

# Northland Reliability Project



March 6, 2026

VIA E-FILING

Sasha Bergman  
Executive Secretary  
Minnesota Public Utilities Commission  
121 7th Place East, Suite 350  
St. Paul, MN 55101-2147

**Re: Variance Analysis Information (Order Point 4 and Route Permit Section 6.10)**

*In the Matter of the Application of Minnesota Power and Great River Energy for a Certificate of Need and Route Permit for the Northland Reliability Project 345 kV Transmission Line*

MPUC Docket Nos. E015,ET2/TL-22-416 and E015,ET2/TL-22-415

Dear Ms. Bergman:

On February 28, 2025, the Minnesota Public Utilities Commission (“Commission”) issued an order (“Order”) granting Great River Energy and Minnesota Power (“Permittees”) a Certificate of Need and issuing a Route Permit for the Northland Reliability Project (“Project”). On December 16, 2025, the Permittees notified the Commission that the Midcontinent Independent System Operator, Inc. (“MISO”) initiated a Variance Analysis under Attachment FF of the MISO Tariff for the Project.

In compliance with Order Point 4 and Section 6.10 of the Route Permit, the Permittees hereby submit the information provided by the Permittees to MISO as part of the MISO Variance Analysis process, consistent with the Permittees’ MISO Tariff.<sup>1</sup> A copy of MISO’s request for information is included as **Attachment A**, and a copy of the Permittees’ responses is included as **Attachment B**.

If you have any questions or need additional information, please contact Christian Winter at [CWinter@mnpower.com](mailto:CWinter@mnpower.com) or Matthew Ellis at [MEllis@GREnergy.com](mailto:MEllis@GREnergy.com).

/s/ Christian Winter

Christian Winter  
Minnesota Power  
Manager – Regional Transmission  
Planning

/s/ Matthew Ellis

Matthew Ellis  
Great River Energy  
Director – Transmission Planning &  
Compliance

cc: Service Lists

---

<sup>1</sup> The Permittees’ submitted the information to MISO on February 27, 2026.



February 4, 2026

Matt Ellis  
Director, Transmission Planning & Compliance  
Great River Energy (GRE)  
12300 Elm Creek Blvd N,  
Maple Grove, MN 55369

Christian Winter  
Manager, Regional Transmission Planning  
Minnesota Power (MP)  
30 W Superior Street  
Duluth, MN 55802

**RE: Request for Information #1 for Variance Analysis on  
MTEP21 LRTP Project 03 Iron Range – Benton County – Big Oaks**

Dear Mr. Ellis and Mr. Winter:

Pursuant to the December 15, 2025 correspondence, Midcontinent Independent System Operator, Inc. (“MISO”) determined that reasonable grounds for Variance Analysis exist in relation to the Iron Range – Benton County – Big Oaks Long Range Transmission Planning (“LRTP”) Tranche 1 project (hereinafter referred to as the “Project”), designated to both GRE and MP, on the grounds that the cost increases reported by both GRE and MP exceed the Tariff-provided 25% variance threshold allowed in relation to the original MTEP21 project Baseline Cost Estimate (BCE) (in 2022\$) listed in Appendix A for the Project. Accordingly, MISO formally commenced Variance Analysis for the Project on December 15, 2025. This letter to GRE and MP, which is the first formal Request for Information (“RFI #1”), represents phase 2, milestone 5 of the Variance Analysis process<sup>1</sup> as diagrammed and described in the “Variance Analysis Process Overview” section of this letter.

### Variance Analysis Process Overview

Variance Analysis, which is set forth within Attachment FF, Section IX of the MISO Tariff, is MISO’s process for addressing challenges that arise during project development. As defined in the Tariff and illustrated in the graphic on page 2, the process consists of three phases.

In view of previous correspondence among MISO, GRE and MP staff, milestone 1 (initial inquiry from MISO), milestone 2 (response from GRE and MP), milestone 3 (confirmation of commencement of Variance Analysis by MISO), and milestone 4 (limited public notice of analysis by MISO) of the Variance Analysis process have been completed.

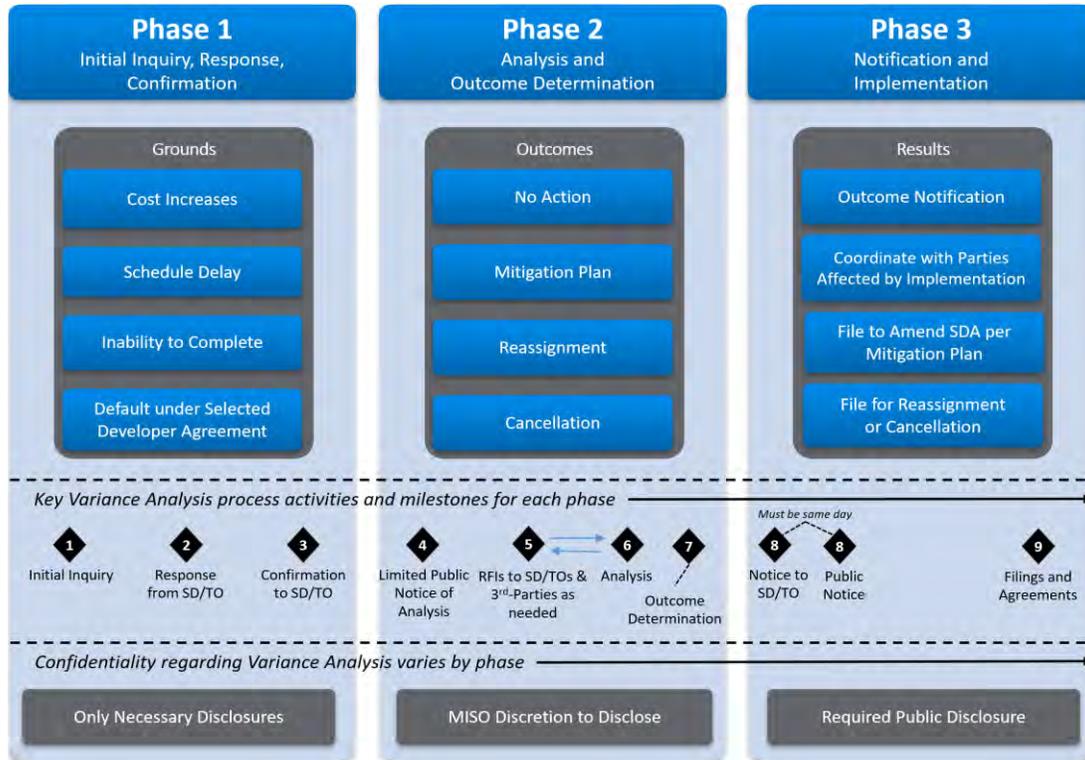
At this time, MISO believes it is appropriate to proceed to milestone 5 of the Variance Analysis process (i.e., this RFI #1), which is the purpose of this letter. Collectively, milestones 5 (RFIs to SD/TOs) and 6 (analysis) represent MISO’s process of requesting and analyzing information from GRE and MP. At its

---

<sup>1</sup> Pursuant to Attachment FF, Section IX.D.1 of the MISO Open Access Transmission, Energy and Operating Reserve Markets Tariff (“Tariff”).



discretion, MISO may issue additional RFIs to collect new information or clarify provided information prior to proceeding to milestone 7 (outcome determination by MISO).



Guidelines describing confidentiality during the Variance Analysis process are contained in Attachment FF, Section IX.F of MISO’s Tariff. During phase 1, MISO must keep its discussions with affected parties confidential unless additional disclosures are necessary. During phase 2, MISO shall publicly state that Variance Analysis has commenced on the Project in the interest of transparency related to the process and may provide a high-level explanation of why Variance Analysis was commenced. During phase 2, MISO also has the option to disclose limited information to third-parties, as needed, to support its analysis. At the beginning of phase 3, MISO is required to notify GRE and MP of the outcome determination, as well as publicly post information about the determination on its website.



[Next Steps and Requested Acknowledgement from GRE and MP](#)

At your earliest opportunity, please confirm receipt of this RFI #1 for Variance Analysis for the Project via email to [jdoner@misoenergy.org](mailto:jdoner@misoenergy.org).

MISO requests that GRE and MP provide responses to this RFI #1 no later than **February 27, 2026**. Please contact me if you have any questions.

Respectfully submitted,

Midcontinent Independent System Operator, Inc.

By [/s/ Jeremiah Doner](#)

Jeremiah Doner

Director of Cost Allocation and Competitive Transmission



## Variance Analysis RFI #1 Questions for GRE and MP

### 1) General Topics

- a) If GRE and MP have summary materials that have been prepared to explain the respective variances that triggered Variance Analysis on the facilities that comprise LRTP Project 3, please provide them. (GRE and MP are not required to create summary materials, beyond those already provided, if they do not exist at this time.)
- b) In this RFI #1, MISO will ask for the estimated cost of each individual facility in both 2022\$ and in Nominal\$.<sup>2</sup> In the October 10, 2025, response to MISO's initial inquiry, GRE/MP explained how it converted the estimated costs to 2022\$ as follows:

*"Updated estimated costs are provided in 2022 dollars. Project cost estimates terms other than real \$-2022 have been de-escalated to 2022 using 4% assumed inflation rate for labor and external contractor costs, as well as a 5.6% assumed inflation rate for materials. The amount of de-escalation per estimate line item is dependent on the project schedule's delivery or end date for that item."*

Please confirm whether this explanation is still applicable, as well as add any clarifying statements that you wish for MISO to consider in relation to GRE/MP's internal escalation/de-escalation methodology.

---

<sup>2</sup> "Nominal\$" refers to the actual dollars spent in each year of the project, without any adjustment for inflation. For example, if the project forecast is for a spend of \$1M in year 1, and a spend of \$1M in year 5 you would report those exact amounts for each of those years or sum the total spend as \$2M, despite the fact that the purchasing power of \$1M in year 5 is lower than in year 1.



2) Facility 27051 (GRE)

- a) Please update the table below, which is derived from MTEP21 Appendix A, with any proposed changes. When updating, please craft “Description” verbiage at approximately the same summary-level shown in the “Original” column of the table. There will be an opportunity to provide additional details below the table.

Facility ID	27051 – Original	27051 – Updated
Facility Type	LN	
From Sub	Cassie's Crossing (aka, Big Oaks)	
To Sub	Structure(s) at estimated GPS Coordinates: 45°27'37.5"N 93°53'32.5"W	
Max kV	345	
Min kV		
Emerg. Rating	3000 A	
Expected ISD	6/1/2030	
Description	Replace existing GRE single circuit 230kV transmission line with double circuit 345kV transmission line. Both lines will tie to Benton County.	
Miles Upgrade		
Miles New	12.5	
Estimated Cost 2022\$	\$48,800,000	
Estimated Cost Nominal\$	Not calculated in MTEP	

- b) **Scope:** Please provide additional details (cause, rationale, circumstances, etc.) about any substantive changes in the scope of work for this facility (as summarized above in the “Description,” “Miles Upgrade,” “Miles New,” or “Emerg. Rating” fields). For substation facilities, describe any scope changes along with the rationale; for existing substation modifications, include substation one-line drawings that depict the substation before the project and after the project with the proposed project modifications called out; for new substations, include substation one-line drawings that highlight the scope changes. For transmission line facilities, describe any scope changes along with the rationale; include a simplified transmission diagram that illustrates the scope changes.
- c) **Schedule:** Please provide additional details (cause, rationale, circumstances, etc.) about any substantive delays in the schedule for energization of this facility (as shown above in “Expected ISD” field) that would cause a delay in the expected ISD for the entire LRTP Project.
- d) **Cost:** Please provide additional details (cause, rationale, circumstances, etc.) about any substantive changes in the estimated cost for this facility (as shown above in the “Estimated Cost 2022\$” field). Please update both the 2022\$ and Nominal\$ fields if documenting a change to the estimated cost.
- e) Please provide additional details (cause, rationale, circumstances, etc.) about any other fields that you have updated in the table above.
- f) Please provide any other information about this facility that you would like MISO to consider for Variance Analysis.



3) Facility 27052 (GRE)

- a) Please update the table below, which is derived from MTEP21 Appendix A, with any proposed changes. When updating, please craft “Description” verbiage at approximately the same summary-level shown in the “Original” column of the table. There will be an opportunity to provide additional details below the table.

Facility ID	27052 – Original	27052 – Updated
Facility Type	LNup	
From Sub	Sherco	
To Sub	Structure(s) at estimated GPS Coordinates: 45°27'37.5"N 93°53'32.5"W	
Max kV	345	
Min kV		
Emerg. Rating	3000 A	
Expected ISD	6/1/2028	
Description	Replace the existing Benton County-Sherco line to accommodate a rating greater than 3000 Amps. Including south deadend structure for new conductor. This line will tie to Benton County.	
Miles Upgrade	7.3	
Miles New		
Estimated Cost 2022\$	\$25,000,000	
Estimated Cost Nominal\$	Not calculated in MTEP	

- b) **Scope:** Please provide additional details (cause, rationale, circumstances, etc.) about any substantive changes in the scope of work for this facility (as summarized above in the “Description,” “Miles Upgrade,” “Miles New,” or “Emerg. Rating” fields). For substation facilities, describe any scope changes along with the rationale; for existing substation modifications, include substation one-line drawings that depict the substation before the project and after the project with the proposed project modifications called out; for new substations, include substation one-line drawings that highlight the scope changes. For transmission line facilities, describe any scope changes along with the rationale; include a simplified transmission diagram that illustrates the scope changes.
- c) **Schedule:** Please provide additional details (cause, rationale, circumstances, etc.) about any substantive delays in the schedule for energization of this facility (as shown above in “Expected ISD” field) that would cause a delay in the expected ISD for the entire LRTP Project.
- d) **Cost:** Please provide additional details (cause, rationale, circumstances, etc.) about any substantive changes in the estimated cost for this facility (as shown above in the “Estimated Cost 2022\$” field). Please update both the 2022\$ and Nominal\$ fields if documenting a change to the estimated cost.
- e) Please provide additional details (cause, rationale, circumstances, etc.) about any other fields that you have updated in the table above.
- f) Please provide any other information about this facility that you would like MISO to consider for Variance Analysis.



4) Facility 27053 (GRE)

- a) Please update the table below, which is derived from MTEP21 Appendix A, with any proposed changes. When updating, please craft “Description” verbiage at approximately the same summary-level shown in the “Original” column of the table. There will be an opportunity to provide additional details below the table.

Facility ID	27053 – Original	27053 – Updated
Facility Type	LN	
From Sub	Structure(s) at estimated GPS Coordinates: 45°27'37.5"N 93°53'32.5"W	
To Sub	Benton County	
Max kV	345	
Min kV		
Emerg. Rating	3000 A	
Expected ISD	6/1/2030	
Description	Replace existing GRE single circuit 230kV transmission line with double circuit 345kV transmission line. One line will tie to Sherco and other to Cassie Crossing.	
Miles Upgrade		
Miles New	12.5	
Estimated Cost 2022\$	\$48,800,000	
Estimated Cost Nominal\$	Not calculated in MTEP	

- b) **Scope:** Please provide additional details (cause, rationale, circumstances, etc.) about any substantive changes in the scope of work for this facility (as summarized above in the “Description,” “Miles Upgrade,” “Miles New,” or “Emerg. Rating” fields). For substation facilities, describe any scope changes along with the rationale; for existing substation modifications, include substation one-line drawings that depict the substation before the project and after the project with the proposed project modifications called out; for new substations, include substation one-line drawings that highlight the scope changes. For transmission line facilities, describe any scope changes along with the rationale; include a simplified transmission diagram that illustrates the scope changes.
- c) **Schedule:** Please provide additional details (cause, rationale, circumstances, etc.) about any substantive delays in the schedule for energization of this facility (as shown above in “Expected ISD” field) that would cause a delay in the expected ISD for the entire LRTP Project.
- d) **Cost:** Please provide additional details (cause, rationale, circumstances, etc.) about any substantive changes in the estimated cost for this facility (as shown above in the “Estimated Cost 2022\$” field). Please update both the 2022\$ and Nominal\$ fields if documenting a change to the estimated cost.
- e) Please provide additional details (cause, rationale, circumstances, etc.) about any other fields that you have updated in the table above.
- f) Please provide any other information about this facility that you would like MISO to consider for Variance Analysis.



5) Facility 27054 (GRE)

- a) Please update the table below, which is derived from MTEP21 Appendix A, with any proposed changes. When updating, please craft “Description” verbiage at approximately the same summary-level shown in the “Original” column of the table. There will be an opportunity to provide additional details below the table.

Facility ID	27054 – Original	27054 – Updated
Facility Type	LNup	
From Sub	Structure(s) at estimated GPS Coordinates: 45°27'37.5"N 93°53'32.5"W	
To Sub	Benton County	
Max kV	345	
Min kV		
Emerg. Rating	3000 A	
Expected ISD	6/1/2028	
Description	Replace the existing Benton County-Sherco line to accommodate a rating greater than 3000 Amps. Including north deadend structure for new conductor. This line will tie to Cassie Crossing.	
Miles Upgrade	14.1	
Miles New		
Estimated Cost 2022\$	\$47,400,000	
Estimated Cost Nominal\$	Not calculated in MTEP	

- b) **Scope:** Please provide additional details (cause, rationale, circumstances, etc.) about any substantive changes in the scope of work for this facility (as summarized above in the “Description,” “Miles Upgrade,” “Miles New,” or “Emerg. Rating” fields). For substation facilities, describe any scope changes along with the rationale; for existing substation modifications, include substation one-line drawings that depict the substation before the project and after the project with the proposed project modifications called out; for new substations, include substation one-line drawings that highlight the scope changes. For transmission line facilities, describe any scope changes along with the rationale; include a simplified transmission diagram that illustrates the scope changes.
- c) **Schedule:** Please provide additional details (cause, rationale, circumstances, etc.) about any substantive delays in the schedule for energization of this facility (as shown above in “Expected ISD” field) that would cause a delay in the expected ISD for the entire LRTP Project.
- d) **Cost:** Please provide additional details (cause, rationale, circumstances, etc.) about any substantive changes in the estimated cost for this facility (as shown above in the “Estimated Cost 2022\$” field). Please update both the 2022\$ and Nominal\$ fields if documenting a change to the estimated cost.
- e) Please provide additional details (cause, rationale, circumstances, etc.) about any other fields that you have updated in the table above.
- f) Please provide any other information about this facility that you would like MISO to consider for Variance Analysis.



6) Facility 27055 (GRE)

- a) Please update the table below, which is derived from MTEP21 Appendix A, with any proposed changes. When updating, please craft “Description” verbiage at approximately the same summary-level shown in the “Original” column of the table. There will be an opportunity to provide additional details below the table.

Facility ID	27055 – Original	27055 – Updated
Facility Type	SUB	
From Sub	Benton County	
To Sub		
Max kV	345	
Min kV		
Emerg. Rating	3000 A	
Expected ISD	6/1/2030	
Description	Add 345kV 7-position breaker-and-a-half bus with 2 transformer positions and 5 line positions (one an existing modification), with two line connected 70MVAr shunt reactors on Iron Range lines, and modify 230kV position for one 230/345kV transformer	
Miles Upgrade		
Miles New		
Estimated Cost 2022\$	\$25,500,000	
Estimated Cost Nominal\$	Not calculated in MTEP	

- b) **Scope:** Please provide additional details (cause, rationale, circumstances, etc.) about any substantive changes in the scope of work for this facility (as summarized above in the “Description,” “Miles Upgrade,” “Miles New,” or “Emerg. Rating” fields). For substation facilities, describe any scope changes along with the rationale; for existing substation modifications, include substation one-line drawings that depict the substation before the project and after the project with the proposed project modifications called out; for new substations, include substation one-line drawings that highlight the scope changes. For transmission line facilities, describe any scope changes along with the rationale; include a simplified transmission diagram that illustrates the scope changes.
- c) **Schedule:** Please provide additional details (cause, rationale, circumstances, etc.) about any substantive delays in the schedule for energization of this facility (as shown above in “Expected ISD” field) that would cause a delay in the expected ISD for the entire LRTP Project.
- d) **Cost:** Please provide additional details (cause, rationale, circumstances, etc.) about any substantive changes in the estimated cost for this facility (as shown above in the “Estimated Cost 2022\$” field). Please update both the 2022\$ and Nominal\$ fields if documenting a change to the estimated cost.
- e) Please provide additional details (cause, rationale, circumstances, etc.) about any other fields that you have updated in the table above.
- f) Please provide any other information about this facility that you would like MISO to consider for Variance Analysis.



7) Facility 27056 (MP)

- a) Please update the table below, which is derived from MTEP21 Appendix A, with any proposed changes. When updating, please craft “Description” verbiage at approximately the same summary-level shown in the “Original” column of the table. There will be an opportunity to provide additional details below the table.

Facility ID	27056 – Original	27056 – Updated
Facility Type	LN	
From Sub	Benton County	
To Sub	Riverton 230/115kV	
Max kV	345	
Min kV		
Emerg. Rating	3000 A	
Expected ISD	6/1/2030	
Description	Construct new 345kV double circuit transmission line	
Miles Upgrade		
Miles New	78	
Estimated Cost 2022\$	\$312,000,000	
Estimated Cost Nominal\$	Not calculated in MTEP	

- b) **Scope:** Please provide additional details (cause, rationale, circumstances, etc.) about any substantive changes in the scope of work for this facility (as summarized above in the “Description,” “Miles Upgrade,” “Miles New,” or “Emerg. Rating” fields). For substation facilities, describe any scope changes along with the rationale; for existing substation modifications, include substation one-line drawings that depict the substation before the project and after the project with the proposed project modifications called out; for new substations, include substation one-line drawings that highlight the scope changes. For transmission line facilities, describe any scope changes along with the rationale; include a simplified transmission diagram that illustrates the scope changes.
- c) **Schedule:** Please provide additional details (cause, rationale, circumstances, etc.) about any substantive delays in the schedule for energization of this facility (as shown above in “Expected ISD” field) that would cause a delay in the expected ISD for the entire LRTP Project.
- d) **Cost:** Please provide additional details (cause, rationale, circumstances, etc.) about any substantive changes in the estimated cost for this facility (as shown above in the “Estimated Cost 2022\$” field). Please update both the 2022\$ and Nominal\$ fields if documenting a change to the estimated cost.
- e) Please provide additional details (cause, rationale, circumstances, etc.) about any other fields that you have updated in the table above.
- f) Please provide any other information about this facility that you would like MISO to consider for Variance Analysis.



8) Facility 27057 (MP)

- a) Please update the table below, which is derived from MTEP21 Appendix A, with any proposed changes. When updating, please craft “Description” verbiage at approximately the same summary-level shown in the “Original” column of the table. There will be an opportunity to provide additional details below the table.

Facility ID	27057 – Original	27057 – Updated
Facility Type	SC	
From Sub	Riverton 230/115kV	
To Sub		
Max kV	345	
Min kV		
Emerg. Rating	3000 A	
Expected ISD	6/1/2030	
Description	Add 4-345kV series capacitor bank groups (2 in series for each circuit) with protective bypass equipment. Impedance of series capacitor bank will be approximately 60% compensation of line	
Miles Upgrade		
Miles New		
Estimated Cost 2022\$	\$80,000,000	
Estimated Cost Nominal\$	Not calculated in MTEP	

- b) **Scope:** Please provide additional details (cause, rationale, circumstances, etc.) about any substantive changes in the scope of work for this facility (as summarized above in the “Description,” “Miles Upgrade,” “Miles New,” or “Emerg. Rating” fields). For substation facilities, describe any scope changes along with the rationale; for existing substation modifications, include substation one-line drawings that depict the substation before the project and after the project with the proposed project modifications called out; for new substations, include substation one-line drawings that highlight the scope changes. For transmission line facilities, describe any scope changes along with the rationale; include a simplified transmission diagram that illustrates the scope changes.
- c) **Schedule:** Please provide additional details (cause, rationale, circumstances, etc.) about any substantive delays in the schedule for energization of this facility (as shown above in “Expected ISD” field) that would cause a delay in the expected ISD for the entire LRTP Project.
- d) **Cost:** Please provide additional details (cause, rationale, circumstances, etc.) about any substantive changes in the estimated cost for this facility (as shown above in the “Estimated Cost 2022\$” field). Please update both the 2022\$ and Nominal\$ fields if documenting a change to the estimated cost.
- e) Please provide additional details (cause, rationale, circumstances, etc.) about any other fields that you have updated in the table above.
- f) Please provide any other information about this facility that you would like MISO to consider for Variance Analysis.



9) Facility 27058 (MP)

- a) Please update the table below, which is derived from MTEP21 Appendix A, with any proposed changes. When updating, please craft “Description” verbiage at approximately the same summary-level shown in the “Original” column of the table. There will be an opportunity to provide additional details below the table.

Facility ID	27058 – Original	27058 – Updated
Facility Type	LN	
From Sub	Riverton 230/115kV	
To Sub	Iron Range 500/230kV	
Max kV	345	
Min kV		
Emerg. Rating	3000 A	
Expected ISD	6/1/2030	
Description	Construct new 345kV double circuit transmission line	
Miles Upgrade		
Miles New	78	
Estimated Cost 2022\$	\$312,000,000	
Estimated Cost Nominal\$	Not calculated in MTEP	

- b) **Scope:** Please provide additional details (cause, rationale, circumstances, etc.) about any substantive changes in the scope of work for this facility (as summarized above in the “Description,” “Miles Upgrade,” “Miles New,” or “Emerg. Rating” fields). For substation facilities, describe any scope changes along with the rationale; for existing substation modifications, include substation one-line drawings that depict the substation before the project and after the project with the proposed project modifications called out; for new substations, include substation one-line drawings that highlight the scope changes. For transmission line facilities, describe any scope changes along with the rationale; include a simplified transmission diagram that illustrates the scope changes.
- c) **Schedule:** Please provide additional details (cause, rationale, circumstances, etc.) about any substantive delays in the schedule for energization of this facility (as shown above in “Expected ISD” field) that would cause a delay in the expected ISD for the entire LRTP Project.
- d) **Cost:** Please provide additional details (cause, rationale, circumstances, etc.) about any substantive changes in the estimated cost for this facility (as shown above in the “Estimated Cost 2022\$” field). Please update both the 2022\$ and Nominal\$ fields if documenting a change to the estimated cost.
- e) Please provide additional details (cause, rationale, circumstances, etc.) about any other fields that you have updated in the table above.
- f) Please provide any other information about this facility that you would like MISO to consider for Variance Analysis.



10) Facility 27059 (MP)

- a) Please update the table below, which is derived from MTEP21 Appendix A, with any proposed changes. When updating, please craft “Description” verbiage at approximately the same summary-level shown in the “Original” column of the table. There will be an opportunity to provide additional details below the table.

Facility ID	27059 – Original	27059 – Updated
Facility Type	SUB	
From Sub	Iron Range 500/230kV	
To Sub		
Max kV	345	
Min kV		
Emerg. Rating	3000 A	
Expected ISD	6/1/2030	
Description	Add 4-position 345kV ring bus (expandable to breaker-and-a-half bus) for 2-345/500kV transformer positions and 2 line positions (includes 2-345 kV shunt reactors on lines to Benton, est. 50 MVAR each)	
Miles Upgrade		
Miles New		
Estimated Cost 2022\$	\$20,000,000	
Estimated Cost Nominal\$	Not calculated in MTEP	

- b) **Scope:** Please provide additional details (cause, rationale, circumstances, etc.) about any substantive changes in the scope of work for this facility (as summarized above in the “Description,” “Miles Upgrade,” “Miles New,” or “Emerg. Rating” fields). For substation facilities, describe any scope changes along with the rationale; for existing substation modifications, include substation one-line drawings that depict the substation before the project and after the project with the proposed project modifications called out; for new substations, include substation one-line drawings that highlight the scope changes. For transmission line facilities, describe any scope changes along with the rationale; include a simplified transmission diagram that illustrates the scope changes.
- c) **Schedule:** Please provide additional details (cause, rationale, circumstances, etc.) about any substantive delays in the schedule for energization of this facility (as shown above in “Expected ISD” field) that would cause a delay in the expected ISD for the entire LRTP Project.
- d) **Cost:** Please provide additional details (cause, rationale, circumstances, etc.) about any substantive changes in the estimated cost for this facility (as shown above in the “Estimated Cost 2022\$” field). Please update both the 2022\$ and Nominal\$ fields if documenting a change to the estimated cost.
- e) Please provide additional details (cause, rationale, circumstances, etc.) about any other fields that you have updated in the table above.
- f) Please provide any other information about this facility that you would like MISO to consider for Variance Analysis.



11) Facility 27060 (MP)

- a) Please update the table below, which is derived from MTEP21 Appendix A, with any proposed changes. When updating, please craft “Description” verbiage at approximately the same summary-level shown in the “Original” column of the table. There will be an opportunity to provide additional details below the table.

Facility ID	27060 – Original	27060 – Updated
Facility Type	TX	
From Sub	Iron Range 500/230kV	
To Sub		
Max kV	500	
Min kV	345	
Emerg. Rating	1200 MVA	
Expected ISD	6/1/2030	
Description	Add 2-345/500kV 1200MVA transformers (with 1 single phase spare on-site)	
Miles Upgrade		
Miles New		
Estimated Cost 2022\$	\$36,400,000	
Estimated Cost Nominal\$	Not calculated in MTEP	

- b) **Scope:** Please provide additional details (cause, rationale, circumstances, etc.) about any substantive changes in the scope of work for this facility (as summarized above in the “Description,” “Miles Upgrade,” “Miles New,” or “Emerg. Rating” fields). For substation facilities, describe any scope changes along with the rationale; for existing substation modifications, include substation one-line drawings that depict the substation before the project and after the project with the proposed project modifications called out; for new substations, include substation one-line drawings that highlight the scope changes. For transmission line facilities, describe any scope changes along with the rationale; include a simplified transmission diagram that illustrates the scope changes.
- c) **Schedule:** Please provide additional details (cause, rationale, circumstances, etc.) about any substantive delays in the schedule for energization of this facility (as shown above in “Expected ISD” field) that would cause a delay in the expected ISD for the entire LRTP Project.
- d) **Cost:** Please provide additional details (cause, rationale, circumstances, etc.) about any substantive changes in the estimated cost for this facility (as shown above in the “Estimated Cost 2022\$” field). Please update both the 2022\$ and Nominal\$ fields if documenting a change to the estimated cost.
- e) Please provide additional details (cause, rationale, circumstances, etc.) about any other fields that you have updated in the table above.
- f) Please provide any other information about this facility that you would like MISO to consider for Variance Analysis.



12) Facility 27061 (MP)

- a) Please update the table below, which is derived from MTEP21 Appendix A, with any proposed changes. When updating, please craft “Description” verbiage at approximately the same summary-level shown in the “Original” column of the table. There will be an opportunity to provide additional details below the table.

Facility ID	27061 – Original	27061 – Updated
Facility Type	SUB	
From Sub	Iron Range 500/230kV	
To Sub		
Max kV	500	
Min kV		
Emerg. Rating	3000 A	
Expected ISD	6/1/2030	
Description	Add 5-position 500 kV ring bus (line to Dorsey, 500-230 TX, 500-345 TX, Cap Bank, 500-345 TX)	
Miles Upgrade		
Miles New		
Estimated Cost 2022\$	\$14,000,000	
Estimated Cost Nominal\$	Not calculated in MTEP	

- b) **Scope:** Please provide additional details (cause, rationale, circumstances, etc.) about any substantive changes in the scope of work for this facility (as summarized above in the “Description,” “Miles Upgrade,” “Miles New,” or “Emerg. Rating” fields). For substation facilities, describe any scope changes along with the rationale; for existing substation modifications, include substation one-line drawings that depict the substation before the project and after the project with the proposed project modifications called out; for new substations, include substation one-line drawings that highlight the scope changes. For transmission line facilities, describe any scope changes along with the rationale; include a simplified transmission diagram that illustrates the scope changes.
- c) **Schedule:** Please provide additional details (cause, rationale, circumstances, etc.) about any substantive delays in the schedule for energization of this facility (as shown above in “Expected ISD” field) that would cause a delay in the expected ISD for the entire LRTP Project.
- d) **Cost:** Please provide additional details (cause, rationale, circumstances, etc.) about any substantive changes in the estimated cost for this facility (as shown above in the “Estimated Cost 2022\$” field). Please update both the 2022\$ and Nominal\$ fields if documenting a change to the estimated cost.
- e) Please provide additional details (cause, rationale, circumstances, etc.) about any other fields that you have updated in the table above.
- f) Please provide any other information about this facility that you would like MISO to consider for Variance Analysis.



February 27, 2026

Jeremiah Doner  
Director of Cost Allocation and Competitive Transmission  
Midcontinent Independent System Operator, Inc.

**RE: GRE and MP Response to Request for Information #1 for Variance Analysis on MTEP21 LRTP Project 03 Iron Range – Benton County – Big Oaks**

Dear Mr. Doner,

With respect to MISO’s RFI #1 for the Variance Analysis of the above-referenced project, we are pleased to provide the enclosed response from Minnesota Power (“MP”) and Great River Energy (“GRE”). If you have any further questions or need clarification on any of the information provided in this response, please do not hesitate to contact either of us.

Sincerely,

Christian Winter  
*Manager, Regional Transmission Planning*  
Minnesota Power

Matt Ellis  
*Director, Transmission Planning & Compliance*  
Great River Energy

Attachment  
*NRP\_Cost&ScheduleUpdates\_FINAL.pdf*



## 1. General Topics

- a. If GRE and MP have summary materials that have been prepared to explain the respective variances that triggered Variance Analysis on the facilities that comprise LRTP Project 3, please provide them. (GRE and MP are not required to create summary materials, beyond those already provided, if they do not exist at this time.)

**Response:** GRE and MP appreciate the opportunity to provide MISO additional details on the cost and scope changes for the Northland Reliability Project (“Project”) since MISO’s approval on July 25, 2022. Additional details on each cost and scope change including background, drivers, and links to the Minnesota Public Utilities Commission’s (“Commission”) regulatory proceedings are detailed in the attached: *NRP\_Cost&ScheduleUpdates\_FINAL.pdf*

- b. In this RFI #1, MISO will ask for the estimated cost of each individual facility in both 2022\$ and in Nominal\$. In the October 10, 2025, response to MISO’s initial inquiry, GRE/MP explained how it converted the estimated costs to 2022\$ as follows:

*“Updated estimated costs are provided in 2022 dollars. Project cost estimates terms other than real \$-2022 have been de-escalated to 2022 using 4% assumed inflation rate for labor and external contractor costs, as well as a 5.6% assumed inflation rate for materials. The amount of de-escalation per estimate line item is dependent on the project schedule’s delivery or end date for that item.”*

Please confirm whether this explanation is still applicable, as well as add any clarifying statements that you wish for MISO to consider in relation to GRE/MP’s internal escalation/deescalation methodology.

**Response:** This explanation is still applicable.

## 2.-12. Facility Tables

MISO instructions common to all facility tables: Please update the table below, which is derived from MTEP21 Appendix A, with any proposed changes. When updating, please craft “Description” verbiage at approximately the same summary-level shown in the “Original” column of the table. There will be an opportunity to provide additional details below the table.

**Response:** MP’s and GRE’s responses are provided below, in **blue**, for the tables and subsequent discussion of Scope, Schedule, Cost, and additional details.



