best lake I ever knew for ricing is Nett Lake, and I don't believe the rice is as good there as it used to be."

"But there is a lot of stuff that is changing our environment. You know a lot of lakes have been ruined by pollution, air pollution, lots of other stuff. A guy said to me once, the fish in Lake Superior were going away, there are not hardly any lake trout left and this was when I worked in Duluth. One guy said the Indians are netting all the fish. My reply to him was the little bit of fish that the Indians take is not the problem with Lake Superior, it's the lamprey, all the foreign species, and the pollution is what's killing off the fish. It's the same way here in Vermilion, the Indians net fish; I'm one that nets fish. We net fish here under the 1854 Authority, but the fishing in Lake Vermilion right now is down. I don't know if it is going to come back. I don't know, but I can say that cause I've been fishing in this lake since 1972. Our family vacationed here before moving here. The fishing isn't even 25% of what it was in 1974, so that kind of tells you what is happening to our lakes. We've got some sort of red crab in here, we've got some foreign weed, and I used to fish the Fish Lake a lot near Duluth, and that's got some spinney water flea, milfoil and a lot of other things that is ruining our natural way of life."

"We used to eat all the game and fish-now it's getting more scarcer & scarcer all the time. I don't know what can be done about that you know. I tell you, you go down to any big city, Chicago, Duluth any big city, that all built their industrial plants on shore lines, and they all had a pipe going into the lake. I worked at a wood products plant in Superior, Wisconsin and that's what they had. Eventually the plant was closed and we no longer were putting no more of our processed water into Superior Bay, but for quite a few years there they did."

"It seems that every time anybody wants to build something that's what they do. I went to a meeting at Fortune Bay it had something to do with the Polymet thing. They said they were going to put like 1500 gallons of water or more into some river every hour. Well you shouldn't have to do that. There should be some other way to handle that water. I'm not a pollution expert,

but every time someone wants to do something they should not have to stick a pipe into a river or a lake, but I guess that's enough said about that."

(Marybelle) "Is there anything you would like to put in about historical sites?"

"Just last year I went with the elder's on a pontoon trip over here to the new State Park, and over there they showed us an old camp site where they recovered some old artifacts, spear heads, arrowheads, some old deer bones. And there was another spot there in Stuntz Bay where there was another ancient camp site. There are some spots like that where I believe they shouldn't disturb. I used to live in the Fond du Lac neighborhood of Duluth. Up the road there on Hwy 210 it goes up to the Jay Cooke Park. There's a spot right next to the Jay Cook Park line where there's an old Indian cemetery. I don't know who is supposed to be taking care of it, but it isn't being cared for very well. I don't know if the city is responsible or who it is, but that's one spot, and there are other spots in Nett Lake, like Big Point should be checked and preserved. When I was a kid back in the late 40's maybe 1946, there was some people that came to Big Point. I don't know where they were from, but they were archaeologists and they were finding a lot of artifacts. I don't know if anybody has ever explored that any more. But that's one spot where there are graves, campsites."

(Marybelle) "Do you remember these places changing over time?"

"Well they've put roads into some of these places like at the State park where there is a park there now. When I talked to the ranger there, the guy in charge, he said they are going to keep those spots isolated. So I guess they will take care of it, but I guess everything is subject to development wherever there were places, Indian campsites, or grave sites were replaced by roads or highways or whatever, the area now is far from being as pristine as it was if you want to look at a place like the St Louis River down at the Fond du Lac neighborhood. I have read books about Indian settlements there; way back a hundred years which was the Fond du Lac people they say was one of the most pristine places. The fish were plentiful and the water was crystal clear, but take a look at it now and that's pretty much of what's happening all around the country. All of our resources which were natural to us to survive are all depleted bad with pollution and logging. Everybody knows how many white pine there was in this state of Minnesota, but there is lots of logging going on. You know the moose, I'm sure the logging has something to do with the moose population and the deer and forest fires. It all adds up that there is nowhere near the natural resources left here for the native people like there was, even fifty years ago. The fishing is bad; the hunting is not good. Now we can't hunt moose. Everything that's taking place, like getting rid of a bunch of land or eliminate some forest, you're taking away from our food supply that's what it amounts to.

Marybelle "I know your heart is in your words, I guess that's life.

" Yes, but I hope somehow they can turn it around."

Jennie Woodenfrog

(Marybelle) "Can you tell me how you got to Twin Lakes when you riced there?"

“I think they used to haul us around in Gerald Sheehy’s truck, they would haul us around, when there wasn’t much rice on our lake. They would carry our boats.”

(Marybelle) “Did you stay overnight?”

“Yeah, we camped on Twin Lakes for a few days with the Strong’s; George Strong and his family. When Joanne Donald was a teenager she poled her grandpa around the lake, his name was Jim Boness. Her mother was Emma Bones who had two brothers, Frank & Charlie Boness. She lived with Herbert Strong. I was ricing with my mother, my brother William went along, also Billy & Mary Strong.”

(Marybelle) “Did you sell your rice?”

“No, we brought ours home, a lot of people made their rice out there-just enough to eat while they were there. A different party took us when we went to Big Rice Lake. There was a rice buyer there, so we sold our rice. There was a lot of people there, Roy Boness and his wife Sadie, that’s the only two times I went to outside lakes. The rest of the time I riced with my brother John on Nett Lake. My sister Mary and Billy riced in the Deer Lake area, one time-they used to go around with John Whiteman. A lot of people riced around in the Ely area. Someone mentioned Hay Lake that’s around Virginia too-that’s all I know, I hope I helped you.”

Kenneth Boney

“My name is Kenneth Boney. I’m from the Bois Forte Reservation. I was born and raised here. Right now I’m a spiritual leader & healer here at Bois Forte.”

(Marybelle) “Are you familiar with medicines from the area in question?”

“There is a plant picked in July called Weekaa that is used for many things, like arthritis, smudging, for healing, like a salve. Long ago, all of the sicknesses were treated by a healer, or medicine man. When we were ricing at Twin Lakes, Frank Boness found where Weekaa was growing, he said he was going to come back, since he seen where it was growing. There was enough there to last for a couple of years.”

(Marybelle) “Do you know if there were spiritual ceremonies done, during the gathering or medicine, or harvesting rice?”

“Yes, they have ceremonies first, to let the spirits know that they were going to go out down to the lake-or to get medicine.”

(Marybelle) “When you harvested rice in Twin Lakes was there a lot of rice that year?”

“Yes, there was quite a lot of rice on both sides and there was quite a few people there from Bois Forte.”

(Marybelle) “What do you attribute to the rice not being there anymore?”

“I think it’s the weather and all the other stuff like pollution even our lake is dying, and a lot of other lakes around here are dying from pollution, I attribute it to that, and there is nothing that can stop it. I’m concerned about that too, myself, you know. The old guys from long ago used to tell about this, they actually forecasted this, they knew that something was coming and that everything would be gradually poisoned, they knew about it. The water would be poisoned, they knew about it. That the water would be poisoned and that would be the end of the earth.

You know people can't live anymore if they can't have water. That's what they said long ago, they knew what was going to happen."

(Marybelle) Do you know about any particular trails?"

"There were trails all over. If a party of four got together to be gone for four or five days, they knew where they were going, whether it be North-south, east or west. They knew what they were going there for and what trail to travel on. They were guided by their spiritual dreams and were told what to look for as they went along, such as certain rocks or different things on the landscape. I remember this big old truck that had a canvas over the top, it could fit a lot of people back there, the truck belonged to Ed Foster he owned a store right off Hwy 53 he was also a rice buyer. He would drop his load of people off and make another trip to pick up more people. We would be left there for a couple days, and he would come back. He even had a processing plant to parch and thrash the rice in the back of his store. He'd hire three or four guys to work there. They knew what they were doing."

"This is the end of my story."

Marcella Drift

(Marybelle) Marcy was telling me that her grandpa built the first thresher for threshing wild rice ever used in Nett Lake-I responded saying, "Boy that sure saved a lot of work"

"Oh yeah, every day after ricing people would parch their rice at home then bring it to my grandpa. They would fan the rice (winnowing) (to remove the chaff) instead of taking money. He had a 83 lard bucket that he'd put into a bag and that's what we ate all winter and he's take the rice into Orr to barter at Lammis' or get hay with rice. All of us kids remember that. We were never hungry because my grandpa made sure we always had food and he'd even give some of the old people food to help them out. Grandpa had horses, two of them, he would cut wood and he told people to cut their wood and he would have it home for them. So he helped people. He was so generous, every Thanksgiving he'd put two long tables together and had all the old people come to eat. They had turkey, duck, deer meat, a lot of food to eat. Grandpa told us to 'never be lazy.' I asked him why our uncle was so poor, he said, because he is lazy. Grandpa even made a plow that the horses pulled, he'd plow the driveway, and he even filled barrels of water at the pump, so we didn't have to carry all the water such a long way. (Sigh) I retired not too long ago, but sometimes I wish I was still working because sometimes I don't have anything to do. I go for long walks. I walk downtown and if I stop for some groceries, I call dial-a ride."

(Marybelle) "Can you tell how you came to work for Mimntac?"

I'm thankful for being hired. It all started when my cousin Benny said, Indian, you are always working. Why don't you go and put in an application where I work for the Mimntac mining company. You would make more money, so I did. I later got a message that I was to attend some classes and later I was hired. I had a car, but after a while I worked with a lot of old guys that worked for US Steel in Duluth, but they had been laid off when they closed down in Duluth, so we all rode together in a van. I was the only lady in the van, but all the guys were so good and when I came up to Mimntac all the people were good. I guess because I was a good worker or something. One electrician said yeah, everybody says how good you work. I said I had

a good teacher, my grandpa always told us, you gotta work, if you don't work you'll never have anything. Then I found out that was true, so I took care of my kids all by myself."

"When I first started working, I started downstairs, hosing all the pellets into a conveyor belt where they were carried to the trains and loaded up. After I was done cleaning there, I was sent upstairs, and I would push the pellets down to the floor where I was before. In time, I was sent to the tap floor where all the balls were crushed and put into drums that went round and round all the stuff fell out and went down to the balling floor where the pellets were made. I worked there awhile. Then I went to the back where they cooked the pellets. After that I'd been to each floor, I went back to the balling floor. I was making the chemicals and stuff to make the pellets, that's where I stayed. I liked it there the best. One time they asked me to be labor foreman, I said no I don't want to 'cause I know what guys are lazy or who is not. They might get to hate me, if I told them what to do, stayed on the same floor all those years. I finally said, I'm going to retire as soon as I get old enough to because I've worked all my life, my kids are all grown up now I can just take it easy for a while. Now I'm kind of tired of being home. I'd like to take care of the yard, but the landlady does all that. I tell my kids to be thankful for the mines- they supported us through those hard years. Miigwech"

Delano Gonier

"I am seventy three years old, and I was born and raised on the Nett Lake reservation and I would like to speak a little about the mining companies. Mining the land on the iron Range in particular, talking about Big Rice Lake that is producing very little wild rice whereas fifteen, twenty years ago I believe that there was a lot of wild rice being produced on Big Rice Lake. Now there isn't much, if any, rice out there. A few sparse stands, I believe this is all due to the mining going on, on the Iron Range because of the seepage going into the water system and chemicals are being mined also and they're being washed also into the lakes around here on the Iron Range. No, on the Bois Forte Reservation there doesn't seem to be as much rice either and the size of the rice is much smaller. And I believe also, that somehow something is getting into that lake, maybe run off from farms, and possibly from the mines reaching up that far because, all water runs north from the Laurentian Divide so there may be some chemicals also. And Little Rice Lake also, is not producer of rice anymore, as are lots of lakes on the Iron Range from Babbitt to the Hibbing area, Nashwauk. So I think something has to be done. I don't think these mining companies United Taconite, Reserve Mining and those companies should have free access to mining. As I say, I've been wild ricing for a long, long time when the lakes were pure – so I think the mining has a lot to do with what is happening to the wild rice. I thank you."

Phyllis Boshey

"I'm Phyllis Boshey, living at Lake Vermillion reservation and I'm originally from Nett Lake. My Dad was Albert Strong and my Mother, Mary Boness. They divorced, and I grew up with my grandmother and grandfather, aunts and uncles. I went to school in Nett Lake from kindergarten, eventually on to Orr High School. I went to work at Minntac for six and a half years, they shut down for a while. They called me in to do a physical exam so I thought I was

going to go back to work, but they never called me, so I called them. They said I was number 6 to be called back but instead of having 4,400 people they had 2,200 people so that's why I didn't make it, but I enjoyed working up there. I worked nine months inside the building and where it was dirty in there, every day I would clean it up and the next day come back, it would be dirty again, because the night crew didn't do anything, they didn't clean up, so we had to do their work on the day shift. But after nine months I was able to bid on different jobs. Anyway I was surprised to get the job I bid on, it was unloading rail cars and loading the pellets that were going out. So I did unload coal and unloaded bitrate that was used to make pellets. So I worked three different places and really enjoyed going outside. I smoked, and needed to go to my car to smoke, 'cause they wouldn't dare to have us smoke less than 20 feet from the building. So I'd go up to my car which was about 50 feet from the building. I'd start up my car, smoke there, and eat my lunch. So I finally got the job I wanted to be outside a little bit. I really enjoyed working there. They were saying the men wouldn't like us women working there, 'cause they already had some there, and hiring more women was against what they wanted, that the women would take over the taconite plant up there. We didn't do that, but, there was a lot of us women up there. I was there six and a half years. Then the plant shut down. There was four thousand four hundred working then at the time of the shut-down. When there was a call back there was only two thousand two hundred called back. I was number six from being called back to work. I was hoping I could retire from there, but my cousin Marcy got to retire from there. She was hired two to three years before I was so she had seniority. But I was able to draw up until five years ago. My money ran out from Minntac so I felt like I was living quite high for a while until money ran out. Now I just buy what I absolutely need."

"But anyway my husband Bob got two checks, so he was able to buy a new truck every two years. I was happy to get one of his trucks when he was done with it. I didn't have to pay for it (laugh). I was too cheap. I'm paying for his truck now 'cause Bob died just recently. I guess he forgot to make sure it was paid for through his insurance if something happened. But living away from the city, a person needs a reliable car."

"I riced with my mom and stepdad over in Twin Lakes and my uncle Calvin (Guam). We went everywhere with my mom and stepdad. There wasn't much rice there. If there was more than four canoes in there-we stayed only a couple hours, but the rice from there was real good and tasty. We riced in Big Rice Lake whenever there was rice there. I remember I was working at Minntac when I went to go ricing, they said where are you going? I said Big Rice Lake, oh maybe we'll try, we'll see you out there. I said yeah I'll be out there with my kids my partner was Rosemary (Glig's) wife. We had four canoes. Sure enough, them guys came pulling in to shore, two six packs, no rice in their canoes. I told them to look at the kid's rice. He asked her how old she was, she said twelve. He said twelve years old and you've got that much, I guess were not good pickers."

"I told them at work I was teaching my children to harvest wild rice, cause that was that age when I learned. That same year after we sold the rice, my dad made me help to buy school clothes and Sarah was just starting school that year, so grandma and I went shopping, we bought

winter boots-snow pants and a jacket. I felt so rich I even bought another jacket. My grandmother said, you give me sixty dollars and I will give you ten dollars every month-don't ask me for any more, make it last. So she was my banker. I got ten dollars on the first of every month."

(Marybelle) "Do you remember these places we've talked about, how have they changed over time?"