**2. Facility 27051 (GRE)**

a. Table Updates

Facility ID	27051 – Original	27051 – DELETED. Combined with Facility 27053.
Facility Type	LN	
From Sub	Cassie’s Crossing (aka, Big Oaks)	
To Sub	Structure(s) at estimated GPS Coordinates: 45°27’37.5”N 93°53’32.5”W	
Max kV	345	
Min kV		
Emerg. Rating	3000 A	
Expected ISD	6/1/2030	
Description	Replace existing GRE single circuit 230kV transmission line with double circuit 345kV transmission line. Both lines will tie to Benton County.	
Miles Upgrade	12.5	
Miles New		
Estimated Cost 2022\$	\$48,800,000	
Estimated Cost Nominal\$	Not calculated in MTEP	

b. Scope

This facility is being bundled with 27053 as a single transmission line facility.

c. Schedule

N/A

d. Cost

N/A

e. Additional details about table:

N/A

f. Additional information for MISO’s Variance Analysis consideration:

N/A



**3. Facility 27052 (GRE)**

a. Table Updates

Facility ID	27052 – Original	27052 – DELETED Combined with Facility 27054.
Facility Type	LN	
From Sub	Sherco	
To Sub	Structure(s) at estimated GPS Coordinates: 45°27'37.5"N 93°53'32.5"W	
Max kV	345	
Min kV		
Emerg. Rating	3000 A	
Expected ISD	6/1/2028	
Description	Replace existing Benton County-Sherco line to accommodate a rating greater than 3000 Amps. Including south deadend structure for new conductor. This line will tie to Benton County	
Miles Upgrade	7.3	
Miles New		
Estimated Cost 2022\$	\$25,000,000	
Estimated Cost Nominal\$	Not calculated in MTEP	

b. Scope

This facility is being bundled with 27054 as a single transmission line facility.

c. Schedule

N/A

d. Cost

N/A

e. Additional details about table:

N/A

f. Additional information for MISO's Variance Analysis consideration:

N/A



**4. Facility 27053 (GRE)**

a. Table Updates

Facility ID	27053 – Original	27053 – Updated
Facility Type	LN	LN
From Sub	Structure(s) at estimated GPS Coordinates: 45°27'37.5"N 93°53'32.5"W	Big Oaks
To Sub	Benton County	Cherry Park (Benton County)
Max kV	345	345
Min kV		
Emerg. Rating	3000 A	3000 A
Expected ISD	6/1/2030	6/1/2030
Description	Replace existing GRE single circuit 230kV transmission line with double circuit 345kV transmission line. One line will tie to Sherco and other to Cassie Crossing.	From Big Oaks to line crossing, replace existing GRE single circuit 230kV with double circuit 345kV transmission line. At line crossing, reconfigure to avoid crossing Benton-Sherco 345kV line. From line crossing to Cherry Park (Benton County), replace existing Benton-Sherco 345kV line with double circuit 345kV transmission line. A portion of new line will include underbuild of an existing 69kV line.
Miles Upgrade	12.5	25 (including mileage of original Facility 27051)
Miles New		N/A
Estimated Cost 2022\$	\$48,800,000	\$139,871,000 (including cost of original Facility 27051)
Estimated Cost Nominal\$	Not calculated in MTEP	N/A

b. Scope

This facility was combined with Facility ID 27051 to encompass the entirety of the transmission line between Cherry Park (Benton County) and the new Big Oaks (Cassie’s Crossing) substation. Cherry Park is the name for the 345kV substation expansion at the Benton County Substation site. Big Oaks is the name of the new substation formerly referred to as Cassie’s Crossing in the MTEP21 approval. The facility scope remains as a replacement of the existing transmission lines between Monticello/Sherco and Benton County with a double circuit 345kV line. A portion of this facility will also include an underbuild of an existing 69kV line on the



double circuit 345kV structures – see Section 4.1.4.1 of *NRP\_Cost&ScheduleUpdates\_FINAL.pdf* for additional details.

For comparison, the original mileage of all MTEP Facility ID’s included in this discussion of Updated Facility ID 27053 are compared to the updated mileage in the table below:

<b>Miles Upgrade</b>	<b>Original</b>	<b>New (27053)</b>
<b>27051</b>	12.5	25
<b>27053</b>	12.5	
<b>TOTAL</b>	<b>25</b>	<b>25</b>

c. Schedule

The current schedule remains with a target in-service date (ISD) of 6/1/2030.

d. Cost

Increased facility costs are attributed to several factors including:

- Transmission line specifications and market impacts – see Section 4.1 and 4.1.1,
- Increased future optionality – see Section 4.1.4.1,
- And asset retirement and permitting costs – see Section 4.1.4.

All referenced sections in “*NRP\_Cost&ScheduleUpdates\_FINAL.pdf*.”

For comparison, the original cost of all MTEP Facility ID’s included in this discussion of Updated Facility ID 27053 are compared to the updated cost estimate in the table below:

<b>Cost (2022\$)</b>	<b>Original</b>	<b>New (27053)</b>
<b>27051</b>	\$48,800,000	\$139,871,000
<b>27053</b>	\$48,800,000	
<b>TOTAL</b>	<b>\$97,600,000</b>	<b>\$139,871,000</b>

e. Additional details about table:

N/A

f. Additional information for MISO’s Variance Analysis consideration:

Please reference “*NRP\_Cost&ScheduleUpdates\_FINAL.pdf*” for additional details.



**5. Facility 27054 (GRE)**

a. Table Updates

Facility ID	27054 – Original	27054 – Updated
Facility Type	LN	LN
From Sub	Structure(s) at estimated GPS Coordinates: 45°27'37.5"N 93°53'32.5"W	Sherco
To Sub	Benton County	Cherry Park (Benton County)
Max kV	345	345
Min kV		
Emerg. Rating	3000 A	3000 A
Expected ISD	6/1/2028	6/1/2028
Description	Replace the existing Benton County-Sherco line to accommodate a rating greater than 3000 Amps. Including north deadend structure for new conductor. This line will tie to Cassie Crossing.	From Sherco to line crossing, replace the existing Benton County-Sherco single circuit 345 kV to accommodate a rating greater than 3000 Amps on double-circuit 345 kV capable structures. At line crossing, reconfigure to avoid crossing Benton to Big Oaks 345kV line (formerly 230kV to Monticello). A portion of new line will include underbuild of an existing 69kV line.
Miles Upgrade	14.1	21.4 (including mileage of original Facility 27052)
Miles New		
Estimated Cost 2022\$	\$47,400,000	\$106,013,000 (including cost of original Facility 27052)
Estimated Cost Nominal\$	Not calculated in MTEP	N/A

b. Scope

This facility was combined with Facility ID 27052 to encompass the entirety of the transmission line between Cherry Park (Benton County) and the Sherco Substation. Cherry Park is the name for the 345kV substation expansion at the Benton County Substation site. The facility scope remains as a replacement of the existing transmission lines between Sherco and Benton County with a higher capacity 345kV transmission line. This facility will be built as a single-circuit double-circuit capable 345kV transmission line; a portion of this facility will also include an underbuild of an existing 69kV line – see Section 4.1.4.1 of *NRP\_Cost&ScheduleUpdates\_FINAL.pdf* for additional details.



For comparison, the original mileage of all MTEP Facility ID's included in this discussion of Updated Facility ID 27054 are compared to the updated mileage in the table below:

Miles Upgrade	Original	New (27054)
27052	14.1	21.4
27054	7.3	
<b>TOTAL</b>	<b>21.4</b>	<b>21.4</b>

c. Schedule

The current schedule remains with a target ISD of 6/1/2028.

d. Cost

Increased facility costs are attributed to several factors including:

- Transmission line specifications and market impacts – see Section 4.1 and 4.1.1,
- Increased future optionality – see Section 4.1.4.1,
- And asset retirement and permitting costs – see Section 4.1.4.

All referenced sections in “*NRP\_Cost&ScheduleUpdates\_FINAL.pdf*.”

For comparison, the original cost of all MTEP Facility ID's included in this discussion of Updated Facility ID 27054 are compared to the updated cost estimate in the table below:

Cost (2022\$)	Original	New (27053)
27052	\$47,400,000	\$106,013,000
27054	\$25,000,000	
<b>TOTAL</b>	<b>\$72,400,000</b>	<b>\$106,013,000</b>

e. Additional details about table:

N/A

f. Additional information for MISO's Variance Analysis consideration:

Please reference “*NRP\_Cost&ScheduleUpdates\_FINAL.pdf*” for additional details.



**6. Facility 27055 (GRE)**

a. Table Updates

Facility ID	27055 – Original	27055 – Updated
Facility Type	SUB	SUB
From Sub	Benton County	Cherry Park (Benton County)
To Sub		
Max kV	345	345
Min kV		
Emerg. Rating	3000 A	3000 A
Expected ISD	6/1/2030	6/1/2030
Description	Add 345kV 7-position breaker-and-a-half bus with 2 transformer positions and 5 line positions (one an existing modification), with two line connected 70MVAr shunt reactors on Iron Range lines, and modify 230kV position for one 230/345kV transformer	Add 345kV 7-position breaker-and-a-half bus with 2 transformer positions and 5 line positions (one an existing modification), with two bus connected 60MVAr shunt reactors, and modify 230kV position for one 230/345kV transformer going to Benton County. Cherry Park is at the Benton County Substation site but a separate fenced area due to physical site constraints.
Miles Upgrade		
Miles New		
Estimated Cost 2022\$	\$25,500,000	\$45,152,000
Estimated Cost Nominal\$	Not calculated in MTEP	N/A

b. Scope

The overall scope of the Cherry Park (Benton County) substation facility remains the same. The expansion of the Benton County 345/230 kV Substation is required to accommodate the new 345 kV and upgraded lines connecting to the Cuyuna, Big Oaks, and Sherco substations. Due to physical constraints at the existing Benton County Substation site a new fenced area was required – referred to as Cherry Park. Additionally, to address issues identified in detailed design electrical studies (delayed current zero crossing) the size and configuration of the Cherry Park shunt reactors were modified See Section 4.2.3.1 of [NRP\\_Cost&ScheduleUpdates\\_FINAL.pdf](#) for additional details.

c. Schedule

The current schedule remains with a target ISD of 6/1/2030.



d. Cost

Increased facility costs are attributed to several factors including:

- Substation equipment market impacts – see Section 4.1.2.1 and 4.2.3.1,
- Substation scope and configuration updates identified during detailed design – see Section 4.2.3.1,

All referenced sections in “*NRP\_Cost&ScheduleUpdates\_FINAL.pdf*.”

e. Additional details about table:

N/A

f. Additional information for MISO’s Variance Analysis consideration:

Please reference “*NRP\_Cost&ScheduleUpdates\_FINAL.pdf*” for additional details.



**7. Facility 27056 (MP)**

a. Table Updates

Facility ID	27056 – Original	27056 – Updated
Facility Type	LN	LN
From Sub	Benton County	Cherry Park (Benton County)
To Sub	Riverton 230/115kV	Cuyuna
Max kV	345	345
Min kV		
Emerg. Rating	3000 A	3000 A
Expected ISD	6/1/2030	6/1/2030
Description	Construct new 345kV double circuit transmission line	Construct new 345kV double circuit transmission line, including the following relocations and realignments to enable siting of the new facility in or adjacent to existing rights-of-way per State of MN routing criteria: 3.5 miles of MR 230kV Line relocation and retermination at Benton County, 5.1 miles rebuild of MR/BP 230kV/69kV on double circuit structures, 4.5 miles rebuild of MR/RW 230kV/69kV on double circuit structures, 4.3 miles rebuild of 115kV 12 Line, 6.3 miles rebuild of 115kV 13 Line, and 7 targeted realignments of MR 230kV Line. Also includes relocation of existing Riverton 115/34kV Substation and equipment into Riverton 230/115kV Substation, upgrades to Riverton 230/115 kV Substation, and retermination of existing transmission lines at Riverton 230/115 kV Substation to enable siting of the new double-circuit 345kV line in or adjacent to existing rights-of-way per State of MN routing criteria.
Miles Upgrade		23
Miles New	78	68
Estimated Cost 2022\$	\$312,000,000	\$458,932,000
Estimated Cost Nominal\$	Not calculated in MTEP	N/A



b. Scope

This facility combined with Facility ID 27058 make up the primary new transmission line components of the Project. The Cherry Park (Benton County) to Cuyuna to Iron Range double circuit 345kV has a mid-point series compensation station at Cuyuna and as a result the facilities are split into a south segment and a north segment. This facility is the south segment which connects Cherry Park (Benton County) and Cuyuna. The overall scope and purpose of this facility is consistent with MISO's approval. Major scope updates since MISO's original approval include the following:

- On February 28, 2025, the Minnesota Public Utilities Commission approved the route for the Project. The Commission has authority to determine the route which best meets the State's established routing criteria. The route for this facility is approximately ten miles shorter than MISO's approved length – see Section 4.1.3.1 of *NRP\_Cost&ScheduleUpdates\_FINAL.pdf* for additional details.
- The Commission approved route for this facility includes approximately 20-miles of existing transmission asset co-locations as well as the relocation of an existing substation to make room for siting the new transmission line facility. Co-location, in this situation, is the replacement of two existing single circuit transmissions lines with a new double-circuit (common tower) transmission line (e.g. an existing single-circuit 230kV and single-circuit 115kV are both removed and rebuilt on a double-circuit 230/115kV transmission line). Co-locating assets frees existing transmission right-of-way which can then be repurposed for siting the Project. The Commission approved route includes four major co-location areas to route the Project through pinch-points. All co-locations meet NERC reliability standards under common tower contingencies ("P7"). See Section 4.2.1 and related subsections of *NRP\_Cost&ScheduleUpdates\_FINAL.pdf* for additional details.
- The Commission approved route for this facility also includes approximately 3-miles of existing transmission line realignments and other route refinements identified during the Commission's route permit process. Realignment, in this situation, is the shifting of an existing transmission line's centerline (removal and replacement) to route the Project through a pinch point. Realignments are used in lieu of more expensive and less resilient transmission line crossings to avoid residential displacement. See Sections 4.1.3.2 and 4.2.2 of *NRP\_Cost&ScheduleUpdates\_FINAL.pdf* for additional details.
- The northern termination point for this facility has moved from the existing Riverton 230/115kV substation to an electrically equivalent expansion approximately two-miles north due to physical site constraints. Additional details are contained under Facility 27057 and in Section 4.1.2.2 of *NRP\_Cost&ScheduleUpdates\_FINAL.pdf*.

c. Schedule

The current schedule remains with a target ISD of 6/1/2030.



d. Cost

The net increase in facility costs is attributed to several factors including the scope changes described in response to (a) as well as:

- Transmission line specifications and market impacts – see Section 4.1,
- Construction optimization – see Section 4.2.3.2
- And asset retirement and permitting costs – see Section 4.1.4.

All referenced sections in “*NRP\_Cost&ScheduleUpdates\_FINAL.pdf*.”

e. Additional details about table:

N/A

f. Additional information for MISO’s Variance Analysis consideration:

Please reference “*NRP\_Cost&ScheduleUpdates\_FINAL.pdf*” for additional details.



**8. Facility 27057 (MP)**

a. Table Updates

Facility ID	27057 – Original	27057 – Updated
Facility Type	SC	SC
From Sub	Riverton 230/115kV	Cuyuna
To Sub		
Max kV	345	345
Min kV		
Emerg. Rating	3000 A	3000 A
Expected ISD	6/1/2030	6/1/2030
Description	Add 4-345kV series capacitor bank groups (2 in series for each circuit) with protective bypass equipment. Impedance of series capacitor bank will be approximately 60% compensation of line	Construct new 6-position 345 kV breaker-and-a-half bus near the existing Riverton 230/115kV Substation. Add 4-345kV series capacitor banks (1 for each line segment going north and south) with protective bypass equipment. Impedance of series capacitor bank will be approximately 52% compensation of line  Cuyuna is approximately 2 miles from the existing Riverton 230/115 kV Substation site due to physical site constraints and land availability.
Miles Upgrade		
Miles New		
Estimated Cost 2022\$	\$80,000,000	\$116,436,000
Estimated Cost Nominal\$	Not calculated in MTEP	N/A

b. Scope

The overall scope of the Cuyuna series compensation station facility remains the same as the series compensation station facility originally approved by MISO. The location was shifted approximately 2 miles north of the existing Riverton 230/115kV substation to remain near the electrical midpoint of the new 345kV lines, because the existing Riverton Substation site was highly constrained had insufficient space to add this new station. See Section 4.1.2.2 of *NRP\_Cost&ScheduleUpdates\_FINAL.pdf* for additional details. The percent compensation for the series capacitors was also optimized based on detailed design and performance studies, considering the impedance of the selected transmission line conductor and the impact of the series capacitors on transmission line maximum continuous operating voltage.



The breaker-and-a-half bus included between the series capacitor segments at the Cuyuna Substation facilitates future expandability and connections, like the proposed Maple River – Cuyuna 345 kV Line that is included with the LRTP Tranche 2.1 portfolio (see LRTP Project #20). Additionally, to address issues identified in detailed design electrical studies (delayed current zero crossing), bus-connected shunt reactors were added to the Cuyuna Substation. This necessitated expanding the substation from a 4-position ring bus to a 6-position breaker-and-a-half configuration. See Section 4.2.3.1 of *NRP\_Cost&ScheduleUpdates\_FINAL.pdf* for additional details.

c. Schedule

The current schedule remains with a target ISD of 6/1/2030.

d. Cost

Increased facility costs are attributed to several factors including:

- Substation equipment market impacts – see Section 4.1.2.1 and 4.2.3.1,
- Substation scope and configuration updates identified during siting and detailed design – see Section 4.1.2.2 and 4.2.3.1

All referenced sections in “*NRP\_Cost&ScheduleUpdates\_FINAL.pdf*.”

e. Additional details about table:

N/A

f. Additional information for MISO’s Variance Analysis consideration:

N/A



**9. Facility 27058 (MP)**

a. Table Updates

Facility ID	27058 – Original	27058 – Updated
Facility Type	LN	LN
From Sub	Riverton 230/115kV	Cuyuna
To Sub	Iron Range 500/230kV	Iron Range
Max kV	345	345
Min kV		
Emerg. Rating	3000 A	3000 A
Expected ISD	6/1/2030	6/1/2030
Description	Construct new 345kV double circuit transmission line	Construct new 345kV double circuit transmission line, including the following relocations and realignments to enable siting of the new facility in or adjacent to existing rights-of-way per State of MN routing criteria: 19.2 miles of 115kV 11 Line and 20.3 miles of 115kV 92 Line
Miles Upgrade		40
Miles New	78	66
Estimated Cost 2022\$	\$312,000,000	\$407,612,000
Estimated Cost Nominal\$	Not calculated in MTEP	N/A

b. Scope

This facility combined with Facility ID 27056 make up the primary new transmission line components of the Project. The Cherry Park (Benton County) to Cuyuna to Iron Range double circuit 345kV has a mid-point series compensation station at Cuyuna and as a result the facilities are split into a south segment and a north segment. This facility is the north segment which connects Iron Range and Cuyuna. The overall scope and purpose of this facility is consistent with MISO’s approval. Scope updates since MISO’s original approval include:

- On February 28, 2025, the Minnesota Public Utilities Commission approved the route for the Project. The Commission has authority to determine the route which best meets the State’s established routing criteria. The route for this facility is approximately 12-miles shorter than MISO’s approved length – see Section 4.1.3.1 of *NRP\_Cost&ScheduleUpdates\_FINAL.pdf* for additional details.
- The Commission approved route for this facility includes approximately 40-miles of existing transmission asset co-locations. Co-location, in this situation, is the replacement of two existing single circuit transmissions lines with a new double-circuit (common tower) transmission line (e.g. an existing single-circuit 230kV and single-circuit 115kV are both removed and rebuilt on a double-circuit 230/115kV transmission line). Co-locating assets frees existing transmission right-of-way which can then be repurposed



for siting the Project. All co-locations meet NERC reliability standards under common tower contingencies (“P7”). See Section 4.2.1 and subsections of *NRP\_Cost&ScheduleUpdates\_FINAL.pdf* for additional details.

- The Commission approved route for this facility also includes multiple existing transmission line realignments and other route refinements identified during the Commission’s route permit process. Realignment, in this situation, is the shifting of an existing transmission line’s centerline (removal and replacement) to route the Project through a pinch point. Realignments are used in lieu of more expensive and less resilient transmission line crossings to avoid residential displacement. See Sections 4.1.3.2 and 4.2.2 of *NRP\_Cost&ScheduleUpdates\_FINAL.pdf* for additional details.
- The southern termination point for this facility has moved geographically from the existing Riverton 230/115kV substation to an electrically equivalent location for the Cuyuna Substation approximately two miles north due to physical site constraints. Additional details are contained under Facility 27057 and in Section 4.1.2.2 of *NRP\_Cost&ScheduleUpdates\_FINAL.pdf*.

c. Schedule

The current schedule remains with a target ISD of 6/1/2030.

d. Cost

The net increase in facility costs is attributed to several factors including the scope changes described in response to (a) as well as:

- Transmission line specifications and market impacts – see Section 4.1,
- Construction optimization – see Section 4.2.3.2
- And asset retirement and permitting costs – see Section 4.1.4.

All referenced sections in “*NRP\_Cost&ScheduleUpdates\_FINAL.pdf*.”

e. Additional details about table:

N/A

f. Additional information for MISO’s Variance Analysis consideration:

Please reference “*NRP\_Cost&ScheduleUpdates\_FINAL.pdf*” for additional details.



**10. Facility 27059 (MP)**

a. Table Updates

Facility ID	27059 – Original	27059 – Updated
Facility Type	SUB	SUB
From Sub	Iron Range 500/230kV	Iron Range 500/230kV
To Sub		
Max kV	345	500
Min kV		345
Emerg. Rating	3000 A	3000 A substation 1500 MVA transformer
Expected ISD	6/1/2030	6/1/2030
Description	Add 4-position 345kV ring bus (expandable to breaker-and-a-half bus) for 2-345/500kV transformer positions and 2 line positions (includes 2-345 kV shunt reactors on lines to Benton, est. 50 MVAR each)	Expand existing Iron Range 500kV Substation to establish a 5-position 500 kV ring bus (line to Dorsey, 500-230 TX, 500-345 TX, Cap Bank, 500-345 TX), add 2-345/500kV 1200MVA transformers (with 1 single phase spare on-site), and add 4-position 345kV breaker-and-a-half bus for 2-345/500kV transformer positions and 2-345kV line positions (includes 2-345 kV bus connected shunt reactors, 60 MVAR each). Includes rerouting of existing 230kV and 115kV lines around substation expansion area.
Miles Upgrade		
Miles New		
Estimated Cost 2022\$	\$20,000,000	\$115,879,000 (including cost of original Facilities 27060 and 27061)
Estimated Cost Nominal\$	Not calculated in MTEP	N/A

b. Scope

The overall scope of the Iron Range facilities remains the same, this change represents the consolidation of the MTEP Facility ID's for the three Iron Range facilities (27059, 27060, and 27061) into a single MTEP Facility ID for more concise discussion and reporting. As originally proposed, the Iron Range 500kV is expanding to a full ring bus with breakers (formerly Facility ID 27061) to accommodate the connection of additional 500/345kV transformers (formerly Facility ID 27060), along with an expansion to accommodate a new 345kV substation yard. To address issues identified in detailed design electrical studies (delayed current zero crossing), the size and configuration of the Iron Range shunt reactors was modified. This necessitated



expanding the substation from a 4-position ring bus to a 6-position breaker-and-a-half configuration. See Section 4.2.3.1 of *NRP\_Cost&ScheduleUpdates\_FINAL.pdf* for additional details.

c. Schedule

The current schedule remains with a target ISD of 6/1/2030.

d. Cost

Increased facility costs are attributed to several factors including:

- Substation equipment and market impacts – see Section 4.1.2.1 and 4.2.3.1,
- Substation scope and configuration updates identified during detailed design – see Section 4.2.3.1

All referenced sections in “*NRP\_Cost&ScheduleUpdates\_FINAL.pdf*.”

For comparison, the original cost of all MTEP Facility ID’s included in this discussion of Updated Facility ID 27059 are compared to the updated cost estimate in the table below:

<b>Cost (2022\$)</b>	<b>Original</b>	<b>New (27053)</b>
<b>27059</b>	\$20,000,000	\$115,879,000
<b>27060</b>	\$36,400,000	
<b>27061</b>	\$14,000,000	
<b>TOTAL</b>	<b>\$70,400,000</b>	<b>\$115,879,000</b>

e. Additional details about table:

N/A

f. Additional information for MISO’s Variance Analysis consideration:

Please reference “*NRP\_Cost&ScheduleUpdates\_FINAL.pdf*” for additional details.



**11. Facility 27060 (MP)**

a. Table Updates

Facility ID	27060 – Original	27060 – DELETED Combined with Facility 27059.
Facility Type	TX	
From Sub	Iron Range 500/230kV	
To Sub		
Max kV	500	
Min kV	345	
Emerg. Rating	1200 MVA	
Expected ISD	6/1/2030	
Description	Add 2-345/500kV 1200MVA transformers (with 1 single phase spare on-site)	
Miles Upgrade		
Miles New		
Estimated Cost 2022\$	\$36,400,000	
Estimated Cost Nominal\$	Not calculated in MTEP	

b. Scope

This facility was combined with 27059 as a single substation facility.

c. Schedule

N/A

d. Cost

N/A

e. Additional details about table:

N/A

f. Additional information for MISO's Variance Analysis consideration:

N/A



**12. Facility 27061 (MP)**

a. Table Updates

Facility ID	27061 – Original	27061 – DELETED Combined with Facility 27059.
Facility Type	SUB	
From Sub	Iron Range 500/230kV	
To Sub		
Max kV	500	
Min kV		
Emerg. Rating	3000 A	
Expected ISD	6/1/2030	
Description	Add 5-position 500 kV ring bus (line to Dorsey, 500-230 TX, 500-345 TX, Cap Bank, 500-345 TX)	
Miles Upgrade		
Miles New		
Estimated Cost 2022\$	\$14,000,000	
Estimated Cost Nominal\$	Not calculated in MTEP	

b. Scope

This facility was combined with 27059 as a single substation facility.

c. Schedule

N/A

d. Cost

N/A

e. Additional details about table:

N/A

f. Additional information for MISO's Variance Analysis consideration:

N/A

# Northland Reliability Project

---



# Project Update Report

Background and Justification for Updates to Project  
Scope and Cost through State Regulatory Approvals

*October 2025*

## TABLE OF CONTENTS

		Page
1	EXECUTIVE SUMMARY .....	1-1
2	OVERVIEW.....	2-1
	2.1 Background.....	2-1
	2.2 MISO’s 2021 Approval .....	2-3
3	REGULATORY PROCEDURAL HISTORY .....	3-1
	3.1 Prior to Filing Application with the Commission.....	3-1
	3.2 Commission Regulatory Process .....	3-2
	3.3 Commission Decision.....	3-5
4	PROJECT SCOPE AND COST UPDATES.....	4-1
	4.1 Pre-Application Scope and Cost Updates .....	4-2
	4.1.1 Transmission Line Specifications and Market Impacts .....	4-4
	4.1.2 Substation Scope and Market Impacts .....	4-5
	4.1.3 Cost Impact from Development of the Proposed Route .....	4-7
	4.1.4 Other Pre-Application Optimizations and Refinements .....	4-10
	4.2 MPUC Approved Route Scope and Cost Updates.....	4-13
	4.2.1 Co-Location Route Areas .....	4-14
	4.2.2 Additional Route Refinements.....	4-26
	4.2.3 Refined Project Scope & Cost Estimate Updates .....	4-27
	4.2.4 Project Contingency.....	4-30
	4.2.5 Cost controls .....	4-32
5	PROJECT SCHEDULE.....	5-1
6	CONCLUSION.....	6-1

## APPENDICES

- Appendix A Proposed MISO Appendix A Updates
- Appendix B MPUC Completeness Order
- Appendix C Direct Testimony and Schedules of Christian Winter
- Appendix D MPUC Order Granting Certificate of Need and Issuing Route Permit
- Appendix E Certificate of Need 60-Day Cost Compliance Filing
- Appendix F Modified & Co-Location Route Cost Analysis

## 1 EXECUTIVE SUMMARY

Pursuant to Attachment FF of the Midcontinent Independent System Operator, Inc.'s ("MISO") Tariff, Minnesota Power ("MP") and Great River Energy ("GRE") have provided updated costs, facility descriptions, and in-service dates to MISO for MISO Long-Range Transmission Plan ("LRTP") Project #3, the Northland Reliability Project, following the Minnesota Public Utilities Commission's ("MPUC" or "Commission") approval of the combined Certificate of Need ("CON") and Route Permit ("RP") Application (hereafter, the "Application" or the "CON/RP Application") on February 28, 2025.<sup>1</sup> MP and GRE respectfully request MISO to find that these scope and cost updates are reasonable, prudent, and necessary for the Northland Reliability Project, and to incorporate them into the MISO-approved scope of LRTP Project #3.

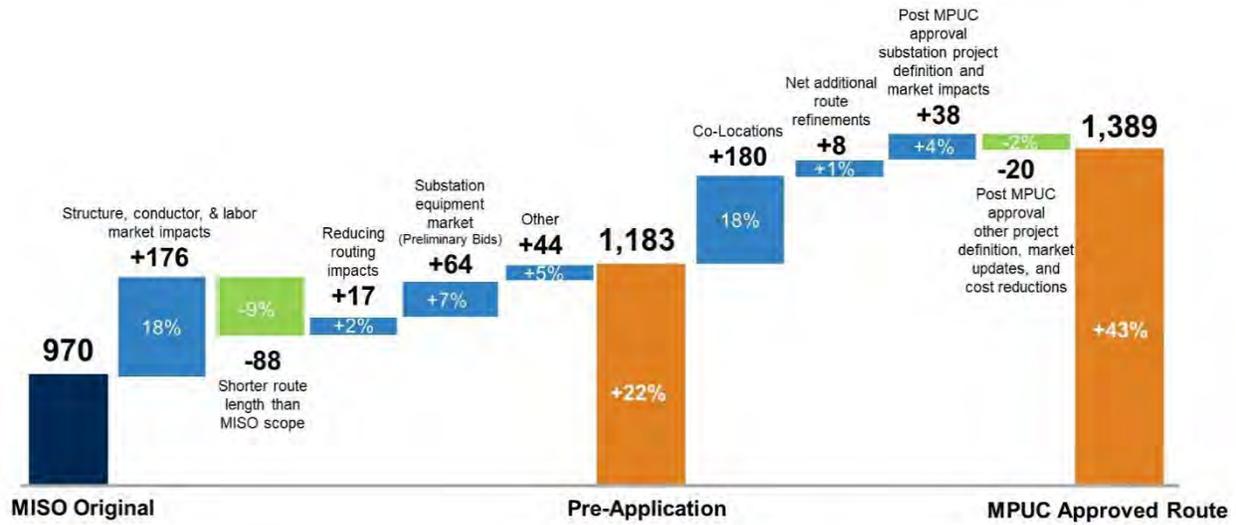
The Northland Reliability Project ("Project") involves the construction of an approximately 180-mile double-circuit 345 kilovolt ("kV") high-voltage transmission line between Grand Rapids (northern Minnesota) and Becker (outside the Twin Cities of Minnesota). The Project was studied, reviewed, and ultimately approved as part of the LRTP Tranche 1 Portfolio by MISO's Board of Directors in July 2022. The Project will ensure that the power grid in northern and central Minnesota continues to operate safely and reliably as energy resources in Minnesota and the region continue to evolve.

MISO's July 2022 approval estimated the Project to cost \$970 million (\$-2022) and included a need by date of June 2030. The MISO approved Project cost estimate was developed between late 2021 and early 2022. The current cost estimate for the Project as of mid-2025 is \$1,389 million (\$-2022), an approximate 43 percent increase from MISO's approved cost estimate. Figure 1-1 illustrates the major changes impacting the Project's cost from the MISO original approved cost estimate to the cost estimate included by MP and GRE in the CON/RP Application, to the current baseline cost estimate updated to reflect the Commission's final route decision.

---

<sup>1</sup> *In the Matter of the Application of Minnesota Power and Great River Energy for a Certificate of Need and Route Permit for the Northland Reliability Project 345 kV Transmission Line*, Docket Nos. E015,ET2/CN-22-416; E015,ET2/TL-22-415, ORDER GRANTING CERTIFICATE OF NEED AND ISSUING ROUTE PERMIT (Feb. 28, 2025) (eDocket No. [20252-215918-01](#)). A full copy of the Commission's approval order is contained in Appendix D.

**Figure 1-1 – Northland Reliability Project Cost Estimate Change**  
All values in millions \$-2022 - mid-level estimates



The increased cost from MISO’s approved cost estimate is generally attributed to:

- **25 percent** inflation and market factors;
- **12 percent** routing factors, including the Commission’s final approved route;
- **6 percent** scope refinements and other factors, including future optionality, updated substation facility scopes, transmission facility asset retirements, and other costs not considered in the original MISO approved estimate

The Project’s MISO approved cost estimate was developed during the early stages and without full knowledge of the impacts of historic inflation, supply chain disruptions and labor market spikes that took place since 2021. Without this level of market volatility the Project cost increase attributable to routing-related impacts, scope refinements, and other factors would be within the 25 percent variance analysis threshold established in the MISO Tariff.<sup>2</sup> This report provides detailed discussion and justification for the increase to the Project cost estimate, which are summarized below and discussed in Section 4.

**Inflation and Market Factors:** Since MISO’s original development of the LRTP Tranche 1 projects and the estimated costs in late 2021, market pressures have had significant impacts on the cost of delivering high-voltage transmission projects. Much of this impact is due to global and domestic supply chain pressures stemming from the COVID-19 pandemic, but more recently the global electric utility market and supply chain have been significantly impacted by geopolitical events such as the Russia-Ukraine war starting in second quarter 2022. In addition, market impacts are driven by high demand for engineering, labor, materials, and equipment both domestically and internationally.

<sup>2</sup> MISO FERC Electric Tariff, Attachment FF (Transmission Expansion Planning Protocol) (93.0.0) § IX, available at <https://www.misoenergy.org/legal/rules-manuals-and-agreements/tariff/>.

Compounding the market impacts, the inflation rate since the Project estimate was developed has been at a historic high.<sup>3</sup>

Market factors resulted in a total Project cost increase of approximately 25 percent since the original estimate. Of this 25 percent, approximately 7 percent is driven by increased substation costs, specifically major equipment costs such as transformers, reactors, breakers, and series compensation, and 18 percent is driven by market increases in transmission line material (steel structures, conductors, and foundations) and construction labor. All current Project costs are based on secured vendor and contractor bids evaluated through a competitive bidding process.

The market related cost increases experienced by MP and GRE for the Project are consistent with the Handy-Whitman Index<sup>4</sup> and MISO Cost Estimation Guide. The Handy-Whitman Index of Public Utility Costs for the North Central Region from January 2022 to January 2025 shows a 29 percent increase in total transmission plant and a 28 percent increase in substation equipment. Consistently, the MISO Cost Estimation Guide from MISO Transmission Expansion Plan 2022 (“MTEP22”) to MTEP25 has an approximately 15 percent increase in Minnesota exploratory double-circuit 345 kV line costs and a 37 percent increase in 345 kV substations. The Project’s current cost for double-circuit 345 kV of \$5.4 million per mile (\$-2022) escalated to 2025 dollars is \$5.9 million per mile (\$-2025) - below MISO’s MTEP25 Cost Estimation Guide value of \$6.2 million per mile (\$-2025).<sup>5</sup>

The inflationary and market pressures experienced by the Project can be expected to similarly impact all Tranche 1 projects.

**Routing Factors:** The projected route that formed the basis of the MISO cost estimate has changed substantially since the MISO Board approved the Project in 2022. The Project’s final route was developed over multiple iterations of desktop analysis, survey, community engagement, and regulatory hearings. The final MPUC approved route resulted in a cost increase of approximately 12 percent from MISO’s approved cost estimate. While the final MPUC approved route reduced the length of the proposed double-circuit 345 kV line by approximately 16 miles, it also added approximately 63 miles<sup>6</sup> of co-located facilities, routing the Project with existing rebuilt or modified transmission line facilities, including several realignments of existing transmission lines. The final Commission-approved route results in a net Project cost increase of \$180 million (\$-2022). The Commission’s order requires MP and GRE to seek opportunities to reduce

---

<sup>3</sup> <https://www.bls.gov/charts/consumer-price-index/consumer-price-index-by-category-line-chart.htm>

<sup>4</sup> The Handy-Whitman Index is a cost index that tracks the price of construction and equipment for electric utilities. It's published by [Whitman, Requardt & Associates, LLP](#) semi-annually, on January 1 and July 1.