"Yes, my uncles, I can't remember what year it was-we were looking for rice, so we went to Twin Lakes. There was about four other boats in there, and we cleaned out that patch in two hours. We used to get three or four sacks, but not this time. So that was the last time we went there. My two uncles, Benny and Calvin and I riced with my brother Minge. Gerald Chicog and my ma and Jerry went out looking for rice; they didn't want to go to Twin Lakes. We had to walk from the road. We couldn't get a truck in there because of big ditches, big holes in the road I went as far as we could."

(Marybelle) "Did your grandparents live in the days that they would travel to harvest for winter use?"

We picked every kind of berry that was edible. Then my grandma would make jam. The only berry we could eat out there was June berries because of the big seeds in them, but she never let us eat pin cherries, choke cherries and cranberries. We used to pick cranberries in Nett Lake too I believe, Windigo's landing, high bush cranberries. Then of course blueberries so we could pretty much eat fruit all winter long. With all the kids picking, we had a lot."

(Marybelle) "Was there ceremonies done at harvest time?"

"Yeah, we had two sides, my grandpa, my mother's dad lived on one side and we lived on the other side. Then there was a big wagon in the front and then we had old man Pego who lived over here, his name was Jim Boness. Then my grandma's house was here, and we had a round one there too, where they did ceremonies."

(Marybelle) "Do they do the ceremonies, giving thanks for the rice crop, the berries and all that was provided?"

"Yeah, anyway the ceremonies were, well almost like a church you know, that they wanted you to live good, they were the same way, especially if you went through Midewewin. The elder's would all talk to you when you sat in front of them you can't do this, you can't do that, you know, they would tell you what you could do. I went through once. Bob went through two times, cause both of his grandpa's were medicine men. I can't think of the first name of his other grandpa, Pete was the last name. They moved here from Burnside. The reason they moved here was Joe Boshey's wife died, so all the kids left there and moved here. Bob's grandpa Joe Boshey would go there to stay for the summer and guide over there. They had an island, but they never went back, once in a while they would go there to have ceremonies. After that old lady died, they just couldn't stay there anymore. So there is quite a few graves on that island, but they all made their homes here."

(Marybelle) "What are your thoughts about the mining that's going to be done, concerning our natural resources?"

“Well, they destroy a lot of land, when I worked up there I used to load the train, and I’d look around me, at what was being done” (The tape ran out).

Jim & Becky Gawboy

“I’m Jim Gawboy, I was born 78 years ago, Lake Vermillion Reservation. Last time I talked about the Twin Lakes area. I guess sometimes it’s called Big Sandy and Little Sandy. When I was a kid we picked wild rice there, and had wild rice camps north of Minntac. I don’t know too much of south of Minntac but as far as rice camps go, when a person died, wherever they were, they had to bury that person right there before the time of Indian reservations. I heard the old people talk of graves being in that area, but I was too young to remember or if they even knew where the graves were. But, the mining companies tend to do what they want. At one time I spoke with a guy, John Make, was his name. He said he had an aunt and sister buried in Britt. He said if you’ve got a business in Virginia you just don’t talk about what the mining companies do, but he did tell me about it. As far as the expansion goes it won’t affect the Indians up here because all the water is flowing south. The first Indians affected will be Fond du Lac reservation, the Saint Louis River goes through the Fond du Lac reservation, but except for the fact that was an important trade route all the way up the St. Louis River into the Embarrass River, right into the Pike River-right into Lake Vermillion.”

(Becky) “I’m Becky Gawboy. I was born and raised here. I’m 62. I have watched the mining companies swallow the land and poison the water. Even as I was a small child riding into Virginia, looking at the tailings ponds, we talked about there not being any birds or animals around there. My father talked about the land being poisoned and this was only what we could see from the road. And they could do what they wanted because they were rich. Now, I’m pretty sure that the US Steel or USX will say they’re going to do an archeological survey of this area. They did one on the new State Park and they told the State Park people that there was no findings. So the elder’s committee said you do more. This was after it became a State Park and there were thousands and thousands of artifacts there, and they discovered that Indian people had been living there for ten thousand years and that was the quarry for “chert” that had been found by archeologists for the last hundred years all over the country had been traded. That was a very rich resource and Minntac would have blasted a hole in it if it hadn’t become a state park. They don’t have any conscience about this land, they have no love for the land, they don’t honor it, people that get rich from that, they don’t live here, they live somewhere else. They will continue to do whatever they can do for more profit from this land. And they are not interested in what Indian people, or local people, or any people have to say about how they are poisoning the water and poisoning the land. Because their only interest is profit and that’s why it is so important to speak truth to power about this and to explain that these are sacred grounds, just like all the lands here are sacred land. These are gifts from the Creator and we have no right to poison it. We have no right to stand by and watch big corporations do the same thing. Where they are talking about expanding, they are not going to tell anybody about what the impact will be, because they don’t have to. That’s how they feel. They don’t have to because they are rich. And that has often been true over the years, but things are changing, people are listening, people are more concerned,

people are afraid because they know about the poisons. The people that are the fat takers the ones that take the best cut of everything, that take from the top of the pile from everything, that they are the ones that will take the earth away from our children's future. We need to stop and listen and take a look at this. The line has to be drawn now and it's very important for all of us to not be afraid of their lies. Because they will tell us that without them that we can't survive, but we know that is not true, because this land has all that we need as long as we take care of it. But as long as we continue to let it be poisoned, soon it won't be a fit place for anyone to live, just as all the fish, the birds, the animals, they leave when the mine companies come because it's poisoned, that's what we will have to do too"

(Jim) "The mining companies say they are there to provide jobs-they are not. They are there to make money! And if they can make money with fewer and fewer jobs, which is the history of the past, they will hire fewer and fewer people. So they will get by with as few people as they can."

(Becky) "And they bought off the unions, because they are saying, oh we need these people, we need them. But we don't need them; this land can support all of us in a good way, without them."

(Jim) When they used that river all the way to Lake Superior for transportation you could find good places to camp. If you were taking a canoe trip down there, you would find good places where the Indians would camp, just because it's a good place to camp. Just like the place at the state park, they wanted to build condos there when they found they couldn't because of there being too much ledge rock there. They chose that site for the condominiums because it was the most beautiful site, it was breezy, good access, and everything else. Well that is where they found all the artifacts and the chert Becky was talking about. That's the only place in the whole United States that it's found. It's a certain type of chert. They knew it was at Northern Minnesota some place, but they didn't know just where. They knew the further they got from Northern Minnesota, the less and less there was. In Wyoming at a village site, there was artifacts found there, or in Nebraska it was the same, but the closer you got to Minnesota, the more common it became archeological digs in Minnesota. The closer you got to Lake Vermilion the more there was because they not only mined it there, but they manufactured the little arrowheads there, then they took the little arrowheads out to trade, instead of taking big chunks of rock to other tribes, of course it was the finished product and there had to be a lot of craftsmen there to make these trade pieces that they traded out all over the whole United States."

(Becky) "What has happened is that the lies that the mining company have become the truth and the truth is buried. The lies are that this was all empty land, waiting for exploitation but, we all know that wasn't true. There was Indian people living all over Lake Vermilion, all along the river, in all of the good places, there was Indian people there. The fact that all those people were gone when the settlers came was simply the testament of the loss of life because of disease, the disease the French traders brought. Probably to 70-75 percent of the population was killed off because of those diseases, and there was few people left and many of those communities were gone. But it doesn't deny the fact that they existed and the history is still there

in the land and the resources that they used are still there for Indian people to use. The mining company comes in and claims the land for their own. It's land that was reserved by treaty for the Indian people to use, for hunting and gathering and things that they need to sustain themselves and it's a big lie that they don't have to follow those treaties. They are bound by those treaties, because they are not independent of the US Government, even though they try to be, they are part of this country and they have to follow those laws too."

(Marybelle) "Jim, do you know of any areas that were used for hunting, fishing and gathering or other activities in the time of going with your parents?"

(Jim) "I don't remember going south, although they did go south to Old Mesabi location to make maple sugar, that would be just south of where the Erie Mining company is now. They used to take a train there in the later days. I think earlier they probably walked there from Pike River. There is still evidence that they made maple sugar there, they also went to Big Rice Lake to make maple sugar our family only went to the Mesabi location once maple season came up, the people went to the traditional place where they have always went. Which is a little different then harvesting wild rice, wild rice is unpredictable, some years it is there, and others not-so. There is a mixture of people at the wild rice camp. Families go where the wild rice is growing. The area south of the plant I don't have much information."

(Becky) "Most of the land was logged off very early because there was all those lumber mills in Virginia early on at the turn of the century so there wasn't a stick of wood standing anywhere around the area. All the logs were cut off, so the land was spoiled initially the water wasn't, but the land was, so only along the river were there people traveling still."

(Jim) "I remember stories about the area called the "Thunderbird Trail" where the ridge goes. Well, it's probably on the bottom of the Minntac mine now, all the way up to Grand Portage, for the Thunderbird to travel back and forth. Indians still stop there on that rock just north of Virginia to put out tobacco on that place. Whenever we stop there we still see evidence that shows other people still stop there to put tobacco and small items on that rock, called The Laurentian Divide."

(Marybelle) "The maps show Indian trails going through where the mine is now and other trails from other directions coming in to that area, would you say that area was a point of Indian activity?"

(Becky) Yes, I think so, I think they recognized the sacredness of the Laurentian they recognized that was the route the Thunderbird took was there, because of the power of that spot, now they are digging holes in it on the other side."

(Jim) "When they would travel to Duluth or from here south, they would go to Fond du Lac because I have relatives there was because there was travel all the way down the St Louis River, a two day paddle to Cloquet really and that wasn't a long way to travel in those days."

(Becky) "And there was Indian communities in between there, just where the reservations are, that's not only where Indian people lived, they lived everywhere. The illusion is that Indian people only live in Nett Lake or Tower, Lake Vermilion or Fond du Lac, but the fact is this was all Indian land. They were always moving, harvesting with the changing of the seasons."

(Jim) "I remember looking at old copies or re-prints of Biwabik Times way back at the end of the 1800's where they talked about Indians picking blueberries or going down to Embarrass to pick blueberries. Well when they went on these routes they didn't just stick to these routes they didn't just say we're going to Fond du Lac. They would go upstream, maybe hunt and fish for a while, stop and visit at different family groups staying in places for harvesting. It could take weeks to reach their destinations."

(Becky) "This was a time when people were connected. It's connections that has been broken. All the things, the stuff that people collect around their houses now, the junk and the things they buy, are a distraction from their connection. Their connection to the mother earth is the important connection. It's the only thing that puts us in a peaceful place. They understood their part, what humans play in the world. They were not on top of anything; they were part of it and respectful of it. Then the Europeans came and they had the value that they could take, that they could take whatever they were strong enough to get, the fat takers."

(Jim) "They had gardens they never had permanent places to grow a garden, now when we have a garden, we think we are pretty close to the earth with our garden and our animals, but we're getting further and further away from it, like we're waiting to go and pack up our ATV tonight (chuckle). When we talk about the medicines that all the Indians used they say; they must have had someone that specialized in that. I'd say, well to a limited extent they did. But they knew what they had to do, so everybody knew what had to be used for certain illnesses. I can remember what size of tire my pick-up used but I don't know, I know maybe two dozen medicine plants, and they knew hundreds, so that's the difference and everybody knew, not just the specialists. They did that because that was their life. But it was a life they knew, this life we have now is imposed on us by the greedy ones. They did some studying and figured that they only had to work about twenty hours a week to survive, that was including women with babies, so it wasn't nearly as hectic, life as it is now. So they had time to make beautiful things and sing beautiful songs and tell stories and those are the things that are missing now and the reason why we can't stay connected to all of the relatives now."

Ronald King

"My name is Ronald King. My father and mother were LaVern King and Gwendolyn King. I basically grew up in Virginia, Minnesota. When I was a small child, 2 or 3 years old, we lived in Nett Lake. I remember when I was young my mom and dad ricing all the time on Nett Lake, about the state lakes, maybe Big Rice lake, it was so long ago. Personally, I riced on Pike River in Biwabik, Big Rice Lake. Up in Ely there's a lake a little ways out of town on the north side. I riced there. I did a lot of hunting by the Laurentian Divide by Big Rice Lake, very beautiful country, but they've logged a lot of that out right now. My friend rented a cabin near Big Rice Lake. He leased the land so we took a lot of deer out of there, and also a lot of rice. When I was about twenty, my sister and I riced there. I'm now fifty seven and no longer rice there. I don't know if it was the way the people beat the rice stock, it was beaten so often I basically quit ricing there. I haven't been back there for at least fifteen years. The only places I

harvest rice now is Vermilion River and Nett Lake. I have only riced these two areas for the past ten years. There's a site at the Laurentian Divide where there's a rock right next to the freeway. My family would go there whenever anyone went anywhere whether it be a road trip or by plane, train or whatever. I have had people that I loved and honored, a woman who I loved very dearly was my second wife. She was making a plane trip out of the country, she was going to Jamaica and was deathly fearful of flying. So I went to the rock put out tobacco and prayed that she would have a safe trip and she did. I remembered that from my childhood. Also in my childhood, every ricing time we'd go up to Nett Lake from Minneapolis my parents had a little trailer house behind Bronco Villebrun's house. We lived there a couple weeks, ricing and parching the rice. I remember the roads were not paved at that time, I remember the people that would stop just to visit. They would tell stories. Some had musical instruments, sing music, just enjoy the heck out of themselves. Now they don't do that anymore, just wave. I've been up into the boundary waters and I heard stories about (I can't remember what lake it was about). They had a trail that went up to a rock. I think the hill was called "brave hill" in order for a young man to become a brave they needed to run up this trail to the top of the hill. It was a very long hill and steep on a rock. I was young, I tried to run up that hill didn't make it more than half way. I tried several times and never made it to the top. So this was one of the stories how a young man made it to the top of the hill, to earn his manhood. I guess I'm not a brave, I never made it (chuckle). Just things and stories like that are what made life interesting. I think the story came from Roger and Donnie King, they were both a little bit older than I am. We were all up there together and the hieroglyphics I seen up there on the rocks and they used to tell me about the route the Indian people would take coming in, how they got in there and that was one of the places they would have to stop. This was years ago, those people are no longer around. I have just moved up here, about two and a half years ago, to Indian Point and I do a lot of visiting with just the locals around here. It reminds me of when my father lived here on Indian Point, everybody would gather on the road with their morning coffee, or whatever, and just talk and visit. I laugh because my two sisters who have their homes right beside me, they tell me I have turned into my dad, because it's what he used to do. People used to come to him for advice on their vehicles now people come and ask the same of me for help and it's a real good feeling, it really is. To look back what he used to do and what I'm doing. I'm filling his shoes, basically. There are so many things, when I was young we would drive up here from Minneapolis every Fourth of July. There wasn't many houses on Indian Point, just a few and there would be one huge gathering over at the beach area. Uncle Bronco would bring his boat and we could water ski and go swimming. There was a hundred people there easy, these were not all family, but people from Nett Lake too, all mingling together and once again there was beer, guitars and music. But those are the kind of days I miss. I have family gatherings with my own family now; sons, grandson, sisters, nieces and nephews. The only stories we can tell is stories we heard when we were children about my parents. They are lovely stories, but we need to carry on some traditional value and by telling these stories to our children and grandchildren. They ask me questions now, like what was grandpa and grandma like? What did you do when you were a child? Things have changed a lot

what we used to do, what we do now it seems a lot different. It's the same kinda, but it seems different to me, maybe cause those elderly people that were there are just not there anymore. I don't know if it just seems so different to me. And I'm just trying to carry on a little bit of what I know and unfortunately I was never raised on the reservation. I lived in the white world where I got a lot of grief from children in high school, since the schooling programs I went through I had a lot of fights just being Indian and being called that. There was a lot of problems as I was growing up with it. My children, my sons, went through a little bit of that, but as they got older it got better, much easier to deal with. They had more programs that were covered in the school systems. They had Indian programs set up for them and they were also, as I remember when they were small we were able to get help with clothing and shoes through the Indian programs. So they didn't have to dress funny because we couldn't afford good clothes. And the special Ed programs too, it was a lot easier to get into them at that time. I can't remember what it's called, but I do know the program still exists. I have a hard time thinking of things, but I do know things have changed quite a bit. When we started getting casinos built, we went through a thing of, why do we deserve things like that? But it's not of deserving it; it's something we earned and pushed to get, a better way of life and to get away from depending on the State of Minnesota and the Government programs. Although we still have that, but we are more an independent person so things have changed. I can only hope that things continue to change, that it gets better and better as life goes on, so that our children can grow up to be better people themselves."