<sup>5</sup>

<https://cdn.misoenergy.org/MISO%20Transmission%20Cost%20Estimation%20Guide%20for%20MTEP25337433.pdf>

<sup>6</sup> Mileage is the total of all lines. E.g. two (count) existing parallel 10 mile single-circuit transmission lines being rebuilt on a common 10 mile double-circuit structure is represented as 20 miles.

Project costs<sup>7</sup> and requires MP to justify any Project costs above \$1.21 billion, or 125 percent of the original MISO approved Project cost.<sup>8</sup>

**Scope Refinements and Other Factors:** Since MISO’s July 2022 approval, the Project scope and facility descriptions have been updated to reflect detailed engineering and scope refinement to meet MISO’s stated reliability need, the Commission’s approved route, and the Commission’s approved Project scope. All facility changes are electrically equivalent to MISO’s original approved scope. In addition to the routing factors discussed above, the primary updates to the Project scope are:

- **Future optionality:** Benton County – Sherco 345 kV transmission line facility updated from single-circuit 345 kV to single-circuit on double-circuit capable 345 kV structures to accommodate a future 345 kV circuit when conditions warrant.
- **Mid-point series compensation station:** Moved from being located at MP’s existing Riverton Substation property to a few miles north due to routing and siting constraints. Series compensation station renamed to Cuyuna.
- **Substation configurations:** Reactor sizes updated from 70 megavolt-amperes reactive (“MVAR”) line-connected at two substations to 60 MVAR bus-connected at three substations to mitigate an electromagnetic transient reliability issue identified with the original MISO approved configuration. In addition to configuration changes necessary to accommodate the reactive power needs, substation scopes were updated to address site constraints for each substation, including splitting the Benton County 345 kV Substation into two separate but adjacent substation yards, with the new 345 kV yard being named Cherry Park.

**Cost Containment:** GRE and MP have taken steps to control costs as reflected in the current cost estimate and going forward including:

- Competitively bidding all major contracts,
- Arranging for earlier delivery of some materials, when appropriate, to minimize costs and/or mitigate tariff impacts,
- Providing contractor incentives to reduce costs below the current baseline costs, where appropriate,
- Scheduling wetland work during frozen conditions to save matting costs, and
- Early engagement with general contractor prior to construction to optimize design and construction efficiencies, such as:
  - Matting procurement plan and usage analysis netted savings of \$20 million, and
  - Pole/foundation optimization analysis to reduce costs.

**In-service date:** The Project’s in-service date is June 2030 – unchanged from MISO’s approved need date. GRE and MP, from the beginning have taken steps to meet MISO’s

---

<sup>7</sup> *In the Matter of the Application of Minnesota Power and Great River Energy for a Certificate of Need and Route Permit for the Northland Reliability Project 345 kV Transmission Line*, Docket Nos. E015,ET2/CN-22-416; E015,ET2/TL-22-415, ORDER GRANTING CERTIFICATE OF NEED AND ISSUING ROUTE PERMIT at Order Point 8 (Feb. 28, 2025) (eDocket No. [20252-215918-01](#)). A full copy of the Commission’s approval order is contained in Appendix D.

<sup>8</sup> Id. at Order Point 3

need date and secure contractors and materials to avoid scarcity pricing. GRE and MP, in partnership with construction contractor(s), are accommodating the increased project scope of co-locations without delaying the in-service date. With the complex routing constraints and modifications due to the Commission-approved route, GRE and MP took detailed looks at outage constraints to develop a construction sequence to minimize impact to the existing system during construction.

**Actions Requested of MISO by MP and GRE:**

MP and GRE respectfully request MISO find that the scope and cost changes are reasonable, prudent, and necessary for the Project, and to incorporate them into the MISO-approved scope of LRTP Project #3. GRE and MP request that MISO revise the project baseline cost at \$1,389 million (\$-2022) and set a new variance analysis threshold at 13% (\$1,564 million) - consistent with the Project's contingency established via the risk register.<sup>9</sup> As a mitigation plan, GRE and MP agree to provide MISO regular updates of project costs, scope, and schedule. In addition, GRE and MP are willing to provide MISO materials provided to the Commission to justify any project expenditures over \$1,210 million (MISO original approved cost + 25%).

GRE and MP continue to look for opportunities to further reduce costs from the baseline and mitigate any additional cost impacts from tariffs or additional supply chain pressures, as directed by the MPUC and in accordance with good utility practice. GRE and MP are committed to safely energizing the Northland Reliability Project in 2030 on budget.

---

<sup>9</sup> The risk register is a line-item listing and cost contingency of prudent risks and unknowns that exist at each stage of the Project - additional details provided in Section 4.2.4.

## 2 OVERVIEW

The Project, also known as MISO LRTP Project #3, is a joint transmission project between MP and GRE that was approved by MISO in July 2022 as part of MTEP21. On February 28, 2025, the MPUC granted a CON and RP for the Project.<sup>10</sup> Pursuant to the MISO Tariff, MP and GRE are required to submit regular updates to MISO Appendix A, which publicly lists the description, costs, expected in-service date, and other details for all MISO-approved transmission projects. This document provides a detailed description of changes in the scope and cost of the Project between MISO's original 2022 approval and the Project team's updated cost estimate following the Commission's approval of the Project and its final route.

### 2.1 Background

The Project as originally proposed by MP and GRE in the CON/RP Application includes the construction of approximately 180 miles of new double-circuit 345 kV high-voltage transmission line, replacement of certain existing high-voltage transmission lines, and other improvements to the power grid in Minnesota, from the Grand Rapids area in Itasca County to the Becker area in Sherburne County.

The Project was studied, reviewed, and ultimately approved as part of the LRTP Tranche 1 Portfolio by the MISO's Board of Directors in July 2022 as part of its annual MTEP21 report. The Project will ensure that the power grid in northern and central Minnesota continues to operate safely and reliably as energy resources in Minnesota and the region continue to evolve. The Project, shown in Figure 2-1, consists of two major segments:

1. Segment One: Construction of a new, approximately 140-mile long, double-circuit 345 kV transmission line connecting the existing Iron Range Substation, a new Cuyuna Series Compensation Station located near the existing Riverton Substation, and the existing Benton County Substation, including an expansion area now referred to as Cherry Park, and
2. Segment Two: Replacement of two existing transmission lines, including replacing an approximately 20-mile 230 kV line with two 345 kV circuits from the Benton County Substation to the new Big Oaks Substation (originally referred to as the "Cassie's Crossing" Substation in MTEP21) along existing transmission corridors on double-circuit 345 kV structures; and replacing an approximately 20-mile 345 kV line from the Benton County Substation to the existing Sherco Substation in Sherburne County along existing transmission corridors using double-circuit capable 345 kV structures.

---

<sup>10</sup> *In the Matter of the Application of Minnesota Power and Great River Energy for a Certificate of Need and Route Permit for the Northland Reliability Project 345 kV Transmission Line*, Docket Nos. E015,ET2/CN-22-416; E015,ET2/TL-22-415, ORDER GRANTING CERTIFICATE OF NEED AND ISSUING ROUTE PERMIT (Feb. 28, 2025) (eDocket No. [20252-215918-01](#)). A full copy of the Commission's approval order is contained in Appendix D.

The Project also involves the following improvements to the power grid:

1. Expansion of the existing Iron Range Substation, located near Grand Rapids, and expansion of the existing Benton County Substation (including the Cherry Park Substation), located near St. Cloud, and rerouting existing transmission lines at the Iron Range and Benton County Substations; and
2. Construction of a new Cuyuna Series Compensation Station near the existing Riverton Substation and rerouting existing transmission lines in the Riverton area.

**Figure 2-1: Northland Reliability Project Overview Map<sup>11</sup>**



<sup>11</sup> Detailed parcel-level route maps available at <https://northlandreliabilityproject.com/maps/>

## 2.2 MISO's 2021 Approval

On July 25, 2022, MISO approved the LRTP Tranche 1 Portfolio, which includes the Project, referred to as LRTP#3, as part of the MTEP21. The MISO approved Project scope included:

- Construction of a new 156 mile double circuit 345 kV line from MP's existing Iron Range Substation to a new midpoint series compensation station at MP's existing Riverton Substation to GRE's existing Benton County Substation,
- An upgrade of GRE's existing 25 mile single-circuit 230 kV line between the Benton County Substation and Big Oaks Substation (formerly referred to as Cassie's Crossing) to double circuit 345 kV,
- An upgrade of GRE's existing 21.4 mile 345 kV line between the Benton County Substation and Sherco Substation, including reconfiguration of the line with the proposed Benton County – Big Oaks 345 kV line to eliminate an existing line crossing,
- Construction of a new mid-point series compensation station at MP's existing Riverton Substation, and
- Upgrades of MP's Iron Range 500 kV Substation and GRE's Benton County 345 kV Substation to accommodate the new 345 kV lines, including 500/345 kV transformers at Iron Range Substation and 345 kV shunt reactors at Iron Range and Benton County.

MISO estimated the Project to cost \$970 million (\$-2022) at the time of MISO Board approval in 2022. The MISO project cost estimate was developed based on the original facility descriptions, which were based on conceptual project information and prior to transmission line and substation engineering, detailed design electrical studies, and route development. The MISO approved cost estimate was developed in late 2021 with consideration from MISO's MTEP22 Cost Estimation Guide and with input from recent construction actual costs from MP and GRE, including the Great Northern Transmission Line<sup>12</sup> and CapX2020 projects,<sup>13</sup> all of which were constructed and placed into service prior to June 1, 2020. MISO listed the Project need-by date as June 1, 2030.

---

<sup>12</sup> *Route Permit Application of Minnesota Power for the Great Northern Transmission Line*, Docket No. E-015/TL-14-21. Project website available at, [Great Northern Transmission Line](#).

<sup>13</sup> *In the Matter of the Application of Great River Energy, Northern States Power Company (d/b/a Xcel Energy) and Others for Certificates of Need for the CapX 345-kV Transmission Projects*, Docket Nos. ET-2-E-002, et al./CN-06-1115. Project website available at, [Projects - Grid North Partners](#).

### 3 REGULATORY PROCEDURAL HISTORY

---

#### 3.1 Prior to Filing Application with the Commission

**August 1, 2022** – MP and GRE submitted a Notice of Intent to Construct, Own, Operate, and Maintain the Project (“Notice of Intent”) to the Commission as required under Minnesota law.<sup>14</sup> The statute in effect at the time required that the Certificate of Need application for the Project be filed within 18 months from the filing of the Notice of Intent.

Following the Notice of Intent, MP and GRE began developing the combined Certificate of Need and Route Permit Application to file with the Commission. For development of the Route Permit portion of the Application, MP and GRE used a multi-stage, interactive process to identify a Proposed Route that focused on the use of existing high-voltage transmission line or other existing rights-of-way. This process was intended to identify a Proposed Route that met the objectives of the Project along with minimizing impacts to the environment in conformance with Minnesota’s routing considerations. The iterative process started with the development of an initial study area for evaluation for the Project. This study area was then refined two additional times into a Route Corridor and Preliminary Route before the Applicants finalized the Proposed Route.

To gather feedback from a variety of stakeholders on the development of the Proposed Route, the Project team prepared a public engagement plan in late summer 2022 that consisted of several engagement methods. Public and stakeholder engagement opportunities included six in-person stakeholder workshops, virtual self-guided public open houses, seven in-person “route corridor” open houses, six in-person “preliminary route” open houses, direct mailings, social media posts, a dedicated email and hotline to field questions and comments, an interactive online comment map, a Project website, detailed maps that could be downloaded and printed from the Project website, and mailed Project information packets. The Project team also had regular discussions with local, state, federal, and tribal governments and agencies throughout the route development process. Throughout this process, MP and GRE incorporated stakeholder feedback throughout each stage of route development to refine the Proposed Route.

In light of the Minnesota statutory considerations and preference for following existing transmission line rights-of-way and other linear infrastructure,<sup>15</sup> the presence of existing high-voltage transmission lines running the entire length of the Project provided an initial routing opportunity that was reviewed and analyzed prior to considering routes that deviated from the existing transmission line corridors. In areas where a potential route following the existing transmission lines encountered significant constraints, possible

---

<sup>14</sup> *In the Matter of the Application of Minnesota Power and Great River Energy for a Certificate of Need and Route Permit for the Northland Reliability Project 345 kV Transmission Line*, Docket Nos. E015,ET2/CN-22-416; E015,ET2/TL-22-415, Notice of Intent to Construct, Own, and Maintain the Iron Range – Benton County – Cassie’s Crossing Transmission Project (Aug. 1, 2022) (eDocket No. [20228-188015-01](#)); Minn. Stat. § 216B.246, subd. 3.

<sup>15</sup> Minn. Stat. 216E.03, subd. 7(e).

alternatives were developed and considered and compared to identify an alternative that complied with the Minnesota routing requirements and the Project need. Ultimately, MP and GRE identified a Proposed Route that follows or replaces existing high-voltage rights-of-way for more than 85 percent of its length.

### 3.2 Commission Regulatory Process

**August 4, 2023** – The Applicants filed the CON/RP Application.<sup>16</sup>

**November 2023** – Following a hearing in October 2023, the Commission issued an order (“Completeness Order”)<sup>17</sup> finding the Application complete, authorizing joint hearings and combined environmental review for the CON and RP, and requesting an administrative law judge (“ALJ”) from the Office of Administrative Hearings to preside over public hearings and prepare a full report including findings of fact, conclusions of law, and recommendations. In its Completeness Order, the MPUC also ordered the Applicants to identify opportunities to address routing constraints by considering increased use of “infrastructure stacking” above and beyond what is included with the Proposed Route. The Completeness Order is included for reference in Appendix B.

**November-December 2023** – The Minnesota Department of Commerce, Energy Environmental Review and Analysis (“EERA”), held public meetings and compiled comments from stakeholders on the scope of the Environmental Assessment (“EA”) for the Project. In response to the Completeness Order point on “infrastructure stacking” and to proactively address public and agency comments, the Applicants submitted two “feasible but not preferred” route alternatives for consideration in the EA which both involve co-locating existing lines to address human and environmental constraints in specific areas of the Project.<sup>18</sup> The two co-located alternatives identified by the Applicants are known as the “Riverton Alternative” and the “Cole Lake Way Alternative.” After the scoping comment period, the Applicants also responded to route alternatives proposed

---

<sup>16</sup> *In the Matter of the Application of Minnesota Power and Great River Energy for a Certificate of Need and Route Permit for the Northland Reliability Project 345 kV Transmission Line*, Docket Nos. E015,ET2/CN-22-416; E015,ET2/TL-22-415, Combined Application (Aug. 4, 2023) (eDocket No. [20238-198009-03](#)).

<sup>17</sup> *In the Matter of the Application of Minnesota Power and Great River Energy for a Certificate of Need and Route Permit for the Northland Reliability Project 345 kV Transmission Line*, Docket Nos. E015,ET2/CN-22-416; E015,ET2/TL-22-415, ORDER ACCEPTING APPLICATIONS AS COMPLETE AND ESTABLISHING PROCEDURAL REQUIREMENTS (Nov. 15, 2023) (eDocket No. [202311-200529-02](#)).

<sup>18</sup> *In the Matter of the Application of Minnesota Power and Great River Energy for a Certificate of Need and Route Permit for the Northland Reliability Project 345 kV Transmission Line*, Docket Nos. E015,ET2/CN-22-416; E015,ET2/TL-22-415, Environmental Assessment Scoping Comments (Nov. 11, 2023) (eDocket No. [202311-200670-04](#)).

by the public and other stakeholders for inclusion in the EA, generally asserting that the Proposed Route and alternatives presented by the Applicants are sufficient for the EA.<sup>19</sup>

**February-March 2024** – EERA filed recommendations regarding the scope of the EA and the Commission subsequently issued an order adopting EERA’s recommended scope of the EA with modifications (“Scoping Order”).<sup>20</sup> The Scoping Order finalized route alternatives to be considered in the EA, adding approximately 35 route and alignment alternatives in total, including the two co-located alternatives submitted by the Applicants and many other route alternatives submitted by the public and other state agencies.

**June 2024** – EERA filed the completed EA; the public comment period on the EA and the Project began.

**July 2024** – The Applicants submitted direct testimony and exhibits in advance of formal CON and RP hearings to be facilitated by the ALJ. The Direct Testimony of Applicants’ witness Christian Winter addressed the Applicants’ efforts to evaluate corridor sharing opportunities for the Project and the Applicants’ position on the co-location routes being considered in the EA, including concerns about cost, reliability and schedule impacts. Mr. Winter’s testimony also provided background on how cost impacts related to the Commission’s final route decision may lead to variance analysis under the MISO Tariff.<sup>21</sup> Mr. Winter’s testimony is included for reference in Appendix C.

**July-August 2024** – The ALJ facilitated public hearings throughout the Project area during the comment period. Formal comments identify a strong preference for co-located options, including the Riverton Alternative and Cole Lake Way Alternative identified by the Applicants and an additional co-location route known as “Alignment Alternative 16 (AA16)” in the Hill City area of the Project. In response to public comments, the Applicants also developed and submitted one additional co-located route alternative to

---

<sup>19</sup> *In the Matter of the Application of Minnesota Power and Great River Energy for a Certificate of Need and Route Permit for the Northland Reliability Project 345 kV Transmission Line*, Docket Nos. E015,ET2/CN-22-416; E015,ET2/TL-22-415, Response to Route Alternatives and Conditions Proposed to be Evaluated in the Environmental Assessment – Agencies, Tribes, and Organizations (Dec. 1, 2023) (eDocket No. [202312-200917-01](#)); *In the Matter of the Application of Minnesota Power and Great River Energy for a Certificate of Need and Route Permit for the Northland Reliability Project 345 kV Transmission Line*, Docket Nos. E015,ET2/CN-22-416; E015,ET2/TL-22-415, Response to Route Alternatives and Conditions Proposed to be Evaluated in the Environmental Assessment – Comments from Members of the Public (Dec. 8, 2023) (eDocket No. [202312-201101-01](#)).

<sup>20</sup> *In the Matter of the Application of Minnesota Power and Great River Energy for a Certificate of Need and Route Permit for the Northland Reliability Project 345 kV Transmission Line*, Docket Nos. E015,ET2/CN-22-416; E015,ET2/TL-22-415, Environmental Assessment Scoping Decision (March 22, 2024) (eDocket No. [20243-204589-02](#)).

<sup>21</sup> *In the Matter of the Application of Minnesota Power and Great River Energy for a Certificate of Need and Route Permit for the Northland Reliability Project 345 kV Transmission Line*, Docket Nos. E015,ET2/CN-22-416; E015,ET2/TL-22-415, Winter Direct (July 8, 2024) (eDocket No. [20247-208392-04](#)).

address constraints in the Elk River area of the Project.<sup>22</sup> With the “Elk River Alternative”, there were now four distinct constructable co-located route alternatives that could be selected by the Commission as the final route for the Project.

**September 2024** – In response to the public hearing comments, other comments submitted during the EA comment period, and EERA’s response to public comments, the Applicants provided two constructable full route options for the Commission’s consideration: the MPR and the CLMR. The MPR was largely consistent with the Applicants’ original Proposed Route, incorporating certain minor route and alignment alternatives identified during the EA process. The CLMR used the MPR and incorporated all four constructable co-located route and alignment alternatives identified during the EA process. The Applicants presented facts and analysis for the Commission’s consideration of the MPR and CLMR, including a comparison of human and environmental impacts, costs, and schedule impacts for each full route option. The updated Project cost estimate ranges for the two full route options compared to the Applicants’ original proposed route, as provided to the Commission in the Applicants’ response to public hearing comments, are shown in the table below.

Full Route Option	Low (\$Millions) (2022\$)	Mid (\$Millions) (2022\$)	High (\$Millions) (2022\$)
Applicants’ Original Proposed Route	\$970.0	\$1,182.0	\$1,353.0
Modified Proposed Route	\$980.0	\$1,194.2	\$1,366.9
Co-Location Maximization Route	\$1,122.5	\$1,367.9	\$1,565.8

The Applicants’ full assessment of cost impacts from the MPR and CLMR as provided to the Commission in the response to public hearing comments, are attached as Appendix F. The Applicants did not take a position on a preferred route at this time, instead advising the Commission that either route would satisfy the State of Minnesota routing criteria and would be constructable. The Applicants requested that the MPUC grant a RP for the Project on either the MPR or CLMR based on its own evaluation of the record.<sup>23</sup>

**November 2024** – The ALJ filed Findings of Fact, Conclusions of Law, and Recommendations (“ALJ Report”) summarizing the record and recommending the

<sup>22</sup> *In the Matter of the Application of Minnesota Power and Great River Energy for a Certificate of Need and Route Permit for the Northland Reliability Project 345 kV Transmission Line*, Docket Nos. E015,ET2/CN-22-416; E015,ET2/TL-22-415, Comments on the Environmental Assessment and Responses to Requests for Additional Information from the Public Hearings (Aug. 5, 2024) (eDocket No. [20248-209266-01](#)) (see Attachment 4 for analysis on the Elk River Alignment Alternative).

<sup>23</sup> *In the Matter of the Application of Minnesota Power and Great River Energy for a Certificate of Need and Route Permit for the Northland Reliability Project 345 kV Transmission Line*, Docket Nos. E015,ET2/CN-22-416; E015,ET2/TL-22-415, Response to Public Hearing Comments and Comments on the Draft Route Permit at Attachment C at 2 (Sep. 19, 2024) (eDocket No. [20249-210359-05](#)).

Commission grant the Applicants a CON for the Project.<sup>24</sup> The ALJ Report also recommended the Commission grant the Applicants a RP for the Project on the CLMR, with certain modifications recommended by EERA and the ALJ. Subsequently, the Applicants submitted exceptions to the ALJ Report objecting to EERA and the ALJ's recommended modifications to CLMR as infeasible and more expensive and requesting the Commission grant a RP for the Project utilizing either the MPR or the CLMR as proposed by the Applicants.<sup>25</sup>

**January-February 2025** – In a hearing on January 23, 2025, the Commission selected the CLMR, with certain modifications, as the final route for the Project. During the hearing, the Applicants informed the Commission that the anticipated mid-range of the cost of the CLMR, as modified for the Commission's decision, was estimated to be \$1,369 million (2022 dollars), approximately \$187 million more than the estimated mid-range cost of the Applicants' original proposed route. Following the January hearing, the Commission issued an order ("CON/RP Order") on February 28, 2025, granting a CON and RP for the Project on the CLMR with the minor modifications identified by the Commission. The CON/RP Order includes certain other conditions as discussed below.<sup>26</sup>

### 3.3 Commission Decision

The Commission's CON/RP Order includes decisions related to the CON and route for the Project, as well as various compliance items related to the CON and RP. The following is a summary of order points from the CON/RP Order, focusing on those which are relevant to the purpose of this document. The full CON/RP Order is included for reference in Appendix D.

Order point 1 specifies the Commission's adoption of the ALJ Report, to the extent it is consistent with the remainder of the Commission's decisions.

Order points 2-4, quoted below, pertain to the Commission's decision to grant the Certificate of Need for the Project.

**Order Point 2:** The Commission grants a certificate of need to Minnesota Power and Great River Energy for the Northland Reliability Project.

---

<sup>24</sup> *In the Matter of the Application of Minnesota Power and Great River Energy for a Certificate of Need and Route Permit for the Northland Reliability Project 345 kV Transmission Line*, Docket Nos. E015,ET2/CN-22-416; E015,ET2/TL-22-415, Findings of Fact, Conclusions of Law, and Recommendations (Nov. 8, 2024) (eDocket No. [202411-211770-02](#)).

<sup>25</sup> *In the Matter of the Application of Minnesota Power and Great River Energy for a Certificate of Need and Route Permit for the Northland Reliability Project 345 kV Transmission Line*, Docket Nos. E015,ET2/CN-22-416; E015,ET2/TL-22-415, Minnesota Power and Great River Energy's Exceptions to the Findings of Fact, Conclusions of Law, and Recommendations of the Administrative Law Judge (Nov. 25, 2024) (eDocket No. [202411-212404-01](#)).

<sup>26</sup> *In the Matter of the Application of Minnesota Power and Great River Energy for a Certificate of Need and Route Permit for the Northland Reliability Project 345 kV Transmission Line*, Docket Nos. E015,ET2/CN-22-416; E015,ET2/TL-22-415, ORDER GRANTING CERTIFICATE OF NEED AND ISSUING ROUTE PERMIT, (Feb. 28, 2025) (eDocket No. [20252-215918-01](#)).

**Order Point 3:** Minnesota Power shall bear the burden of proof in any future regulatory proceeding related to the recovery of any costs above \$1,210,000,000. Nothing prevents the Applicant from seeking recovery of additional amounts through the Transmission Cost Recovery Rider.<sup>27</sup>

**Order Point 4:** Applicants must inform the Commission of the initiation of Midcontinent Independent System Operator (MISO) Variance Analysis under Attachment FF within 5 business days of initiation. Applicants must file all copies of information submitted to the MISO Variance Analysis process. Disclosures must be consistent with Applicants' MISO Tariff.

As seen in these order points, while granting the Certificate of Need, the Commission also established a threshold of cost (\$1,210 million) above which Minnesota Power specifically bears the burden of proof in future cost recovery proceedings to demonstrate that the costs above the threshold were reasonably and prudently incurred. It is worth noting that the Commission deliberately established the cost recovery threshold at 25 percent above the original MISO cost estimate for consistency with the variance analysis threshold in the MISO Tariff rather than the cost estimates provided on the record by the Applicants for the route alternatives under consideration. With that intention, the Commission also included an order point requiring the Applicants to inform the Commission if and when MISO initiates variance analysis for the Project, and file copies of all information submitted to MISO during variance analysis, to the extent such disclosures are consistent with the MISO Tariff.

Order points 5-8 pertain to the Commission's decision to grant the RP for the Project on the CLMR, with certain modifications, conditions, and compliance items required in the order points. Order point 9, quoted below, pertains to the impact of the Commission's RP decision on the cost of the Project.

**Order Point 9:** Within 60 days of the date of this order, Applicants must file revised Project cost estimates in 2022 dollars reflecting the Commission's decision herein.

To ensure the cost of the Project on the CLMR as ordered by the Commission is clearly documented on the record, the Commission required the Applicants to submit a compliance filing within 60 days of the CON/RP Order updating the Project cost estimate to reflect the Commission's decision. The updated mid-range cost estimate for the Project on the CLMR ordered by the Commission is \$1,369 million (\$-2022). The Applicants preliminarily shared this number with the Commission during the January 23, 2025, hearing prior to the Commission's decision, and subsequently submitted it in a

---

<sup>27</sup>The project cost referenced in Order Point 3 includes MP and GRE's combined project costs; however, MP as an MPUC rate regulated utility holds the burden of proof for rate recovery. As a not-for-profit cooperative, GRE's costs are allocated to GRE's member-owner distribution cooperatives based on a GRE board approved formula rate methodology.

compliance filing on April 29, 2025.<sup>28</sup> The April 29 compliance filing also informed the Commission that the high-range cost estimate for the Project on the CLMR is \$1,567 million (\$-2022) and that both the mid-range and high-range cost estimates exceed the \$1,210 million threshold relating to cost recovery, as included in the Commission's order point 3. The April 29 compliance filing is included for reference in Appendix E.

---

<sup>28</sup> *In the Matter of the Application of Minnesota Power and Great River Energy for a Certificate of Need and Route Permit for the Northland Reliability Project 345 kV Transmission Line*, Docket Nos. E015,ET2/CN-22-416; E015,ET2/TL-22-415, 60-Day Cost Compliance Filing (April 29, 2025) (eDocket No. [20254-218276-01](#)).

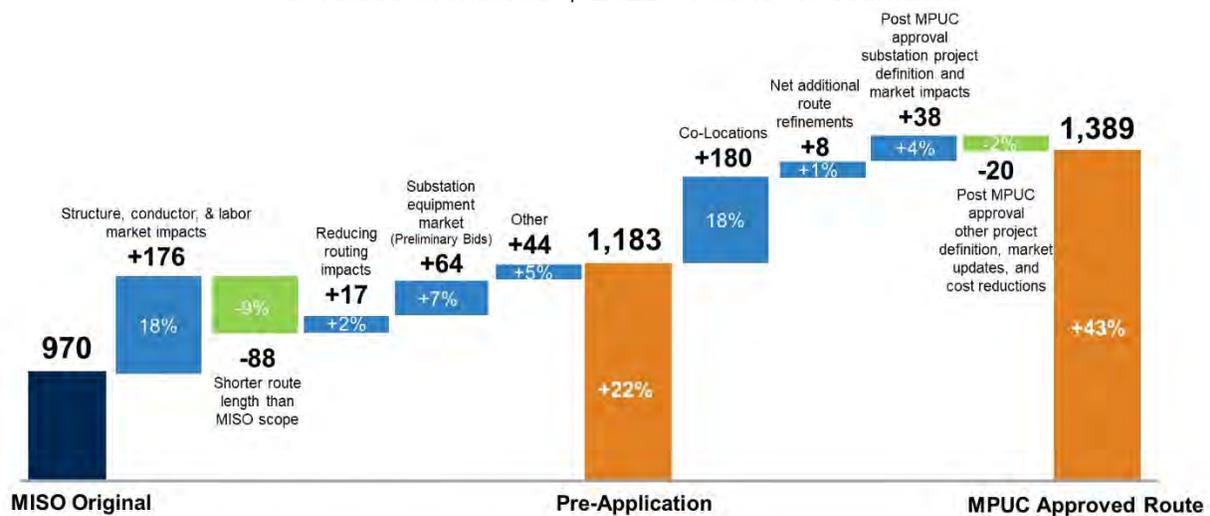
## 4 PROJECT SCOPE AND COST UPDATES

This section provides an overview of the underlying scope and cost updates resulting in the current cost estimate for the Project on the MPUC-approved route. Scope and cost updates are broken down into two stages. The first stage (“Pre-Application”) consists of scope and cost updates identified by MP and GRE as they undertook Project development, routing, and preliminary engineering activities in preparation for filing the combined CON and RP application. The second stage (“MPUC Approved Route”) consists primarily of scope and cost updates resulting from the Commission’s final route decision, with additional Project development and engineering updates incorporated as available following the Commission’s decision.

As shown in Figure 4-1, the current cost estimate for the Project exceeds MISO’s approved cost estimate developed between late 2021 and early 2022 by approximately 43 percent. The increased Project cost is primarily driven by market impacts (25 percent of the 43 percent total cost increase) and routing-related impacts (12 percent), while various scope refinements and other factors also contribute to minor changes in cost (the remaining 6 percent). The Project’s MISO approved cost estimate was developed during the early stages and without full knowledge of the impacts of historic inflation, supply chain, tariff uncertainty, and labor market spikes that took place since 2021. Thus, it should be emphasized that under normal market volatility, the net Project cost increase attributable to routing-related impacts, scope refinements, and other factors would be within the 25 percent variance analysis threshold established in the MISO Tariff.<sup>29</sup>

**Figure 4-1 – Northland Reliability Project Cost Estimate Change**

All values in millions \$-2022 - mid-level estimates



In the following sections, the background and justification for each of the major drivers for changes to the Project’s costs is discussed in further detail. The discussion of cost impacts is bifurcated into changes that took place as MP and GRE developed the original

<sup>29</sup> MISO FERC Electric Tariff, Attachment FF (Transmission Expansion Planning Protocol) (93.0.0) § IX, available at <https://www.misoenergy.org/legal/rules-manuals-and-agreements/tariff/>.

proposed route and updated Project scope and cost estimates prior to submitting the CON/RP Application to the Commission (Pre-Application updates), and changes taking place after the Application was filed or resulting from the Commission's CON/RP Order (MPUC Approved Route updates).

#### 4.1 Pre-Application Scope and Cost Updates

Before MISO's approval of the Project in July 2022, MP and GRE had been working for over three years to study and develop the Project to optimally and cost-effectively meet the reliability needs identified by MP, GRE, and MISO. At the same time, MP and GRE understood that identifying a proposed route for the Project would require working with local communities, agencies, stakeholders, and the MPUC to identify a route which reasonably balances human and environmental impacts with engineering, reliability, and cost considerations.

Since MISO's original development of the LRTP Tranche 1 projects and the estimated costs in late 2021 and early 2022, market pressures have continued to have significant impacts on the cost of delivering high voltage transmission projects. Much of this impact is due to global and domestic supply chain pressures originating out of the COVID-19 pandemic, but more recently the global electric utility market and supply chain have been significantly impacted by geopolitical events such as the Russia-Ukraine war starting in second quarter 2022. It should be noted that some of the market impacts are also due to the Tranche 1 portfolio itself, which includes 18 projects and over \$10 billion in investment, all requiring similar engineering, materials, and labor resources during a time of high global demand for electric utility infrastructure. Compounding these market impacts, the inflation rate since the original MISO project estimate was developed has been at a historic high.<sup>30</sup> These same inflationary and market pressures will similarly impact all Tranche 1 projects.

As part of the development of the CON/RP Application, the Project team developed an updated cost estimate for the Project. This updated cost estimate, referred to in Figure 4-1 as the Pre-Application cost estimate, was based on GRE and MP's Proposed Route<sup>31</sup> and was developed based on preliminary engineering, scope refinements, and an updated equipment and labor market forecast as of mid-2023. Given the market volatility, MP and GRE acquired multiple bids from contractors and equipment vendors for key transmission line and substation components, used engineering firms to provide updated comprehensive cost estimates for the transmission line and substations, and validated cost estimate assumptions with recent transmission projects across North America.

---

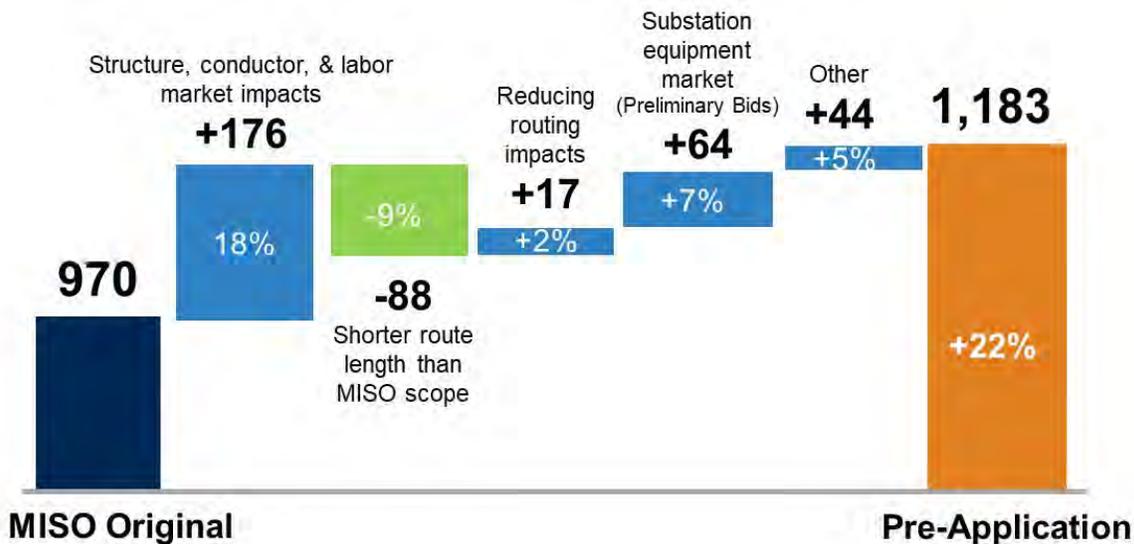
<sup>30</sup> <https://www.bls.gov/charts/consumer-price-index/consumer-price-index-by-category-line-chart.htm>. U.S. Bureau of Labor Statistics, *12-month percentage change, Consumer Price Index, selected categories*, available at <https://www.bls.gov/charts/consumer-price-index/consumer-price-index-by-category-line-chart.htm>

<sup>31</sup> See *In the Matter of the Application of Minnesota Power and Great River Energy for a Certificate of Need and Route Permit for the Northland Reliability Project 345 kV Transmission Line*, Docket Nos. E015,ET2/CN-22-416; E015,ET2/TL-22-415, Combined Application at Appendix A (Aug. 4, 2023) (eDocket No. [20238-198009-03](#)). The Proposed Route is detailed in the CON/RP Application in Appendix A.

As shown in Figure 4-2, at the time the Application was filed, the Project was expected to cost approximately \$1,183 million (\$-2022) – approximately 22 percent higher than MISO’s original approved estimate. MP and GRE also included a high-end range of cost in the Application representing various contingencies identified and quantified by the Project team in its risk register. These additional risk contingencies resulted in the high-end range of costs being \$1,353 million (\$-2022), or approximately 14 percent greater than the expected (or “mid-range”) cost.

**Figure 4-2 – Northland Reliability Project Cost Estimate Change from MISO Approved Costs to Pre-Application Cost**

*Figure is a focused view of Figure 4-1*  
All values in millions \$-2022 - mid-level estimates



The increased cost at this stage of the Project was primarily driven by market impacts, with routing and scoping changes contributing minor impacts. While the drivers for the increased Project cost at this stage are discussed in the sections below, it should be emphasized that, even with the unpredicted inflation and supply chain issues, at this stage the total Project mid-range cost was still below the 25 percent variance analysis threshold established in the MISO Tariff.<sup>32</sup> At the time of filing the CON/RP Application in August 2023, MP and GRE considered this updated Pre-Application estimate to be the new baseline cost estimate for the Project. While MISO does not afford projects in right of first refusal (“ROFR”) states the opportunity to update the baseline project cost estimate under the Tariff in the way competitive projects’ cost estimates are updated, the additional year of preliminary engineering and cost estimate refinement provided important visibility into the full extent of the market and supply chain forces impacting costs for the Project and was important to ensure that the Commission was presented with the most up-to-date cost estimate available at the time of filing the CON/RP Application.

<sup>32</sup> MISO FERC Electric Tariff, Attachment FF (Transmission Expansion Planning Protocol) (93.0.0) § IX, available at <https://www.misoenergy.org/legal/rules-manuals-and-agreements/tariff/>.

The following sections detail the cost and scope changes from the MISO original cost estimate at the time of MISO Board approval to the Pre-Application cost estimate MP and GRE presented to the Commission in the CON/RP Application filed on August 4, 2023.

#### **4.1.1 Transmission Line Specifications and Market Impacts**

Transmission line structure design and conductor selection for the Project was developed based on best engineering practices to comply with the applicable state and federal standards and requirements, meet MISO's electrical performance specifications, and minimize costs and environmental impacts. The Project's transmission structures are tubular steel monopole – consistent with past and current double-circuit 345 kV projects in Minnesota. The Project's general structure design is unchanged from the MISO approved baseline assumptions.

Conductor was selected via an economic and performance-based analysis. The analysis compared the total cost impacts for the life of the Project for conductor alternatives. Only conductors capable of meeting MISO's performance specifications were considered in the economic selection analysis. The conductor selected for the Project not only has the least cost over the life of the Project but is designed to resist icing impacts, such as galloping, which is one of the top threats to reliability in Minnesota. The double-bundled twisted pair 795 ACSR conductor selected as a result of this analysis is slightly larger than conductors previously implemented for 345 kV projects in the region, due to a combination of the MISO-required 3,000 Amp emergency rating and performance impacts relating to the series compensation of the transmission line. As a result, the initial capital cost of the Project's conductor is higher than MISO's original baseline assumptions. However, incrementally higher initial capital costs are offset by lifecycle cost savings from more efficient operation of the transmission line with the larger, lower impedance conductor.

As noted previously, MP and GRE enlisted a consulting engineering firm to develop preliminary design criteria, perform preliminary engineering, update current market assumptions, and produce an updated cost estimate for the Project prior to filing the CON/RP Application. When the CON/RP Application was filed with the Commission in August 2023, the price of steel structures included in GRE and MP's Pre-Application Cost had increased by approximately 36 percent and conductor costs had increased by approximately 19 percent relative to the assumptions in the original MISO approved estimate developed in late 2021 and early 2022. In addition, the labor costs to construct transmission lines had increased. The cumulative impacts of each of these factors along with the preliminary engineering of the transmission line and conductor selection resulted in a cost estimate increase of \$176 million (\$-2022) or 18 percent from MISO's approved baseline cost estimate as reflected in the Pre-Application cost estimate in Figure 4-2. These same market factors are likely to impact all projects in the LRTP Tranche 1 portfolio.

The Pre-Application cost estimate increases relative to MISO's approved estimate experienced by GRE and MP for the transmission line facilities are also consistent with the Handy-Whitman Index of Public Utility Costs for the North Central Region from July

2021 to July 2023,<sup>33</sup> which show an approximately 20 percent increase in transmission (total transmission plant) costs. Pre-Application transmission line structure, conductor, and construction labor costs were developed from preliminary estimates from equipment vendors, construction contractors, and engineering consultants.

#### 4.1.2 Substation Scope and Market Impacts

Similar to the transmission line facilities, MP and GRE updated the Project substation facilities during development of the Pre-Application cost estimate. Substation facility optimizations and updates were developed based on routing and siting considerations, preliminary engineering, and updated market assumptions. An updated cost estimate was produced for each Project substation facility prior to filing the CON/RP Application. In total, the Pre-Application cost estimates for the three Project substations increased by \$64 million (\$-2022) which represents an approximately 7 percent increase in the total cost of the Project from MISO’s approved baseline cost estimate. The increased substation costs are primarily driven by market factors and inflation.

##### 4.1.2.1 Substation Equipment Market Impacts

Pre-Application substation equipment costs were developed based on preliminary bids from substation equipment vendors and construction contractors. Table 4-1 compares the substation cost assumptions included in MISO’s original approved 2022 cost estimate versus the substation cost assumptions used by MP and GRE in development of the Pre-Application cost estimate.

**Table 4-1 – Substation Facility Cost Change from MISO Approval to Pre-Application Cost Estimate**

Substation	MISO Original Estimate (\$M)	Pre-Application Estimate (\$M)	Percent Change	Major Drivers
Iron Range 500/345 kV	\$70	\$92	+31%	Transformers Breakers, Reactors
Riverton (Cuyuna) 345 kV Series Comp	\$80	\$96	+20%	Location, Series Capacitors
Benton County (Cherry Park) 345 kV	\$26	\$30	+15%	Breakers Reactors

Due to the increasing global demand, coupled with supply chain and manufacturing shortfalls, the market for transformers, circuit breakers, shunt reactors, and other substation equipment changed substantially between 2021 and 2023. As an example, the cost for the seven single phase 500/345 kV transformers at the Iron Range Substation

<sup>33</sup> The Handy-Whitman Index is a cost index that tracks the price of construction and equipment for electric utilities. It’s published by [Whitman, Requardt & Associates, LLP](#) semi-annually, on January 1 and July 1.

more than tripled in the five years leading up to the development of the Pre-Application cost estimate in 2023, based on a comparison of the bids received for the Project versus a comparable transformer from 2018. Similar impacts were observed across all categories of major substation equipment.

#### 4.1.2.2 Series Compensation Station Location and Configuration

The original MISO approved Project description specified that the new 345 kV series capacitors required for optimal performance of the Iron Range – Benton County 345 kV lines would be located at the existing MP Riverton 230/115 kV Substation. The Riverton Substation was originally selected because it is an existing substation near the likely electrical midpoint of the new 345 kV lines. After a thorough investigation of available property, site constraints, and route constructability at the Riverton Substation, MP determined that it would not be feasible to locate the series compensation station at the existing Riverton Substation site as originally planned. As a result, MP identified and acquired a tract of county land roughly 3 miles north of the Riverton Substation to facilitate siting of the series compensation in the vicinity of the Riverton Substation as originally planned. Figure 4-3 shows the location of the new Cuyuna Series Compensation Station relative to the existing Riverton Substation and relevant constraints driving the need to find a different site.

**Figure 4-3 – Cuyuna Series Compensation Station Siting Considerations**

**Optimization:** Series capacitor station located ~2 miles north of Riverton 230/115kV due to the following constraints:

1. Mississippi River
2. Existing 230kV, 115kV, and 69kV lines
3. Existing Riverton 115/34 kV substation
4. Cuyuna Country State Recreation Area
5. Residences along river
6. Wetlands and Topography Constraints

**Rationale:**

- Electrically equivalent
- Lower Human & Environmental Impact
- Avoids Costly Reconfigurations of Existing Transmission & Distribution (~\$12M)
- Preserves Future Optionality for Additional 345kV Outlets or 345/230kV Transformer
- Likely Cost-Neutral

**Original Riverton Series Comp Location**



The Cuyuna Series Compensation Station is electrically equivalent to the original Riverton Series Compensation Station specified in MISO’s approval. Shifting the location of the series compensation station to a site with adequate space for the new facility enabled development of the original Proposed Route to avoid major human, environmental, and existing infrastructure constraints in the Riverton Substation area. The new location also provided for significantly more flexibility to accommodate future expansion of the Cuyuna Series Compensation Station 345 kV bus to interconnect additional regional transmission

lines, support the underlying local transmission system, or facilitate generator interconnections. The series capacitors are sized to offset approximately 52 percent of the impedance of the transmission line segments going north and south from Cuyuna to Iron Range and Benton County/Cherry Park, respectively. Because this is near the practical limit for series compensation of a transmission line, further segmentation of these line segments would require costly replacement and reconfiguration of the series compensation, making Cuyuna the only technically practical point of interconnection on the Project between the Iron Range and Benton County/Cherry Park Substations. To ensure that future interconnections to support the regional grid would be possible at Cuyuna, MP and GRE further clarified the scope of the Cuyuna Series Compensation Station to include a full 345 kV breaker station in between series capacitor segments.

### 4.1.3 Cost Impact from Development of the Proposed Route

The Proposed Route for the Project was developed over multiple iterations of desktop analysis, survey, community engagement, and agency feedback, as described in Section 3. GRE and MP took great care to ensure the final Proposed Route balanced engineering and constructability considerations, impacts to people and communities, environmental impacts, and costs. While final route selection is the responsibility of the Commission, GRE and MP as Applicants were responsible for developing and filing an initial Proposed Route at the initiation of the state routing regulatory process. During the regulatory process, the public and agencies file alternatives to the Applicants' initial Proposed Route for the Commission's consideration. The Commission ultimately selects the route that best meets the state routing criteria.<sup>34</sup> Section 3 provides a detailed overview of the regulatory process and considerations that went into the Commission's final route determination. This section provides an overview of scope and cost impacts from GRE and MP's initial Proposed Route, which was filed in the CON/RP Application in August 2023.<sup>35</sup> As discussed in Section 3 and later in Section 4.2, modified versions of this route were later developed and considered during the regulatory process.

#### 4.1.3.1 Shorter Route Length than MISO Original Assumption

The Project's initial Proposed Route was approximately 180 miles in total length – 140 miles of new transmission in Segment One (Iron Range – Cuyuna – Benton/Cherry Park) and approximately 40 miles of upgraded transmission in Segment Two (Benton/Cherry Park – Big Oaks & Sherco).<sup>36</sup> The initial Proposed Route followed existing high voltage transmission corridors for approximately 85 percent of its length, meaning the Project's route is either adjacent to existing transmission facilities or replaces existing transmission

---

<sup>34</sup> Minn. Stat. § 216E.03, subd. 7 and Minn. R. 7850.4100. As noted above, this statute and most parts of this rule were repealed on July 1, 2025 but both were in effect at the time the Commission issued its decision in February 2025.

<sup>35</sup> See *In the Matter of the Application of Minnesota Power and Great River Energy for a Certificate of Need and Route Permit for the Northland Reliability Project 345 kV Transmission Line*, Docket Nos. E015,ET2/CN-22-416; E015,ET2/TL-22-415, Combined Application at Appendix §§ 5, 7.2.4 (Aug. 4, 2023) (eDocket No. [20238-198009-03](#)).

<sup>36</sup> See *infra* Figure 2-1 for definitions of Segment One and Segment Two.

facilities. Locating the Project adjacent to existing transmission lines helps reduce impacts by being able to share 15 to 20 feet of existing right-of-way and is a required consideration in the Minnesota transmission line routing process.<sup>37</sup> MISO's original approved Project description assumed a Segment One route length of 156 miles. GRE and MP's initial proposed Segment One route was shorter by 16 miles, resulting in a cost savings of \$88 million (\$-2022) or a nine percent reduction in the total Project costs.

#### 4.1.3.2 Reducing Routing Impacts (Realignments)

The initial Proposed Route followed existing transmission corridors for approximately 85 percent of its length. In Segment One, there are existing 230 kV transmission lines continuously from the Iron Range Substation to the Benton County Substation, providing an opportunity for much of the Proposed Route to be located adjacent to the existing 230 kV transmission lines with overlapping rights-of-way. The side of the existing 230 kV transmission lines on which the Project was proposed to be located was selected to minimize human and environmental impacts and to minimize the number of high voltage transmission line crossings. As the Iron Range Substation is located on the east side of the existing 230 kV transmission line and the Benton County/Cherry Park Substation is located on the west side of the existing transmission line, at least one line crossing was necessary for the Project. During the routing process, it became evident that it would not be feasible to follow one side of the existing 230 kV lines continuously from Iron Range to Benton County without either displacing residential properties or establishing additional line crossings. Even with careful selection of the crossing location to minimize impacts, several pinch points existed along the route corridor which could not be avoided while continuing to parallel the existing transmission lines. To avoid residential displacement, MP and GRE evaluated two options:

1. Cross over the existing 230 kV transmission line (and cross back later); or
2. Realign (shift) the existing 230 kV line and route the Project in the vacated place.

GRE and MP's objectives in this consideration were to develop a Proposed Route that did not require residential displacement, met the reliability needs of the Project by limiting the number of transmission line crossings, and minimized overall cost impacts. Therefore, in the Proposed Route GRE and MP included six realignments of the existing 230 kV lines which, along with other necessary line reroutes at substation sites, added a total incremental cost of \$17 million (\$-2022). GRE and MP minimized crossings of the 230 kV transmission lines, because high voltage transmission line crossings create increased risks to reliability and resiliency as well as safety during maintenance activities.<sup>38</sup> In

---

<sup>37</sup> Minn. R. 7850.4100, subd. J.

<sup>38</sup> See *In the Matter of the Application of Minnesota Power and Great River Energy for a Certificate of Need and Route Permit for the Northland Reliability Project 345 kV Transmission Line*, Docket Nos. E015,ET2/CN-22-416; E015,ET2/TL-22-415, Winter Direct at Schedule 3 (July 8, 2024) (eDocket No. [20247-208392-04](#)) ("Line crossings are generally technically possible. However, high-voltage transmission line crossings create unique safety, reliability, and resiliency concerns, while also contributing to increased cost and environmental impacts due to the need for taller and larger structures. Consequently, good utility practice is to minimize new line crossings to the greatest practical extent when routing new high-voltage transmission lines.").

addition, MP and GRE’s preliminary engineering evaluation determined that crossing the existing transmission lines would be more expensive than realigning the existing lines for short distances, due to the requirement to install four dead-end structures to turn the line perpendicular to cross over the existing line, then turn the line parallel again to follow the existing line, then turn the line perpendicular again to cross back over the existing line, and finally turn the line again to continue paralleling the existing line on the preferred side.<sup>39</sup> In addition to being taller than other Project structures to provide adequate electrical clearances at the crossing, these dead-end structures would need to be designed with high resiliency to limit the inherent reliability risk associated with the crossing of two regionally-significant transmission lines, resulting in additional costs per structure. Each “there-and-back” line crossing was found to cost approximately \$4 million versus the \$1.2 to \$2.6 million for each realignment avoided.<sup>40</sup> While MP and GRE designed the Proposed Route to minimize the number of realignments, six such realignments were included with the Proposed Route. One of the six realignments in the Proposed Route is shown in Figure 4-4 as an example. Additional descriptions and diagrams of each realignment can be found in Section 2.1.5.4.2 of the CON/RP Application.

**Figure 4-4 – Realignment Example**



Realignments were added and modified during the regulatory review process and those that were ultimately included with the Commission’s final route decision are discussed further in Section 4.2. In addition, as a cost control measure, GRE and MP are required per the Commission’s CON/RP Order to attempt to negotiate with the landowners to purchase the properties avoided by the realignments in order to determine whether these

<sup>39</sup> *In the Matter of the Application of Minnesota Power and Great River Energy for a Certificate of Need and Route Permit for the Northland Reliability Project 345 kV Transmission Line*, Docket Nos. E015,ET2/CN-22-416; E015,ET2/TL-22-415, Response to the MPUC’s Request for Comments at 5-7 (January 10, 2025) (eDocket No. [20251-213840-01](#)).

<sup>40</sup> *Id.* at 3-4.

landowners would be willing to relocate, reducing Project costs compared to realigning the line.<sup>41</sup>

#### 4.1.4 Other Pre-Application Optimizations and Refinements

In addition to the market and routing factors, there were a series of other various changes from MISO's approval to the Pre-Application cost estimate. The other scope and cost changes include:

1. Permitting costs,
2. Asset retirement costs, and
3. Segment Two Optionality (detailed in Section 4.1.4.1).

In total, these additional refinements increased the total costs by \$44 million (\$-2022) or a five percent increase from the original MISO approved baseline cost.

##### 4.1.4.1 Segment Two Optionality

The most significant of these additional optimizations and refinements in terms of Project scope is the addition of double-circuit capable design considerations on the Benton County – Sherco 345 kV line. MISO's original approved description for the transmission facilities in Segment Two between Benton County and Sherco specified construction of a single-circuit 345 kV transmission line with higher capacity than the existing Benton – Sherco 345 kV line. During preliminary engineering and routing analysis, a transmission owner optimization was identified and ultimately included in the CON/RP Application to construct the facilities as single-circuit 345 kV on the double-circuit capable structures built to accommodate a future second 345 kV circuit when conditions warrant. This configuration provides future optionality to double the transmission capacity of the Benton County to Sherco transmission line with no additional right-of-way and with minimal impacts at the time the additional transmission capacity is needed.

Maximizing the use of existing transmission or other rights-of-way is especially prudent in this location given the presence of agricultural center-pivot irrigation, residential development, proposed solar generation, and other local interests. Without this action, it would be extremely difficult and impactful to communities to route a future transmission line through this area. The double-circuit capable structures between the Benton County Substation and the Sherco Substation result in a marginal incremental cost, approximately 20 percent, compared to single-circuit 345 kV structures. However, should the second circuit be needed in the future, it is projected to result in cost savings of at least two-fold relative to a stand-alone option,<sup>42</sup> as shown in **Table 4-2**.

---

<sup>41</sup> See *In the Matter of the Application of Minnesota Power and Great River Energy for a Certificate of Need and Route Permit for the Northland Reliability Project 345 kV Transmission Line*, Docket Nos. E015,ET2/CN-22-416; E015,ET2/TL-22-415, ORDER GRANTING CERTIFICATE OF NEED AND ISSUING ROUTE PERMIT, (Feb. 28, 2025) (eDocket No. [20252-215918-01](#)); Appendix D.

<sup>42</sup> Comparison is conservative as it ignores impacts of inflation and incremental costs associated with future economic development in the area.

**Table 4-2 - Cost Comparison of Benton County to Sherco Transmission Line Single- Versus Double-Circuit 345 kV Capability<sup>43</sup>**

<b>Single-Circuit 345 kV Cost (\$ millions) (2022\$)</b>	<b>Single 345 kV – Double-Circuit Capable Cost (\$ millions) (2022\$)</b>	<b>Cost to add Second Circuit to Double-Circuit Capable Structure (\$ millions) (2022\$)</b>	<b>Total Cost for Double Circuit Build-out (\$ millions) (2022\$)</b>	<b>Two Parallel Single-Circuit 345 kV Cost (\$ millions) (2022\$)</b>
\$73.4	\$89.5	\$9.7	\$99.2	\$146.8

There is Commission precedent to construct 345 kV facilities to double-circuit capable. Prior to MISO’s LRTP, the last regional buildout in Minnesota was CapX2020. The CapX2020 buildout included three 345 kV lines in Minnesota - including the MISO Multi-Value Project (“MVP”) between Brookings, South Dakota and the Twin Cities. After comparing multiple options to meet needs including single-circuit 345 kV, 500 kV,<sup>44</sup> and single-circuit built on double-circuit capable 345 kV<sup>45</sup> the Commission ordered the CapX2020 345 kV lines be built as single-circuit on double-circuit capable structures.<sup>46</sup>

Minnesota’s double-circuit capable practice has saved costs not only for Minnesota but the broader MISO region. As required by the Commission, the three 345 kV CapX2020 lines in Minnesota were initially strung as single-circuit, but on double-circuit capable structures. In LRTP Tranche 1, the addition of the second circuit position for the southern portion of the CapX2020 line from Alexandria to Monticello was approved by MISO. This project was able to utilize the spare circuit, saving nearly \$200 million relative to a new standalone 345 kV circuit.<sup>47</sup> LRTP Tranche 2.1 includes adding a conductor on the remaining spare position of the CapX2020 line between Fargo, North Dakota and Alexandria, as well as adding a conductor on the spare position for the CapX2020 line

<sup>43</sup> See *In the Matter of the Application of Minnesota Power and Great River Energy for a Certificate of Need and Route Permit for the Northland Reliability Project 345 kV Transmission Line*, Docket Nos. E015,ET2/CN-22-416; E015,ET2/TL-22-415, Combined Application at Table 2-2 (Aug. 4, 2023) (eDocket No. [20238-198009-03](#)).

<sup>44</sup> *In the Matter of the Application of Great River Energy, Northern States Power Company (d/b/a Xcel Energy) and Others for Certificates of Need for the CapX 345-kV Transmission Projects*, Docket Nos. ET-2-E-002, et al./CN-06-1115, Rakow Direct at 72 (May 23, 2008) (eDocket No. [5228603](#)).

<sup>45</sup> *In the Matter of the Application of Great River Energy, Northern States Power Company (d/b/a Xcel Energy) and Others for Certificates of Need for the CapX 345-kV Transmission Projects*, Docket Nos. ET-2-E-002, et al./CN-06-1115, Grivna Rebuttal at 9, 12 (June 16, 2008) (eDocket No. [5278640](#)).

<sup>46</sup> *In the Matter of the Application of Great River Energy, Northern States Power Company (d/b/a Xcel Energy) and Others for Certificates of Need for the CapX 345-kV Transmission Projects*, Docket Nos. ET-2-E-002, et al. CN-06-1115, ORDER GRANTING CERTIFICATES OF NEED WITH CONDITIONS at 43 (May 22, 2009) (eDocket No. [20095-37752-01](#)).

<sup>47</sup> Using MISO’s MTEP2024 cost estimation guide, the cost would have been approximately \$380 million for a new stand-alone Alexandria to Big Oaks 345kV circuit. In comparison the total cost to add the Alexandria to Big Oaks line using the spare circuit (~\$130 million) and the initial upfront incremental investment (\$35 - \$48 million) to make the line double circuit capable was approximately \$180 million

between North Rochester and Hampton Corners – thus further providing significant cost savings to the MISO region through the Commission’s forward-looking approach. It should be noted the original CapX2020 line from Fargo, and incremental upfront investment to make it double-circuit capable, was a MISO Baseline Reliability Project with costs primarily borne locally by Minnesota ratepayers.

The existing Benton to Sherco 345 kV line has a 69 kV line carried on common structures for approximately 10 miles of the segment. Rebuilding the Benton to Sherco 345 kV line to a higher capacity, as specified by MISO, also requires rebuilding the underbuilt 69 kV facilities. As a result, approximately 10 miles of the 345 kV transmission lines between the Benton County Substation and the Sherco and Big Oaks Substations are designed to also carry a 69 kV circuit on triple-circuit structures. The 69 kV underbuild will be operated at 69 kV but designed and built to 115 kV standards for maintenance and future optionality purposes.

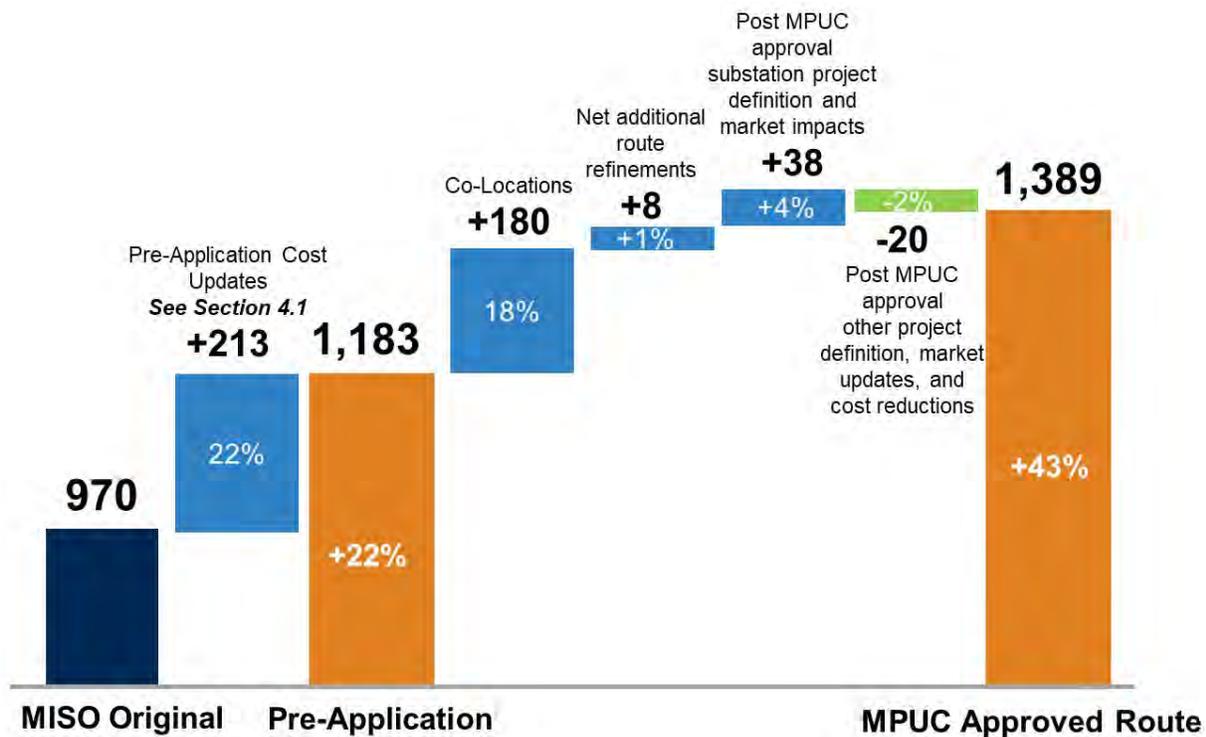
## 4.2 MPUC Approved Route Scope and Cost Updates

As discussed in Section 3, on February 28, 2025, the Commission issued its CON/RP Order, granting a route permit for the Project on the CLMR as modified by the Commission.<sup>48</sup> Consistent with State of Minnesota routing criteria, the CLMR maximizes utilization of existing high voltage transmission corridors, resulting in the rebuilding of multiple existing high voltage transmission lines on common towers to create right-of-way space for the new double-circuit 345 kV transmission line to be sited. This section provides background and justification for the major scope and cost impacts of the Commission’s CON/RP Order, along with additional scope and cost updates developed by MP and GRE since the Pre-Application cost estimate was developed to arrive at the current Project baseline cost estimate. Changes from the Pre-Application cost estimate to the current cost estimate with the MPUC Approved Route are illustrated in Figure 4-5.

**Figure 4-5 – Northland Reliability Project Cost Estimate Change from Pre-Application Cost to MPUC Approved Route Cost**

*Figure is a focused view of Figure 4-1*

All values in millions \$-2022 - mid-level estimates



<sup>48</sup> *In the Matter of the Application of Minnesota Power and Great River Energy for a Certificate of Need and Route Permit for the Northland Reliability Project 345 kV Transmission Line*, Docket Nos. E015,ET2/CN-22-416; E015,ET2/TL-22-415, ORDER GRANTING CERTIFICATE OF NEED AND ISSUING ROUTE PERMIT, (Feb. 28, 2025) (eDocket No. [20252-215918-01](#)).

#### 4.2.1 Co-Location Route Areas

As described in Section 3, the Commission in its Completeness Order required the Applicants to identify opportunities to address routing constraints by considering increased use of “infrastructure stacking” or co-location to further leverage existing utility infrastructure corridors to minimize human and environmental impacts. The Commission and Applicants used the term infrastructure stacking during the Commission proceedings to refer to constructing multiple circuits on a common structure, while the term co-location or common corridor was used to refer to siting multiple circuits adjacent to each other in a common corridor on separate structures. Infrastructure stacking is only feasible if it does not undermine the system reliability needs for the Project.<sup>49</sup>

During the EA scoping comment period, the public, state agencies (e.g., Minnesota Department of Natural Resources), and the Applicants submitted route alternatives for consideration in the EA which involved stacking existing lines. The route alternatives identified by the Applicants were submitted in response to the Commission’s direction in its Completeness Order and to proactively address public and agency comments. The two co-location route alternatives identified by the Applicants, which were presented to the Commission as “feasible but not preferred” alternatives, are known as the “Riverton Route Alternative” and the “Cole Lake Way Alignment Alternative.”<sup>50</sup> Subsequently in the EA and during the public hearing process, formal comments identified a strong preference from the public and environmental agencies for these two co-location route alternatives and an additional co-location route known as “Alignment Alternative 16 (AA16)” in the Hill City area of the Project. In response to comments received during the public hearings, the Applicants also developed and submitted one additional co-location route alternative to address constraints in the Elk River area of the Project, known as the “Elk River Alignment Alternative.” These four major co-location areas, illustrated below in Figure 4-6, constituted the major route alternative options developed and considered in the EA.

---

<sup>49</sup> See *In the Matter of the Application of Minnesota Power and Great River Energy for a Certificate of Need and Route Permit for the Northland Reliability Project 345 kV Transmission Line*, Docket Nos. E015,ET2/CN-22-416; E015,ET2/TL-22-415, Winter Direct at 2-3 (July 8, 2024) (eDocket No. [20247-208392-04](#)).

<sup>50</sup> See *Id.* at Direct Schedule 1 at 1; *In the Matter of the Application of Minnesota Power and Great River Energy for a Certificate of Need and Route Permit for the Northland Reliability Project 345 kV Transmission Line*, Docket Nos. E015,ET2/CN-22-416; E015,ET2/TL-22-415, Response to Public Hearing Comments and Comments on the Draft Route Permit at Attachment 4 at 2 (Sep. 19, 2024) (eDocket No. [20249-210359-05](#)).

Figure 4-6 – Major Co-Location Areas Identified During the EA Process



Near the conclusion of the route permit process, it became necessary for the Applicants to summarize the record and consolidate the options before the Commission by presenting two constructable full route options for the Commission's consideration. The MPR closely followed the Applicants' original Proposed Route with minor modifications due to route and alignment alternatives, maintaining approximately 85 percent common corridor throughout the Project. None of the four identified co-location route alternatives were included in the MPR. The Applicants estimated the mid-range cost of the MPR to be \$1,194 million (\$-2022), resulting in an increase of \$11 million, less than a one percent increase, over the mid-range cost of the original Proposed Route.<sup>51</sup> The CLMR used the MPR and incorporated the four major co-location areas identified during the EA process. The CLMR route incorporated over 31 miles of rebuilt and double-circuited existing transmission lines and required additional modifications to two substations. The Applicants provided information in the record before the Commission specifying the incremental cost of each co-location alternative and the total CLMR cost estimate.<sup>52</sup> The estimated mid-range cost of the CLMR was \$1,368 million (\$-2022), or \$185 million more than the original Proposed Route, and \$174 million more than the MPR.<sup>53</sup>

The Applicants informed the Commission that the CLMR had been developed to meet the Commission's direction in its Completeness Order and that it was the Applicants' position that either the MPR or the CLMR would provide a constructable route for the Project that is consistent with state routing criteria. As stated in the Applicants' exceptions to the ALJ Report, "The Applicants took, very seriously, the Commission's clear direction to fully evaluate how the Project could maximize co-location with existing facilities and developed the Co-location Maximization Route. The record demonstrates that the Co-location Maximization Route meets the state routing criteria and maximizes co-location with existing facilities, as the Commission requested. If the Commission seeks to follow the state routing criteria and prioritize maximizing co-location with existing facilities, the Applicants request that the Commission select the Co-location Maximization Route.... However, if the Commission seeks to follow the state routing criteria and approve a lower cost route without prioritizing maximizing co-location with existing facilities, the Applicants request that the Commission select the Modified Proposed Route...."<sup>54</sup>

Ultimately, the Commission selected the CLMR as the final MPUC Approved Route for the Project, with some modifications. As a result, the four co-location areas, with a total

---

<sup>51</sup> See *In the Matter of the Application of Minnesota Power and Great River Energy for a Certificate of Need and Route Permit for the Northland Reliability Project 345 kV Transmission Line*, Docket Nos. E015,ET2/CN-22-416; E015,ET2/TL-22-415, Response to Public Hearing Comments and Comments on the Draft Route Permit at Attachment 2 at 4 (Sep. 19, 2024) (eDocket No. [20249-210359-06](#)).

<sup>52</sup> See *In the Matter of the Application of Minnesota Power and Great River Energy for a Certificate of Need and Route Permit for the Northland Reliability Project 345 kV Transmission Line*, Docket Nos. E015,ET2/CN-22-416; E015,ET2/TL-22-415, Response to Public Hearing Comments and Comments on the Draft Route Permit at Attachment C at 2 (Sep. 19, 2024) (eDocket No. [20249-210359-05](#)).

<sup>53</sup> *Id.*

<sup>54</sup> See *In the Matter of the Application of Minnesota Power and Great River Energy for a Certificate of Need and Route Permit for the Northland Reliability Project 345 kV Transmission Line*, Docket Nos. E015,ET2/CN-22-416; E015,ET2/TL-22-415, Minnesota Power and Great River Energy's Exceptions to the ALJ Report at 1 (Nov. 25, 2024) (eDocket No. [202411-212404-01](#)).

incremental cost impact of nearly \$180 million, became system improvements necessary to implement the Project as approved by the Commission, and were incorporated into the scope and cost of the Project.

The relevant background, rationale, and estimated cost impact for each of the four co-location areas is discussed briefly below. The four co-locations approved by the Commission and their corresponding cost as part of the MPUC Approved Route are included in GRE and MP's proposed updates to the MTEP Appendix A Facility List, attached as Appendix A of this document.

#### 4.2.1.1 Riverton Route Alternative

In response to the direction in the Commission's Completeness Order to look for additional opportunities to consolidate the new double-circuit 345 kV transmission line with existing lines, the Applicants submitted the "Riverton Area Alternative Corridor" (also called the Riverton Route Alternative or Route Alternative E1) with their initial EA scoping comments.<sup>55</sup> The Applicants had initially rejected a route alternative following and adjacent to existing transmission lines through the Riverton area due to significant constraints presented by existing infrastructure, lakes, homes, the Mississippi River, and the Cuyuna Country State Recreation Area.<sup>56</sup> However, the Proposed Route through the area received significant opposition from state agencies and the public. After the Completeness Order, the Applicants reviewed the Riverton area again and developed a "feasible but not preferred" route alternative for further evaluation in the EA. The mid-range incremental cost of this co-location area, as it was included in the CLMR and approved by the Commission, was \$81.1 million compared to the Proposed Route.<sup>57</sup> The Riverton Route Alternative as originally submitted by the Applicants is shown in Figure 4-7 and described in detail below.