(Marybelle) "I'd like to ask what you think of what changes do you think mining has made in our lives; the lives of the Bois Forte people in regards to the wild rice?"

I know that Donnie King and most of the men in that family worked in the mines. Roget, Donald, Danny, Dale, they were all steel workers and worked a lot in the mining companies, constructing buildings and putting up other things. I can't remember why they quit, but a lot of other people who worked for years got sick from the dust – mesothelioma or whatever they call that. I think the dust itself is hurting the wild life. I know I worked with Johnny Mattson when I was a kid of about seventeen. As a logger I ran a skidder for him, we went in to some of the mining companies to clear cut a lot of the wood and there was. I seen a lot of wildlife, deer, wolves, beaver a lot the animals were in there, because nobody could hunt there. So it created an environment for the animals so they couldn't be bothered. But they took away a lot of wetlands that were there; they dug a lot of holes all through. The pits are still there with water in them, so deep, it's taken away some of the population for the people, a lot of the land is gone; even now they are planning on re-routing Highway 53. Which is a good possibility it's gonna take over Midway between Virginia and Eveleth. The population here will have to move and it's going to destroy businesses in that area. People will bypass those places, so it's ruining the economy. I think it's just more of a greed thing. We need more money; the mining companies want to make more money. I realize they can go only so far down, but to expand and destroy the land around, taking out the woodland and creating big holes."

Ronald Geshick

“My name is Ronald Geshick. I was born in Nett Lake in February 1942. I went into the service when I just turned nineteen. There’s a lot of things going on cultural wise with the Indians; pow-wows and ceremonies giving thanks for ricing, fishing and hunting. I came from a family of seven boys and three girls in which I was the youngest one, so I didn’t get much training in Indian ways and language. My parents didn’t teach me these ways, because they were intimidated into not doing any of those ways, but the ways were still going on, a lot of it was. I just wish I could have learned these things, the language I understand the language, I just don’t talk it very much, or very well. Growing up we had hunting and fishing; fishing on Nett Lake, hunting on Nett Lake because that’s the only world we knew was Nett Lake and it was a happy life that I had doing all these things as a young boy. Then when I went into the service I got to know the world a little bit better, a better understanding of it, but I still have my roots in Nett Lake and will always be there. Although I lived all over Minnesota, California, Chicago, I had, or I have this problem with alcohol, although I haven’t drank for over twenty years. So that kind of kept me down as far as learning about things, but right now I feel pretty good about myself that I was able to quit drinking and look at life more spiritual. My spiritual life now is pretty good, it’s growing. I think I’ve had it all along, but never used it until I sobered up again and it has helped me a lot.”

(Marybelle) “Could you tell me what you experienced as a youngster going to harvest wild rice on outside lakes?”

“When I was young, a teenager, we used to go out quite a ways. There’s a place called Twin Lake we went to and a place called Dora Lake it’s over by Leech Lake and we riced on Vermilion River and Big Rice Lake. There was a lot of people at these lakes we rode on a big truck filled with people. I believe it was Ed Foster or Matt Holmes.”

(Marybelle) “Did you camp there?”

“No, we came back the same day, but there was some people that would stay for days or weeks, ricing or picking blueberries.”

(Marybelle) “Did you know, or hear of the Laurentian Divide being a spiritual place to the Indians, then and now?”

“They had full ceremonies up on that ridge many years ago. I think they knew that it was a dividing line, so that made it a sacred place where they would have ceremonies there at certain times of the year. I’m sure as I think more on this, I’ll probably think of a lot more things. There used to be rice on Sand Lake here too! As I look at this map of the Minntac mine, I remember a friend of mine told me there was a little lake called Knuckey Lake and it was plumb full of rice. That was about four years ago. Moose Lake had rice on it too.”

Marybelle Isham

“My recollection of harvesting wild rice on state lakes, outside of our reservation brings memories of my mom and dad, my husband, who have gone before me. Our preparation of packing lunches, making sure we had sunglasses which was very important for the protection of the eyes, because once the rice kernel hits the eyes, the whole kernel may stay in the eye, or just

the tail part which we call a “beard” which has ridges which are sharp and helps to move the beard in deeper, almost like it crawls, much like the porcupine quill. Another necessity is to wear good gloves, as the tools of harvest are rough wood, knocking sticks, used to flail the rice off of the rice stock into the boat, the push pole used in the back of the canoe to propel the canoe and steer or manipulate the canoe through the rice, and of course the paddles. Our destination was decided by rumors of amounts of wild rice on different lakes, or news reports, sometimes someone was sent ahead to check out the lakes, lakes that I remember, Mud Lake, Big Rice Lake, Twin Lakes, Moose Lake, Vermilion River. Dad was chosen to harvest a couple times on East Lake near McGregor MN. That’s how they handled that lake, almost like a lottery. I am a member of the Conservation Committee on our reservation; we observe the wild rice closely up to harvest time. Worms are a problem, we hope for the black birds to come back to help with the problem, the worms eat a lot of rice-we have noticed the rice kernel is somewhat smaller. I hope the great-great grandchildren will not be deprived of this wonderful cultural seed that is a part of who we are as Native Americans. Miigwech”

Results

Four of the 12 people interviewed during the course of the Minntac Extension project, Jim Gawboy, Ronald King, Bernard O’Leary and Sandy Walter, were consulted for the Minntac Progression project in 2013. As documented in the earlier project, the latest interviews confirm that through the early 1980’s, vestiges of the ancient Ojibwe settlement and subsistence pattern were pursued to the extent possible (Latady and Isham 2013). These interviews once again confirm that traces of the ancient lifeways remain imbedded in the Ojibwe worldview as respondents speak of ricing on the Vermillion River and when possible, State lakes, such as Twin Lakes a.k.a. Sandy and Little Sandy Lakes, in addition to Nett Lake.

Not surprisingly, interviewees again indicated that the area around the Minntac Mine had been in general use up to 30-40 years ago when resources became unavailable ostensibly due to the effects of mining. In the case of towns like Parkville people were forced to move because of the encroachment of the mine.

Subsistence activities such as ricing, maple sugaring or berry picking were noted by almost all of the interviewees. Those who did not speak of one or more of these actions alluded to them. Ricing was noted the most often followed by sugaring and berry picking. People riced as families or with family members, sometimes camping with other families and at other times making day trips to the lake(s). Often ricers were transported to the lakes, including Twin Lakes, by rice buyers; individuals who purchased rice from the harvesters and had a vested interest in making certain that transportation to and from rice lakes was available.

Phyllis Boshey spoke eloquently about berry picking stating: “We picked every kind of berry that was edible. Then my grandma would make jam. The only berry we could eat out there was June berries because of the big seeds in them, but she never let us eat pin cherries, choke cherries and cranberries. We used to pick cranberries in Nett Lake too I believe, Windigo’s landing, high bush cranberries. Then of course blueberries so we could pretty much eat fruit all

winter long. With all the kids picking, we had a lot.” Berry picking was also mentioned by Jim and Becky Gawboy.

Maple sugaring was mentioned by Jim and Becky Gawboy, both locations they speak about are beyond the project boundaries, but it is noteworthy that people returned to the sugabush where their families had sugared before. In contrast to ricing, where rice productivity is variable year to year and the harvest unpredictable which leads to a mixture of people at the rice camp and no one family returning annually to the same rice lake/river.

Other activities such as fishing and hunting were described. Deer hunting was mentioned specifically, by several interviewees as was fishing. One respondent, Bernard O’leary, laments the declining fish and game populations attributing the decline to pollution and introduced taxa. He also notes that wild game is important to his family explaining that wild game is healthier than meats purchased in a supermarket and emphasizing that usufructuary rights are important for his family’s welfare.

Trails were mentioned by three Band members. Sandy Walters recalls a trail that went through where the mine is now and Ken Boney states that there were “Trails all over” and individuals or groups using the trails were guided by spiritual dreams. Jim Gawboy recalls the Thunderbird Trail, a spiritual journey along the Laurentian Divide. He also notes that trails were transportation networks and not confined to walking trails, but included, indeed often depended upon rivers, such as the St Louis. Becky Gawboy, comments that trails, in particular rivers, connected numerous native villages. Prior to the fur trade and the introduction of European diseases, native communities were ubiquitous; unlike now when native communities are confined to reservations.

Concern about the loss of usufructuary rights was expressed by the interviewees. Several noted the disappearance of rice or diminishing productivity and actual size of the rice grains. Some attributed the depletion to mining while others thought pollution, introduced taxa and climate were culprits. All expressed concern about the loss of resources and worried about the consequences if this trend is not reversed.

Another concern was historic preservation, in part due to the importance of conserving physical links to the past, but also because of the possibility that the physical remains of native people might be disturbed. Gordon Adams, Jr. and Becky and Jim Gawboy made it clear that federal laws pertaining to historic preservation should be followed by Minntac including the National Historic Preservation Act (NHPA) and the Native American Graves and Repatriation Act (NAGPRA). The Gawboys mentioned the work done at the Vermilion State Park by archaeologists as did Bernard O’Leary. It is of vital importance to these interviewees that the State acted as a responsible steward by identifying and preserving these connections to the past. They clearly feel Minntac has a similar responsibility to follow the letter and the spirit of the antiquities laws and regulations.

Spirituality was touched upon by five interviewees. Becky and Jim Gawboy acknowledged the sacred nature of the land and this theme was reiterated by Ken Boney and Ronal King. Jim Gawboy and Ronald King described a rock where tobacco and other offerings

are made at the intersection of Hwy 53 and the Laurentian Divide. This area is only a mile north of Sandy and Little Sandy Lakes. Ron Geshick, notes that ceremonies were conducted on the Laurentian Divide and also remarked that ceremonies were performed giving thanks for success in riceing, hunting and fishing at Nett Lake. Phyllis Boshay echoed Ronald's statement about ceremonies in Nett Lake.

The importance of medicinal plants to Band members was noted by Becky and Jim Gawboy and Ken Boney. The Gawboys explained that they knew the uses of perhaps only two dozen medicinal plants in the not too distant past Band members probably knew the uses of hundreds of medicinal plants and spiritual advisors knew even more. Ken Boney described and named a plant, "Weekaa," that he said grew near the Twin Lakes (Sandy and Little Sandy) which another Band member planned to harvest.

The topic of graves was mentioned by three interviewees, but in general terms. Burials are an extremely sensitive issue and specific information on grave locations would only be revealed if the informant was certain that the knowledge would not be exploited and/or lead to desecration of the graves. Gordon Adams and Becky and Jim Gawboy noted the association of graves and historic campsites used by Band members and Mr. Adams stressed that internments were not very deep. The other mention of graves was by Bernard O'Leary and he referred to areas on the Bois Forte Reservation.

Two interviewees, Phyllis Boshay and Marcella Drift, had worked for Minntac and several others noted that they knew or had family members who had worked in the mines. When queried about their experiences, Mrs. Boshay said that she had hoped to retire from Minntac, but had not been recalled after a layoff. Mrs. Drift noted some of her duties as an employee, but also noted that she was thankful that the mines helped support her family.

The interviews revealed that there are few specifics known or recalled by the interviewees within the Minntac Extension Project APE. Sandy Walter and Gordon Adams mentioned Parkville and their association with that community, but did not describe specific areas where traditional activities occurred. Sandy Walter described a trail that has since been swallowed by the Minntac Mine and that Parkville has been slowly consumed by mining activity.

Discussion

Band members with knowledge of historic traditional practices or resource use in the general area of the Minntac Extension project provided information about when, how and where usufructuary rights were practiced. The authors were fortunate that interviews conducted during Minntac Progression project identified individuals and families with ties to the area who could be interviewed a second time about activities in the Extension project. Unfortunately little is recalled about activities of Band members within the Extension APE. This deficiency in detail is a characteristic in the interviews of the eight other interviewees. Were we able to interview

elders from a generation or two prior to this one, there would have been considerably more information.

However, these interviews added considerably to what was established during the Progression project, namely that usufructuary rights were practiced in the vicinity of the Minntac mine by Band members who lived both on and off the reservation. The four individuals, Jim Gawboy, Ronald King, Bernard O'Leary and Sandy Walter who were interviewed for both projects expanded upon their initial statements concerning the practice of usufructuary rights in to include their concerns about the effects of mine expansion and the loss of traditional resources.

Spiritual activities were another topic covered by interviewees. Band members identified medicinal plant gathering, offering tobacco and other ceremonies. Three interviewees, Jim Gawboy, Ronald Geshick and Ronald King touched upon the sacred nature of the Laurentian Divide; speaking of ceremonies and leaving tobacco along side of Hwy 53 where it crosses the Divide. Becky Gawboy noted that the land itself is sacred and is being harshly treated today. The references to graves did not include specific locations, but their proximity to settlements, even short term camps was noted.

The Twin Lakes (Sandy and Little Sandy Lakes) came up in a number of interviews. Descriptions of ricing, transportation to and from the lakes and even if the rice was retained or sold and whether pickers spent the day or camped further corroborates the historic importance of these lakes to the Bois Forte Band (Latady and Isham 2013: 14-16). An inventory of the lakeshores would probably reveal the location of camps used historically and in antiquity.

As noted in previous reports (Latady and Isham 2011, 2012, 2013) the importance of wild rice to the Bois Forte Band and indeed the Ojibwe as a whole cannot be overstated. Indeed, Latady and Isham (2013) affirm that "Manoomin (wild rice) is not only an important food, but also the center of Ojibwe life as it is the reason for the westward migration, which for Bois Forte culminated in their arrival in northeastern Minnesota. Manoomin appeared in the vision received by an elder on the east coast that initiated the Anishinabe migration to find the food that grows on water." The drastic reduction of wild rice in areas where it was once abundant is a continual concern to all Ojibwe and in this area of particular distress to Bois Forte Band members.

Another topic noted by interviewees is transportation, historically via foot trails and waterways, and in modern times through the use of motor vehicles along roads. Trails were used to access locations of different resources, such as berries, rice, maple groves hunting and fishing areas as well as associated camps. According to Kenneth Boney, individuals also were guided in their use trails by spiritual dreams, a statement that is similar to one uttered by Lester Drift in the Minntac Progression project report (Latady and Isham 2013: 9-10) in which he notes ceremonies were also performed in conjunction with subsistence activities or camping. Traditional travel routes were abandoned once other forms of transportation became available. In the last 60 years Band members often travelled to ricing areas by vehicles, but once there used traditional harvest methods to pick rice. By the time many of the elders alive today were born, traditional travel

corridors and routes were rarely used and probably accounts for the lack of detail on the locations of trails.

The loss of traditional life ways within the 1854 Ceded Territory is an ongoing concern and is expressed in many of the interviews. The decline in wild rice, but also game animals and fish was attributed to pollution, climate changes and invasive species. One interviewee noted that the mines used a lot of land implying these actions impacted Band members ability to pursue their usufructuary rights within the ceded territory. Concern about mine impacts to traditional ways was also voiced by three interviewees who indicated Minntac should to adhere to federal historic preservation laws.

The lack of information about traditional activities within the Minntac Extension APE is a little surprising given that several of the interviewees either grew up in the area or visited families who lived in towns within the project area. During discussions with the Corps of Engineers before this project was initiated, the authors thought that Band members who grew up in Parkville, a community within the APE would have accessed specific areas to rice, pick berries or other plants and possibly hunt and fish. However, few specifics were mentioned and the anticipated information on trails and access routes in addition to specific resource localities did not materialize.

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Identification of Historic Properties of
Traditional Religious and Cultural Significance to
The Bois Forte Band in UTAC Tailings Basin 3 Project
Area of Potential Effect

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Introduction

This report presents the results of a survey to identify historic properties of spiritual and cultural significance to the Bois Forte Band within the United Taconite (UTAC) Tailings Basin 3 Project Area of Potential Effect (APE). The survey was conducted by interviewing Bois Forte elders during the autumn of 2014 and results from plans by UTAC to expand its tailings Basin near Forbes, Minnesota, located south of Eveleth in St Louis County (Figure 1).

In an effort to help UTAC comply with federal regulations to identify and document historic properties of traditional religious and cultural significance to Tribes, the Bois Forte Tribal Historic Preservation Office (THPO) proposed to document places visited by Band members. The proposal grew out of consultation between the Ojibwe Bands and the US Army Corps of Engineers. The survey was designed to document and evaluate historic properties of significance to the Band within the APE located near Forbes in St Louis County, Minnesota. These properties include, but are not limited to, off-reservation treaty resources within the 1854 Ceded Territory, such as maple sugaring areas, wild rice waters, sites with spiritual significance, trails, village sites, fishing areas and other places where usufructuary rights are practiced.

Work began after the agreement created by the Bois Forte THPO was approved by the Reservation Tribal Council and UTAC in early September, 2014. The survey was conducted through interviews of Bois Forte elders in the latter part of September, October and November 2014.

Project Setting

The project area is located near Forbes, Minnesota, south and east of the St Louis River in St Louis County. The first US Government survey of the area in which the United Taconite (UTAC) tailings basin is located occurred in 1875 by William Kindred. He described the Township as having uplands well suited to cultivation. Timber included pine, birch, ash, elm, aspen and tamarack. Kindred's notes go on to state that the lowlands are a "swamp," principally open with a few small trees 2-3 inches in diameter. Furthermore, the St Louis River was 8-10 feet deep with a rapid current and that the river, its branches and the lakes contained good clear water.

Wildlife typically found in this area includes black bear, white tail deer, ruffed grouse, small mammals and migratory birds including ducks and geese. Water bodies including Murphy Lake, the St Louis River and its tributaries contain a variety of fish including bluegill, small and largemouth bass, crappie and northern and walleye pike. Many, if not all of these taxa, are economically significant to Bois Forte Band members, and in some instances have special spiritual import. Wild rice is found in Perch Lake, Round Lake, Stone Lake, East Stone Lake, Anchor Lake and Elliot Lake. Historically, wild rice occurred along the entire length of the St Louis River (Jenks 1901).

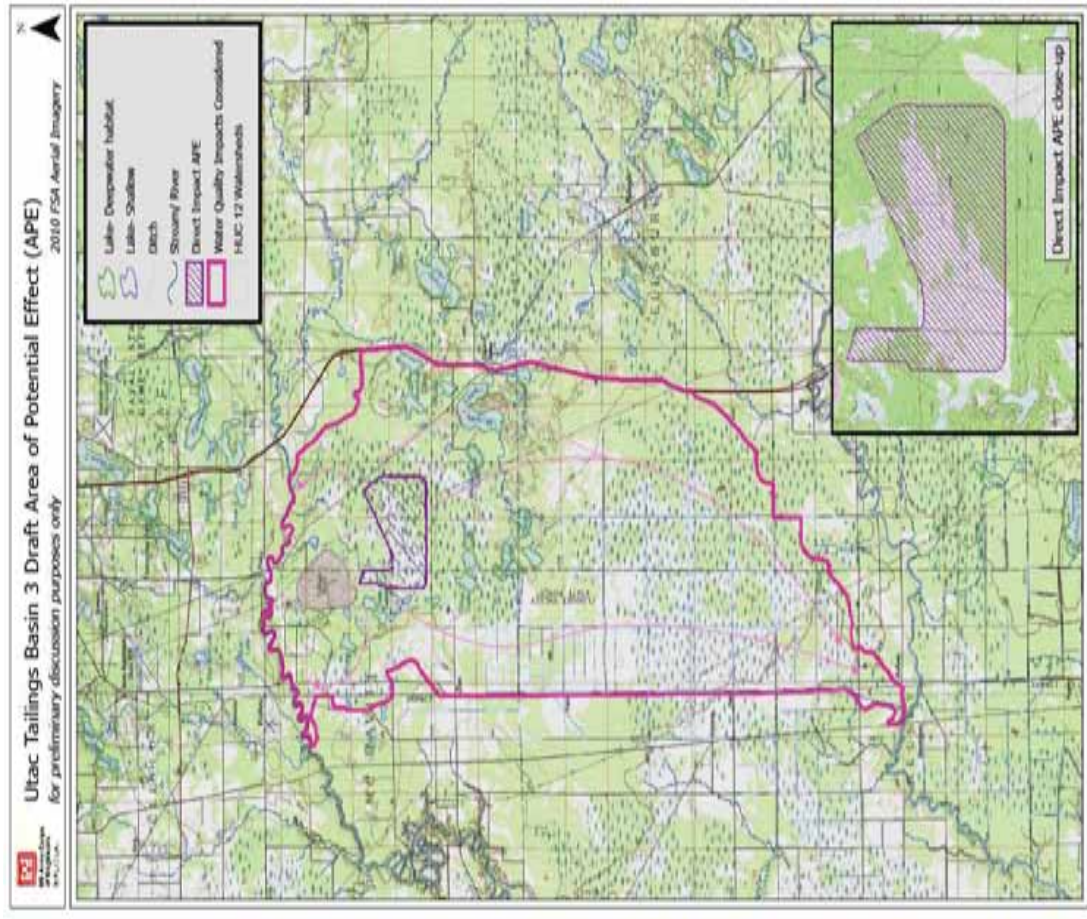


Figure 1. Location of Project area showing the Area of Potential Effect.

American Indians have resided in northeastern Minnesota for time immemorial. Archaeological investigations indicate people arrived in the vanguard of retreating glacier's more

than 10,000 years ago. The earliest inhabitants hunted large game and left behind evidence of their lives in the form of beautifully crafted spear points and other stone tools.

The most recent Bands to reside in the project area are the Anishinabe (Ojibwe or Chippewa). The ancestors of modern Anishinabe living in northeastern Minnesota originated on the east coast and migrated to the area before the United States became a nation (Warren 2009). The journey to Minnesota began when the Anishinabe followed the vision, received by an elder in a dream, warning him to leave the homeland on the east coast (probably at or near the mouth of the St Lawrence River) and journey west to find “the food that grows on water” or manoomin (wild rice). The first European reference to the Anishinabe in the area appears in the journal of a French Explorer, Pierre de la Verendrye, in which he mentions an encampment of Saultier (French term for Ojibwe encountered at Sault-St. Marie) on the Vermilion River in 1731 (Lamppa 1996, Richner 2002).

French Fur Traders referred to the Ojibwe in Northeastern Minnesota as Bois Forte or “strong wood” a reference to the thick, almost impenetrable, forests covering much of the area where these people lived (Richner 2002). An Ojibwe village was probably established at Vermilion Lake around 1800 and by the middle of the century there were hundreds of families in the vicinity who traded almost exclusively with the British Hudson Bay Company (Lamppa, 1996).

Wild Rice was abundant in the shallow bays of Lake Vermilion and along the Pike River and its tributaries. The LaPointe Treaty of 1854 referred to the residents of the area as the “Bois Forte of Vermilion Lake” and granted rights to the lake in addition to yearly annuities in trade goods and provisions, but ceded more than five million acres to the United States including the project area. In 1865 gold was discovered at Vermilion and fears of confrontation between Band members and prospectors lead to the Bois Forte Treaty of 1866. This treaty terminated Band rights to Lake Vermilion and ceded another two million acres to the United States in return for annuities and a 103,000 acre reservation at Nett Lake.

Gold prospectors had left the area by 1868 because there was little of the precious metal to be found and Band members returned to once again reside at Lake Vermilion and roam the surrounding forests, streams, rivers and lakes. Band members living at Lake Vermilion held no legal title to the land, but refused to leave and move to the Nett Lake Reservation. In 1881 President Chester Arthur signed an Executive Order establishing the 1,600 acre Vermilion Lake Reservation which became a gathering place for small Bands of Ojibwe living across northern Minnesota.

After 1900, following traditional ways of life became increasingly difficult for Band members; traveling was restricted as land became privately owned. Logging reduced the forests to pitiful remnants and areas formerly used for berry picking, hunting fishing and ricing became homesteads and lake homes. Limited mobility infringed on basic subsistence practices which eventually resulted in families leaving the area and scattering to other communities. Some moved to Nett Lake while others traveled to other reservations including crossing the border into Canada. Many moved to cities and towns and a very few lived comfortably after finding wage

work (Lamppa 1996). Those who remained often followed a seasonal round in order to survive; whenever possible gathering wild rice in the fall, berry picking in the summer and sugaring in early spring on and off the reservation. In spite of these and many other challenges, today there are more than 200 people living on the Vermilion Sector and 600 at Nett Lake.

The outline presented above is sketchy, in part because existing documentation on the history of the Bois Forte Band is not well organized and exists as scattered references or the occasional footnote in publications describing the history of Minnesota. The struggle for survival and connections to one another and other communities in the face of rapid change have been overlooked in texts and ignored by the dominant culture. Here we present some of the recollections of the past through the stories told by elders in interviews. Their reflections appear below.

Methods

Obtaining information on historic properties of religious and cultural significance to Indian tribes is complex. Sharing information with outsiders on resources that comprise cultural identity is carefully considered by tribal members because history has shown the information may be misused and exploited at the expense of the individual, tribe or resource. In some instances it is taboo to discuss activities with others and offensive to ask. This methodological and sampling challenge results in the under-representation of historic properties of spiritual and cultural significance to Indian tribes in resource inventories.

Elders are highly respected individuals who are 55 years or older and the traditional repositories of knowledge. For millennia they have passed the Band's beliefs, customs and traditions to succeeding generations and continue to do so today. It is to them that we who are requesting knowledge turn to first.

Seven elders were contacted following a letter to all Bois Forte elders explaining that the Bois Forte Tribal Historic Preservation Office (THPO) wanted to speak with anyone who was willing to share knowledge or information about the project area.

During late September, October, November and early December the Bois Forte THPO conducted interviews of Bois Forte Band members willing to share their traditional knowledge. The interviews were conducted by Marybelle Isham, a Band elder and co-author of this report, who has worked on similar projects (Latady and Isham 2011, 2012, 2013). Interviews were conducted at individuals' homes and recorded when allowed. Six open-ended questions were asked during the course of the interview and contained in the letter requesting elder's participation:

1. Do you know of trails or routes that passed through the area?
2. Did you or anyone in your family use the area for collecting medicinal plants?
3. Can you tell me anything about places used for fishing, sugar bush, gathering bark, ricing or hunting?
4. What kinds of sacred areas have you heard about from the area?

- How do you remember these ceremonies taking place or changing over time?
- 5. What stories do you remember about the area?
- 6. Do you recall traditional names of lakes, streams, outcrops, hills, important views?

Additional questions were sometimes asked in order to elucidate details or clarify points made by the interviewees, such as “did you or members of your family live near the project area?”

In addition to interviews, the authors previously reviewed the archives at the Bois Forte Heritage Museum, the Gale Family Library at the Minnesota Historical Society and Minnesota Discovery Center (Latady and Isham 2013). Archival research centered on the Trygg Collection at the Heritage Museum and the Minnesota Historical Society and an assortment of legal and background papers related to William Trygg’s work as an appraiser for the Indian Claims Commission. Included are tree tallies, land sale information, abstracts from U.S. Land Surveyors’ field notes, printed reports, court exhibits and names of native and local informants.

In addition, avocational historians Todd Lindahl and Don Menuay of Two Harbors, Minnesota were consulted in October, 2014 regarding trails and other historic features in the project area. Both have spent years searching for historic features on the Iron Range and researching documents preserved in local historical societies. They have reported their findings to archaeologists from the Superior National Forest and the Minnesota Department of Natural Resources.

Interviews

Seven elders were interviewed and their recollections appear below. Marybelle Isham, a coauthor of this and earlier reports, included her thoughts.

Harold “Dayshun” Goodsky

“My name is Dayshun Goodsky. I am from Sugar Bush and my parents used to do a lot of ricing for Ed Foster, he paid them really good, he paid them by the pound and he knew what lakes had rice on them, because Steve Gheen used to fly his plane for him. And Steve Gheen could land his plane on a can, he was really a good pilot! My dad trapped for him all over this area. Twin Lakes always stands out in my mind. We used to go to them lakes back there, we had tents and we would get firewood while they were out ricing. Most of the area there, well it’s pretty hard to tell now, cause it’s all urban and them Twin Lakes are dried up completely, nothing! I guess Minntac is losing about a million gallons a day, according to a source that lives right back there and there’s about six people that have cancer back there. The road run right through those Twin Lakes and we camped right on the end of it. Iris smoked a pipe, made medicine and we all prayed the Great Spirit would take care of them. I went up there about two months ago just to see if them lakes were there--there was nothing there. Them lakes were all weeds and swamps, but I remember them. We used to go there all the time, they used to pay a good price for rice-even the kids who tried to rice, he even bought from them. But, there is on

distinct place besides Nett Lake, where we always riced, did you ever hear of doo-dash-di-dabon? It's a river, Vermilion River, that's it!"

(Marybelle) "What does the word mean?"

(Dayshun) "Means a fire train, there are old railroad ties running right into Pelican Lake. Before they flooded Pelican here you used to be able to go all over back there, it was a waterway. I did that one summer, we used to talk about the Indian people, the Lakota the Sioux. They had a place over by Littlefork River. My dad used to stay there. They used to sing in the evening for the rice and that. Oh gosh, the only lakes I can talk about is those two lakes, Twin Lakes, they used to be chock full of rice, there used to be a river in between them where you could knock rice even there without losing anything, and there was real-real good rice on them lakes. We would camp, all the kids would have to get the wood; we all had something to do. Twin Lakes always sticks in my mind because of how hard we had to work."

(Marybelle) "What can you tell me about the Laurentian Divide?"

"There was a grant given by the University of Minnesota because they wanted people to know more about the history of the Ojibway people. I don't think many of you people utilize that. We have to hire a different people to come in and speak. I went up there a few days speaking to them people, speaking about the lands and how the big bucks ran through there years ago (So as far back as you can remember they have changed a lot from what they used to be) Oh yes, I went up to Nett River the other day just to take a ride, cause I've been staying in the house so much."

Lillian (Ruby) Boshey

(Marybelle) "Ruby started her interview in our native Ojibwe, I had to tell her I'm sorry, but I couldn't understand, or wouldn't be able to write down what she was telling me."