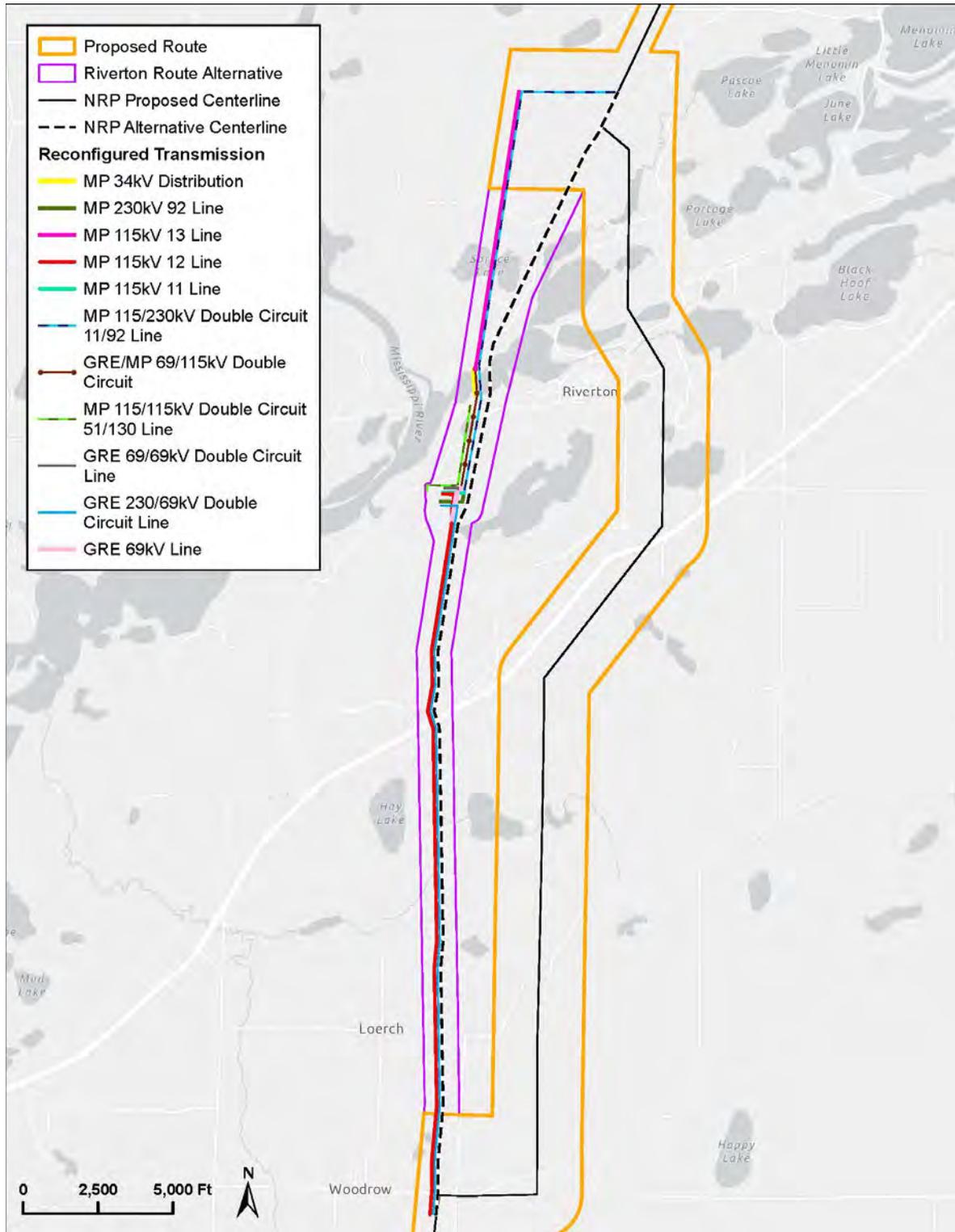
---

<sup>55</sup> See *In the Matter of the Application of Minnesota Power and Great River Energy for a Certificate of Need and Route Permit for the Northland Reliability Project 345 kV Transmission Line*, Docket Nos. E015,ET2/CN-22-416; E015,ET2/TL-22-415, Environmental Assessment Scoping Comments (Nov. 21, 2023) (eDocket No. [202311-200670-04](#)).

<sup>56</sup> See *In the Matter of the Application of Minnesota Power and Great River Energy for a Certificate of Need and Route Permit for the Northland Reliability Project 345 kV Transmission Line*, Docket Nos. E015,ET2/CN-22-416; E015,ET2/TL-22-415, Combined Application at § 5.3.5 (Aug. 4, 2023) (eDocket No. [20238-198009-03](#)).

<sup>57</sup> See *In the Matter of the Application of Minnesota Power and Great River Energy for a Certificate of Need and Route Permit for the Northland Reliability Project 345 kV Transmission Line*, Docket Nos. E015,ET2/CN-22-416; E015,ET2/TL-22-415, Response to Public Hearing Comments and Comments on the Draft Route Permit at Attachment C at Appendix 4 Table 8 (Sep. 19, 2024) (eDocket No. [20249-210359-06](#)).

Figure 4-7 – Riverton Route Alternative Overview



Starting at the Cuyuna Series Compensation Station, the Riverton Route Alternative replaces MP's existing 230 kV 92 Line with the Project's new double circuit 345 kV line for approximately 1.5 miles until it crosses Little Rabbit Lake.<sup>58</sup> The 92 Line will be relocated and consolidated with an existing 115 kV line in a nearby existing corridor. Following the Little Rabbit Lake crossing, the Project will shift to replacing the existing GRE Riverton – Blind Lake 69 kV Line ("RV" Line) through the Cuyuna Country State Recreation Area for approximately 0.6 miles. The RV Line will be relocated and consolidated with an existing 115 kV line in a nearby corridor. South of MP's existing Riverton 230/115 kV Substation, the Project will replace the GRE Riverton - Wilson Lake 69 kV Line ("RW" Line) as it parallels the east side of the existing GRE 230 kV line and an existing MP 115 kV line for approximately 1.2 miles. The RW Line will be relocated and consolidated with the existing 230 kV line in the same corridor. At the Highway 210 crossing, the entire corridor including the Project, the consolidated 230 kV and 69 kV lines, the 115 kV line, and an existing 34.5 kV distribution feeder, will be relocated to an alignment that balances impacts to homes on both sides of the highway. Approximately 1.4 miles south of Highway 210, the entire corridor will again be shifted to the west to limit impacts to homes along Nelson Road. In this part of the corridor, the Project will take over the centerline of the existing 230 kV line, with the consolidated 230 kV and 69 kV lines and the 115 kV line located to the west in the right-of-way. The Project will continue on this alignment for 1.4 miles until it rejoins the Proposed Route at Woodrow Road. Extensive reconfigurations of existing electrical infrastructure are required to facilitate the Riverton Route Alternative, including those described above as well as additional relocations of existing 230 kV, 115 kV, 69 kV, and 34.5 kV lines. The existing Riverton 230/115 kV Substation will also need to be expanded to accommodate additional 115 kV and 34.5 kV equipment that is necessary to enable the retirement of the existing Riverton 115/34.5 kV Substation, which needs to be removed to facilitate relocation of the existing transmission lines and siting of the Project. In total, the Riverton Route Alternative introduces ten additional 230 kV, 115 kV, and 69 kV segments, four additional 34.5 kV feeders, and two substations to the overall scope of the Project.

#### 4.2.1.1 Cole Lake Way Alignment Alternative

In response to comments from landowners with properties on or near Cole Lake Way and the direction in the Commission's Completeness Order to look for additional opportunities to consolidate the new double-circuit 345 kV transmission line with existing lines, the Applicants submitted the "Cole Lake Way Alignment Alternative" (also called Alignment Alternative AA3) with the initial EA scoping comments as a "feasible" but not preferred

---

<sup>58</sup> See *In the Matter of the Application of Minnesota Power and Great River Energy for a Certificate of Need and Route Permit for the Northland Reliability Project 345 kV Transmission Line*, Docket Nos. E015,ET2/CN-22-416; E015,ET2/TL-22-415, Environmental Assessment Scoping Comments (Nov. 21, 2023) (eDocket No. [202311-200670-04](#)); *In the Matter of the Application of Minnesota Power and Great River Energy for a Certificate of Need and Route Permit for the Northland Reliability Project 345 kV Transmission Line*, Docket Nos. E015,ET2/CN-22-416; E015,ET2/TL-22-415, Winter Direct at 9-13 (July 8, 2024) (eDocket No. [20247-208392-04](#)).

alternative<sup>59</sup> The Cole Lake Way Alignment Alternative consolidates the existing MP 115 kV 11 Line and 230 kV 92 Line on double-circuit structures, enabling placement of the Project's proposed double-circuit 345 kV transmission line on the right-of-way currently used by the 92 Line in this area. In submitting the Cole Lake Way Alignment Alternative, the Applicants re-iterated their support for the Proposed Route.<sup>60</sup> As the record developed in the CON/RP proceedings, the Applicants provided updates on the anticipated incremental cost of the Cole Lake Way Alignment Alternative.<sup>61</sup> The mid-range incremental cost of this co-location area, as it was included in the CLMR and approved by the Commission, was \$29.2 million compared to the Proposed Route.<sup>62</sup>

On December 23, 2024, shortly before the final Commission hearing on the CON/RP Application, the Commission issued a Request for Comments where the Commission asked the Applicants if the Cole Lake Way Alignment Alternative could be extended by nearly 1.5 miles at its northern end to reduce the number of structures crossing the Mississippi River.<sup>63</sup> The Applicants advised the Commission that it was technically feasible to continue the double-circuit of the existing 115 kV and 230 kV transmission lines across the Mississippi River as suggested by the Commission's Request for Comments, and that the additional incremental cost of this added co-location would be approximately \$5.9 million.<sup>64</sup> This modification of the Cole Lake Way Alignment

---

<sup>59</sup> *In the Matter of the Application of Minnesota Power and Great River Energy for a Certificate of Need and Route Permit for the Northland Reliability Project 345 kV Transmission Line*, Docket Nos. E015,ET2/CN-22-416; E015,ET2/TL-22-415, Environmental Assessment Scoping Comments at 3 (Nov. 21, 2023) (eDocket No. [202311-200670-04](#)).

<sup>60</sup> *See Id.* at 2-3; *In the Matter of the Application of Minnesota Power and Great River Energy for a Certificate of Need and Route Permit for the Northland Reliability Project 345 kV Transmission Line*, Docket Nos. E015,ET2/CN-22-416; E015,ET2/TL-22-415, Winter Direct at 12-13 (July 8, 2024) (eDocket No. [20247-208392-04](#)).

<sup>61</sup> *See e.g. In the Matter of the Application of Minnesota Power and Great River Energy for a Certificate of Need and Route Permit for the Northland Reliability Project 345 kV Transmission Line*, Docket Nos. E015,ET2/CN-22-416; E015,ET2/TL-22-415, Winter Direct at 18 (July 8, 2024) (eDocket No. [20247-208392-04](#)); *In the Matter of the Application of Minnesota Power and Great River Energy for a Certificate of Need and Route Permit for the Northland Reliability Project 345 kV Transmission Line*, Docket Nos. E015,ET2/CN-22-416; E015,ET2/TL-22-415, Environmental Assessment Scoping Comments Attachment 2 at 2 (Nov. 21, 2023) (eDocket No. [202311-200670-04](#)); *In the Matter of the Application of Minnesota Power and Great River Energy for a Certificate of Need and Route Permit for the Northland Reliability Project 345 kV Transmission Line*, Docket Nos. E015,ET2/CN-22-416; E015,ET2/TL-22-415, Response to Public Hearing Comments and Comments on the Draft Route Permit at Attachment C at Appendix 4 (Sep. 19, 2024) (eDocket No. [20249-210359-06](#)).

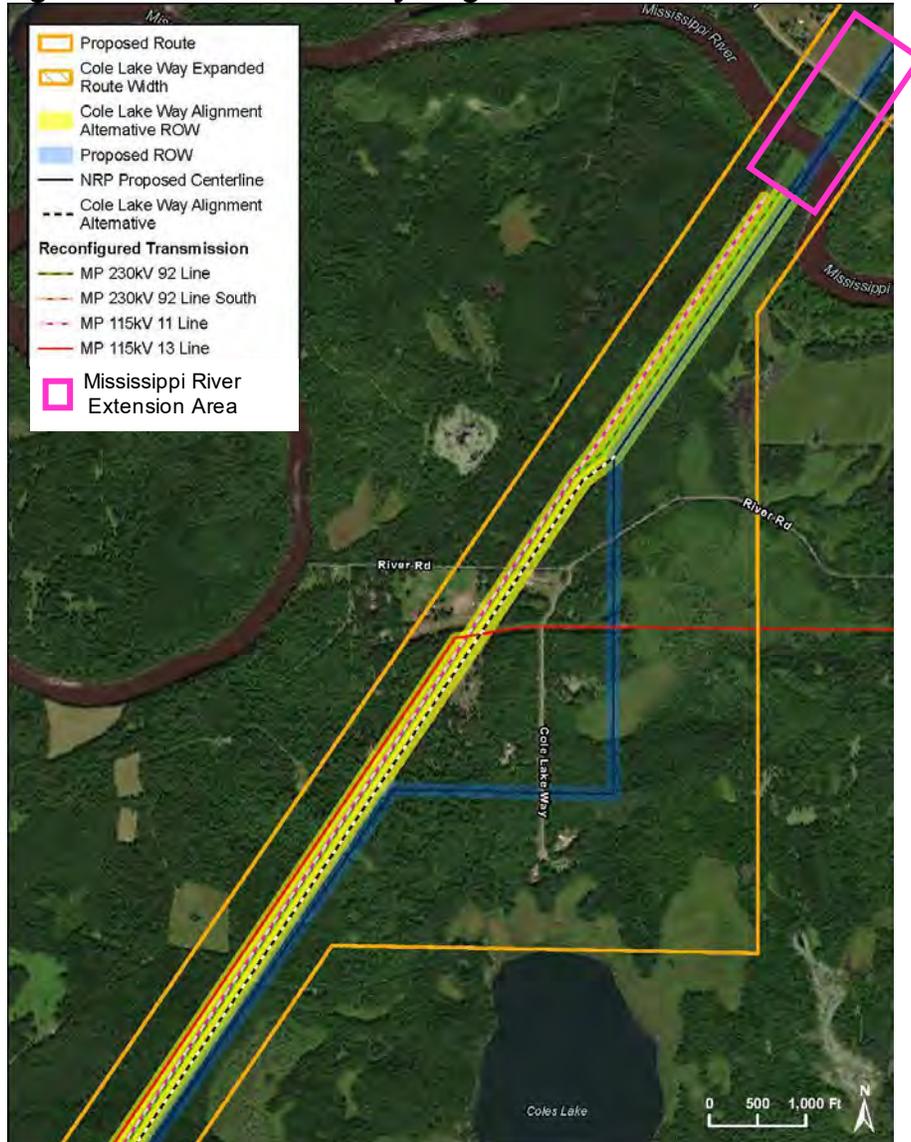
<sup>62</sup> *In the Matter of the Application of Minnesota Power and Great River Energy for a Certificate of Need and Route Permit for the Northland Reliability Project 345 kV Transmission Line*, Docket Nos. E015,ET2/CN-22-416; E015,ET2/TL-22-415, Response to Public Hearing Comments and Comments on the Draft Route Permit at Attachment C at Appendix 4 Table 7 (Sep. 19, 2024) (eDocket No. [20249-210359-06](#)).

<sup>63</sup> *In the Matter of the Application of Minnesota Power and Great River Energy for a Certificate of Need and Route Permit for the Northland Reliability Project 345 kV Transmission Line*, Docket Nos. E015,ET2/CN-22-416; E015,ET2/TL-22-415, Notice of Comment Period at 2-3 (Dec. 23, 2024) (eDocket No. [202412-213290-01](#)).

<sup>64</sup> *In the Matter of the Application of Minnesota Power and Great River Energy for a Certificate of Need and Route Permit for the Northland Reliability Project 345 kV Transmission Line*, Docket Nos. E015,ET2/CN-22-416; E015,ET2/TL-22-415, Response to the MPUC's Request for Comments at 1-2 (January 10, 2025) (eDocket No. [20251-213840-01](#)).

Alternative was subsequently incorporated into the final MPUC Approved Route, bringing the total incremental cost of the Cole Lake Way Alignment Alternative to \$35.1 million. The primary constraint area addressed by the Cole Lake Way Alignment Alternative, including the Mississippi River extension area, is shown in Figure 4-8.

**Figure 4-8 – Cole Lake Way Alignment Alternative Overview**



**4.2.1.2 Alignment Alternative 16 (“AA16”)**

During the EA scoping comment period, an alignment alternative was submitted by a landowner to combine the proposed Project with existing 115 kV and 230 kV transmission lines to mitigate environmental and aesthetic impacts (also called Alignment Alternative

16 (“AA16”).<sup>65</sup> The Applicants did not object to this alignment alternative being evaluated in the EA, but did note in their scoping comments that no environmental or engineering analysis had been completed at that time. The scope of this alignment alternative involved consolidating the existing MP 115 kV 11 Line and 230 kV 92 Line on double-circuit structures, enabling placement of the Project’s proposed double-circuit 345 kV transmission line on the right-of-way currently used by the 11 Line and the 92 Line in this area.<sup>66</sup> The mid-range incremental cost of this co-location area, as it was included in the CLMR and approved by the Commission, was \$41.9 million compared to the Proposed Route.<sup>67</sup> AA16, as evaluated for the EA, is shown in Figure 4-9.

---

<sup>65</sup> *In the Matter of the Application of Minnesota Power and Great River Energy for a Certificate of Need and Route Permit for the Northland Reliability Project 345 kV Transmission Line*, Docket Nos. E015,ET2/CN-22-416; E015,ET2/TL-22-415, EERA Comments and Recommendations on the Scoping Process and Routing Alternatives at 9 (Feb. 13, 2024) (eDocket No. [20242-203365-02](#)).

<sup>66</sup> *In the Matter of the Application of Minnesota Power and Great River Energy for a Certificate of Need and Route Permit for the Northland Reliability Project 345 kV Transmission Line*, Docket Nos. E015,ET2/CN-22-416; E015,ET2/TL-22-415, Response to Route Alternatives and Conditions Proposed to be Evaluated in the Environmental Assessment – Comments from Members of the Public at 4 (Dec. 8, 2023) (eDocket No. [202312-201101-02](#)).

<sup>67</sup> *In the Matter of the Application of Minnesota Power and Great River Energy for a Certificate of Need and Route Permit for the Northland Reliability Project 345 kV Transmission Line*, Docket Nos. E015,ET2/CN-22-416; E015,ET2/TL-22-415, Response to Public Hearing Comments and Comments on the Draft Route Permit at Attachment C at Appendix 4 Table 4 (Sep. 19, 2024) (eDocket No. [20249-210359-06](#)).

Figure 4-9 – Alignment Alternative 16 (AA16) Overview



### 4.2.1.3 Elk River Alignment Alternative

After the draft EA was released, residents at the Sauk Rapids public hearing asked about the possibility of combining existing 230 kV and 69 kV facilities north of Benton County Substation onto common structures to reduce the amount of new right-of-way that would be needed for the Project.<sup>68</sup> In response, GRE reviewed the specific lines in the area and determined that it was possible to combine the existing 230 kV and 69 kV lines in parts of this area where the lines do not serve a common purpose. To maximize co-location opportunities in compliance with the Commission's Completeness Order, the Applicants submitted the "Elk River Alignment Alternative" as a "feasible, but not preferred" alternative.<sup>69</sup> The scope of this alignment alternative involved consolidating the existing GRE 230 kV and 69 kV lines on double-circuit structures, enabling placement of the Project's proposed double-circuit 345 kV transmission line in the right-of-way currently used by the 69 kV line. At the time the Elk River Alignment Alternative was submitted on the record, Applicants provided an estimated range of cost impacts of an additional \$22 - \$27 million.<sup>70</sup> The mid-range incremental cost of this co-location area, as it was later refined and included in the CLMR and approved by the Commission, was \$21.6 million compared to the Proposed Route.<sup>71</sup> The Elk River Alignment Alternative is shown in Figure 4-10 and 4-11.

---

<sup>68</sup> *In the Matter of the Application of Minnesota Power and Great River Energy for a Certificate of Need and Route Permit for the Northland Reliability Project 345 kV Transmission Line*, Docket Nos. E015,ET2/CN-22-416; E015,ET2/TL-22-415, Comments on Environmental Assessment and Responses to Requests for Additional Information at Attachment 4 (Aug. 8, 2024) (eDocket No. [20248-209266-02](#)).

<sup>69</sup> *Id.*

<sup>70</sup> *Id.*

<sup>71</sup> *In the Matter of the Application of Minnesota Power and Great River Energy for a Certificate of Need and Route Permit for the Northland Reliability Project 345 kV Transmission Line*, Docket Nos. E015,ET2/CN-22-416; E015,ET2/TL-22-415, Response to Public Hearing Comments and Comments on the Draft Route Permit at Attachment C at Appendix 4 Table 11 (Sep. 19, 2024) (eDocket No. [20249-210359-06](#)).

Figure 4-10 – Elk River Alignment Alternative North Segment Overview



Figure 4-11 – Elk River Alignment Alternative South Segment Overview



#### 4.2.2 Additional Route Refinements

In addition to the four co-location areas described in Section 4.2.1, the final MPUC Approved Route decision includes several additional refinements to the original Proposed Route. Some of these refinements were included with the CLMR as proposed by the Applicants, while others were either added or removed from the CLMR by the Commission. Table 4-3 shows additional minor route refinements that were included in the final MPUC Approved Route. Some of the additional refinements reduced the cost of the Project, while others increased the cost of the Project. In one case, the Commission omitted an alignment alternative proposed by the Applicants as part of the CLMR. The cumulative cost impact of these additional refinements is estimated to be approximately \$7.5 million. During the Commission’s hearing, there was considerable discussion about the cost impact of the realignments, resulting in the addition of an order point in the Commission’s CON/RP Order specifically requiring the Applicants to work with landowners at the affected realignment locations to determine if a lower-cost solution, such as “buy the farm” was available. The Commission’s “Order Point on Realignments” is discussed in further detail below.

**Table 4-3 – Additional Route Refinements in MPUC Approved Route<sup>72</sup>**

Route Refinement	Incremental Cost Impact (\$M-2022)	Original Proposed Route	Co-Location Maximization Route	Final MPUC Approved Route
Modified Alignment Alternative AA1	\$7.1	Not Included	Included	Not Included
Swatara Route Width Expansion Alignment	\$5.3	Not Included	Included	Included
Moose River Alignment	\$1.1	Not Included	Included	Included
H4-H7 Alignment	-\$2.0)	Not Included	Included	Included
Erickson Alignment	\$2.5	Not Included	Not Included	Included
AA17 Realignment	\$1.2	Not Included	Included	Included
Sherco Solar Alignment	-\$0.6)	Not Included	Included	Included
<b>Total Additional Route Refinements in MPUC Approved Route</b>				<b>\$7.5M</b>

The CLMR approved by the Commission included an anticipated centerline that incorporates shifting the alignment of existing transmission lines to avoid residences that

<sup>72</sup> *In the Matter of the Application of Minnesota Power and Great River Energy for a Certificate of Need and Route Permit for the Northland Reliability Project 345 kV Transmission Line*, Docket Nos. E015,ET2/CN-22-416; E015,ET2/TL-22-415, ORDER GRANTING CERTIFICATE OF NEED AND ISSUING ROUTE PERMIT at 10-11 (Feb. 28, 2025) (eDocket No. [20252-215918-01](#)). A full copy of the Commission’s approval order is contained in Appendix D.

have been built near these existing lines. The Commission's Order required that the Applicants continue to work with landowners in advance of finalizing the final alignment for the Project to determine whether there were property purchases that could be completed to eliminate the need to shift the alignment of existing transmission lines ("Order Point on Realignments").<sup>73</sup> The Applicants are required to file a report with the Commission that includes a description of the resolution, proposed actions, and final design for review by Commission staff.

The Commission's Order Point on Realignments, coupled with the Commission's established threshold cost for MP's cost recovery,<sup>74</sup> are cost controls for final Project route realignment costs to be at or below the costs reported in Table 4-3.

### **4.2.3 Refined Project Scope & Cost Estimate Updates**

MP and GRE continued to advance engineering and design of the Project after filing the CON/RP Application and developed an updated Project baseline cost estimate following the Commission's CON/RP Order in February 2025. This section summarizes additional scope and cost estimate refinements that were identified after filing the original CON/RP Application including improved project definition, updated equipment and labor market outlooks, and cost reductions achieved through the Project's contracting and procurement strategy.

#### **4.2.3.1 Substation Project Definition & Market Updates**

Site evaluations, detailed design electrical studies, and updated market outlooks from final bids for major Project components impacted the scope and estimated cost of the Iron Range, Cuyuna, and Benton County/Cherry Park Substations. While electrically equivalent to MISO's original approval, the scope of each Project substation has been updated to reflect the final Project configuration and specifications necessary to meet the Project's reliability needs.

The primary changes in each substation are attributed to the size and configuration of reactive compensation. In MISO's original Project definition, 70 MVAR line-connected shunt reactors were included on each 345 kV line at Iron Range and Benton County/Cherry Park to facilitate steady-state voltage regulation within applicable limits. Reactors are especially necessary during energization to limit Ferranti voltage rise along the transmission line and prevent excessive overvoltage at the remote-end substation. As detailed design studies for the Project advanced, it was identified that delayed-zero-crossing ("DZC") concerns would make line-connected shunt reactors infeasible for the Project. The DZC concern is an electromagnetic transient phenomenon that can prevent

---

<sup>73</sup> *In the Matter of the Application of Minnesota Power and Great River Energy for a Certificate of Need and Route Permit for the Northland Reliability Project 345 kV Transmission Line*, Docket Nos. E015,ET2/CN-22-416; E015,ET2/TL-22-415, ORDER GRANTING CERTIFICATE OF NEED AND ISSUING ROUTE PERMIT at Order Point 8, (Feb. 28, 2025) (eDocket No. [20252-215918-01](#)); Appendix D.

<sup>74</sup>Id.

a circuit breaker from operating properly to interrupt a fault, leading to breaker failures and associated reliability issues. Detailed design electrical studies identified that DZC issues would be unavoidable due to the size of the line-end shunt reactors relative to the length of the transmission lines between the breakers located at Iron Range and Cuyuna. However, studies continued to show that shunt reactive compensation would be needed to regulate steady state voltage within design limits at the remote-end substation and along the transmission line during energization.

MP and GRE considered several alternatives for addressing this concern, including implementing smaller reactors, adding reactors at Cuyuna, and changing the connection configuration of the reactors. In the end, the best solution to meet steady state voltage regulation needs without causing DZC issues was to install more (quantity) but smaller (MVAR rating) reactors for the Project, and for all reactors to be bus-connected rather than line-connected. Moving the reactors to be bus-connected allows for voltage control at the sending end of the transmission line during energization to limit overvoltage while keeping the reactors outside the transmission line relaying zone of protection to prevent DZC concerns, mitigating concerns of circuit breaker mis-operations impacting the reliability of the transmission system. In the end, MP and GRE settled on a solution that allows for two 60 MVAR reactors at each Project substation (Iron Range, Cuyuna, and Cherry Park), one on each end-bus, rather than the originally scoped 70 MVAR line reactors at Iron Range and Benton County/Cherry Park. These changes and related design considerations are described for each Project substation below.

### ***Iron Range Substation***

The expansion of the Iron Range 500/230 kV substation is required to accommodate the new 500/345 kV transformers and Project 345 kV scope. At the time of MISO approval, the 345 kV substation was designed as a 4-position ring bus, expandable to breaker-and-a-half, with two transformer positions and two 345 kV line positions. Each transmission line also included a line-connected 70 MVAR shunt reactor to regulate voltage during energization and operation of the transmission lines.

As a result of the DZC issues described above, the original 70 MVAR line-connected reactors at the Iron Range Substation were changed to 60 MVAR bus-connected reactors, and two additional 345 kV breakers were added to the Iron Range 345 kV Substation (for a total of six breakers) to complete the breaker-and-a-half configuration with two transformers, two transmission lines, and two bus-connected reactors.

Additionally, detailed design electrical studies identified that three of the planned 500 kV circuit breakers would need to be designed with pre-insertion resistors to mitigate impacts of transformer energization inrush currents, which would cause low voltages on the surrounding transmission system during energization of the Project's planned 1200 MVA 500/345 kV transformers. While similar to standard 500 kV breakers, the addition of pre-insertion resistors to these three breakers impacted both cost and lead time.

### ***Cuyuna Series Compensation Station***

The Cuyuna Series Compensation Station (“Cuyuna Substation”) is designed with a breakered 345 kV substation in between series capacitor segments to facilitate future substation interconnections without impacting series compensation. The Cuyuna Substation was originally defined in MISO’s approval as a 4-position ring bus, expandable to breaker-and-a-half, with each Project transmission line connected to an individual line position. No shunt reactors were included at the Cuyuna Substation.

As a result of the DZC issues described above, two 60 MVAR bus-connected reactors with dedicated reactor breakers were added at the Cuyuna Substation. To facilitate connection of these reactors to the main buses, two additional 345 kV breakers were added to the Cuyuna Substation bus (for a total of six breakers) to complete the breaker-and-a-half configuration of four transmission lines and two bus-connected reactors. These reactors were not originally included in the MISO project definition and became necessary as a result of detailed design electrical studies for the Project.

### ***Benton County/Cherry Park Substation***

The expansion of the Benton County 345/230 kV Substation is required to accommodate the new 345 kV lines connecting to Cuyuna and Big Oaks, and the upgraded 345 kV line connecting to the Sherco Substation. At the time of MISO approval, the Benton County 345 kV Substation expansion was designed as a 7-position breaker-and-a-half bus, with two existing 345/230 kV transformer positions and five 345 kV line positions. Each of the two transmission lines to Cuyuna also included a line-connected 70 MVAR shunt reactor to regulate voltage during energization and operation of the transmission lines.

Due to a physical constraint on the property, the most cost-effective option was to extend the existing 345 kV buswork to the west within a new fenced area on the existing Benton County Substation property rather than extending the existing fence line. With the fence physically separated from the Benton County Substation fence, the substation expansion area is named Cherry Park. The substation will continue to have five line positions and two line extensions to the 345/230 kV transformers at Benton County. Cherry Park is electrically equivalent to MISO’s approved scope but includes the extension of 350 feet of 345 kV overhead “strain” buswork to connect with the existing Benton County 345/230 kV transformers. Extensions result in four new dead-end structures being needed.

As a result of the DZC issues described above, the two planned 345 kV line-connected shunt reactors, originally 70 MVAR, were moved to bus-connected positions and resized as 60 MVAR reactors. All other Benton County/Cherry Park Substation specifications are equivalent to MISO’s original approval.

### ***Summary of Substation-Related Cost Impacts***

The updated Project baseline cost estimate following the MPUC Approved Route includes the combined impacts of substation scope changes and market impacts. The net impact of these changes is an increase of approximately \$38 million (\$-2022). The net change in

cost for major substation components from the Pre-Application Project baseline cost estimate to the post-MPUC Approved Route is shown in Table 4-4.

**Table 4-4 – Major Substation Component Cost Change from Pre-Application Cost Estimate to Post-MPUC Approved Route Cost Estimate**

Component	Percent Change	Major Drivers
Circuit Breakers	+129%	Updated project definition: Six additional 345 kV breakers (2-Iron Range, 4-Cuyuna) Market impacts from final bids
Electrical Equipment Enclosures (EEE)	+97%	Updated project definition at Riverton driven by Commission final route Market impacts from updated bids
Other Materials (Switches, Instrument Transformers, Misc)	+92%	Updated project definition: Additional substation facility scope Market impacts from final bids
Reactors	+22%	Updated project definition: Two additional reactors at Cuyuna
Transformers	+13%	Market impacts from final bids

#### 4.2.3.2 Other Project Definition & Market Updates

In addition to substations, MP and GRE continued to advance engineering, design, and construction planning efforts for the transmission line facilities. The most significant cost impact is the line length of the Iron Range – Cuyuna – Benton County 345 kV double circuit transmission line in the final MPUC Approved Route that is approximately 16 miles shorter than the original route assumed by MISO. In addition to reduced transmission line costs, GRE and MP were able to proactively reduce construction costs by procuring composite mats to support the Project throughout the duration of construction rather than sourcing them through the line contractor. The total cost **reduction** achieved through transmission line scope refinements, updated transmission line material market outlook, and composite mat procurement is approximately \$44 million (\$-2022). While these transmission line costs decreased, other general project costs, including project management, engineering, and construction costs, increased by a cumulative amount of approximately \$24 million (\$-2022) as the scope and construction plan for the Project were refined based on the final MPUC Approved Route, which included significant facility additions to the Project. The combined impact of these cost changes is a **decrease** of approximately \$20 million (\$-2022).

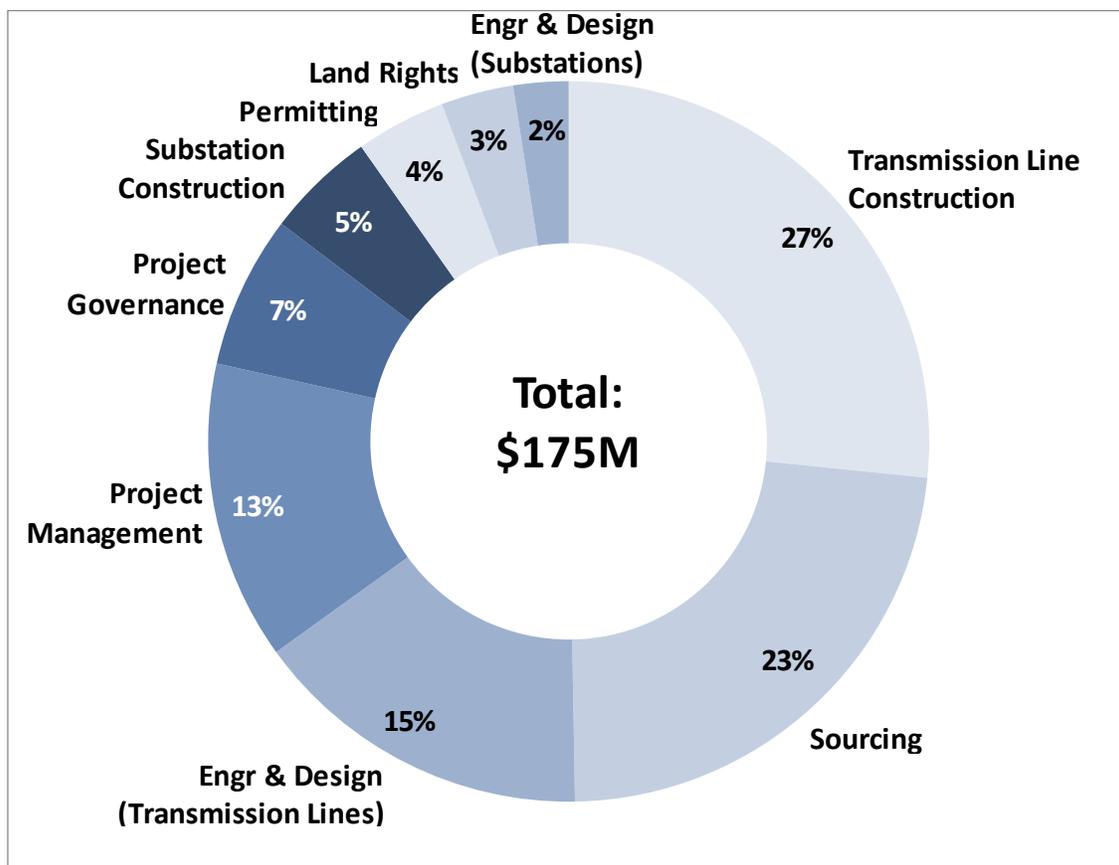
#### 4.2.4 Project Contingency

The Project cost presented in the preceding sections is the anticipated baseline, or mid-range, cost estimate which does not include contingency. Since the development of the original Pre-Application cost estimate, MP and GRE have also maintained a Project contingency to account for prudent risks and unknowns that exist at each stage of Project

development. The Project contingency was developed through an evaluation and development of a risk register. MP and GRE presented the high-end cost estimate of \$1.35 billion, including contingency, in the CON/RP Application, alongside the mid-range cost estimate of \$1.18 billion and MISO’s original approved estimate of \$970 million (characterized as the low-end cost estimate).<sup>75</sup>

The current Project baseline cost estimate incorporates changes that have occurred since the development of the original Pre-Application cost estimate, including some changes that were anticipated as risks when the contingency was developed and presented in the CON/RP Application. However, the final MPUC Approved Route incorporates additional facilities and risk factors for construction of the Project, in addition to previously accounted risk factors. In developing the current baseline cost estimate of \$1.39 billion, MP and GRE identified and quantified specific Project risks and determined it necessary to carry \$175 million of contingency (approximately 13 percent) in addition to the approved Project baseline budget. A breakdown of contingency categories included in the \$175 million risk-based Project contingency is given in Figure 4-12.