"Hello! My name is Lillian Boshey, my clan is the lynx. My Mum was from here, Tower, Minnesota. Her name was Mary Ellen Labotte Jourdain. She was born on Jackfish Bay. My Dad is from Koochiching, First Nation, his name was Andrew Jourdain, Sr. and they had 13 children. My Dad always pretended he couldn't talk our Ojibwe language, so we would talk English then we would talk half and half 'cause my Mum didn't understand English, so we would say it half and half so the both could understand. Later we found out that my Dad was fluent, that he was just making that up, learning both languages at once. He was the one that really pushed us to school. Our cousins would be playing outside and had come up the hill and yell to us "Jordain kids, 8:00" and we'd all have to go in, even if we were seventeen years old, he'd sit at the table and watch us do our homework. Then if we said we already did it, and didn't, then we'd have two days of school work to do. He really pushed us hard and we benefitted from it. We have five social workers in my family, four teachers and two lawyers. He really pushed us. When me and my husband got married, or when I was just going with him, he had come from Lake Vermilion here cause his mama died and his Granma and Grandpa raised him here on this rez, and he used to come and visit his dad at Lac LaCroix, then that's how I met him. When we got married we moved to Lake Vermilion here. Then we used to go ricing at Big Rice Lake. That guy that owned

the land around the lake, he'd let us camp there. We'd stay there three or four days ricing, then we'd come back and parch the rice with his grandpa and grandma. But, I haven't been there for many years. It must be about twenty years ago when I went ricing. My cousin Isabelle Strong-gosh we had a tough time—we almost tipped over when we first got out. She was paddling and I was knocking, but we still made thirty dollars for that day, cause we were so busy laughing. The other Indians from Vermilion said we were like Che-mook (white) women cause we couldn't paddle or rice. When we got our kids we used to pick berries and then take them camping. Then this one time we went with Bobby and Phyllis and their girls. By the time we got on the other side of the portage it was really dark, we couldn't see and we had six kids with us. We had to shine the light for the guys so they'd know where to go, then we went to a little island, we set up camp. Mosquito's galore! The first thing they did was build a fire, so the kids could sit around the fire while we set up the tents. We'd have a little wiener roast and send them to bed. Next day we'd go fishing all day; we'd come back and cook the fish and stay one more day. On Sunday we'd get back so our husbands could go to work at Minntac. Quite a few times we did that!! Then when we got our grandkids we started to teach them how to set net, how to pick blueberries and how to put your "asaima" (tobacco) down before you do anything, like ricing at Big Rice. We put "asaima" down in the water to give thanks for what we are going to get. My great grandson, he was only four, my Dad had passed away so we took my Mum out on the lake at Lac LaCroix, cause she was feeling bad, so we went blueberry picking and my Mum said make sure your grandson puts asaima down. I said he knows, so I gave him a pinch of tobacco, he went put it under a rock, he said this is for the makwa (bear), my doodem (totem). My Mum said "shaa" (expression for surprise or disgust) he's the one eating all our berries, so we can't pick them (laugh). All my grandkids know what to do—spiritually. Two of them live in Duluth. They call me all upset about things—I just tell them—you know what to do, grandma taught you what to do—ok, yeah, put out asaima by the tree—yeah that's what you do, the spirits understand you even if you don't talk Ojibwe. That's what they still do, they are young ladies now. Now my granddaughter who is eleven—I started teaching her how to bead when she was four and first used pony beads. By the time she was five, she was beading with my beads. They were here about a month ago. Her parents told me she made seventy dollars from her bead work. She called me, than they came to visit so she took more of my beads, thread and needles. She said she was going to have her other grandma teach her how to string the loom I bought for her. She wants to do loom work now. Then to pay her back I'm going to help her bead her mukluks here, she's only seven. She made a medallion for herself with a bear on it and she makes a lot of earrings and sold them. Now she's teaching the other little girls to bead. She said they are at the place I was when I started to use real beads. I told her not to supply the beads, let the parents buy their beads, because they are too expensive. But I really enjoy teaching my grandkids and the older three when they were young. I taught them to bead and make regalia. I'd tell them to come sit by me and watch what I'm doing. By the time you are fourteen, you're going to do it on your own, 'cause I'm not going to touch that sewing machine, or the needle. You are going to do it, unless you run into a problem. I'll advise you, but I'm not doing it 'cause grandma won't be making

anything for you anymore-you'll have to do it yourself. The seven year old said "but that won't be for seven more years grandma. Now I am teaching her the language. The other grandkids, my mum told me that's okay if they understand it, they don't have to talk it. So I followed what she told me. Now I'm sorry that I did. Now they can't teach their kids how to talk, they only understand and can't verbalize it. So that's my regret, cause I listened to my mummy, cause she said at least they'll know if someone is talking about them she said. I've been living here now since I got married. Only time I was out for nineteen years. I went to the university for four years then our deal was that I would have to come back to my Rez. to practice my teaching and help them out with teaching the kids, so I did that for fifteen years. Within that fifteen years I was taking summer courses and I got to earn a three degrees in education administrative, then I was teaching kindergarten and they told me that I have to get early childhood certificate cause my license was from grade one to grade eight, so I'd have to go back to school. So I went to Bemidji for three summers and I'm still short three credits to get my degree. I'm still going to try to get the credits through the internet, to get finished. I don't know why, but I just want to. I enjoy teaching; right now I'm enjoying reading native books, comparing our spirituality to what other tribes do. It's really interesting.

My great grandma, Nora Labotte Pete, was my mum's mom. I went to boarding school for seven years, every time we came home she would take us out on the lake and teach us the language, the medicines and the names of the animals, the birds and everything, cause we'd be out there with her all summer, until we had to go back to that boarding school. Then that's how I kept my language to keep it in my heart, not to let it go, or lose it, that's all. Miigwech (Thank you)"

Jim Gawboy

"This is Jim Gawboy. I have been asked if I can remember anything about the area where they are expanding this tailings basin. I don't know. I think maybe I've told everything I have in my head already, but I may as well. I'm not familiar with that area, but I did paddle that route from Murphy Lake to Stone Lake once back in, I'd say before 1965 and it was very hard to paddle as it was overgrown with brush. These routes that were used by Indians didn't have to be very wide three foot wide and a foot deep and a canoe could go through there, the only real problem we had was alder bush growing over each side of the creek, or river in the old days that was always cut clear so it was real usable. I suppose the reason I went in there was because it was my patrol area when I was working as a game warden for the State of Minnesota. It was a creek I had never been on. About half way through we were kind of regretting that decision, but we made it through. A lot of these small creeks were used as canoe routes and kept clear of this kind of brush. I suppose they would come up St Louis River to Anchor Lake and maybe portage into Murphy or maybe through Eliot Lake, cause there's a creek coming into Elliott Lake too that's probably usable. But the area they are going to use as a proposed tailings pond and proposed plant area is an already overburdened. But the place that's a tailings basin it looks by the map that it's all muskeg swamp which of course is sphagnum that holds water and lets out a

little at a time. So if everything was paved over, everything downstream would be flooded out the next day, but muskeg swamps hold all this water and other than being useful for cranberries and it's fairly close to the Saint Louis River and it drains north and almost every direction draining out too- into Round Lake. To be completely safe it would have to be waterproofed and I don't know how you'd make that area waterproofed cause I don't know how deep those muskegs go. Around Zim it would go twenty-thirty feet to the ground. I remember 20-30 years ago when they were putting a pipe line through that Zim Swamp. Just west of this map it might be right on the edge of the river. (Edge of this map) I remember when they were working on the pipeline, they parked a caterpillar-a bulldozer, on their work site. They came back the next day, it had disappeared. The muskeg gave way. It went down into the peat, they probed and couldn't find it. It's probably still down there. Those swamps are unlike nothing else in the whole United States. The swamps in Louisiana and Florida they all have solid bottoms, sandy bottoms. (Laugh) and these swamps here have muskeg that just goes down and down, the only way to keep the pipeline down, would be to weigh them down with concrete blocks as big as a house to keep them from popping up. It's really a unique area, a unique kind of swamp. There's probably other swamps like this in other parts of the world and Canada, but they're not as deep as around here. When the glacier left I think it filled in faster here than it did other places further north because of longer seasons. An ancient glacial lake that filled in a lot faster than the ones up north, so it would make the muskeg bogs much deeper. But I paddled the St Louis River all the way down too, on several occasions. I don't know how much leakage is going in there that wasn't going in there before, I don't have too much else to say around that area. I don't know of any old. My family never lived in that area, or moved through there. I've been through there a few times. I remember people talking about paddling the St Louis River going downstream on long trips. I suppose they were going down as far as Fond du Lac because I have relatives there too. My great grandparents had relatives there the last couple generations I don't even know. But I'm sure there were other people that used that area for a lot of things. Indians use a lot of medicines. Plants grow in bogs, there's swamp tea and other medicine plants besides cranberries. Of course they used spruce wood for a lot of things, but it wouldn't be too critical for spruce wood to disappear, other than that's about all I know of that area. My wife Becky has something to say."

Becky Gawboy

"The doubling of the tailings pond and the questions asked about the historic significance to Bois Forte, all of the land in the 1854 Treaty is historic and has religious significance. Any harm that is done to the land will hurt the people of Bois Forte because it is part of them. It's not just the complications of adding this to the tailings ponds is why this tailings pond is once again being expanded, it's because in other parts of the 1854 area, more land is being mined and more taconite is being taken out and if these tailings ponds weren't a risk or a danger, there wouldn't be a need for this study. If what they were putting back was harmless it could be put back anywhere but it isn't harmless, it is poisonous and does put all the rice lakes at risk. It puts the St Louis River at risk and it puts all the well water for all the people who live around there at risk,

and the question is, who profits from this? The people around there don't profit by this, the mining company, the multi-national. They're the ones who profit. This is all sacred land—every inch of it—because that's just the nature of the land—a lot of this land is still hunted and still riced by the people of Bois Forte and it will definitely make an impact on these people and the health of the rice. In fact, we just had rice from Stone Lake the other night because our boys riced there several years ago, they got three sacks. Stone Lake is a nice rice lake—good rice! Perch and Round Lakes are too”

(Marybelle) “I would like to know if Perch and Round Lake had any rice this year?”

The tailings pond will change the acidity of the waters, is anyone going to stop this because of those rice lakes? I don't know, I don't know what the process is, or if it matters you know, if anyone is going to do anything about this? Every time they move further into that swampland and take more land, which are full of plants and full of medicines that heal the people and the land, they diminish the resources left for Bois Forte people. That's all I have to say.

Lester Drift

“All the lakes that produce rice are sacred to us, we put medicine in the lake to keep it sacred, we do ceremonies around the lake to keep it sacred, we even had powwows in some areas because it is a sacred place to us. Any lake that has rice on it is food for the Native American and we treat it with high respect because it's fed us through the winter. There is probably a lot of individual ceremonies taking place. I do a ceremony every spring, every fall. I thank the Creator for giving us wild rice. I cook up some wild rice, I mix in some blueberries and maple sugar and talk to the Creator in the native language. We do the same thing at the sugar camp and the blueberry camp. We put tobacco down and talk to the ground area to tell it to bring back the blueberries next year and do the same at the maple sugar camp. We did a sacred ceremony at every place where we took or got something from that place, to sustain us in food or whatever it was for our winter use. Sugar we could keep, blueberries we could keep, wild rice we could keep. We are thankful for this food for our use. Up here in Nett Lake we still do the ceremonies, like myself, probably at every lake, at every Indian campground, wherever the Native American lived or moved there were sacred ceremonies. So to look at it realistically, the whole northern part of Minnesota is sacred to the American Indian, especially all the lakes that have wild rice. We know that as Native Americans we do not own the earth. The earth owns us, because we are only here for a short time. The earth is old, the universe is old. In the short time we are here we get to do sacred ceremonies. We are thankful for the part of the earth that gets into our systems through the blueberries, maple syrup and wild rice and all the plants that contain Indian medicine—and it grows all across the Iron Range and we know that there are plants out there, that there is a plant out there that can heal every sickness. We know as Native Americans that sooner or later we're going to run out of these medicines. Men and women know that it is fast disappearing, because nobody wants to believe that part of our life, but we know. I've tried as hard as I could. The sun, the moon, the wind, all the parts of the universe are sacred. They were here long before men were, but they are still a part of our life because if it wasn't for them I

don't think we would be here. I'll always be thankful for that, and anything that is taken from the earth, like minerals, a kind of gold, nickel, copper and all the kinds of mining that is going to go on, something should be put back, at least a little bit of tobacco. That's what we do; giving a little something back because if we don't do that, it will be taken away from us. Or if we abuse it, it will be taken away from us. Just like most of the lakes that had wild rice on them, they allow motor boats and everything else to go in them. Now there isn't any more rice on them lakes. That's a good example of when you abuse something. Creator takes it away, can't give it to you anymore! What traditional people used to do, ceremonies, talking all the time so everyone knew what they had to do; the warriors knew what to do, the chief's knew what to do, the ladies knew what to do, the elders knew what to do—even the kids, like if they were moving from one camp to another camp, everyone had a part so that the whole community moved together. We just didn't go one at a time, we moved all together, this brought the community closer together, cause we were all helping each other and that's the way we shared the blueberries and maple sugar and wild rice. We are all in this world together, so, let's help each other. What we take, put something back, be thankful, we didn't do that because we knew that belonged to Mother Earth, that's probably why we didn't grab the iron ore and all those other metals cause they didn't belong to us, they belonged to mother Earth. So the traditional Indians long time ago, did all kinds of sacred ceremonies, finally dropped the medicine and rights to protect them, to keep them safe. There's less and less of us doing that, so the lake is getting less and less rice out there, because nobody is being thankful-nobody is doing anything to help the lake anymore. It was hard work back then and it still is hard work, but we still do the ceremonies. After it's all over I do a ceremony here in the house. Hopefully, we will be given rice again next year. We keep taking, taking and not giving anything back. What I hope to see done is maybe pick the rice once or maybe twice then let it go, don't rice anymore, let that lake fill up again; guaranteed, in four or five years that lake will fill up again, guaranteed! But if we keep take, take, take and never put anything back, guaranteed, we will lose it-Creator will take it!"