**Figure 4-12 – Breakdown of Risk-Based Project Contingency in Current Estimate**



<sup>75</sup> See *In the Matter of the Application of Minnesota Power and Great River Energy for a Certificate of Need and Route Permit for the Northland Reliability Project 345 kV Transmission Line*, Docket Nos. E015,ET2/CN-22-416; E015,ET2/TL-22-415, Combined Application at 2-13 Table 2-3 (Aug. 4, 2023) (eDocket No. [20238-198009-03](#)).

Major risks accounted for with this contingency amount include transmission line construction contracting cost impacts, the inclusions of several additional transmission line and substation facility modifications resulting from the Commission's final route decision, contract management and change orders for major materials, and tariffs on imported materials in view of the present uncertainty regarding United States tariff policy and its impact on imported materials procured or in the process of being procured for the Project.

#### 4.2.5 Cost controls

MP and GRE have taken proactive cost control measures and remain committed to delivering the Project on time and on the updated budget. Major cost control considerations implemented for the Project include:

- Competitively bidding all major contracts
- Arranging for earlier delivery of some materials where it can reduce costs and/or help mitigate potential tariff impacts
- Partnering with suppliers to secure manufacturing slots for major materials and equipment early and identifying standardized designs where appropriate to reduce costs and lead times
- Early engagement with transmission line construction contractor prior to construction to optimize design and construction efficiencies, including optimizing access planning and tower and foundation designs
- Developing contractor incentives to reduce costs below the current baseline costs, where appropriate (pain share / gain share)
- Scheduling construction work in wetland areas during frozen ground conditions to reduce access and wetland matting costs
- Directly procuring composite mats which may be used multiple times by the construction contractor during construction, saving on the cost of indirectly sourcing matting materials via the construction contractor

MP and GRE are required per the Commission's CON/RP Order to work to identify additional cost savings, including continuing to work with landowners at the proposed realignment locations to determine if property purchases would eliminate the need for the realignments and reduce Project cost.<sup>76</sup> MP is also required per the Commission CON/RP Order to bear the burden of proof to justify to the Commission any Project costs in excess of 1.12 billion (\$-2022).<sup>77</sup>

---

<sup>76</sup> *In the Matter of the Application of Minnesota Power and Great River Energy for a Certificate of Need and Route Permit for the Northland Reliability Project 345 kV Transmission Line*, Docket Nos. E015,ET2/CN-22-416; E015,ET2/TL-22-415, ORDER GRANTING CERTIFICATE OF NEED AND ISSUING ROUTE PERMIT at Order Point 8 (Feb. 28, 2025) (eDocket No. [20252-215918-01](#)). A full copy of the Commission's approval order is contained in Appendix D.

<sup>77</sup> *Id.* – Order Point 3

## 5 PROJECT SCHEDULE

The Project's in-service date is June 2030 – unchanged from MISO's approved need date. GRE and MP from the beginning have taken proactive steps to meet MISO's need date, secure contractors and materials, and avoid scarcity pricing. The Project was the first in LRTP Tranche 1 project to file for regulatory permits.

GRE and MP have taken steps in partnership with our construction contractors and suppliers to shift resources to enable the increased project scope from co-locations (Section 4.2.1) and realignments (Section 4.2.2) without delaying the in-service date. With the complex routing constraints and modifications due to the MPUC Approved Route, GRE and MP have taken detailed looks at outage constraints to develop a construction sequence that will limit the impact to the existing system during the buildout of this new double circuit transmission line. GRE and MP are committed to energizing the Northland Reliability Project by June 2030 or earlier.

## 6 CONCLUSION

Pursuant to Attachment FF of the MISO Tariff, MP and GRE have provided updated costs, facility descriptions, and in-service dates to MISO for MISO LRTP Project #3, the Northland Reliability Project, following the Minnesota Public Utilities Commission's approval of the combined CON/RP Application on February 28, 2025. MP and GRE respectfully request MISO to find that these scope and cost updates are reasonable, prudent, and necessary for the Project, and to incorporate them into the MISO approved scope of LRTP Project #3. Proposed updates to the MTEP Appendix A facilities, descriptions, and costs for the Project are provided in Appendix A of this document.

MP and GRE do not take lightly the fact that the cost of the Project has increased by 43 percent since MISO's original approval. However, MISO's consideration of the prudence of these costs must be informed by the following factors:

1. **LRTP Tranche 1 was approved during a time of significant uncertainty with respect to inflation and market factors.** The original MISO approved cost estimate for the Project was developed during the early stages of portfolio development in late 2021 and without full knowledge of the impacts of historic inflation, supply chain, and labor market spikes that have taken place since 2021. Approximately 25 percent of the 43 percent change in the Project cost estimate is directly attributable to demonstrable changes in the global electric utility market and inflation taking place between the time MISO's original cost estimate was developed in late 2021 and early 2022 and the time MP and GRE updated the cost estimate prior to filing the CON/RP Application in mid-2023. While global economic conditions have stabilized since mid-2023, some of these inflation and market factors continue to impact the Project as updated cost estimates were developed in mid-2025. It must be recognized that under normal historical market volatility, the net Project cost increase attributable to all other factors combined would be well within the 25 percent variance analysis threshold established in the MISO Tariff. These same inflationary and market pressures will similarly impact all LRTP Tranche 1 projects.
2. **Ability to update costs post MISO approval.** Under the MISO Tariff the baseline cost estimate for MVP projects that are either direct assigned upgrades or located in states with a right of first refusal (ROFR) law, like Minnesota, is established at MISO's original Board or Directors approval. In the case of the Project, the baseline project cost estimate was established in July 2022 and developed in late 2021. For other MVP projects that are subject to the competitive transmission request for proposal process, the baseline cost estimate is updated to be consistent with the selected developer's proposal. Depending on MISO's competitive bid schedule for each project, the developer's proposal may be developed and submitted to MISO six to eighteen months after MISO's original Board of Directors approval. The additional time **after** MISO approval allows for preliminary engineering to expand on the original MISO approved project to develop a more accurate and timely cost estimate at the time the baseline cost estimate is set by MISO. Of particular significance for the MISO LRTP Tranche 1 portfolio projects, the additional year provided greater visibility into the extent of the market and supply chain impacts to

costs. The value of this additional development prior to setting the baseline project cost is demonstrated by the fact that over half of the total increase in the cost of the Northland Reliability Project was identified between MISO's original approval in July 2022 and the filing of the CON/RP Application in August 2023. If the baseline cost had been updated at that time to be consistent with MP and GRE's Pre-Application cost estimate, the increased cost resulting from the Commission's route decision and other Project updates since August 2023 would not exceed the 25 percent cost threshold for variance analysis.

- 3. Routing, constructability, and engineering.** At the time of MISO approval multiple key factors are unknown, including routing and detailed engineering. It is the responsibility of transmission owners, GRE and MP, to engineer and route a constructable project which aligns with MISO's original justification for the project, meets MISO's performance requirements and other applicable specification and design requirements, and complies with state regulatory policies. Scope changes for this project (e.g. reactors, substation sites, etc.) were necessary to meet MISO's specified reliability need and respond to technical and practical challenges identified during development of the Project. The final route including co-locations selected and approved by the Commission is reasonable and prudent given the priorities and routing criteria in the State of Minnesota. There is only one Commission-approved route for the Project, which was selected by the Commission after a long and rigorous regulatory review process, including consideration and balancing of human, environmental, engineering, and cost impacts. The Project cannot be constructed without incorporating the co-locations included in the Commission's final approved route. With respect to the prudence of the co-locations, it should be emphasized that the Project is just one in a series of regional transmission projects which either have or will come before the Commission. As such, the Commission's interest in utilizing options like co-location to minimize routing impacts is essential to the successful implementation of the multi-phase LRTP and aligns with MISO's interest in seeing the LRTP projects constructed and placed into service. Finally, none of these scope or cost changes degrade the Project's capability to deliver the benefits identified in the MISO LRTP analysis.

In addition to incorporating scope and cost updates into Appendix A as proposed, MP and GRE request that MISO recognize that some contingency remains prudent and necessary. GRE and MP respectfully request MISO to reestablish the project baseline cost at \$1,389 million (\$-2022) and set a new variance analysis threshold at 13% (\$1,564 million) - consistent with the Project's contingency established via the risk register (see Section 4.2.5). As a mitigation plan, GRE and MP are willing and ready to provide MISO regular updates to track project costs, scope, and schedule. In addition, GRE and MP are willing to provide MISO materials provided to the Commission to justify any project expenditures over \$1,210 million (MISO original approved cost + 25%). Finally, GRE and MP will continue to look for opportunities to further reduce costs from the baseline and mitigate additional costs impacts from potential tariffs or additional supply chain pressures, as directed by the Commission and in accordance with good utility practice.

## APPENDIX A: Proposed MISO Appendix A Updates

Facility ID	Name	Facility Description	Facility Owner	Current Cost	Expected ISD	Facility Type	From Sub	To Sub	kV	Miles New	Miles Upgrade	Updates from MISO Approval
27053	27053-Benton County/Cherry Park-Big Oaks	Replace existing GRE single circuit 230 kV with double circuit 345 kV transmission line. Uncross existing Benton to Big Oaks (Monticello) and Benton to Sherco lines. A portion of new line will underbuild an existing 69kV line.	GRE	\$139,871,000	6/1/2030	Line Rebuild	Cherry Park (Benton County)	Big Oaks	345	0	25	Updated Name, Description, Owner, Cost, Type, Endpoints, and Miles. Incorporated Facility ID 27051 for simplicity of reporting
27054	27054-Benton County/Cherry Park-Sherco	Replace the existing Benton County-Sherco single circuit 345 kV to accommodate a rating greater than 3000 Amps on double-circuit 345 kV capable structures. Including north dead-end structure for new conductor. Uncross existing Benton to Big Oaks (Monticello) and Benton to Sherco lines. A portion of new line will underbuild an existing 69 kV line.	GRE	\$106,013,000	6/1/2028	Line Upgrade	Cherry Park (Benton County)	Sherco	345		21.4	Updated Name, Description, Owner, Cost, Endpoints, and Miles. Incorporated Facility ID 27052 for simplicity of reporting
27055	27055-Benton County/Cherry Park	Add 345 kV 7-position breaker-and-a-half bus with 2 transformer positions and 5 line positions (one an existing modification), with two bus connected 60 MVAR shunt reactors on Cherry Park bus, and modify 23 0kV position for one 230/345 kV transformer going to Benton County Cherry Park is at the Benton County Substation site but a separate fenced area due to physical site constraints.	GRE	\$45,152,000	6/1/2030	Substation	Cherry Park (Benton County)		345			Updated Description, Owner, Cost, and Substation Name.
27056	27056-Benton County/Cherry Park-Cuyuna	Construct new 345 kV double circuit transmission line, including the following relocations and realignments to enable siting of the new facility in or adjacent to existing rights-of-way per State of MN routing criteria: 3.5 miles of MR 230 kV Line relocation and retermination at Benton County, 5.1 miles rebuild of MR/BP 230/69 kV on double circuit structures, 4.5 miles rebuild of MR/RW 230/69 kV on double circuit structures, 4.3 miles rebuild of 115 kV 12 Line, 6.3 miles rebuild of 115 kV 13 Line, and 7 targeted realignments of MR 230 kV Line.	GRE, MP	\$415,744,000	6/1/2030	Line New	Cherry Park (Benton County)	Cuyuna	345	68	23	Updated Name, Description, Cost, Endpoints, and Miles. Includes underlying system improvements ordered by the MPUC route decision
27057	27057-Cuyuna	Construct new 6-position 345 kV breaker-and-a-half bus near the existing Riverton 230/115 kV Substation. Add 4-345kV series capacitor banks (1 for each line segment going north and south) with protective bypass equipment. Impedance of series capacitor bank will be approximately 52% compensation. Cuyuna is approximately 2 miles from the existing Riverton 230/115 kV Substation site due to physical site constraints and land availability.	MP	\$116,436,000	6/1/2030	Voltage Device	Cuyuna		345			Updated Name, Description, Owner, Cost, and Substation Name.
27058	27058-Cuyuna-iron Range 500/230kV	Construct new 345 kV double circuit transmission line, including the following relocations and realignments to enable siting of the new facility in or adjacent to existing rights-of-way per State of MN routing criteria: 19.2 miles of 115 kV 11 Line and 20.3 miles of 115 kV 92 Line	MP, GRE	\$407,612,000	6/1/2030	Line New	Cuyuna	Iron Range 500/230 kV	345	66	40	Updated Name, Description, Cost, Endpoint, and Miles. Includes underlying system improvements ordered by the MPUC route
27059	27059-iron Range 500/230kV-	Expand existing Iron Range 500 kV Substation to establish a 5-position 500 kV ring bus (line to Dorsey, 500-230 TX, 500-345 TX, Cap Bank, 500-345 TX), add 2-345/500 kV 1200 MVA transformers (with 1 single phase spare on-site), and add 4-position, 345 kV breaker-and-a-half bus for 2-345/500 kV transformer positions and 2-345 kV line positions (includes 2-345 kV bus connected shunt reactors, est. 60 MVAR each). Includes rerouting of existing 230 kV and 115 kV lines around substation expansion area.	MP	\$115,879,000	6/1/2030	Substation	Iron Range 500/230 kV		345			Updated Description, Owner, Cost, and Type. Incorporated Facility ID 27060 and Facility 27061 for reporting
TBD	TBD-Riverton Substation Relocation	Relocation of existing Riverton 115/34 kV Substation and equipment into Riverton 230/115 kV Substation, upgrades to Riverton 230/115 kV Substation, and retermination of existing transmission lines at Riverton 230/115 kV Substation to enable siting of the new double-circuit 345 kV line in or adjacent to existing rights-of-way per State of MN routing criteria.	MP, GRE	\$43,188,000	6/1/2030	Substation	Riverton 230/115 kV		230, 115		2.1	New Facility added to describe additional underlying system improvements ordered by the MPUC route decision

October 2025

Northland Reliability Project  
MPUC Docket No. E015,ET2/CN-22-416  
MPUC Docket No. E015,ET2/TL-22-415

## APPENDIX B: MPUC Completeness Order

BEFORE THE MINNESOTA PUBLIC UTILITIES COMMISSION

Katie J. Sieben	Chair
Valerie Means	Commissioner
Matthew Schuerger	Commissioner
Joseph K. Sullivan	Commissioner
John A. Tuma	Commissioner

In the Matter of the Application of Great River Energy and Minnesota Power for a Certificate of Need and Route Permit for an Approximately 180-mile, Double Circuit 345-kV Transmission Line in Itasca, Aitkin, Crow Wing, Morrison, Benton, and Sherburne Counties.

ISSUE DATE: November 15, 2023

DOCKET NO. E-015,ET-2/CN-22-416

DOCKET NO. E-015,ET-2/TL-22-415

ORDER ACCEPTING APPLICATIONS  
AS COMPLETE AND ESTABLISHING  
PROCEDURAL REQUIREMENTS

### PROCEDURAL HISTORY

On August 4, 2023, Minnesota Power and Great River Energy (Applicants) filed applications for a certificate of need and a route permit to construct the Northland Reliability Project, a transmission system reliability project with two distinct segments. The first segment would involve construction of a new 345 kilovolt (kV) transmission line 140 miles in length; and the second segment would involve the replacement of two existing transmission lines, a 230 kV line and a 345 kV line, each 20 miles in length. The project would also include construction of a new Cuyuna series compensation station and expansion of an existing substation.

By August 22, 2023, the Commission received comments on the application from the Department of Commerce, Division of Energy Resources (the Department); the Department of Natural Resources (DNR); the Citizens Utility Board; No CAPX 2020; the Department of Commerce, Energy Environmental Review and Analysis (EERA); the Laborers' International Union of North America; International Union of Operating Engineers Local 49 (IUOE Local 49).

On August 29, 2023, the Commission received reply comments from the Clean Energy Organizations, as well as the Applicants.<sup>1</sup>

On September 6, 2023, the Applicants filed supplemental comments.

By September 26, 2023, the Commission had received approximately 18 public comments, most of which addressed the merits of the application, including the potential impacts of the proposed project.

---

<sup>1</sup> The Clean Energy Organizations include the Minnesota Center for Environmental Advocacy; Clean Grid Alliance; Fresh Energy; the Union of Concerned Scientists; and the National Audubon Society.

On October 5, 2023, the applications came before the Commission.

## **FINDINGS AND CONCLUSIONS**

### **I. The Proposed Project**

The proposed project includes a new 345 kV high-voltage transmission, replacement of two existing high-voltage transmission lines, a new series compensation station and expansion of an existing substation. According to the Applicants, the Northland Reliability Project is needed to address transmission system reliability issues in northern and central Minnesota related to the region's transition away from coal-fired generation. The Applicants stated that these reliability issues have been analyzed for a decade and include regional voltage and transient stability issues identified by the Applicants and the Midcontinent Independent System Operator (MISO).

The Project would also provide voltage support, improve system strength, and provide local sources of power delivery. It would further increase the ability to move power between regions to help ensure customer access to resources during extreme weather events.

### **II. Application Completeness**

The Applicants filed their applications under Minn. Stat. §§ 216B.243 (the certificate of need statute) and 216E.04, subd. 2(5) (permitting statute).

Under the certificate of need statute, anyone seeking to construct a large energy facility must first obtain a certificate of need from the Commission. Under Minn. Stat. § 216B.2421, subd. 2(2), a large energy facility includes a high voltage transmission line of 200 kV or more and greater than 1,500 feet in length.

Under Minn. Stat. § 216E.01, a high voltage transmission line includes a conductor of electric energy and associated facilities designed for and capable of operation at a nominal voltage of 100 kilovolts or more and is greater than 1,500 feet in length; under § 216E.02, subd. 2, a permit from the Commission is required for construction of a high voltage transmission line.

The Applicants stated that because at least 80% of the distance of the lines will be located along existing high-voltage transmission line right-of-way, the application is subject to the alternative review process set forth under Minn. Stat. § 216E.04, subd. 2(5). The Applicants requested joint review of both the certificate of need and route permit applications under this process in accordance with the requirements of Minn. R. 7849.1900.

Both the Department and the EERA, as well as LIUNA and IUOE Local 49, recommended that the Commission find the applications complete under Minn. R. 7849.0200, subp. 5 and 7850.2000.

The Commission concurs with the Applicants and parties that the applications are complete and will accept them as such.

### **III. Record Development**

The EERA, LIUNA, IUOE Local 49, CUB, and the Clean Energy Organizations recommended that the Commission apply the alternative review permitting process under Minn. Stat. § 216E.04, subd. 2(5) and Minn. R. 7850.2800, as requested by the Applicants. They concurred that at least 80 percent of the distance of the lines in Minnesota would be located along existing high-voltage transmission line right-of-way, triggering application of the alternative review process. Under this process, an environmental assessment is required, consistent with Minn. Stat. § 216E.04, subd. 5, which directs the Department of Commerce to prepare the assessment, and which states, in part:

The environmental assessment shall contain information on the human and environmental impacts of the proposed project and other sites or routes identified by the commission and shall address mitigating measures for all of the sites or routes considered. The environmental assessment shall be the only state environmental review document required to be prepared on the project.

They also supported the Applicants' request that the Commission hold joint proceedings on both applications, including joint hearings and environmental review. And, they supported use of the Commission's informal review process under Minn. R. 7849.1200 for developing the record on certificate of need issues raised throughout the duration of the proceeding.

The EERA further recommended that the Commission request that the Office of Administrative Hearings assign an administrative law judge to act as the hearing examiner for the public hearing consistent with Minn. R. 7850.3800, and request that the ALJ prepare a full report including findings of fact, conclusions of law, and recommendations, in lieu of a contested case process, which the alternative review process does not require.

No CAPX 2020 recommended that the Commission instead apply the standard review process, which requires a contested case process and an environmental impact statement, as set forth under Minn. Stat. § 216E.03, subd. 5 and 6.

### **IV. Commission Action**

The Commission concurs with the Applicants that the proposed project is eligible for the alternative review process under Minn. Stat. § 216E.04 and Minn. R. 7850.2800 to 7850.3900. The Commission will therefore examine the applications under these procedures and will also require that joint hearings be held and joint environmental review be conducted, will develop the record using the Commission's informal record development process, and will require that an environmental assessment be prepared.

The Commission will also request, as recommended by the EERA, that the Office of Administrative Hearings assign an administrative law judge to act as the hearing examiner for the public hearing as outlined in Minn. R. 7850.3800 and prepare a report on the proposed projects that includes findings of fact, conclusions of law, and recommendations.

The Commission is persuaded that these procedures will ensure full and comprehensive record development of all issues raised, including potential environmental impacts and mitigation measures and will provide opportunities for maximum public participation.

To facilitate timely and full record development, the Commission will take the additional actions set forth in the ordering paragraphs below.

### **ORDER**

1. The Commission hereby accepts the applications as complete.
2. The Commission directs that the route permit application be reviewed under the alternative permitting process under Minn. Stat. § 216E.04 and Minn. R. 7850.2800 to 7850.3900.
3. The Commission directs that the certificate of need application be reviewed using the Commission's informal review process.
4. The Commission authorizes joint hearings and combined environmental review of the certificate of need and route proceedings.
5. The Commission requests that the EERA prepare an environmental assessment in lieu of an environmental report.
6. The Commission requests that the Office of Administrative Hearings assign an administrative law judge to act as the hearing examiner for the public hearing consistent with Minn. R. 7850.3800, and requests that the ALJ prepare a full report including findings of fact, conclusions of law, and recommendations.
7. The Commission requests that EERA work with the Applicants and DNR to identify areas to minimize necessary right-of-way and mitigate impacts of right-of-way expansion.
8. The Commission delegates administrative authority to the Executive Secretary to do the following:
  - a. Provide the name, telephone number, and email address of the staff person designated as the public advisor, Cezar Panait, to facilitate citizen participation in the process.
  - b. Request that the Department continue to study issues and indicate during the hearing process its position on the reasonableness of granting a certificate of need.
  - c. Require the Applicants to facilitate in every reasonable way the continued examination of the issues by the Department and Commission staff.
  - d. Require the Applicants to place a copy of the applications (print and/or electronic) for review in at least one government center or public library in each county where the proposed transmission line project is located.

- e. Request Commission staff to work with the Administrative Law Judge and the Department in selecting a suitable location for the public hearings on the application.
9. The Commission hereby directs the Executive Secretary to issue the Delegation of Authority to the applicants for attached Authorization to Initiate State Historic Preservation Office Consultation to the Applicant.
10. The Commission requests that the EERA ensure that the comments received by the Additional Landowners (and the Landowners discussed in the Applicants' August 29, 2023, reply comments) are included in the scoping process.
11. The Commission hereby extends the scoping comment period by 10 days, making scoping comments due 20 days after the scoping meeting.
12. This order shall become effective immediately.

BY ORDER OF THE COMMISSION

*Lauren C. Brthke* for

Will Seuffert  
Executive Secretary



This document can be made available in alternative formats (e.g., large print or audio) by calling 651.296.0406 (voice). Persons with hearing or speech impairment may call using their preferred Telecommunications Relay Service or email [consumer.puc@state.mn.us](mailto:consumer.puc@state.mn.us) for assistance.

## CERTIFICATE OF SERVICE

I, Mai Choua Xiong, hereby certify that I have this day, served a true and correct copy of the following document to all persons at the addresses indicated below or on the attached list by electronic filing, electronic mail, courier, interoffice mail or by depositing the same enveloped with postage paid in the United States mail at St. Paul, Minnesota.

**Minnesota Public Utilities Commission**  
**ORDER ACCEPTING APPLICATION AS COMPLETE AND ESTABLISHING**  
**PROCEDURAL REQUIREMENTS**

Docket Number **E-015,ET-2/CN-22-416 and E-015,ET-2/TL-22-415**  
Dated this 15<sup>th</sup> day of November, 2023

/s/ Mai Choua Xiong

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Lisa	Agrimonti	lagrimonti@fredlaw.com	Fredrikson & Byron, P.A.	60 South Sixth Street Suite 1500 Minneapolis, MN 55402-4400	Electronic Service	No	OFF_SL_22-415_Official
Jim	Atkinson	jbalkinson@allete.com	Minnesota Power	30 West Superior Street  Duluth, MN 55802	Electronic Service	No	OFF_SL_22-415_Official
Generic Notice	Commerce Attorneys	commerce.attorneys@ag.state.mn.us	Office of the Attorney General-DOC	445 Minnesota Street Suite 1400  St. Paul, MN 55101	Electronic Service	Yes	OFF_SL_22-415_Official
MP Regulatory	Compliance	MPRegulatoryCompliance@mpower.com	Minnesota Power	30 W Superior St.  Duluth, MN 55802	Electronic Service	No	OFF_SL_22-415_Official
Brandon	Crawford	brandonc@subminnesota.org	Citizens Utility Board of Minnesota	332 Minnesota St Ste W1360  St. Paul, MN 55101	Electronic Service	No	OFF_SL_22-415_Official
Adam	Duininck	aduinck@ncsccc.org	North Central States Regional Council of Carpenters	700 Olive Street  St. Paul, MN 55130	Electronic Service	No	OFF_SL_22-415_Official
Sharon	Ferguson	sharon.ferguson@state.mn.us	Department of Commerce	85 7th Place E Ste 280  Saint Paul, MN 55102198	Electronic Service	No	OFF_SL_22-415_Official
Zachary	Golkowski	zgoldkowski@mpower.com	Minnesota Power	30 W. Superior Street  Duluth, MN 55802	Electronic Service	No	OFF_SL_22-415_Official
Valerie	Herring	vherring@taftlaw.com	Taft Stettinius & Hollister LLP	2200 IDS Center 80 S. Eighth Street Minneapolis, MN 55402	Electronic Service	No	OFF_SL_22-415_Official
Brian	Hunker	bhunker@GREnergy.com	Great River Energy	12300 Elm Creek Blvd  Maple Grove, MN 55369	Electronic Service	No	OFF_SL_22-415_Official

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Craig	Janezich	craig.janezich@state.mn.us	Public Utilities Commission	121 7th Pl E #350 St. Paul, MN 55101	Electronic Service	No	OFF_SL_22-415_Official
Ray	Kirsch	Raymond.Kirsch@state.mn.us	Department of Commerce	85 7th Place E Ste 500 St. Paul, MN 55101	Electronic Service	No	OFF_SL_22-415_Official
Jennifer	Kuklenski	jkuklenski@mnpower.com	Minnesota Power	30 West Superior Street Duluth, MN 55082	Electronic Service	No	OFF_SL_22-415_Official
Dan	Leshner	dlesher@grenergy.com	Great River Energy	12300 Elm Creek Blvd Maple Grove, MN 55369	Electronic Service	No	OFF_SL_22-415_Official
Peter E.	Madsen	pmadsen@taftlaw.com	Taft Stettinius & Hollister LLP	2200 IDS Center 80 South 8th Street Minneapolis, MN 55402	Electronic Service	No	OFF_SL_22-415_Official
Discovery	Manager	discoverymanager@mnpower.com	Minnesota Power	30 W Superior St Duluth, MN 55802	Electronic Service	No	OFF_SL_22-415_Official
John	McElfresh	john@bygassistedliving.com		18323 County Road 22 Brainerd, MN 56401	Electronic Service	No	OFF_SL_22-415_Official
Brian	Meloy	bmeloy@grenergy.com	Great River Energy	12300 Elm Creek Blvd Maple Grove, MN 55369	Electronic Service	No	OFF_SL_22-415_Official
David	Moeller	dmoeller@allele.com	Minnesota Power	30 W Superior St Duluth, MN 558022093	Electronic Service	No	OFF_SL_22-415_Official
Carol A.	Overland	overland@legalelectric.org	Legalelectric - Overland Law Office	1110 West Avenue Red Wing, MN 55066	Electronic Service	No	OFF_SL_22-415_Official

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Kevin	Pranis	kpranis@lunagroc.com	Laborers' District Council of MN and ND	81 E Little Canada Road St. Paul, MN 55117	Electronic Service	No	OFF_SL_22-415_Official
Generic Notice	Residential Utilities Division	residential.utilities@ag.state.mn.us	Office of the Attorney General-RUD	1400 BRM Tower 445 Minnesota St St. Paul, MN 5510212131	Electronic Service	Yes	OFF_SL_22-415_Official
Nathaniel	Runke	nrunke@local49.org	International Union of Operating Engineers Local 49	611 28th St. NW Rochester, MN 55901	Electronic Service	No	OFF_SL_22-415_Official
Will	Seuffert	Will.Seuffert@state.mn.us	Public Utilities Commission	121 7th Pl E Ste 350 Saint Paul, MN 55101	Electronic Service	Yes	OFF_SL_22-415_Official
Kodi	Verhalen	kverhalen@taftlaw.com	Taft Stettinius & Hollister LLP	80 S 8th St Ste 2200 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_22-415_Official
Haley	Waller Pitts	hwallerpitts@fredlaw.com	Fredrikson & Byron, P.A.	60 S Sixth St Ste 1500 Minneapolis, MN 55402-4400	Electronic Service	No	OFF_SL_22-415_Official
Cynthia	Warzecha	cynthia.warzecha@state.mn.us	Minnesota Department of Natural Resources	500 Lafayette Road Box 25 St. Paul, MN 55155-4040	Electronic Service	No	OFF_SL_22-415_Official

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Lisa	Agrimonti	lagrimonti@fredlaw.com	Fredrikson & Byron, P.A.	60 South Sixth Street Suite 1500 Minneapolis, MN 55402-4400	Electronic Service	No	OFF_SL_22-416_Official
Michael	Ahern	ahern.michael@dorsey.com	Dorsey & Whitney, LLP	50 S 6th St Ste 1500  Minneapolis, MN 554021498	Electronic Service	No	OFF_SL_22-416_Official
Steve	Albrecht	Steve.Albrecht@shakopee.dakota.org	Shakopee Mdewakanton Sioux Community	Shakopee Mdewakanton Sioux Community 2330 Sioux Trail NW Prior Lake, MN 55372	Electronic Service	No	OFF_SL_22-416_Official
Keith	Anderson	keith.anderson@shakopee.dakota.org	Shakopee Mdewakanton Sioux Community	Shakopee Mdewakanton Sioux Community 2330 Sioux Trail NW Prior Lake, MN 55372	Electronic Service	No	OFF_SL_22-416_Official
Kristine	Anderson	kanderson@greatermngas.com	Greater Minnesota Gas, Inc. & Greater MN Transmission, LLC	1900 Cardinal Lane PO Box 798 Fairbault, MN 55021	Electronic Service	No	OFF_SL_22-416_Official
Jay	Anderson	java@cmpas.org	Central Minnesota Municipal Power Agency	7550 Corporate Way Suite 100 Eden Prairie, MN 55344	Electronic Service	No	OFF_SL_22-416_Official
Jaime	Arsenault	jaime.arsenault@whiteearth-nsn.gov	White Earth	PO BOX 418  White Earth, MN 56591	Electronic Service	No	OFF_SL_22-416_Official
Jim	Atkinson	jbatkinson@allete.com	Minnesota Power	30 West Superior Street  Duluth, MN 55802	Electronic Service	No	OFF_SL_22-416_Official
Sarah	Beimers	sarah.beimers@state.mn.us	Department of Administration - State Historic Preservation Office	50 Sherburne Avenue Suite 203 St. Paul, MN 55155	Electronic Service	No	OFF_SL_22-416_Official
David	Bell	david.bell@state.mn.us	Department of Health	POB 64975  St. Paul, MN 55164	Electronic Service	No	OFF_SL_22-416_Official

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Melanie	Benjamin	melanie.benjamin@millelacsband.com	Mille Lacs Band of Ojibwe	43408 Codena Drive Onamia, MN 56359	Electronic Service	No	OFF_SL_22-416_Official
James J.	Bertrand	james.bertrand@stinson.com	STINSON LLP	50 S 6th St Ste 2600 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_22-416_Official
David	Birkholz	david.birkholz@state.mn.us	MN Department of Commerce	Suite 500 85 7th Place East St. Paul, MN 551012198	Electronic Service	No	OFF_SL_22-416_Official
Michelle F.	Bissonnette	michelle.bissonnette@hdrinc.com	HDR Engineering, Inc.	Golden Hills Office Center 701 Xenia Ave S Ste Minneapolis, MN 55416	Electronic Service	No	OFF_SL_22-416_Official
Hunter	Boldt	hunterboldt@redlakenation.org	Red Lake Nation	15484 Migizi Drive Red Lake, MN 56671	Electronic Service	No	OFF_SL_22-416_Official
Sheldon	Boyd	sheldon.boyd@millelacsband.com	Mille Lacs Band of Ojibwe	43408 Codena Drive Onamia, MN 56359	Electronic Service	No	OFF_SL_22-416_Official
B. Andrew	Brown	brown.andrew@dorsey.com	Dorsey & Whitney LLP	Suite 1500 50 South Sixth Street Minneapolis, MN 554021498	Electronic Service	No	OFF_SL_22-416_Official
Christina	Brusven	cbrusven@fredlaw.com	Fredrikson Byron	60 S 6th St Ste 1500 Minneapolis, MN 55402-4400	Electronic Service	No	OFF_SL_22-416_Official
Scott	Buchanan	ScottBuchanan@fdirez.com	Fond du Lac Band of Lake Superior Chippewa	1720 Big Lake Road Cloquet, MN 55720	Electronic Service	No	OFF_SL_22-416_Official
Shelley	Buck	shelley.buck@pic.org	Prairie Island Indian Community	Prairie Island Indian Community 5636 Sturgeon Lake Road Welch, MN 55089	Electronic Service	No	OFF_SL_22-416_Official