Bernard O'Leary

"My name is Bernard O'Leary, I live at the Vermilion Reservation. I was born February 20, 1932 at the Cloquet Hospital. At the time, we were living in Nett Lake. I lived there from the day I was born up until the late 50's, even though we weren't living there we still came up here every year to pick rice, to pick berries, fished, we picked princess pine. We used to harvest pine cones, everything to use in various things we did, we sold the pine cones too. I guess if you've read history books of what the people at Bois Forte did, you'd find we sold a lot of blueberries and raspberries. It was all a part of making a living. I guess that's what this program is about, to let everybody know how much Bois Forte Band depends on all our natural resources we have whether it's logging, picking berries, picking wild rice, hunting deer, or wild game of any sort and also the fishing. With the rice being our greatest resource, because it's what we use for food, it's very important to do everything that can be done to prevent the loss of wild rice being eliminated even partially should be stopped. The fact that there isn't much rice, as there used to

be before is quite alarming to people who depend on it. I remember when I was a small boy and my mom and dad would prepare to go out to harvest the rice in all these area lakes, they had a pick-up truck and they used to go camping. They had a tent and they picked wherever there was a good crop of rice and we really depended on that. We had all we wanted to eat, plus my dad and ma bought us school clothes. They bought everything we needed after they sold the rice. The rice was a way to earn money for everything we needed back then. My dad would buy half of a beef every fall with that ricing money, so it was an important time for people. So was selling the blueberries. We used to can eighty quarts of blueberries every summer and we canned at least twenty or more quarts of raspberries and we also used to pick a lot of plums. We would pick a lot of plums and pin cherries and make jelly out of that. We had chokecherry jam. We had blueberries on our pancakes in the winter time. So all these natural resources that are here are really important and I bet there are a lot of people yet today including myself, my kids and their families. We all hunt, pick wild rice, blueberries, and fish, and that's kind of a sad story when I talk about fish, because the lakes are so polluted, there's fish advisories where you should only eat so many fish a week and the invasive species thing is getting to be a big problem. When I take my boat to the lake there's someone there at the launch to check and make sure that there's no milfoil and all the different kinds of things that they check for. You know there's getting to be Zebra mussels and all kinds of different foreign species of fish in the St Louis River and that's all in the 1854 ceded territory. So it's a big loss for the Bois Forte people and not only for us, but the general population the non-native people. A lot of them depend on all of these things too. I know a lot of people who are not Native American, that go picking berries and fish so it's for anybody, but mainly it's for the Bois Forte people. We for centuries have depended on the land and lakes for our food. I guess I can't stress how important it is to have all our natural resources to stay intact. It's a sad thing to see them going, there ain't nothing like it used to be. You used to be able to get a deer in a couple of hours and the fishing, it used to be that you could go out and get all the fish you wanted, even every day. No I spent three years of ice fishing here on Lake Vermilion and I put in a lot of time and there was one year where all I caught was one white fish! Never seen a walleye, never seen a perch. Talking to some of the people here at the Vermilion Sportsman club, they keep a pretty good eye on what is happening here and there is some red species of crowdad of something that is eating up the weeds and the population of the perch is really low and there's weeds in every bay that had to be gotten rid of. I guess if we were to start naming all the problems and things that are causing this, it's a pretty sad situation. Oh ok, I guess that something has to be done to slow this down, or to stop it or even reverse it and get our natural resources coming back, because there's a lot of people who depend on what we have here in Northern Minnesota-Thank you! I'd like to further comment on this map I am looking at, of what's happening at the UTAC plant. I guess I don't know exactly what is being done, but I'd like to say that eliminating any wetland is never a good idea, because you are eliminating habitat for many different plants, fish, frogs, wild rice, berries, high bush cranberries; there's a lot of stuff that wetlands have. Looking at this map, on the north side is the St Louis River and whatever is seeping out of these tailings basins that's going to end up into the St Louis River and

ultimately into Lake Superior. So, it seems that with all these mines opening up around here, we're losing a lot of timber, wetlands; whatever we need it's going to affect our wild rice crops, our hunting. It's just not a very good idea. That looks like that area might be at least three and a half miles long by probably in spots, two miles wide that's a lot of wetlands to use and being where it is, it looks like a drainage area which is, there's other rivers there. It just ain't good! Our main concern of course is the wild rice and the natural habitat that is eliminated. I just don't believe as a Bois Forte band member, I don't believe that should happen."

Ron King

"I'm Ron King. I lived and grew up in Eveleth most of my life; just recently moved up to Orr, MN three years ago. Now the area we are looking at on the map I believe it's just south of Eveleth in the Zim area between Zim and Cotton. If it was in the Zim area, I have relatives living there, so I've done some hunting and fishing there. Highway 4 goes all the way from Virginia to Duluth, I traveled that way quite a lot and they have that new Forbes mine, it's part of the Eveleth Mines. When they created that my dad used to have horses out on Perry Road, which was south of Eveleth, with a guy named Butch Geefer, I was about seven years old a lot of the houses that were there are not there anymore, they actually got rid of the highway that was there. I think it was the late 70's we did a tree plantation out in that area, we planted thousands of them and I don't know how much they've grown, if at all. I was out there again, about seven years ago. Everything is changed out there. The wetlands, you can't even see the pine forest that should have been there from the thousands of trees we planted--there is a few. There's a lot of little lakes in the area in question, I think it was in the seventies that they moved the plant from Eveleth to the Zim area (Forbes Plant). It's not right off Highway 4, its back where you don't see the pits, they are further back. I think they go back towards Highway 52 and in towards Hibbing that way. But they don't have the lakes that were in there, and they've lost a lot of wetlands. I guess I've never been into that mining company, UTAC. Like I've been over to Mt Iron in that mine and I've worked in the Hibbing Taconite plant doing construction for the Draywell Company out of Virginia. In all of these plants, we had to go in there to make footings for buildings that were being put up in Hibbing. That's a big mining company too. I guess my concern overall is the pollution they put in the air, it affects the wild life, I think the only things that's surviving right now is the wolves, the deer count is down. I used to snare rabbits over that way too, that slowed down too, either that or it was getting too close to summer. There's not too much more I know of the Forbes area, we used to watch the smoke rise out of those plants (I wonder if there still is rice on Round Lake like the map claims) And, as far as lakes with rice on them, I just can't remember wild rice growing on any of these lakes that are on the map. North of Virginia there is a river which I think I've talked about before but that one is just deteriorating there's just barely a little rice on it. But I think it's because of the chemicals they send up into the sky, they travel miles and miles on the wind actually, in the winter you can see the discoloration on top of the snow when you travel the Zim area. When I visited Donny King in that area I don't think it affected the trees, but season after season of that dust looking stuff going into the ground

would have an effect on the plant life and wild rice. On highway 16 in Cook County, actually the Cook county Line changes from Highway 16 to highway 15. I've done a lot of moose hunting around there, my sister Cheryl and I used to rice on Breda Lake in that area, we had to paddle in about two miles up a little river to get to it and that rice used to be big, beautiful kernels. It grew real thick and it was almost as good as Bois Forte used to be; big lone kernels and it was canoe full all the time. I spent many years going up and down that river, eventually the rice began to diminish. You get the reports every year from the 1854 on the lakes. Big Rice Lake, Twin Lakes, all the lakes that had rice growing, but doesn't grow anymore. The same with Breda, it's not a big lake, so you get a couple boats in there and it's picked out in a day. It's just not like it used to be. There's a river by Biwabik, it may be the Embarrass River, we used to harvest all these lakes that had wild rice and had good pickings. Now I'm down to the Vermilion River and Nett Lake, that's it! The only places I go."

Marybelle Connor Isham

"I am repeating the words of Heather Friedli Ratzloff exactly as she wrote them. 'Let's not forget my ancestors who walked, hunted, worshipped, and lived on this land before, during and after contact with white settlers.'"

"My name is Marybelle Connor Isham. I was born and raised on the Bois Forte Indian Reservation until the age of eighteen, when I married and left the reservation. We are Ojibwe people, also known as Anishinaabe, or Chippewa. The nomadic life of our people was before my time, but my heart goes out to our ancestors, who suffered such hardships of having to depend on seasonal food and whether the food for that season is abundant or not a good season or not having enough to last through the harsh winter.

"I am going to describe our reservation briefly. I left the area at quite a young age, but never missed a rice harvest season. I'm back home now! Our reservation is built on a peninsula on a lot of rock, with water and swampland surrounding it. We have a huge amount of clay in the soil, so it is necessary to buy soil suitable for planting seeds and growing a garden. My generation was the depression era. We relied greatly on what we could grow. We still rely on the seasonal food. In the spring, it's the sugar bush, which reminds me of the early maps of the area in question, and it shows a sugar bush at Murphy Lake and 1854 Treaty Authority reports Round Lake supports wild rice. There is also setting nets in the spring for fish. This is a great time and we can feast on fresh fish. Netting season as well as sugar bush season doesn't last very long. There is not a danger of depleting the resources, or using it all up. The summer season is more plentiful. The bears are out of hibernation, ducks and geese are back from migration and more fish can be stored and also mushrooms and other forest plants. Our ancestors preserved all the vegetables, fruits, and berries. The Ojibwe people realized that cattail roots made great food, eaten like potatoes. They also dug wild onions and picked wild grapes, butternuts, hazel nuts, and many types of berries. As with their harvests of each season, they offered tobacco as a sign of respect, and as a spiritual offering for the food. In the fall, the harvesting of wild rice is about the most important food for the Ojibwe people. Legend has it, the Ojibwe people were told by

prophets to travel west from their ancestral homelands on the Atlantic Coast to ‘the land where food grows on water.’ The land is the wild rice country of Minnesota, Wisconsin, Michigan, Ontario, and Manitoba.

I am reminded of another journey in which the Creator fed his people for the forty years that they remained in the wilderness on a substance called manna. The dictionary describes manna as “something of value that comes one’s way”. I find it hard to express the value we place on wild rice, both spiritually and economically. I hear from others, and have experienced it myself, the effects of a loss of a staple that you feel that you cannot be without. Wild rice and maple sugar are the most hardy for storing and keeping. These foods were probably the difference between life and death in some instances. They are called ‘super foods’ providing calories and nutrients. We have freezers now to freeze the fish, grouse, deer and moose that are hunted in the fall, but our ancestors had to dry and pack away all they could acquire for a long winter. Winter hunting for the Ojibwe people was fishing through the ice, trapping beaver and other animals for meat and pelts. A favorite of mine is the snowshoe rabbit. My mom fixed the snowshoe hare many different ways. Yum! I can still taste the soup!

The St. Louis River is on the map of the UTAC tailings basin expansion. I have an article taken from the historical Trygg files previous to year 1840. This article is written by Reverend T. M. Fullerton, describing what he sees while riding in a boat on the St. Louis River. ‘The river at its mouth is less than a quarter mile wide and obstructed by a sandbar holding countless snags; but on passing this a few rods, brings the boat beyond the bend into calm, deep water in any weather. At the head of the bay the traveler is in want of a pilot, as there are numerous channels. *From that point to the falls, the river is full of islands and fields of wild rice*’ (emphasis added).

“This leads to a question that I have! I have a map of the 1854 Ceded Territory.

According to the map, the UTAC tailings basin is within the ceded territory. I am curious to know the procedure of procuring the land for mining when there is a treaty in place; The treaty of September 30, 1854 (ratified January 10, 1855) at La Porte, Wisconsin or Madeline Island?”

Discussion

Traditional Ecological Knowledge (TEK) is a system of understanding one’s environment based on observations and experience. It is built over generations as people who depend on the environment for their food, materials, and culture gain understanding of how the variables comprising the ecology interact. The Bands have special knowledge of the 1854 ceded territory because they have lived there for hundreds of years. Local knowledge systems are based on the shared experiences, customs, values, traditions, lifestyles, social interactions, ideological orientations and spiritual beliefs specific to Native communities. This understanding evolves as new knowledge is obtained and generated (Environmental Protection Agency 2014).

The six questions asked of the elders interviewed for the UTAC traditional properties survey were designed to provide information about the project area not generally available through conventional methods advocated during an environmental review process. Our intent

was to obtain specific information on the types of activities conducted, resources gathered, hunted or obtained, how they were accessed and components of spirituality.

One of the interviewees, Dayshun Goodsky, spoke about his recollections in the vicinity of the Minntac tailings basin, located almost 20 miles north of the project area. Clearly, the area north of Mountain Iron is a place in which he is interested.

The interviews indicate that until a few decades ago, vestiges of traditional Ojibwe life ways were pursued when and where possible. Admittedly, patterns had been extensively disrupted by changes in landownership, poverty, reservation life and the lack of economic opportunity. However, interviewees confirm that the old ways remain imbedded in the Ojibwe worldview as respondents speak of ricing on rivers and when possible, State lakes, such as Perch and Round Lakes.

Ricing was described by all of the interviewees, although only two, Becky Gawboy and Ron King, specified areas close to the proposed tailings basin expansion. Curiously, Ron does not recall rice on any of the small lakes in proximity to the project area. In contrast, Becky Gawboy notes recently eating wild rice obtained by their sons at Stone Lake and that Perch and Round Lakes produce good rice.

Berry picking, in particular blueberries, was mentioned by all of the elders. Ruby Boshey noted that parents and grandparents taught the younger generation how to pick berries and included them when the family went berry picking. Bernie O'Leary spoke eloquently on the importance of berry picking to his family, stating: "We used to can eighty quarts of blueberries every summer and we canned at least twenty or more quarts of raspberries and we also used to pick a lot of plums. We would pick a lot of plums and pin cherries and make jelly out of that. We had chokecherry jam. We had blueberries on our pancakes in the winter time. So all these natural resources that are here are really important and I bet there are a lot of people yet today including myself, my kids and their families."

Hunting, in particular deer hunting, was also described. One respondent, Ron King noted that he had hunted deer as well as rabbits proximal to the project area. Another interviewee, Bernard O'Leary, laments the declining fish and game populations attributing the decline to pollution and invasive species. He also notes the importance of game and fish to his family and emphasized that the Band's usufructuary rights are important for his family's welfare.

Concern about the loss of usufructuary rights was expressed by the interviewees. Several noted the disappearance of rice or diminishing productivity and kernel size. Some attributed the depletion to pollution, others thought introduced species and climate were culprits. All expressed concern about the loss of resources and worried about the consequences should the trend continue.

Four interviewees discussed spirituality. Becky Gawboy acknowledged the sacred nature of the land and this theme was reiterated and expanded upon by Lester Drift. He notes that ceremonies were conducted at every place where Band members obtained something: giving thanks for success in ricing, hunting and fishing among other things. At Nett Lake these ceremonies still take place and he feels that every lake and Indian campground, wherever Native

Americans lived or moved, sacred ceremonies occurred. Furthermore, Lester feels strongly that the whole northern part of Minnesota is sacred especially all of the lakes with wild rice. In fact, Lester's entire interview is a call for understanding that we are all in this world together and we should help one another. When something is taken, be thankful and put something back to show appreciation. Ruby Boshey explains that one of the first things taught to children is to offer tobacco in appreciation of the things that would be provided by the Creator.

The importance of medicinal plants to Band members was noted by Lester Drift and Jim Gawboy. Mr. Gawboy noted the importance of medicinal plants found in bogs such as swamp tea. Mr. Drift explained that plants across the Iron Range can be used medicinally. He further states that a plant exists to heal every illness. Bernard O'Leary mentioned collecting princess pine with his parents, but did not mention how it was used.

Of some note, two interviewees, Ruby Boshey and Ron King, mention the importance of iron mining to their families. Ruby's husband worked for Minntac and Ron helped in construction of portions of Hibtac.

Trails, actually canoe routes were mentioned by only one person, Jim Gawboy. He described paddling a route from Murphy Lake to Stone Lake sometime before 1965, noting that it was difficult due to being overgrown with brush. He notes that canoe routes used by Indians need not be deep or wide, but did need to be kept clear of brush in order to be useable. He had made the journey as he was a Minnesota game warden and the region was within his patrol area. He had not been on that creek before and questioned his decision before he was done. He goes on to describe possible routes for access into the project area via the St Louis River. In an earlier interview (Latady and Isham 2014), Becky Gawboy, comments that trails, in particular rivers, connected numerous native villages. Prior to the fur trade and the introduction of European diseases, native communities were ubiquitous; unlike now when native communities are confined to reservations.

Maple sugaring is mentioned by Lester Drift and Marybelle Isham, although not in terms of a specific locale within or even close to the project area. Both note the significance of maple sugaring spiritually and economically.

These last two topics, trails and sugar camps, are noteworthy as the Trygg map (1966, sheet 18) depicting this area shows a sugar camp on Murphy Lake and the "Indian Trail to Stone Lake" that originates at the St. Louis River. Evidently the trail portrayed on the Trygg map is the one followed by Jim Gawboy in the early 1960's. However, the archival searches, including the U.S. Land Surveyors' field notes, did not contain any references to trails, portages or sugar camps within the township or adjoining townships. It is conceivable that these features were plotted incorrectly or information on which the depictions are based was obtained from one or more of Trygg's informants.

The interviews revealed that there are few specifics known or recalled by the interviewees within the proposed UTAC Tailings Basin Expansion project APE. Rice from Lakes within the APE was mentioned by Becky Gawboy and Ron King wondered if rice still

grew on those lakes. More than 50 years ago Jim Gawboy, canoed some of the streams between the small lakes, but has not done so since that time.

Conclusions

Band members with knowledge of historic traditional practices or resource use in the general area of the UTAC Tailings Basin 3 Project provided information about when, how and where usufructuary rights were practiced. Unfortunately little is recalled about activities of Band members within the APE, although two elders noted having been in the area and one mentioned hunting. Another elder described eating rice from lakes within the APE. Overall there is a deficiency in detail which is a characteristic of interviews conducted for other projects. Were we able to interview elders from a generation or two prior to this one, there would have been considerably more information.

However, these interviews added to our knowledge of use of the area by Band members in that usufructuary rights were practiced in the vicinity of the UTAC Tailings Basin by Band members who lived off the reservation. Four individuals, Jim Gawboy, Becky Gawboy, Ronald King and Bernard O'Leary stated their concerns about the effects of mine expansion and the loss of traditional resources.

Spiritual activities were another topic covered by interviewees. Band members identified medicinal plant gathering, offering tobacco and other ceremonies. Three interviewees, Lester Drift and Becky Gawboy, spoke of the sacred nature of the earth and the importance of giving thanks for the gifts the land bestows.

Perch, Round and Stone Lakes were described by one interviewee as being good for ricing. Another noted traditional ways of accessing in lakes the area through canoes using even the smallest streams, provided the streams were clear of brush. Clearly in recent years ricers made day trips to the lakes, but historically people may have camped on the lakes being riced. An archaeological inventory of the lakeshores would probably reveal the location of camps used historically and in antiquity.

As noted in previous reports (Latady and Isham 2011, 2012, 2013, 2014) the importance of wild rice to the Bois Forte Band and indeed the Ojibwe as a whole cannot be overstated. Indeed, Latady and Isham (2013) affirm that "Manoomin (wild rice) is not only an important food, but also the center of Ojibwe life as it is the reason for the westward migration, which for Bois Forte culminated in their arrival in northeastern Minnesota. Manoomin appeared in the vision received by an elder on the east coast that initiated the Anishinabe migration to find the food that grows on water." The drastic reduction of wild rice in areas where it was once abundant is a continual concern to all Ojibwe and in this area of particular distress to Bois Forte Band members.

Results for questions on information about trails and travel corridors were disappointing. Historically, as noted by Jim Gawboy, travel proceeded via foot trails and waterways, and in modern times through the use of motor vehicles along roads. Trails were used to access locations

as traditional travel routes were abandoned once other forms of transportation became available. In the last 60 years Band members often travelled to ricing areas by vehicle, but once there used traditional harvest methods to pick rice. By the time many of the elders alive today were born, traditional travel corridors and routes were rarely used and may account for the lack of detail on the locations of trails.

The loss of traditional life ways within the 1854 Ceded Territory is an ongoing concern and is expressed in many of the interviews. The decline in wild rice, but also game animals and fish was attributed to pollution, climate changes and invasive species. Concern about mine impacts to traditional ways was also voiced by interviewees.

The lack of detailed information about traditional activities within the UTAC Tailings Basin 3 Project APE is a little surprising given that one of the interviewees grew up in the area. During discussions with the Corps of Engineers before this project was initiated, the authors hoped Band members might recall the sugarbush or accessing Stone Lake by the old trail from the St Louis River plotted on the Trygg maps. Unfortunately, these expectations did not materialize and the authors were unable to even find the records upon which Trygg relied for the information.

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April 13, 2015

VIA ELECTRONIC FILING

The Honorable Ann O'Reilly
Office of Administrative Hearings
PO Box 64620
St. Paul, MN 55164-0620

Re: *In the Matter of the Request by Minnesota Power for a Route Permit for the
Great Northern Transmission Line*
Landowners Jason, Greg and Maynard Braaten Letter
MPUC Docket No. E015/TL-14-21
OAH Case No. 65-2500-31637

Dear Judge O'Reilly:

Please find enclosed to be included for consideration in the above-referenced Docket a letter by Landowners Jason, Greg and Maynard Braaten in support of Minnesota Power's Great Northern Transmission Line Proposed Route dated April 15, 2014. Copies of this letter will also be filed with the United States Department of Energy for consideration in its federal Presidential Permit determination in OE Docket No. PP-398. This letter and resolution has been filed with the E-Docket system and served on the attached service list.

Yours truly,

David R. Moeller
Senior Attorney
Minnesota Power

DRM:st
Enc.

0207-1

The alternatives that are evaluated in the EIS were provided during the scoping process and were developed to address concerns associated with the Proposed Blue and Orange Routes. For each alternative, the land use, land ownership, proximity to airports, and length of the alternatives, are discussed in the EIS. No changes are made to the EIS in response to this comment.

Minnesota Power is suggesting the construction of the 500 KV Great Northern Transmission Line from the Manitoba/Minnesota international border in Roseau County to the Blackberry Substation in Itasca County by June 1, 2020. Minnesota Power is partnering with Manitoba Hydro to build this line that will distribute, clean renewable hydropower from northern Manitoba to Minnesota and the upper Midwest. Minnesota Power has been working with Roseau County residents and landowners in Roseau County, for over three years to develop and improve a route for this project that delivers the least amount of impact to the area's residents and landowners.

This voluntary outreach included multiple open houses in Roseau County, in addition to the required legal notices to Roseau County and multiple public hearings on the need for the Great Northern Transmission Line. In October 2014, Minnesota Power submitted to the United States Department of Energy an amendment to its border crossing based on the consultation with landowners and stakeholders in Roseau County that the originally proposed border crossing was no longer feasible given constraints from the future expansion of the Piney-Pinecreek Border Airport and the Roseau Wildlife Management Area. With this new information, Minnesota Power and Manitoba Hydro reached an agreement on a new border crossing that would originate at te Minnesota-Manitoba border roughly 2.9 miles east of Highway 89 in Roseau County. It would proceed southwest 0.2 miles and then travel south 2.3 miles to 390th Street and turn east following Minnesota Power's proposed Blue and Orange Routes as indicated in its April 15, 2014 Route Permit and Presidential Permit applications.

During the scoping process for the environmental impact statement, additional border crossings were proposed by the Minnesota Department of Natural Resources and private landowners, and four of these additional border crossings were carried forward by the Minnesota Department of Commerce into the scope of the draft environmental impact statement. As a land owner in Roseau County, I strongly oppose the proposed route alternatives in Roseau County, submitted by the Minnesota Department of Natural Resources and the United States Fish and Wildlife Service that were done without input from Roseau County officials and land owners. Including the Roseau Lake WMA Alternative, due to more impacts on private landowners and agricultural land use and interfering with a public airport. It is in the best interest of residents in Roseau County that the impacts to the agricultural land uses and human settlements be minimized, and Minnesota Power's proposed route appears to accomplish those objectives. The route alternatives submitted by the Minnesota Department of Natural Resources and the United States Fish and Wildlife Service negate over three years of good faith participation of Roseau County residents, in working collaboratively with Minnesota Power to route the Great Northern Transmission Line in a manner that attempts to provide the least impact to residents and landowners. As a land owner, I support Minnesota Powers preferred route as submitted on April 15, 2014 and Minnesota Power's proposed border crossing as submitted in October 2014 to the United States Department of Energy.

Jason Braaten, Roseau county land owner

Greg Braaten, Roseau county land owner

Maynard Braaten, Roseau county land owner

0207-1

STATE OF MINNESOTA) AFFIDAVIT OF SERVICE VIA
) ss ELECTRONIC FILING AND
 COUNTY OF ST. LOUIS) U.S. MAIL

Susan Romans of the City of Duluth, County of St. Louis, State of Minnesota, says that on the 13th day of April 2015, she served Minnesota Power's Letter to the ALJ in OAH Case No. 65-2500-31637 and PUC Docket No. E015/TL-14-21 regarding **Landowners Jason, Greg and Maynard Braaten Letter** on the Minnesota Public Utilities Commission and the Energy Resources Division of the Minnesota Department of Commerce via electronic filing. The remaining parties on the attached service list were served as indicated.

 Susan Romans

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Burt W.	Haar	burt.haar@state.mn.us	Public Utilities Commission	Suite 350 121 7th Place East St. Paul, MN 55102147	Electronic Service	Yes	OFF_SL_14-21_Official CC Service List
Linda	Jensen	linda.s.jensen@ag.state.mn.us	Office of the Attorney General-DOC	1900 BRM Tower 445 Minnesota Street St. Paul, MN 55102134	Electronic Service	Yes	OFF_SL_14-21_Official CC Service List
Michael	Kaluzniak	mike.kaluzniak@state.mn.us	Public Utilities Commission	Suite 350 121 Seventh Place East St. Paul, MN 55101	Electronic Service	Yes	OFF_SL_14-21_Official CC Service List
David	Moeller	dmoeller@allele.com	Minnesota Power	30 W Superior St Duluth, MN 558022093	Electronic Service	No	OFF_SL_14-21_Official CC Service List
Ann	O'Reilly	ann.o'reilly@state.mn.us	Office of Administrative Hearings	PO Box 64620 St. Paul, MN 55101	Electronic Service	Yes	OFF_SL_14-21_Official CC Service List
Janet	Shaddix Eiling	jshaddix@janetshaddix.com	Shaddix And Associates	Site 122 9100 W Bloomington Bloomington, MN 55431	Electronic Service	Yes	OFF_SL_14-21_Official CC Service List
Tracy	Smetana	tracy.smetana@state.mn.us	Public Utilities Commission	121 7th Place East Suite 350 St. Paul, MN 55101	Electronic Service	Yes	OFF_SL_14-21_Official CC Service List
William	Storm	bill.storm@state.mn.us	Department of Commerce	Room 500 85 7th Place East St. Paul, MN 55102198	Electronic Service	Yes	OFF_SL_14-21_Official CC Service List
Eric	Swanson	eswanson@winthrop.com	Winthrop Weinstine	225 S 6th St Ste 3500 Capella Tower Minneapolis, MN 554024629	Electronic Service	No	OFF_SL_14-21_Official CC Service List

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Tamara	Cameron	tamara.e.cameron@usace.army.mil	U.S. Army Corps of Engineers	180 5th St # 700 Saint Paul, MN 55101	Electronic Service	No	SPL_SL_14-21_Agency Reps 14-21
Travis	Germundson	travis.germundson@state.mn.us	Resources	Board of Water & Soil Resources 520 Lafayette Rd Saint Paul, MN 55155	Electronic Service	No	SPL_SL_14-21_Agency Reps 14-21
Brooke	Haworth	Brooke.Haworth@state.mn.us	Department of Natural Resources	500 Lafayette Road Saint Paul, MN 55155	Electronic Service	No	SPL_SL_14-21_Agency Reps 14-21
Susan	Heffron	susan.heffron@state.mn.us	MN Pollution Control Agency	520 Lafayette Rd Saint Paul, MN 55155	Electronic Service	No	SPL_SL_14-21_Agency Reps 14-21
Karl	Howe	karl.howe@state.mn.us	DEED	332 Minnesota St, #E200 1st National Bank Bldg St. Paul, MN 55101	Electronic Service	No	SPL_SL_14-21_Agency Reps 14-21
Ray	Kirsch	Raymond.Kirsch@state.mn.us	Department of Commerce	85 7th Place E Ste 500 St. Paul, MN 55101	Electronic Service	No	SPL_SL_14-21_Agency Reps 14-21
Stacy	Kotch	Stacy.Kotch@state.mn.us	MINNESOTA DEPARTMENT OF TRANSPORTATION	395 John Ireland Blvd. St. Paul, MN 55155	Electronic Service	No	SPL_SL_14-21_Agency Reps 14-21
Debra	Moyrihan	debra.moyrihan@state.mn.us	MN Department of Transportation	395 John Ireland Blvd MS St. Paul, MN 55155-1899	Electronic Service	No	SPL_SL_14-21_Agency Reps 14-21
Bob	Patton	bob.patton@state.mn.us	MN Department of Agriculture	625 Robert St N Saint Paul, MN 55155-2538	Electronic Service	No	SPL_SL_14-21_Agency Reps 14-21

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
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Jamie	Schrenzel	jamie.schrenzel@state.mn.us	Minnesota Department of Natural Resources	500 Lafayette Road Saint Paul, MN 55155	Electronic Service	No	SPL_SL_14-21_Agency Reps 14-21
David	Seykora	dave.seykora@state.mn.us	MN Department of Transportation	395 John Ireland Boulevard Mail Stop 130 St. Paul, MN 55155-1899	Electronic Service	No	SPL_SL_14-21_Agency Reps 14-21
Bruce	West	Bruce.West@state.mn.us	Department of Public Safety	Box 145 444 Cedar Street St. Paul, MN 55151	Electronic Service	No	SPL_SL_14-21_Agency Reps 14-21
Jonathan	Wolgram	Jonathan.Wolgram@state.mn.us	Department of Public Safety	445 Minnesota Street Suite 147 St. Paul, MN 55101-1547	Electronic Service	No	SPL_SL_14-21_Agency Reps 14-21

0208-1

The response to your questions are provided in the letter (dated June 24, 2015) sent to you by Mr. Bill Storm and Dr. Julie Smith on June 24, 2015 (eDocket 14-21, document 20156-111735-01). The letter is also attached as the next 8 pages after this comment letter.

No changes are made to the EIS in response to this comment.

Legalelectric, Inc.
Carol Overland Attorney at Law, MN #254617
Energy Consultant—Transmission, Power Plants, Nuclear Waste
overland@legalelectric.org

1110 West Avenue
Red Wing, Minnesota 55066
612.227.8638

1 Stewart Street
Port Penn, Delaware 19731

June 23, 2015

Julie Ann Smith, PhD
Electricity Policy Analyst
DOE National Electricity Delivery Division (OE-20)
1000 Independence Avenue SW
Washington, DC 20585

via email: JulieA.Smith@hq.doe.gov

William Cole Storm
Environmental Review Manager
Energy Environmental Review and Analysis
85 7th Place East, Suite 500
Saint Paul, Minnesota 55101

via email: bill.storm@state.mn.us

RE: Great Northern Transmission Line – DEIS Public Hearings
PUC Docket No. TL-14-21; DOE No. EIS-0499

Dear Ms. Smith and Mr. Storm:

I've reviewed the Notice of Availability for the GNTL DEIS, and note that there are public "meetings" planned, and not public hearings. Is this consistent with the requirements of NEPA?

What is your authority for holding public "meetings" rather than public "hearings?" Will people making public comments at meetings be offered the option of making their comment under oath? Will there be a publicly available transcript made?

Thank you for your consideration of these points.

Very truly yours,



Carol A. Overland
Attorney at Law

cc: David Moeller and Eric Swanson, Great Northern Transmission Line via eService

0208-1



85 7TH PLACE EAST, SUITE 500
SAINT PAUL, MINNESOTA 55101-2198
MN.GOV/COMMERCE
651.539.1500 FAX: 651.539.1547
AN EQUAL OPPORTUNITY EMPLOYER

June 24, 2015

Carol Overland
1110 West Avenue
Red Wing, Minnesota 55066

RE: Great Northern Transmission Line – Draft EIS Public Hearings/Meetings
PUC Docket No. TL-14-21; DOE/EIS-0499

Dear Ms. Overland:

I writing to you in response to your letter dated June 23, 2015 (eDocket 20156-111703-01) regarding the joint federal public hearings and state informational meetings on the Great Northern Transmission Line (GNTL) Draft Environmental Impact Statement (DEIS).