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Robert	Budreau	robert.budreau@llojibwe.net	Leech Lake Band of Ojibwe	190 Sallistar Drive NW Cass Lake, MN 56633	Paper Service	No	OFF_SL_22-416_Official
PUC	CAO	consumer.puc@state.mn.us	Public Utilities Commission	Consumer Affairs Office 121 7th Place E Suite 350 St. Paul, MN 55101	Electronic Service	No	OFF_SL_22-416_Official
James	Canaday	james.canaday@ag.state.mn.us	Office of the Attorney General-RUD	Suite 1400 445 Minnesota St. St. Paul, MN 55101	Electronic Service	No	OFF_SL_22-416_Official
Cathy	Chavers	cchavers@boisfortenmn.gov	Bois Forte Band of Chippewa	Bois Forte Tribal Government 5344 Lakeshore Drive Nett Lake, MN 55772	Electronic Service	No	OFF_SL_22-416_Official
Michael	Childs, Jr.	michael.childsjr@pic.org	Prairie Island Indian Community	Prairie Island Indian Community 5636 Sturgeon Lake Road Welch, MN 55089	Electronic Service	No	OFF_SL_22-416_Official
Cody	Chilson	cchilson@greatermngas.com	Greater Minnesota Gas, Inc. & Greater MN Transmission, LLC	1900 Cardinal Ln PO Box 798 Faribault, MN 55021	Electronic Service	No	OFF_SL_22-416_Official
Ray	Choquette	rchoquette@agp.com	Ag Processing Inc.	12700 West Dodge Road PO Box 2047 Omaha, NE 68103-2047	Electronic Service	No	OFF_SL_22-416_Official
John	Coffman	john@johncoffman.net	AARP	871 Tuxedo Blvd. St. Louis, MO 63119-2044	Electronic Service	No	OFF_SL_22-416_Official
Generic Notice	Commerce Attorneys	commerce.attorneys@ag.state.mn.us	Office of the Attorney General-DOC	445 Minnesota Street Suite 1400 St. Paul, MN 55101	Electronic Service	Yes	OFF_SL_22-416_Official

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Bill	Cook	bcook@rupu.org	Rochester Public Utilities	4000 East River Road NE Rochester, MN 55906	Electronic Service	No	OFF_SL_22-416_Official
Sean	Copeland	seancopeland@fdlrez.com	Fond du Lac Band of Lake Superior Chippewa	1720 Big Lake Rd Cloquet, MN 55720	Electronic Service	No	OFF_SL_22-416_Official
John	Crane	johncrane@fishing@gmail.com	Fishing	1250 Wee Gwaus DR SW Bernidji, MN 56601	Electronic Service	No	OFF_SL_22-416_Official
Brandon	Crawford	brandonc@subminnesota.org	Citizens Utility Board of Minnesota	332 Minnesota St Ste W1360 St. Paul, MN 55101	Electronic Service	No	OFF_SL_22-416_Official
Hillary	Creurer	hcreurer@minpower.com	Minnesota Power	30 W Superior St Duluth, MN 55802	Electronic Service	No	OFF_SL_22-416_Official
George	Crocker	gwilic@hawo.org	North American Water Office	5093 Keats Avenue Lake Elmo, MN 55042	Electronic Service	No	OFF_SL_22-416_Official
Rebecca	Crooks Stratton	Rebecca.Crooks-Stratton@ShakopeeDakota.org	Shakopee Mdewakanton Sioux Community	Shakopee Mdewakanton Sioux Community 2330 Sioux Trail NW Prior Lake, MN 55372	Electronic Service	No	OFF_SL_22-416_Official
Miyah	Danielson	MiyahDanielson@FDLREZ.COM	Fond du Lac Band of Lake Superior Chippewa	1720 Big Lake Road Cloquet, MN 55720	Electronic Service	No	OFF_SL_22-416_Official
Thomas	Davis	atdavis1972@outlook.com	-	1161 50th Ave Sherburne, MN 56171	Electronic Service	No	OFF_SL_22-416_Official

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Jason	Decker	jason.decker@llobjwve.net	Leech Lake Band of Ojibwe	190 Sallistar Drive NW Cass Lake, MN 56633	Electronic Service	No	OFF_SL_22-416_Official
Bobby	Deschampe	robertdeschampe@grandportage.com	Grand Portage Band of Lake Superior Chippewa	PO Box 428 Grand Portage, MN 55605	Electronic Service	No	OFF_SL_22-416_Official
Randall	Doneen	randall.doneen@state.mn.us	Department of Natural Resources	500 Lafayette Rd, PO Box 25 Saint Paul, MN 55155	Electronic Service	No	OFF_SL_22-416_Official
John	Drawz	jdrawz@fredlaw.com	Fredrikson & Byron, P.A.	Suite 1500 60 South Sixth Street Minneapolis, MN 55402-4400	Electronic Service	No	OFF_SL_22-416_Official
Shane	Drift	sdrift@boisforte-nsn.gov	Bois Forte Band of Chippewa	Bois Forte Tribal Government 5344 Lakeshore Drive Nett Lake, MN 55772	Electronic Service	No	OFF_SL_22-416_Official
Adam	Duininck	aduininck@ncsrcc.org	North Central States Regional Council of Carpenters	700 Olive Street St. Paul, MN 55130	Electronic Service	No	OFF_SL_22-416_Official
Wally	Dupuis	WallyDupuis@fdlrez.com	Fond du Lac Band of Lake Superior Chippewa	1720 Big Lake Road Cloquet, MN 55720	Electronic Service	No	OFF_SL_22-416_Official
Kevin	Dupuis, Sr.	kevindupuis@fdlrez.com	Fond du Lac Development Corp.	Reservation Business Committee 1720 Big Lake Rd Cloquet, MN 55720	Electronic Service	No	OFF_SL_22-416_Official
Cory	Dutcher	cory.dutcher@ge.com	GE Power and Water	1 River Rd. Bldg. 37-413 Schenectady, NY 12345	Electronic Service	No	OFF_SL_22-416_Official

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Jamie	Edwards	jamie.edwards@millelacsband.com	Mille Lacs Band of Ojibwe	43408 Oodena Drive Onamia, MN 56358	Electronic Service	No	OFF_SL_22-416_Official
Kristen	Eide Tollefson	healingsystems69@gmail.com	R-CURE	28477 N Lake Ave Frontenac, MN 55026-1044	Electronic Service	No	OFF_SL_22-416_Official
Matthew	Ellis	mellis@GREnergy.com	Great River Energy	N/A	Electronic Service	No	OFF_SL_22-416_Official
James C.	Erickson	jericksonkbc@gmail.com	Kelly Bay Consulting	17 Quechee St Superior, WI 54880-4421	Electronic Service	No	OFF_SL_22-416_Official
Kyle	Fairbanks	kyle.fairbanks@lojibwe.net	Leech Lake Band of Ojibwe	190 Sailstar Drive NW Cass Lake, MN 56633	Electronic Service	No	OFF_SL_22-416_Official
Michael	Fairbanks	Michael.Fairbanks@whiteearth-nsn.gov	White Earth Reservation Business Committee	PO Box 418 White Earth, MN 56591	Electronic Service	No	OFF_SL_22-416_Official
Kate	Fairman	kate.franz@state.mn.us	Department of Natural Resources	Box 32 500 Lafayette Rd St. Paul, MN 551554032	Electronic Service	No	OFF_SL_22-416_Official
John	Farrell	jfarrell@ilsr.org	Institute for Local Self- Reliance	2720 E. 22nd St Institute for Local Self- Reliance Minneapolis, MN 55406	Electronic Service	No	OFF_SL_22-416_Official
Eric	Fehlhaber	efehlhaber@dakotaelectric.com	Dakota Electric Association	4300 220th St W Farmington, MN 55024	Electronic Service	No	OFF_SL_22-416_Official
Annie	Felix Gerth	annie.felix-gerth@state.mn.us	Board of Water & Soil Resources	520 Lafayette Rd Saint Paul, MN 55155	Electronic Service	No	OFF_SL_22-416_Official

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Sharon	Ferguson	sharon.ferguson@state.mn.us	Department of Commerce	85 7th Place E Ste 280 Saint Paul, MN 551012198	Electronic Service	No	OFF_SL_22-416_Official
Kade	Ferris	kade.ferris@redlakenation.org	Red Lake Region	PO Box 274 Red Lake, MN 56671	Electronic Service	No	OFF_SL_22-416_Official
Leonard	Fineday	leonard.fineday@lojibwe.net	Leech Lake Bank of Ojibwe	190 Sallistar Drive NW Cass Lake, MN 56633	Electronic Service	No	OFF_SL_22-416_Official
Terri	Finn	terri.goggleye@lojibwe.net	Leech Lake Band of Ojibwe	N/A	Electronic Service	No	OFF_SL_22-416_Official
Henry	Fox	henry.fox@whiteearthnsn.gov	White Earth Nation	PO Box 418 White Earth, MN 56569	Electronic Service	No	OFF_SL_22-416_Official
Gary	Frazer	gfrazer@mnchippewatribe.org	Minnesota Chippewa Tribe	PO Box 217 Cass Lake, MN 56633	Electronic Service	No	OFF_SL_22-416_Official
Docketing	Fredlaw	docketing@fredlaw.com	Fredrickson & Byron	200 S 6th St, Suite 4000 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_22-416_Official
Daryl	Fuentes	energy@usg.com	USG Corporation	550 W Adams St Chicago, IL 60661	Electronic Service	No	OFF_SL_22-416_Official
Mary Ann	Gagnon	maryann@grandportage.com	Grand Portage Band of Ojibwe	PO Box 428 Grand Portage, MN 55605	Electronic Service	No	OFF_SL_22-416_Official
Edward	Garvey	edward.garvey@AESLconsulting.com	AESL Consulting	32 Lawton St Saint Paul, MN 55102-2617	Electronic Service	No	OFF_SL_22-416_Official

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Karen A	Gebhardt	kageb1@gvtel.com		43901 253rd Ave Leonard, MN 56652-4026	Electronic Service	No	OFF_SL_22-416_Official
Shannon	Geshick	shannon.geshick@state.mn.us	Minnesota Indian Affairs Council (MIAC)	N/A	Electronic Service	No	OFF_SL_22-416_Official
Tara	Geshick	N/A	Bois Forte Band of Chippewa Tribal Government	5344 Lakeshore Drive Nett Lake, MN 55772	Paper Service	No	OFF_SL_22-416_Official
Todd	Green	Todd.A.Green@state.mn.us	Minnesota Department of Labor & Industry	443 Lafayette Rd N St. Paul, MN 55155-4341	Electronic Service	No	OFF_SL_22-416_Official
Todd J.	Guerrero	todd.guerrero@kutakrock.com	Kutak Rock LLP	Suite 1750 220 South Sixth Street Minneapolis, MN 554021425	Electronic Service	No	OFF_SL_22-416_Official
Jeremy	Hamilton	jhamilton@upperSiouxcommunity-nsn.gov	Upper Sioux Community	Upper Sioux Community PO Box 147 Granite Falls, MN 56241	Electronic Service	No	OFF_SL_22-416_Official
Ashley	Harrison	ashley.harrison@llojibwe.net	Leech Lake Band of Ojibwe	190 Sallstar Dr NW Cass Lake, MN 56633	Electronic Service	No	OFF_SL_22-416_Official
Larry	Hartman	Larry.Hartman@state.mn.us	Department of Commerce	85 7th Place East, Suite 280 St. Paul, MN 55101	Electronic Service	No	OFF_SL_22-416_Official
Amy	Hastings	armyh@upperSiouxcommunity-nsn.gov	Upper Sioux Community	5722 Travers Lane PO Box 147 Granite Falls, MN 56241	Electronic Service	No	OFF_SL_22-416_Official
Adam	Heinen	aheinen@dakotaelectric.com	Dakota Electric Association	4300 220th St W Farmington, MN 55024	Electronic Service	No	OFF_SL_22-416_Official

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Annete	Henkel	mui@mnutilityinvestors.org	Minnesota Utility Investors	413 Wacouta Street #230 St. Paul, MN 55101	Electronic Service	No	OFF_SL_22-416_Official
Valerie	Herring	vherring@taftlaw.com	Taft Stettinius & Hollister LLP	2200 IDS Center 80 S. Eighth Street Minneapolis, MN 55402	Electronic Service	No	OFF_SL_22-416_Official
Corey	Hintz	chintz@dakotaelectric.com	Dakota Electric Association	4300 220th Street  Farmington, MN 550249583	Electronic Service	No	OFF_SL_22-416_Official
Michael	Hoppe	lu23@ibew23.org	Local Union 23, I.B.E.W.	445 Eina Street Ste. 61 St. Paul, MN 55106	Electronic Service	No	OFF_SL_22-416_Official
Kari	Howe	kari.howe@state.mn.us	DEED	332 Minnesota St, #E200 1ST National Bank Bldg St. Paul, MN 55101	Electronic Service	No	OFF_SL_22-416_Official
Lori	Hoyum	lhoyum@mnpower.com	Minnesota Power	30 West Superior Street  Duluth, MN 55802	Electronic Service	No	OFF_SL_22-416_Official
Annie	Jackson	Cheryl.Jackson@whiteearth-nsn.gov	White Earth Nation	White Earth Tribal Headquarters 35500 Eagle View Road Ogemo, MN 56569	Electronic Service	No	OFF_SL_22-416_Official
Faron	Jackson, Sr.	faron.jackson@lojibwe.net	Leech Lake Band of Ojibwe	190 Sailstar Drive NW  Cass Lake, MN 56633	Electronic Service	No	OFF_SL_22-416_Official
Travis	Jacobson	travis.jacobson@mdu.com	Great Plains Natural Gas Company	400 N 4th St  Bismarck, ND 58501	Electronic Service	No	OFF_SL_22-416_Official
Alan	Jenkins	aj@jenkinsatlaw.com	Jenkins at Law	2950 Yellowtail Ave.  Marathon, FL 33050	Electronic Service	No	OFF_SL_22-416_Official

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Kevin	Jensvold	kevinj@upperstouxccommunity-nsn.gov	Upper Sioux Community	PO Box 147 Granite Falls, MN 56241-0147	Electronic Service	No	OFF_SL_22-416_Official
Johnny	Johnson	Johnny.Johnson@pic.org	Prairie Island Indian Community	5636 Sturgeon Lake Road Welch, MN 55089	Electronic Service	No	OFF_SL_22-416_Official
Scott	Johnson	Scott.Johnson@ci.medina.mn.us	City of Medina	2052 County Road 24 Medina, MN 55340-9790	Electronic Service	No	OFF_SL_22-416_Official
Richard	Johnson	Rick.Johnson@lawmoss.com	Moss & Barnett	150 S. 5th Street Suite 1200 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_22-416_Official
Jody	Johnson	jody.johnson@pic.org	Prairie Island Indian Community	5636 Sturgeon Lake Rd Welch, MN 55089	Electronic Service	No	OFF_SL_22-416_Official
Sarah	Johnson Phillips	sarah.phillips@stoel.com	Stoel Rives LLP	33 South Sixth Street Suite 4200 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_22-416_Official
Michael	Kaluzniak	mike.kaluzniak@state.mn.us	Public Utilities Commission	Suite 350 121 Seventh Place East St. Paul, MN 55101	Electronic Service	No	OFF_SL_22-416_Official
Nick	Kaneski	nick.kaneski@enbridge.com	Enbridge Energy Company, Inc.	11 East Superior St Ste 125 Duluth, MN 55802	Electronic Service	No	OFF_SL_22-416_Official
Tom	Karas	tomskaras@gmail.com		3171 309th Ave NW Cambridge, MN 55008	Electronic Service	No	OFF_SL_22-416_Official
Bruce	King	Brenda@ranww.org	Realtors, Association of Northwestern WI	Suite 3 1903 Keith Street Eau Claire, WI 54701	Electronic Service	No	OFF_SL_22-416_Official

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Ray	Kirsch	Raymond.Kirsch@state.mn.us	Department of Commerce	85 7th Place E Ste 500 St. Paul, MN 55101	Electronic Service	No	OFF_SL_22-416_Official
Chad	Konickson	chad.konickson@usace.army.mil	U.S.Army Corps of Engineers	180 5th St #700 Saint Paul, MN 55101	Electronic Service	No	OFF_SL_22-416_Official
Stacy	Kotch Egstad	Stacy.Kotch@state.mn.us	MINNESOTA DEPARTMENT OF TRANSPORTATION	395 John Ireland Blvd. St. Paul, MN 55155	Electronic Service	No	OFF_SL_22-416_Official
Michael	Krikava	mikrikava@taflaw.com	Taft Stettinius & Hollister LLP	2200 IDS Center 80 S 8th St Minneapolis, MN 55402	Electronic Service	No	OFF_SL_22-416_Official
Nicolle	Kupser	nkupser@greatermngas.com	Greater Minnesota Gas, Inc. & Greater MN Transmission, LLC	1900 Cardinal Ln PO Box 798 Faribault, MN 55021	Electronic Service	No	OFF_SL_22-416_Official
Mike	Laroque	mike.laroque@whiteearthnsn.gov	White Earth Nation	PO Box 418 White Earth, MN 56591	Electronic Service	No	OFF_SL_22-416_Official
Robert L	Larsen	robert.larsen@lowersiouxc.com	Lower Sioux Indian Community	PO Box 308 39527 Reservation Highway 1 Morton, MN 56270	Electronic Service	No	OFF_SL_22-416_Official
Peder	Larson	plarson@larkinhoffman.com	Larkin Hoffman Daly & Lindgren, Ltd.	8300 Norman Center Drive Suite 1000 Bloomington, MN 55437	Electronic Service	No	OFF_SL_22-416_Official
James D.	Larson	james.larson@avantenergy.com	Avant Energy Services	220 S 6th St Ste 1300 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_22-416_Official
Dan	Leshner	dlesher@greenergy.com	Great River Energy	12300 Elm Creek Blvd Maple Grove, MN 55369	Electronic Service	No	OFF_SL_22-416_Official

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Eric	Lipman	eric.lipman@state.mn.us	Office of Administrative Hearings	PO Box 64620 St. Paul, MN 551640620	Electronic Service	No	OFF_SL_22-416_Official
Jason	Loos	jason.loos@centerpointenergy.com	CenterPoint Energy Resources Corp.	505 Nicollet Mall 3rd Floor Minneapolis, MN 55402	Electronic Service	No	OFF_SL_22-416_Official
Susan	Ludwig	sludwig@mnpower.com	Minnesota Power	30 West Superior Street Duluth, MN 55802	Electronic Service	No	OFF_SL_22-416_Official
Vernelle	Lussier	vernelle.lussier@redlakention.org	Red Lake Nation	15484 Migizi Drive Red Lake, MN 56671	Electronic Service	No	OFF_SL_22-416_Official
Peter E.	Madsen	pmadsen@taftlaw.com	Taft Stettinius & Hollister LLP	2200 IDS Center 80 South 8th Street Minneapolis, MN 55402	Electronic Service	No	OFF_SL_22-416_Official
Kavita	Maini	kmaini@wi.rr.com	KM Energy Consulting, LLC	961 N Lost Woods Rd Oconomowoc, WI 53066	Electronic Service	No	OFF_SL_22-416_Official
Dawn S	Marsh	dawn_marshall@fws.gov	U.S. Fish & Wildlife Service	Minnesota-Wisconsin Field Offices 4101 American Blvd E Bloomington, MN 55425	Electronic Service	No	OFF_SL_22-416_Official
Pam	Marshall	pam@energycents.org	Energy CENTS Coalition	823 E 7th St St Paul, MN 55106	Electronic Service	No	OFF_SL_22-416_Official
Shena	Matrious	Shena.Matrious@millelacsband.com	Mille Lacs Band of Ojibwe	43408 Oodena Drive Onamia, MN 56349	Electronic Service	No	OFF_SL_22-416_Official
April	McCormick	aprim@grandportage.com	Grand Portage Band of Lake Superior Chippewa	PO Box 428 Grand Portage, MN 55605	Electronic Service	No	OFF_SL_22-416_Official

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Brian	Meloy	bmeloy@grenergy.com	Great River Energy	12300 Elm Creek Blvd Maple Grove, MN 55369	Electronic Service	No	OFF_SL_22-416_Official
Joseph	Meyer	joseph.meyer@ag.state.mn.us	Office of the Attorney General-RUD	Bremer Tower, Suite 1400 445 Minnesota Street St Paul, MN 55101-2131	Electronic Service	No	OFF_SL_22-416_Official
Valentina	Mgeni	Valentina.Mgeni@pic.org	Prairie Island Indian Community	Prairie Island Indian Community 5636 Sturgeon Lake Road Welch, MN 55089	Electronic Service	No	OFF_SL_22-416_Official
Cole W.	Miller	cole.miller@shakopeedakota.org	Shakopee Mdewakanton Sioux Community	Shakopee Mdewakanton Sioux Community 2330 Sioux Trail NW Prior Lake, MN 55372	Electronic Service	No	OFF_SL_22-416_Official
Stacy	Miller	stacy.miller@minneapolisn.gov	City of Minneapolis	350 S. 5th Street Room M 301 Minneapolis, MN 55415	Electronic Service	No	OFF_SL_22-416_Official
David	Moeller	dmoeller@allete.com	Minnesota Power	30 W Superior St Duluth, MN 558022093	Electronic Service	No	OFF_SL_22-416_Official
Andrew	Moratzka	andrew.moratzka@stoel.com	Stoel Rives LLP	33 South Sixth St Ste 4200 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_22-416_Official
Travis	Morrison	travis.morrison@boisfortensn.gov	Bois Forte Band of Chippewa	Bois Forte Tribal Government 5344 Lakeshore Drive Nett Lake, MN 55772	Electronic Service	No	OFF_SL_22-416_Official
Robert	Moyer, Jr.	rmoyer@boisfortensn.gov	Bois Forte Band of Chippewa Tribal Government	5344 Lakeshore Drive Nett Lake, MN 55772	Electronic Service	No	OFF_SL_22-416_Official

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Colleen	Mueller	N/A		22186 State Hwy 4 Paynesville, MN 56362	Paper Service	No	OFF_SL_22-416_Official
Sonny	Myers	smyers@1854treatyauthori ty.org	1854 Treaty Authority	4428 Haines Rd Duluth, MN 55811-1524	Electronic Service	No	OFF_SL_22-416_Official
Dan	Nelson	Dan.Nelson@ISGinc.com	I&S Group	115 E Hickory St Ste 300 Mankato, MN 56001	Electronic Service	No	OFF_SL_22-416_Official
David	Niles	david.niles@avantenergy.c om	Minnesota Municipal Power Agency	220 South Sixth Street Suite 1300 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_22-416_Official
Samantha	Norris	samanthanorris@alliantene rgy.com	Interstate Power and Light Company	200 1st Street SE PO Box 351 Cedar Rapids, IA 524060351	Electronic Service	No	OFF_SL_22-416_Official
Joseph	OBrien	joey.obrien@lowersioux.co m	Lower Sioux Indian Community	39527 Highway 1 Morton, MN 56270	Electronic Service	No	OFF_SL_22-416_Official
Samantha J	Odegard	samanthao@upperstouxc ommunity-nsn.gov	Upper Sioux Tribal Community	PO Box 147 Granite Falls, MN 56241	Electronic Service	No	OFF_SL_22-416_Official
Matthew	Olsen	molsen@otpc.com	Otter Tail Power Company	215 South Cascade Street Fergus Falls, MN 56537	Electronic Service	No	OFF_SL_22-416_Official
Carol A.	Overland	overland@legalelectric.org	Legalelectric - Overland Law Office	1110 West Avenue Red Wing, MN 55066	Electronic Service	No	OFF_SL_22-416_Official
Greg	Palmer	gpalmer@greatermngas.co m	Greater Minnesota Gas, Inc. & Greater MN Transmission, LLC	1900 Cardinal Ln PO Box 798 Faribault, MN 55021	Electronic Service	No	OFF_SL_22-416_Official

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Earl	Pendleton	earl.pendleton@lowersioux.com	Lower Sioux Indian Community	39527 Highway 1 Morton, MN 56270	Electronic Service	No	OFF_SL_22-416_Official
Kevin	Peterson	kjp@ibew160.org	IBEW Local 160	1109 Northway Lane NE Rochester, MN 55906	Electronic Service	No	OFF_SL_22-416_Official
Jennifer	Peterson	jipeterson@minpower.com	Minnesota Power	30 West Superior Street Duluth, MN 55802	Electronic Service	No	OFF_SL_22-416_Official
Catherine	Phillips	Catherine.Phillips@wecenergygroup.com	Minnesota Energy Resources	231 West Michigan St Milwaukee, WI 53203	Electronic Service	No	OFF_SL_22-416_Official
Angela	Piner	angela.piner@hdrinc.com	HDR, Inc.	Suite 600 701 Xenia Avenue South Suite 600 Minneapolis, MN 55416	Electronic Service	No	OFF_SL_22-416_Official
Joe	Plumer	joe.plumer@redlakenation.org	Red Lake Nation	15484 Migizi Drive Red Lake, MN 56671	Electronic Service	No	OFF_SL_22-416_Official
Kevin	Pranis	kpranis@lunagroc.com	Laborers' District Council of MN and ND	81 E Little Canada Road St. Paul, MN 55117	Electronic Service	No	OFF_SL_22-416_Official
Robert	Prescott	bob.prescott@lowersioux.com	Lower Sioux Indian Community	39527 Highway 1 Morton, MN 56270	Electronic Service	No	OFF_SL_22-416_Official
Larry	Rebman	larryemls@hotmail.com	EMLS, Inc	PO Box 122 Appleton, MN 56208	Electronic Service	No	OFF_SL_22-416_Official
Generic Notice	Residential Utilities Division	residential.utilities@ag.state.mn.us	Office of the Attorney General-RUD	1400 BRM Tower 445 Minnesota St St. Paul, MN 551012131	Electronic Service	Yes	OFF_SL_22-416_Official

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Kevin	Reuther	kreuther@mncenter.org	MN Center for Environmental Advocacy	26 E Exchange St, Ste 206 St. Paul, MN 551011667	Electronic Service	No	OFF_SL_22-416_Official
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	OFF_SL_22-416_Official
Susan	Romans	sromans@allele.com	Minnesota Power	30 West Superior Street Legal Dept Duluth, MN 55802	Electronic Service	No	OFF_SL_22-416_Official
Stephan	Roos	stephan.roos@state.mn.us	MN Department of Agriculture	625 Robert St N  Saint Paul, MN 55155-2538	Electronic Service	No	OFF_SL_22-416_Official
Bill	Rudnicki	bill.rudnicki@shakopeedakota.org	Shakopee Mdewakanton Sioux Community	Shakopee Mdewakanton Sioux Community 2330 Sioux Trail NW Prior Lake, MN 55372	Electronic Service	No	OFF_SL_22-416_Official
Nathaniel	Runke	nrunke@local49.org	International Union of Operating Engineers Local 49	611 28th St. NW  Rochester, MN 55901	Electronic Service	No	OFF_SL_22-416_Official
Miranda	Sam	Miranda.Sam@lowersioux.com	Lower Sioux Indian Community	39527 Reservation Highway 1 PO Box 308 Morton, MN 56270	Electronic Service	No	OFF_SL_22-416_Official
Adam	Savariego	adams@uppersiouxcommunity-nsn.gov	Upper Sioux Community	5722 Travers Lane PO Box 147  Granite Falls, MN 56241	Electronic Service	No	OFF_SL_22-416_Official
Elizabeth	Schmiesing	eschmiesing@winthrop.com	Winthrop & Weinstine, P.A.	225 South Sixth Street Suite 3500 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_22-416_Official

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Christine	Schwartz	Regulatory.records@xcelenergy.com	Xcel Energy	414 Nicollet Mall FL 7 Minneapolis, MN 55401 1993	Electronic Service	No	OFF_SL_22-416_Official
Jessie	Seim	jessie.seim@pic.org	Prairie Island Indian Community	5636 Sturgeon Lake Rd Welch, MN 55089	Electronic Service	No	OFF_SL_22-416_Official
Darrell	Seki, Sr.	dseki@reclakenation.org	Red Lake Nation	15484 Migizi Drive Red Lake, MN 56671	Electronic Service	No	OFF_SL_22-416_Official
Will	Seuffert	Will.Seuffert@state.mn.us	Public Utilities Commission	121 7th PI E Ste 350 Saint Paul, MN 55101	Electronic Service	Yes	OFF_SL_22-416_Official
Colleen	Sipiorski	Colleen.Sipiorski@wecenergygroup.com	Minnesota Energy Resources Corporation	700 North Adams St Green Bay, WI 54307	Electronic Service	No	OFF_SL_22-416_Official
Tom	Slukich	tom@nationalconductor.com	National Conductor Constructors	18119 Hwy 371 North Brainerd, MN 56401	Electronic Service	No	OFF_SL_22-416_Official
Joel	Smith	jsmith@mnchippewatribe.org	Minnesota Chippewa Tribe	PO Box 217 Cass Lake, MN 56633	Electronic Service	No	OFF_SL_22-416_Official
Nizhoni	Smith	nizhoni.smith@lowersioux.com	Lower Sioux Indian Community	PO Box 308 39527 Reservation Highway 1 Morton, MN 56270	Electronic Service	No	OFF_SL_22-416_Official
Ken	Smith	ken.smith@districtenergy.com	District Energy St. Paul Inc.	76 W Kellogg Blvd St. Paul, MN 55102	Electronic Service	No	OFF_SL_22-416_Official
Roger	Smith, Sr.	RogerMSmithSr@fdtrez.com	Fond du Lac Band of Lake Superior Chippewa	1720 Big Lake Road Cloquet, MN 55720	Electronic Service	No	OFF_SL_22-416_Official

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Adam	Sokolski	adam.sokolski@edf-re.com	EDF Renewable Energy	10 Second Street NE Ste 400 Minneapolis, MN 55410	Electronic Service	No	OFF_SL_22-416_Official
Eugene	Sommers	eugene.sommers@whiteearth-nsn.gov	White Earth Nation	PO BOX 418 White Earth, MN 56591	Electronic Service	No	OFF_SL_22-416_Official
Peggy	Sorum	peggy.sorum@centerpointenergy.com	CenterPoint Energy	505 Nicollet Mall Minneapolis, MN 55402	Electronic Service	No	OFF_SL_22-416_Official
Marie	Spory	mariespy@grandportage.com	Grand Portage Band of Lake Superior Chippewa	PO Box 428 Grand Portage, MN 55605	Electronic Service	No	OFF_SL_22-416_Official
Cheyenne	St. John	cheyenne.stjohn@lowersio.com	Lower Sioux Tribal Community	39527 Reservation Hwy 1 Morton, MN 56270	Electronic Service	No	OFF_SL_22-416_Official
LeRoy	Staples Fairbanks III	leroy.fairbanks@iljibwe.net	Leech Lake Band of Ojibwe	190 Sailstar Drive NW Cass Lake, MN 56633	Electronic Service	No	OFF_SL_22-416_Official
Byron E.	Starns	byron.starns@stinson.com	STINSON LLP	50 S 6th St Ste 2600 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_22-416_Official
Kristin	Stastny	kstastny@taftlaw.com	Taft Stettinius & Hollister LLP	2200 IDS Center 80 South 8th St Minneapolis, MN 55402	Electronic Service	No	OFF_SL_22-416_Official
Toby	Stephens	tobys@grandportage.com	Grand Portage Band of Lake Superior Chippewa	PO BOX 428 Grand Portage, MN 55605	Electronic Service	No	OFF_SL_22-416_Official
Cary	Stephenson	cStephenson@otpc.com	Otter Tail Power Company	215 South Cascade Street Fergus Falls, MN 56537	Electronic Service	No	OFF_SL_22-416_Official

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Mark	Strohfus	mstrohfus@grenergy.com	Great River Energy	12300 Elm Creek Boulevard Maple Grove, MN 553694718	Electronic Service	No	OFF_SL_22-416_Official
Carl	Strohm	cjsmg@sbcglobal.net	SBC Global	105 East Edgewood Ave Indianapolis, IN 46227	Electronic Service	No	OFF_SL_22-416_Official
James M	Strommen	jstrommen@kennedy-graven.com	Kennedy & Graven, Chartered	150 S 5th St Ste 700 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_22-416_Official
Samuel	Strong	Sam.strong@redlakenation.org	Red Lake Nation	15484 Migizi Drive Red Lake, MN 56671	Electronic Service	No	OFF_SL_22-416_Official
Tom	Swafford	tswofford@umsius	Utility Mapping Services, Inc	3947 E Calvary Rd Suite 103 Duluth, MN 55803	Electronic Service	No	OFF_SL_22-416_Official
Eric	Swanson	eswanson@winthrop.com	Winthrop & Weinstine	225 S 6th St Ste 3500 Capella Tower Minneapolis, MN 554024629	Electronic Service	No	OFF_SL_22-416_Official
Todd	Tadych	ttadych@atcllc.com	American Transmission Company LLC	5303 Fen Oak Dr Madison, WI 53718	Electronic Service	No	OFF_SL_22-416_Official
Camille	Tanhoff	kamip@upperSiouxcommunity-nsn.gov	Upper Sioux Community	5722 Travers Lane PO BOX 147 Granite Falls, MN 56241	Electronic Service	No	OFF_SL_22-416_Official
Stuart	Tommerdahl	stommerdahl@otpc.com	Otter Tail Power Company	215 S Cascade St PO Box 496 Fergus Falls, MN 56537	Electronic Service	No	OFF_SL_22-416_Official
Jayne	Trusty	execdir@swrdc.org	SWRDC	2401 Broadway Ave #1 Slayton, MN 56172	Electronic Service	No	OFF_SL_22-416_Official

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Caralyn	Trutna	carrie@upperSiouxcommunity-nsn.gov	Upper Sioux Community	Upper Sioux Community P.O. Box 147 Granite Falls, MN 55372	Electronic Service	No	OFF_SL_22-416_Official
Jen	Tyler	tyler.jennifer@epa.gov	US Environmental Protection Agency	Environmental Planning & Evaluation Unit 77 W. Jackson Blvd. Mallstop B-19J Chicago, IL 60604-3590	Electronic Service	No	OFF_SL_22-416_Official
Kodi	Verhalen	kverhalen@taftlaw.com	Taft Stettinius & Hollister LLP	80 S 8th St Ste 2200 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_22-416_Official
Leonard	Wabasha	leonard.wabasha@shakopeeakota.org	Shakopee Mdewakanton Sioux Community	2300 Tiwaha Circle Shakopee, MN 55379	Electronic Service	No	OFF_SL_22-416_Official
Haley	Waller Pitts	hwallerpitts@fredlaw.com	Fredrikson & Byron, P.A.	60 S Sixth St Ste 1500 Minneapolis, MN 55402-4400	Electronic Service	No	OFF_SL_22-416_Official
Caren	Warner	caren.warner@state.mn.us	Department of Commerce	85 7th Place East Suite 280 St. Paul, MN 55101-2198	Electronic Service	No	OFF_SL_22-416_Official
Luke	Warnsholz	lwarnsholz@boisforten-sn.gov	Bois Forte Band of Chippewa	Bois Forte Tribal Government 5344 Lakeshore Drive Nett Lake, MN 55772	Electronic Service	No	OFF_SL_22-416_Official
Cynthia	Warzecha	cynthia.warzecha@state.mn.us	Minnesota Department of Natural Resources	500 Lafayette Road Box 25 St. Paul, MN 55155-4040	Electronic Service	No	OFF_SL_22-416_Official
Elizabeth	Wetzel	ewetzel@flaherty-hood.com	Flaherty & Hood, P.A.	525 Park St Ste 470 Saint Paul, MN 55103	Electronic Service	No	OFF_SL_22-416_Official

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Heather	Westra	heather.westra@pic.org	Prairie Island Indian Community	5636 Sturgeon Lake Rd Welch, MN 55089	Electronic Service	No	OFF_SL_22-416_Official
Alan	Whipple	sa.property@state.mn.us	Minnesota Department Of Revenue	Property Tax Division 600 N. Robert Street St. Paul, MN 551463340	Electronic Service	No	OFF_SL_22-416_Official
Noah	White	noah.white@pic.org	Prairie Island Indian Community	5636 Sturgeon Lake Road Welch, MN 55089	Electronic Service	No	OFF_SL_22-416_Official
Steve	White	steve.white@ljobwe.net	Leech Lake Band of Ojibwe	190 Sailstar Drive NW Cass Lake, MN 56633	Electronic Service	No	OFF_SL_22-416_Official
Deanna	White	mncwa@cleanwater.org	Clean Water Action & Water Fund of MN	330 S 2nd Ave Ste 420 Minneapolis, MN 55401	Electronic Service	No	OFF_SL_22-416_Official
Cody	Whitebear	cody.whitebear@pic.org	Prairie Island Indian Community	5636 Sturgeon Lake Road Welch, MN 55089	Electronic Service	No	OFF_SL_22-416_Official
Samantha	Williams	swilliams@nrdc.org	Natural Resources Defense Council	20 N. Wacker Drive Ste 1600 Chicago, IL 60606	Electronic Service	No	OFF_SL_22-416_Official
Mike	Wilson	Mike.Wilson@millelacsband.com	Mille Lacs Band of Ojibwe	43408 Oodena Dr Onamia, MN 56359	Electronic Service	No	OFF_SL_22-416_Official
Virgil	Wind	virgil.wind@millelacsband.com	Mille Lacs Band of Ojibwe	43408 Oodena Drive Onamia, MN 56359	Electronic Service	No	OFF_SL_22-416_Official
Joseph	Windler	jwindler@winthrop.com	Winthrop & Weinstine	225 South Sixth Street, Suite 3500 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_22-416_Official

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Jonathan	Wolfigram	Jonathan.Wolfigram@state.mn.us	Office of Pipeline Safety	445 Minnesota St Ste 147 Woodbury, MN 55125	Electronic Service	No	OFF_SL_22-416_Official
Laurie	York	laurie.york@whiteearth-nsn.gov	White Earth Reservation Business Committee	PO Box 418 White Earth, MN 56591	Electronic Service	No	OFF_SL_22-416_Official
Kurt	Zimmerman	kwz@ibew160.org	Local Union #160, IBEW	2909 Anthony Ln St Anthony Village, MN 55418-3238	Electronic Service	No	OFF_SL_22-416_Official
Patrick	Zomer	Pat.Zomer@lawmoss.com	Moss & Barnett PA	150 S 5th St #1200 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_22-416_Official

## APPENDIX C: Direct Testimony and Schedules of Christian Winter

Direct Testimony and Schedules  
Christian Winter

Before the Minnesota Public Utilities Commission

State of Minnesota

In the Matter of the Application of Minnesota Power and Great River Energy  
for a Route Permit for the Northland Reliability Project  
345 kV Transmission Line

OAH Docket No. 21-2500-39822  
MPUC Docket No. E015, ET2/TL-22-415

**Infrastructure Corridor Sharing and Cost Considerations**

July 8, 2024

**TABLE OF CONTENTS**

	<b>Page</b>
I. INTRODUCTION AND QUALIFICATIONS.....	1
II. INFRASTRUCTURE CORRIDOR SHARING.....	2
III. PROJECT COST ESTIMATES.....	15
IV. CLARIFICATIONS TO THE EA .....	18
V. CONCLUSION .....	19



1 River Energy (collectively, the “Applicants”) Northland Reliability Project, which  
2 includes expansion of the existing Minnesota Power Iron Range Substation and Great  
3 River Energy Benton County Substation, a new Cuyuna Series Compensation Station,  
4 345 kilovolt (“kV”) double-circuit transmission connections between these facilities,  
5 and two 345 kV lines between the Benton County Substation and the Big Oaks and  
6 Sherco substations (“Project”), as discussed in more detail in the Direct Testimony of  
7 the Applicants’ witness Zach Golkowski. I am also supporting development of other  
8 large transmission initiatives being advanced, in whole or in part, by Minnesota Power.  
9

10 **Q. What is the purpose of your testimony?**

11 A. The purpose of my testimony is twofold. First, I will discuss the process undertaken by  
12 Applicants to evaluate opportunities for corridor sharing for new 345 kV double-circuit  
13 transmission lines proposed as part of the Project. Second, I will discuss how certain  
14 routing decisions by the Minnesota Public Utilities Commission (“Commission”) in this  
15 proceeding may necessitate further filings with the Midcontinent Independent System  
16 Operator, Inc. (“MISO”) and what those filings may entail. Finally, I provide certain  
17 technical context that is missing from the Environmental Assessment (“EA”).  
18

19 **Q. Are you sponsoring any exhibits in this proceeding?**

20 A. Yes. I am sponsoring the following schedules to my Direct Testimony:  
21 • Applicants Exhibit \_\_\_ (Winter), Direct Schedule 1 – Riverton Area Alternative  
22 Corridor Analysis;  
23 • Applicants Exhibit \_\_\_ (Winter), Direct Schedule 2 – Relevant Excerpts of the  
24 MISO Tariff; and  
25 • Applicants Exhibit \_\_\_ (Winter), Direct Schedule 3 – Analysis of Transmission  
26 Line Crossings.  
27

28 **II. INFRASTRUCTURE CORRIDOR SHARING**

29 **Q. What does it mean to have electric transmission infrastructure share corridors?**

30 A. The term infrastructure corridor sharing can be used to describe a variety of  
31 configurations where transmission lines are co-located or consolidated within a shared

1 physical location for some or all of their route. For the purpose of this discussion, it is  
2 important to define terminology more specifically to make a distinction between two  
3 particular types of infrastructure corridor sharing: “infrastructure stacking” and  
4 “corridor consolidation.”