Attached is a response letter from Dr. Julie Smith, NEPA Document Manager, National Electricity Delivery Division (OE-20) U.S. Department of Energy (DOE). The Department of Commerce Energy Environmental Review and Analysis (DOC EERA) staff concurs with the DOE statement, feels that the response adequately addresses your concerns, and does not have further comments.

Please feel free to contact DOC EERA staff if you require additional assistance.

Sincerely,

William Cole Storm, DOC EERA Staff



Department of Energy

Washington, DC 20585

June 24, 2015

Carol Overland
1110 West Avenue
Red Wing, Minnesota 55066

1 Stewart Street
Port Penn, Delaware 19731

RE: Great Northern Transmission Line – Draft EIS Public Hearings
PUC Docket No. TL-14-21; DOE/EIS-0499

Dear Ms. Overland:

I writing to you in response to your June 23, 2015 letter addressed to me and Bill Storm, Environmental Review Manager, Minnesota Department of Commerce – Energy Environmental Review and Analysis, regarding the joint federal public hearings and state informational meetings on the Great Northern Transmission Line (GNTL) Draft Environmental Impact Statement (DEIS). Thank you for your inquiry and I appreciate the opportunity to clarify the federal public hearing process on the GNTL DEIS for you.

First, I must ask that you disregard the response to your inquiry that was provided to you by Mr. Kaluzniak of the Minnesota PUC staff via email on June 24, 2015 at 8:14 a.m. regarding the federal review and comment process. The information Mr. Kaluzniak provided to you in that email is inaccurate and this letter not only addresses your inquiry but also to correct for the misinformation about DOE's process in the referenced email.

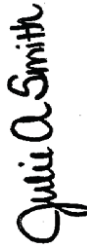
In response to your question regarding the notice that you received about the joint federal and state public comment period and public hearings/informational meetings, DOE is conducting federal public hearings on the subject DEIS according to both Council on Environmental Quality's and DOE's National Environmental Policy Act (NEPA) regulations at 40 CFR Part 1500 and 10 CFR Part 1021, respectively; DOE is not conducting 'meetings.' The title of this Notice is very clear with regard to its subject and that among the public comment opportunities planned are both state informational meetings and federal public hearings but that they are being held jointly in order to reduce duplication of effort and process.

As to the nature of how public comments will be provided to DOE at the joint federal public hearings and state informational meetings: DOE accepts oral comments on an DEIS during its public hearings and these comments are recorded (as were public scoping comments) by a court recorder. There is no "option," as you suggest in your inquiry, to provide comments under oath. I will be present at all eight jointly planned federal public hearings and state informational meetings, acting as the federal hearings officer, and you will be provided the opportunity to sign up to provide oral comments upon arrival at the hearing/meeting locations. The record of public comments (transcripts) of the joint federal public hearings and state public information meetings will be made publicly available following the close of the comment period.

Finally, DOE will not be participating in the MN Public Utilities Commission (PUC) Public and Evidentiary Hearings; these are hearings are solely a part of the state Route Permit process and are not held for the purposes of the federal Presidential permit decision and related NEPA process. DOE is not a party to the PUC Evidentiary Hearings process on this project.

Again, thank you for your inquiry and the opportunity to address your questions about the public comment process for the GNTL DEIS and to clear up any misinformation about the jointly planned DOE public hearings and MN DOC public information meetings on the GNTL DEIS planned for the dates, times and locations provided in the Notice of Availability that you received.

Sincerely,



Julie Ann Smith, PhD
NEPA Document Manager
National Electricity Delivery Division (OE-20)
U.S. Department of Energy

CERTIFICATE OF SERVICE

I, Sharon Ferguson, hereby certify that I have this day, served copies of the following document on the attached list of persons by electronic filing, certified mail, e-mail, or by depositing a true and correct copy thereof properly enveloped with postage paid in the United States Mail at St. Paul, Minnesota.

**Minnesota Department of Commerce
Letter to Carol Overland**

Docket No. E015/TL-14-21

Dated this 24th day of June 2015

/s/Sharon Ferguson

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Linda	Jensen	linda.s.jensen@ag.state.mn.us	Office of the Attorney General-DOC	1800 BRM Tower 445 Minnesota Street St. Paul, MN 55102134	Electronic Service	Yes	OFF_SL_14-21_Official CC Service List
Michael	Kaluzniak	mike.kaluzniak@state.mn.us	Public Utilities Commission	Suite 350 121 Seventh Place East St. Paul, MN 55101	Electronic Service	Yes	OFF_SL_14-21_Official CC Service List
David	Moeller	dmoeller@alleie.com	Minnesota Power	30 W Superior St Duluth, MN 558022093	Electronic Service	No	OFF_SL_14-21_Official CC Service List
Ann	O'Reilly	ann.o'reilly@state.mn.us	Office of Administrative Hearings	PO Box 64620 St. Paul, MN 55101	Electronic Service	Yes	OFF_SL_14-21_Official CC Service List
Janet	Shaddix Eiling	jshaddix@janeshaddix.com	Shaddix And Associates	Sie 122 9100 W Bloomington Fwy Bloomington, MN 55431	Electronic Service	Yes	OFF_SL_14-21_Official CC Service List
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William	Storm	bill.storm@state.mn.us	Department of Commerce	Room 500 85 7th Place East St. Paul, MN 55102198	Electronic Service	Yes	OFF_SL_14-21_Official CC Service List
Eric	Swanson	eswanson@winthrop.com	Winthrop Weinstine	225 S 6th St Ste 3500 Capella Tower Minneapolis, MN 554024629	Electronic Service	No	OFF_SL_14-21_Official CC Service List
Daniel P	Wolf	dan.wolf@state.mn.us	Public Utilities Commission	121 7th Place East Suite 350 St. Paul, MN 55102147	Electronic Service	Yes	OFF_SL_14-21_Official CC Service List

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Travis	Germundson	travis.germundson@state.mn.us		Board of Water & Soil Resources 520 Lafayette Rd Saint Paul, MN 55155	Electronic Service	No	SPL_SL_14-21_Agency Reps 14-21
Susan	Heffron	susan.heffron@state.mn.us	MN Pollution Control Agency	520 Lafayette Rd Saint Paul, MN 55155	Electronic Service	No	SPL_SL_14-21_Agency Reps 14-21
Karl	Howe	karl.howe@state.mn.us	DEED	332 Minnesota St, #E200 1ST National Bank Bldg St. Paul, MN 55101	Electronic Service	No	SPL_SL_14-21_Agency Reps 14-21
Ray	Kirsch	Raymond.Kirsch@state.mn.us	Department of Commerce	85 7th Place E Ste 500 St. Paul, MN 55101	Electronic Service	No	SPL_SL_14-21_Agency Reps 14-21
Stacy	Koich	Stacy.Koich@state.mn.us	DEPARTMENT OF TRANSPORTATION	395 John Ireland Blvd. St. Paul, MN 55155	Electronic Service	No	SPL_SL_14-21_Agency Reps 14-21
Debra	Moynihan	debra.moynihan@state.mn.us	MN Department of Transportation	395 John Ireland Blvd MS St. Paul, MN 55155-1899	Electronic Service	No	SPL_SL_14-21_Agency Reps 14-21
Bob	Patton	bob.patton@state.mn.us	MN Department of Agriculture	625 Robert St N Saint Paul, MN 55155-2538	Electronic Service	No	SPL_SL_14-21_Agency Reps 14-21
Margaret	Rheude	Margaret.Rheude@fws.gov	U.S. Fish and Wildlife Service	Twin Cities Ecological Services Field Office 4101 American Blvd. E. Bloomington, MN 55425	Electronic Service	No	SPL_SL_14-21_Agency Reps 14-21

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Jamie	Schrenzel	jamie.schrenzel@state.mn.us	Minnesota Department of Natural Resources	500 Lafayette Road Saint Paul, MN 55155	Electronic Service	No	SPL_SL_14-21_Agency Reps 14-21
David	Seykora	dave.seykora@state.mn.us	MN Department of Transportation	395 John Ireland Boulevard Mail Stop 130 St. Paul, MN 55155-1899	Electronic Service	No	SPL_SL_14-21_Agency Reps 14-21
Bruce	West	Bruce.West@state.mn.us	Department of Public Safety	Box 145 444 Cedar Street St. Paul, MN 55151	Electronic Service	No	SPL_SL_14-21_Agency Reps 14-21
Jonathan	Wolfram	Jonathan.Wolfram@state.mn.us	Department of Public Safety	445 Minnesota Street Suite 147 St. Paul, MN 55101-1547	Electronic Service	No	SPL_SL_14-21_Agency Reps 14-21

Appendix Z

EIS Distribution List

Appendix Z

EIS Distribution List

Federally Elected Officials

The Honorable Al Franken
United States Senate
309 Hart Senate Office Building
Washington, DC 20510

The Honorable Amy Klobuchar
United States Senate
302 Hart Senate Office Building
Washington, DC 20510

The Honorable Betty McCollum
United States Representative - 4th District
1714 Longworth House Office Building
Washington, DC, 20515

The Honorable Bill Shuster
Chairman, House Committee on Transportation
and Infrastructure
2165 Rayburn House Office Building
Washington, DC 20515

The Honorable Collin C. Peterson
United States Representative - 7th District
2109 Rayburn House Office Building
Washington, DC 20515

The Honorable Erik Paulsen
United States Representative - 3rd District
127 Cannon House Office Building
Washington, DC 20414-2303

The Honorable Frank Pallone, Jr.
Ranking Member, House Committee on Energy
and Commerce
237 Cannon House Office Building
Washington, DC 20515

The Honorable Fred Upton
Chairman, House Committee on Energy and
Commerce
2125 Rayburn House Office Building
Washington, DC 20515

The Honorable John Kline
United States Representative - 2nd District
2439 Rayburn House Office Building
Washington, DC 20515

The Honorable Keith Ellison
United States Representative - 5th District
2244 Rayburn House Office Building
Washington, DC 20515

The Honorable Lisa Murkowski
Chairman, Senate Committee on Energy and
Natural Resources
304 Dirksen Senate Building
Washington, DC 20510

The Honorable Maria Cantwell
Ranking Member, Senate Committee on Energy
and Natural Resources
511 Hart Senate Office Building
Washington, DC 20510

The Honorable Peter DeFazio
Ranking Member, House Committee on
Transportation and Infrastructure
2134 Rayburn House Office Building
Washington, DC 20515

The Honorable Rick Nolan
United States Representative - 8th District
2447 Rayburn House Office Building
Washington, DC 20515

The Honorable Timothy Walz
United States Representative - 1st District
1034 Longworth House Office Building
Washington, DC 20515

The Honorable Tom Emmer
United States Representative - 6th District
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Tribes

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The Honorable Mark Dayton
Governor
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Commissioner
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Saint Paul, MN 55101-2147

Beverly Jones Heydinger
Commissioner
Minnesota Public Utilities Commission
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Dan Lipschultz
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Minnesota State Historic Preservation Office
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Nancy Lange
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Patrice Jensen
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Baudette, MN 56623

Travis Germundson
Minnesota Board of Water and Soil Resources
520 Lafayette Road
St. Paul, MN 55155

Will Seuffert
Executive Director
Minnesota Environmental Quality Board
520 LaFayette Road North
Saint Paul, MN 55055

Locally Elected Officials

Casey Venema
Supervisor
Lawrence Township
25711 County Road 59
Bovey, MN 55079

Charlene D. Sturk
Recorder
Beltrami County
1069 Carved Woodduck Lane SW
Bemidjii, MN 56601

David L. Leonhardt
Supervisor
Waskish Township
32128 Konig Road NE
Waskish, MN 56685

Frank Olson
Supervisor
Lawrence Township
24867 County Road 57
Bovey, MN 55079

Jeanne Newstrom
Supervisor
Trout Lake Township
24683 Trout Lake Road
Bovey, MN 55079

John M. Kannas
Supervisor
Balsam Township
40874 County Road 336
Bovey, MN 55079

Larry C. Salmela
Supervisor
Carpenter Township
22838 Rollercoaster Road
Effie, MN 56639

LeRoy Carriere
Chairman
Roseau River Watershed District
504 4th Avenue NE
Roseau, MN 56751

Michael Gibbons
Assistant Land Commissioner
Itasca County
1177 LaPrairie Avenue
Grand Rapids, MN 55744

Rob Ecklund
Commissioner
Koochiching County
4647 Highway 11
International Falls, MN 56649

Roger Falk
Commissioner
Roseau County
35191 500th Avenue
Salol, MN 56756

Todd Miller
Commissioner
Roseau County
52630 County Road 2
Warroad, MN 56763

Local Agencies

Steve Blair
Environmental Services Specialist
Environmental Services Department
Koochiching County
415 4th Street
International Falls, MN 56649

Organizations/Stakeholders

Barbara Bauman-Tyran
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D. Bambi Kraus
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Erik Hein
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Clean Water Action Group
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Ducks Unlimited, Inc., Great Lakes/Atlantic
Regional Office
1220 Eisenhower Place
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National Audubon Society, Audubon Minnesota
1 Water Street West, Suite 200
St. Paul, MN 55107

National Wildlife Federation,
Great Lakes Regional Center
213 West Liberty Street, Suite 200
Ann Arbor, MI 48104

Sierra Club, Northstar Chapter
23327 East Franklin Avenue, Suite 1
Minneapolis, MN 55406-1024

The Nature Conservancy, Minnesota Field Office
1101 West River Parkway, Suite 200
Minneapolis, MN 55415-1291

Patrick Brown
Director of U.S. Affairs
Canadian Electricity Association
275 Slater Street
Ottawa, Ontario, Canada K1P549

Rae Cronmiller
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National Rural Electric Cooperative Association
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Director of Office of Federal Agency Programs
Advisory Council on Historic Preservation
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Sarah Ball
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Steve Moyer
Vice President for Governmental Affairs
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1777 North Kent Street
Arlington, VA 22209

Tom Goldtooth
Executive Director
Indigenous Environmental Network
PO Box 485
Bemidjii, MN 56619

Traci Barkley
Water Resources Specialist
Prairie Rivers Network
1902 Fox Drive, Suite G
Champaign, IL 61820

Private Citizen

Richard Libbey
Izaak Walton League
Grand Rapids, MN

Libraries

Baudette Library
110 1st Street SW
Baudette, MN 56623

Blackduck Public Library
72 1st Street SE
Blackduck, MN 56630

Bovey Public Library
402 2nd Street
Bovey, MN 55709

Calumet Library
932 Gary Street
Calumet, MN 55716

Coleraine Public Library
203 Cole Street
Coleraine, MN 55722

Duluth Public Library
520 W Superior Street
Duluth, MN 55802

Grand Rapids Public Library
140 NE 2nd Street
Grand Rapids, MN 55744

Greenbush Branch Library
214 Main St
Greenbush, MN 56726

International Falls Public Library
750 4th Street
International Falls, MN 56649

Marble Public Library
302 Alice Avenue
Marble, MN 55764

Northome Public Library
12064 Main Street
Northome, MN 56661

Roseau Public Library
121 Center Street East
Suite 100
Roseau, MN 56751

Warroad Public Library
202 Main Avenue NE
Warroad, MN 56763

Williams Public Library
350 Main Street
Williams, MN 56686