5  
6 Throughout my testimony I will use the term “infrastructure stacking” when discussing  
7 configurations that involve placing multiple transmission circuits on the same  
8 transmission structure. Infrastructure stacking configurations may also be referred to as  
9 underbuild, double-circuit, or triple-circuit, depending on the number of circuits being  
10 “stacked” and their operating voltages.

11  
12 Throughout my testimony I will use the term “corridor consolidation” when discussing  
13 configurations that involve placing multiple transmission circuits physically adjacent to  
14 one another on separate transmission structures, with lateral separation distances  
15 between parallel transmission lines as defined by safety, operation, and maintenance  
16 considerations. This scenario may also be referred to as a “common corridor” or “shared  
17 right-of-way” configuration. In this configuration, several adjacent transmission lines  
18 of varying voltage and physical size may run parallel to one another in a single cleared  
19 area or corridor.

20  
21 **Q. Please describe the different types of infrastructure stacking.**

22 A. The term “underbuild” typically refers to the construction of a high-voltage transmission  
23 line (greater than 100 kV) with the co-location of a lower voltage line (typically below  
24 69 kV) on the same structures. This is rarely done for a variety of reasons, especially  
25 when the ownership of the high-voltage transmission line is different than the lower  
26 voltage lines.

27  
28 Double-circuit construction involves the consolidation of two separate transmission  
29 circuits on the same structure. Triple-circuit construction involves the consolidation of  
30 three separate transmission circuits on the same structure. Placing multiple transmission  
31 circuits on common structures generally reduces right-of-way requirements, which

1 potentially reduces human and environmental impacts. However, there are cost, market,  
2 maintenance, and view-scape impacts.

3  
4 **Q. Have the Applicants evaluated opportunities to implement corridor sharing for the**  
5 **Project?**

6 A. Yes. First, it is important to note that several corridor sharing opportunities were  
7 incorporated into the original design and proposed route for the Project. In both Segment  
8 1 (between the Iron Range Substation and the Benton County Substation) and Segment  
9 2 (between the Benton County Substation and the Big Oaks and Sherco substations),  
10 the Project already includes two new 345 kV transmission lines which will be  
11 configured on a common (double-circuit) structure for practically their entire length. In  
12 Segment 2, the proposed two double circuit 345 kV lines totaling 42-miles will replace  
13 existing single-circuit 230 kV lines within existing rights-of-way for all but 2.25 miles.  
14 In Segment 1, the new approximately 140-mile double-circuit 345 kV line is proposed  
15 by the Applicants to be located in a common corridor with existing 230 kV and 115 kV  
16 lines for over 83 percent of its length, only deviating from those existing corridors along  
17 the proposed route where significant human, environmental, or engineering constraints  
18 were identified by the Applicants.

19  
20 Prior to submitting the combined Certificate of Need and Route Permit Application  
21 (“Application”) on August 4, 2023, Applicants identified and further evaluated existing  
22 linear infrastructure between the existing Minnesota Power and Great River Energy  
23 substations at the Project endpoints, the proposed location of the new Xcel Energy Big  
24 Oaks Substation, and the proposed Cuyuna Series Compensation Station location, to  
25 identify opportunities where infrastructure stacking or corridor consolidation could be  
26 considered for the proposed new double-circuit 345 kV transmission line to minimize  
27 impacts to the natural and human environment. The Applicants’ evaluation of  
28 infrastructure stacking and corridor consolidation is discussed in Section 4.6 of the  
29 Application.

30

1           Importantly, there are circumstances where reliability, maintenance, and safety  
2 requirements make certain corridor sharing configurations unworkable. This is  
3 particularly true for infrastructure stacking, where, in certain circumstances, multiple  
4 transmission lines should not be placed on a shared structure for reliability or system  
5 integrity reasons, including those established by the North American Electric Reliability  
6 Corporation (“NERC”). Certain corridor consolidation configurations may also lead to  
7 reliability and maintenance concerns where the loss of all transmission lines in a  
8 common corridor would result in significant regional reliability impacts or create  
9 challenges for accessibility and maintenance. In other circumstances, it may be  
10 technically feasible to implement certain corridor sharing configurations, but the  
11 existing system modifications and outages required to implement those configurations  
12 may present significant increased costs, schedule impacts, and other risks for the  
13 Project.

14  
15           Based on the evaluation of these issues, the Applicants proposed a Project configuration  
16 and route that maximized corridor sharing opportunities in balance with the associated  
17 human, environmental, and engineering constraints, as well as potential cost, schedule,  
18 and reliability impacts. Subsequent to filing the Application, the Commission asked the  
19 Applicants to further evaluate corridor sharing and infrastructure stacking opportunities  
20 along the Project route, but especially near the existing Minnesota Power Riverton  
21 Substation. In this location, the Applicants proposed a greenfield route segment to avoid  
22 identified routing constraints associated with existing transmission infrastructure and  
23 human settlement and environmental impacts.

24  
25       **Q.    Please describe some of the reliability standards that must be considered when**  
26 **evaluating opportunities for consolidation of transmission lines, particularly for**  
27 **infrastructure stacking configurations.**

28       **A.**   When multiple transmission lines or “circuits” (each circuit made up of three phases)  
29 are placed on a common structure, each of these circuits is now exposed to a single point  
30 of failure (e.g., tower failure). In addition, when performing maintenance on any one  
31 circuit on the common structure, an outage of all circuits is often necessary for worker

1 safety. Reliability standards established by NERC require that the transmission system  
2 is planned to be able to withstand potential contingencies – including the loss of a  
3 common structure or loss of all circuits in a common corridor.<sup>1</sup> The first step in the  
4 evaluation is to determine if the consolidation alternative would lead to criteria  
5 violations under the applicable reliability standards if there is a simultaneous outage on  
6 all circuits on a common tower. After evaluation of reliability standards, other  
7 engineering considerations are evaluated. When placing multiple structures on a  
8 common tower, it often requires both taller and more robust structures, which may not  
9 be allowed in certain areas (e.g., near an airport due to height restrictions).

10  
11 **Q. What other considerations weigh into an evaluation of infrastructure stacking of**  
12 **transmission facilities?**

13 A. In addition to reliability and engineering considerations, the impact of potential  
14 infrastructure stacking on the construction, operation, maintenance, and cost of the  
15 transmission facilities under consideration must be evaluated.

16  
17 **Q. How does infrastructure stacking impact maintenance of transmission lines?**

18 A. When multiple circuits are constructed on common towers, to take one circuit out of  
19 service for maintenance, all circuits sharing the common tower must be deenergized for  
20 the maintenance period. As MISO coordinates outages to ensure system reliability,  
21 trying to schedule simultaneous outages involving multiple circuits on a common tower  
22 is more difficult than if each circuit could be maintained separately without taking the  
23 others out of service at the same time. In addition, taller or more specialized structures  
24 required for infrastructure stacking may require specialized equipment and maintenance  
25 practices, particularly where infrastructure stacking is implemented on a relatively small  
26 segment of a larger transmission line.

27  

---

<sup>1</sup> NERC Standard TPL-001-5.1, Table 1, defines different types of contingencies to be considered in transmission planning reliability assessments, including Category P7 “Multiple Contingency (Common Structure)” and certain types of Extreme Events involving “Loss of a tower line with three or more circuits” or “Loss of all Transmission lines on a common Right-of-Way” for lengths of more than one mile. See <https://www.nerc.com/pa/Stand/Reliability%20Standards/TPL-001-5.1.pdf>.

1 **Q. Besides outage constraints, what other operational impacts may be caused by**  
2 **infrastructure stacking?**

3 A. Part of the reason that outages of multiple-circuit transmission lines may be difficult to  
4 schedule is that those outages can lead to real-time transmission system congestion.  
5 Congestion is a limitation or “bottle neck” on the transmission system which prevents  
6 the lowest cost electric generators from serving demand, which results in higher energy  
7 prices driven by the need to run less economical generation. Conceptually, it can be  
8 equated to a traffic jam on an interstate where there is a greater volume of traffic than  
9 the roadway is designed to typically handle. When planning for reliable and economic  
10 real-time operations, MISO must not only consider the reliability impact of the  
11 transmission lines for which a planned outage is requested, but also any other  
12 transmission lines that may be out of service at that same time, and any single  
13 contingency that may take place during the outage which would cause an unplanned  
14 outage of another transmission line or generator. Transmission congestion patterns  
15 fluctuate based on generation availability, system demand levels, weather, and outages.  
16 In recent years, however, one of the predominate drivers of congestion is transmission  
17 system outages. The more (count) and higher voltage (magnitude) transmission lines  
18 which are on outage at any given time, either planned or unplanned, the higher the  
19 likelihood of congestion.

20  
21 **Q. How is infrastructure stacking of transmission lines interrelated with transmission**  
22 **congestion?**

23 A. Infrastructure stacking increases the potential for system congestion by increasing the  
24 likely frequency and magnitude of transmission outages in at least two ways. First, to  
25 re-locate and reconfigure existing transmission lines onto common structures with other  
26 new or existing transmission lines during the construction process requires a  
27 simultaneous outage of all transmission lines being consolidated onto a common set of  
28 structures. Depending on the configuration and physical location of construction  
29 required to implement the infrastructure stacking, the duration of these simultaneous  
30 outages may take several months before the transmission lines are returned to service.  
31 Second, once the construction of the newly-stacked transmission line infrastructure is

1 complete, maintenance on any one circuit typically requires coordination and  
2 scheduling of outages on all of the consolidated circuits to allow the work to proceed in  
3 a safe manner, as discussed above. In both situations, taking multiple transmission  
4 circuits out of service causes increased power flows on other transmission circuits. If  
5 there is not enough transmission capacity on other circuits to accommodate this rerouted  
6 power, generation resources may need to be curtailed or dispatched from other areas or  
7 other transmission system reconfigurations may be needed to accommodate these  
8 outages. The result is additional congestion that results in increased transmission  
9 congestion costs in the MISO market for the period of congestion.

10  
11 **Q. Do these same concerns also apply to corridor consolidation?**

12 A. Some of these same concerns are also present for corridor consolidation, which involves  
13 constructing transmission lines adjacent to one another on separate structures, but the  
14 concerns in that case are generally present with a different level of risk and potential  
15 impact. For example, it is possible to maintain transmission lines in a common corridor  
16 without taking all of them out of service at the same time, but depending on the type of  
17 maintenance and physical configuration of the corridor, accessibility or safety concerns  
18 may require multiple circuits to be taken out of service at the same time in some  
19 instances. The Applicants also must consider the reliability impacts of an event causing  
20 a simultaneous outage of all transmission lines in a common corridor,<sup>2</sup> but the events  
21 are generally categorized as “extreme” and the focus of the reliability assessment is on  
22 ensuring that such an event would not result in cascading regional outage impacts.<sup>3</sup>

23  

---

<sup>2</sup> *In the Matter of the Application of Minnesota Power for a Route Permit for the Great Northern 500 kV Transmission Line Project in Roseau, Lake of the Woods, Beltrami, Koochiching, and Itasca Counties*, Docket No. E015/TL-14-21, ORDER ISSUING ROUTE PERMIT WITH MODIFICATIONS at Order Point 4 (April 11, 2026) (Commission Order Point requiring that Minnesota Power obtain review of Commission-ordered triple corridor (three separate transmission lines in a common corridor) of a portion of the Great Northern Transmission Line by MISO to affirm that the establishment of such triple corridor is in conformance with MISO planning requirements and NERC reliability standards.

<sup>3</sup> See NERC TPL-001-5.1, Table 1 “Steady State & Stability Performance Extreme Events” (page 26 of 32).

1 **Q. What analysis did the Applicants complete with respect to corridor consolidation**  
2 **or infrastructure stacking for the Project after the Commission’s request?**

3 A. The Applicants reviewed the full length of the Project to identify additional  
4 opportunities where further infrastructure stacking or corridor consolidation may be  
5 feasible and in compliance with the applicable standards. As a result of that analysis,  
6 the Applicants identified potential opportunities in the Riverton area and in the area of  
7 Cole Lake Way, both along Segment 1.

8  
9 **Q. Prior to the Commission’s request, what had the Applicants concluded with**  
10 **respect to the Riverton area of the Project and the proposed double-circuit 345 kV**  
11 **transmission line?**

12 A. The Applicants initially rejected a route alternative in the Riverton area that follows the  
13 existing Minnesota Power 92 Line and 11 Line from the Cuyuna Series Compensation  
14 Station (Section 7 of Irondale Township in Crow Wing County) to the southeast before  
15 turning south at Section 25 of Oak Lawn Township in Crow Wing County and following  
16 Great River Energy’s MR Line for 6.5 miles. This alternative and the reasons for  
17 Applicants’ initial rejection are provided in Section 5.3.5 of the Application.

18  
19 **Q. What additional analysis did the Applicants perform related to consolidation**  
20 **opportunities in the Riverton area in response to the Commission’s Order?**

21 A. The Applicants’ witness Mr. Golkowski discusses the environmental and  
22 socioeconomic impact analysis related to the Riverton area, while I provide a summary  
23 of the electrical and reliability analysis that Applicants performed in response to the  
24 Commission’s request. The Applicants developed a revised routing option in this area  
25 (the “Riverton Area Alternative Corridor”) that maximizes the use of existing rights-of-  
26 way and consolidation of existing electrical infrastructure through the area, combining  
27 existing 69 kV, 115 kV, and 230 kV lines into double-circuit configurations where  
28 feasible without requiring triple-circuiting of the proposed new double-circuit 345 kV  
29 lines. Extensive reconfigurations of existing electrical infrastructure are required to  
30 facilitate the Riverton Area Alternative Corridor. Attached to my Direct Testimony as

1 Schedule 1 is a summary document that describes the Riverton Area Alternative  
2 Corridor in more detail, including a discussion of the associated impacts and costs.

3  
4 **Q. What concerns do the Applicants have with this potential consolidation?**

5 A. The Riverton Area Alternative Corridor would necessitate extensive reconfigurations  
6 and relocations of existing electrical infrastructure in the area. Consolidation of  
7 transmission lines, substations, and distribution lines in this area will also necessitate  
8 complex scheduling of outages for purposes of construction as well as any future  
9 maintenance activities. In addition to outage scheduling, the existing system  
10 reconfigurations necessary to accommodate co-location of the new double-circuit 345  
11 kV transmission line in the existing transmission corridor greatly expand the scope of  
12 work necessary to implement the Project, introducing engineering, procurement, and  
13 construction activities on several additional transmission lines, two existing substations,  
14 and the local distribution system. Because these facilities need to be relocated and  
15 reconfigured to make room for the Project, these additional activities would need to be  
16 integrated into the Project schedule and become a critical path for Project  
17 implementation. Additional risk to the Project schedule would be introduced by the  
18 material lead time and labor requirements to complete these activities for the Riverton  
19 Area Alternative Corridor reconfigurations.

20  
21 Furthermore, Minnesota Power already has a separate Riverton STATCOM Project<sup>4</sup>  
22 planned for construction at the Riverton 230/115kV Substation in the same timeframe  
23 during which the Project would require construction of the Riverton Area Alternative  
24 Corridor reconfigurations. The substantial amount of work taking place within this one  
25 concentrated area would result in elevated risk of scheduling and construction impacts  
26 for both projects.

27  

---

<sup>4</sup> The Riverton STATCOM Project was included in the 2023 Minnesota Biennial Transmission Projects Report (Docket No. E999/M-23-91) under tracking number 2021-NE-N21 (“230 kV STATCOM Project”). This project is needed on a basis entirely independent of the Northland Reliability Project, as discussed in the 2023 Biennial Report. Construction of the project is anticipated to take place between 2025-2027.

1 **Q. How much more would the Riverton Area Alternative Corridor cost when**  
2 **compared to the route proposed in the Application?**

3 A. The net impact of the Riverton Area Alternative Corridor is estimated to cost at least  
4 \$99.5 million more than the route proposed in the Application.  
5

6 **Q. How would the Riverton Area Alternative Corridor impact the Project schedule**  
7 **when compared to the route proposed in the Application?**

8 A. To make room for the construction of the proposed double-circuit 345 kV transmission  
9 line within the existing transmission corridor, the Riverton Area Alternative Corridor  
10 would require significant modifications to the existing 230 kV, 115 kV, 69 kV, and 34.5  
11 kV systems, including relocation and, in some cases, stacking of these existing  
12 transmission lines. The existing Riverton 230 kV/115 kV Substation would also need to  
13 be expanded to accommodate additional 115 kV and 34.5 kV equipment that is  
14 necessary to enable the retirement of the existing Riverton 115 kV/34.5 kV Distribution  
15 Substation, which would need to be removed to facilitate relocation of the existing  
16 transmission lines. In total, the Riverton Area Alternative Corridor would introduce ten  
17 additional 230 kV, 115 kV, and 69 kV line segments, four additional 34.5 kV  
18 distribution feeders, and two substations to the overall Project scope for engineering,  
19 procurement and construction scheduling purposes.  
20

21 Because the modifications to these facilities would need to be completed prior to  
22 constructing the Project's proposed double-circuit 345 kV transmission line, new  
23 engineering, procurement, and construction lead times associated with these  
24 modifications would be added to an already-complex Project schedule and become  
25 critical path items for proceeding with the construction of the double-circuit 345 kV  
26 transmission line. For the substation expansion and relocation, major equipment lead  
27 times for circuit breakers and transformers are currently up to three years. The earliest  
28 the Applicants could realistically order new equipment for the Riverton Area  
29 Alternative Corridor after the Commission's Route Permit decision is finalized  
30 (estimated to occur in the fourth quarter of 2024) would be in the first quarter of 2025.  
31 If material lead times stay around three years and do not increase, that would place the

1 earliest completion of the necessary pre-work for the Riverton Area Alternative  
2 Corridor in the first half of 2028. Only after that work is completed could 345 kV line  
3 construction through the Riverton area proceed, leaving a two-year window within  
4 which to complete 345 kV double-circuit transmission line construction through the  
5 Riverton area to energize the Project by its June 1, 2030, in-service date. This two-year  
6 window is challenging from an overall implementation and scheduling standpoint,  
7 especially if there are additional limitations on vegetation clearing or construction time  
8 periods identified due to potential ecological or environmental resource impacts.

9  
10 The Applicants would need to consider other adjustments to the Project schedule, likely  
11 shifting all transmission line construction between the Cuyuna Series Compensation  
12 Station and through the Riverton Area Alternative Corridor to the end of the Project.  
13 While the Applicants believe that completion of the Project by its June 1, 2030, in-  
14 service date is feasible with the Riverton Area Alternative Corridor, additional Project  
15 facilities and scheduling complexities – including potential outage impacts from the  
16 existing system reconfiguration – would introduce considerable risk and eliminate any  
17 margin for unexpected delays from the Project schedule as it is currently planned. Given  
18 the Applicants’ proposed route would not require this complicated phasing of work,  
19 these risks to Project timing are not anticipated for the Applicants’ proposed route.

20  
21 The Applicants have also evaluated reassigning equipment already procured for other  
22 planned projects if the Riverton Area Alternative Corridor is ordered to be constructed  
23 for the Project to mitigate lead time-related schedule risks. While this approach would  
24 reduce certain timing risks for the Project with the Riverton Area Alternative Corridor,  
25 it would delay important asset renewal projects in other areas of the Applicants’  
26 transmission systems in favor of adding scope to the Project.

27  
28 **Q. Do the Applicants prefer the Riverton Area Alternative Corridor over the route**  
29 **proposed in the Application?**

30 **A.** No. The Applicants still prefer the route proposed in the Application that traverses the  
31 Hay Lake area, avoids the constraints in the Riverton area, and is estimated to cost at

1 least \$99.5 million less than the Riverton Area Alternative Corridor. However, the  
2 Riverton Area Alternative Corridor was developed to ensure that a buildable and  
3 technically feasible alternative would be available for consideration in the EA and for  
4 further consideration by the Commission. If the Commission were to select the Riverton  
5 Area Alternative Corridor, the Applicants are confident that the Project could still be  
6 successfully constructed, albeit with a significant amount of increased cost and  
7 complexity, with some risk of schedule delay as discussed above.

8  
9 **Q. Were any additional areas examined for potential transmission line consolidation**  
10 **for the Project?**

11 A. Yes. During the EA scoping meetings, several landowners with properties on or near  
12 Cole Lake Way recommended that the Proposed Route not deviate from Minnesota  
13 Power’s existing 115 kV (13 Line and 11 Line) and 230 kV (92 Line) transmission lines  
14 (Sections 16, 20, and 21 of Wolford Township in Crow Wing County). The Proposed  
15 Route deviates from these existing lines in this area to avoid displacing homes located  
16 adjacent to the existing right-of-way. After further analysis, Applicants developed an  
17 alternative that would consolidate the 11 Line and 92 Line on the same structures and  
18 enable placement of the new double-circuit 345 kV line proposed for the Project on the  
19 right-of-way currently used by the 92 Line in this area (“Cole Lake Way Alignment  
20 Alternative”). The Applicants’ witness Mr. Golkowski discusses the environmental and  
21 socioeconomic impact analysis related to the Cole Lake Way Alignment Alternative.

22  
23 **Q. What concerns do the Applicants have with this potential consolidation?**

24 A. The Cole Lake Way Alignment Alternative would necessitate complex reconfigurations  
25 and relocations of existing electrical infrastructure in the area. Consolidation of the  
26 existing 115 kV and 230 kV transmission lines in this area onto a common set of  
27 structures will also necessitate complicated scheduling of outages for purposes of  
28 construction, particularly when combined with the impacts of the Riverton Area  
29 Alternative Corridor, as well increasing complexity of future maintenance activities. In  
30 addition to outage scheduling, the existing system reconfigurations necessary to  
31 accommodate co-location of the new double-circuit 345 kV transmission line in the

1 existing Cole Lake Way area transmission corridor expand the scope of work necessary  
2 to implement the Project, introducing engineering, procurement, and construction  
3 activities on the two additional transmission lines which are not necessary for the  
4 Applicants' proposed route. Because these facilities need to be consolidated to make  
5 room for the Project, these additional activities would need to be integrated into the  
6 Project schedule and become a critical path for Project implementation. Additional risk  
7 to the Project schedule would be introduced by the material lead time and labor  
8 requirements to complete these activities for the Cole Lake Way Alignment Alternative.  
9

10 **Q. How much more would the Cole Lake Way Alignment Alternative cost when**  
11 **compared to the route proposed in the Application?**

12 A. The Cole Lake Way Alignment Alternative is estimated to cost approximately \$36.4  
13 million more than the route proposed in this area in the Application.  
14

15 **Q. How would the Cole Lake Way Alignment Alternative impact the Project schedule**  
16 **when compared to the route proposed in the Application?**

17 A. To make room for the construction of the proposed double-circuit 345 kV transmission  
18 line within the existing transmission corridor near Cole Lake Way, the Cole Lake Way  
19 Alignment Alternative would require stacking the existing 230 kV and 115 kV  
20 transmission lines in this area. The new double-circuit 230 kV and 115 kV line would  
21 be constructed on an alignment within the existing corridor that leaves sufficient room  
22 for parallel construction of the proposed double-circuit 345 kV transmission line in a  
23 common corridor through the area. Because the modifications to these two existing  
24 facilities would need to be completed prior to constructing the Project's proposed  
25 double-circuit 345 kV transmission line, new engineering, procurement, and  
26 construction lead times associated with these modifications would be added to an  
27 already-complex project schedule and become critical path items for proceeding with  
28 the construction of the double-circuit 345 kV transmission line.  
29

30 While the Applicants believe that completion of the Project by its June 1, 2030, in-  
31 service date is feasible with the Cole Lake Way Alignment Alternative, additional

1 Project facilities and scheduling complexities – including potential outage impacts from  
2 the existing system reconfiguration and cumulative impacts from other corridor  
3 consolidation alternatives like the Riverton Area Alternative Corridor – would introduce  
4 considerable risk and eliminate margin from the Project schedule as it is currently  
5 planned. These risks to Project timing are not anticipated for the Applicants’ proposed  
6 route because it would not require this complicated phasing of work.

7  
8 **Q. Do the Applicants prefer the Cole Lake Way Alignment Alternative over the route  
9 proposed in the Application?**

10 A. No. As the Applicants’ witness Mr. Golkowski notes, the Cole Lake Way Alignment  
11 Alternative would locate the Project in closer proximity to existing residences than the  
12 alignment proposed in the Application in this area. While the Applicants do not prefer  
13 the consolidation of the 11 Line and the 92 Line, the Applicants believe it is a feasible,  
14 but more costly, alternative to address comments made during the EA scoping meetings  
15 by individuals concerned about routing in this area. If the Commission were to select  
16 the Cole Lake Way Alignment Alternative, the Applicants are confident that the Project  
17 could still be successfully constructed, albeit with added cost and complexity, with some  
18 risk of schedule delay as discussed above.

19  
20 **III. PROJECT COST ESTIMATES**

21 **Q. What is the current cost estimate for the Project?**

22 A. Based on the route proposed in the Application, the Applicants estimate the cost to  
23 construct the Project is between \$970 million and \$1.3 billion (2022\$).

24  
25 **Q. How did the Applicants develop this cost estimate range?**

26 A. The low end of this range (\$970 million) is based on the planning-level cost estimate  
27 used by MISO for review of the Project as part of the LRTP Tranche 1 portfolio and is  
28 the cost basis upon which it was approved by the MISO Board of Directors in July 2022.  
29 The high-end estimate (\$1.3 billion) was developed by the Applicants based on the route  
30 and scope of the Project presented in the Application and incorporating the best-  
31 available cost estimate information at the time of filing. The Applicants’ cost estimate

1 range is based on the Applicants' proposed route and does not reflect potential impacts  
2 from the Riverton Area Alternative Corridor, the Cole Lake Way Alignment  
3 Alternative, or any other potential route alternatives introduced through the scoping  
4 process for the EA.

5  
6 **Q. How does the cost of the Project factor into MISO's prior determinations related**  
7 **to its classification of the Project as a Long Range Transmission Plan ("LRTP")**  
8 **Tranche 1 Portfolio Project?**

9 A. The Project is part of the MISO LRTP Tranche 1 Portfolio, which has been determined  
10 by MISO to meet the criteria for being designated a Multi-Value Project ("MVP")  
11 according to the MISO Tariff. For a project to be deemed justified by MISO as an MVP  
12 it must (i) address transmission issues associated with a projected violation of a  
13 reliability standards, (ii) provide multiple types of economic value across multiple  
14 pricing zones with a benefit-to-cost ratio of 1.0 or higher, or (iii) support the reliable  
15 and economic delivery of energy in support of documented energy policy mandates or  
16 laws. The overall cost of the Project would impact the calculation of the benefit-to-cost  
17 ratio used to justify the LRTP Tranche 1 Portfolio. The LRTP Tranche 1 Portfolio is  
18 estimated to provide a benefit-to-cost ratio of at least 2.6 over the first 20 years and 3.8  
19 over a 40-year period. Thus, the benefit-to-cost ratio of the full LRTP Tranche 1  
20 Portfolio far exceeds the 1.0 threshold. While the Applicants do not expect changes to  
21 the Project identified since MISO approval to materially impact this ratio such that it  
22 falls below the 1.0 threshold, the costs and benefits may need to be re-assessed by MISO  
23 depending on the scope and magnitude of the changes.

24  
25 **Q. Are the Applicants required to make any filings with MISO if Project costs are**  
26 **estimated to exceed \$970 million?**

27 A. Yes. The Applicants are required to provide MISO with regular updates on the cost and  
28 schedule for the Project. If the cost of the Project as reported by the Applicants to MISO  
29 exceeds the original baseline estimate by 25 percent or more, MISO Tariff, Attachment  
30 FF, Section IX.C.1 provides for MISO to undertake a variance analysis. A variance  
31 analysis for a project may also be triggered by a schedule delay or inability to complete

1 project construction. A copy of the relevant sections of the MISO Tariff is included with  
2 my Direct Testimony as Schedule 2.

3  
4 **Q. What does a variance analysis with MISO entail?**

5 A. The process for a variance analysis is set forth in the MISO Tariff. Once a variance  
6 analysis has been triggered, MISO and the Applicants would discuss the known project  
7 facts, whether a variance event exists, and what outcome the Applicants believe is  
8 appropriate. This would also include the development of supporting facts and  
9 documentation. Based on the facts and documentation, MISO may determine that no  
10 further detailed analysis is necessary and accept the changes, ending the variance  
11 analysis at this point. If MISO elects to continue with further detailed variance analysis,  
12 MISO will complete additional investigation into the variance event and relevant facts  
13 and factors including the cause or reason for the variance, the degree of fault of the  
14 transmission owner for the increased costs, impacts to the MISO Transmission System,  
15 degree of completion of other interconnected facilities, and a comparison of the costs of  
16 different outcomes. Once this evaluation is completed, MISO may then elect to: (1) take  
17 no action; (2) institute a mitigation plan to alleviate grounds for a variance; or (3) cancel  
18 the project.

19  
20 **Q. Given that \$1.3 billion would exceed \$970 million by more than 25 percent, have  
21 Applicants notified MISO of this increase in costs?**

22 A. The Applicants' mid-range cost estimate of \$1.1 billion is currently within 25 percent  
23 of the original MISO baseline estimate, while the high-end cost estimate exceeds 25  
24 percent above baseline. The Applicants have been in regular communication with MISO  
25 about the development and status of the Project, including the Applicants' updated cost  
26 estimate range and potential outcomes of the permitting process. Due to the possibility  
27 for realignments, reroutes, and other impacts to Project scope resulting from scoping,  
28 preliminary engineering, and regulatory review processes, MISO directed the  
29 Applicants not to submit an updated cost estimate for the Project until after regulatory  
30 approvals have been obtained. After the Commission's determination of the final route  
31 for the Project, the Applicants will develop an updated cost estimate and schedule based

1 on the Commission's approved route, officially report the updated cost and schedule to  
2 MISO, and then work with MISO as it undertakes a variance analysis, if necessary.

3  
4 **Q. Would the consolidation discussed above necessitate a variance analysis with**  
5 **MISO pursuant to its Open Access Transmission, Energy and Operating Reserve**  
6 **Markets Tariff Attachment FF, Section IX?**

7 A. Perhaps. Depending on the final route approved by the Commission for the Project, the  
8 Applicants will evaluate cost estimates. Should the Commission order construction of  
9 the Riverton Area Alternative Corridor and Cole Lake Way Alignment Alternative,  
10 those changes combined with the overall Project mid-range cost estimate of \$1.1 billion  
11 could necessitate a variance analysis with MISO. The variance analysis would consider  
12 all circumstances and assumptions that have changed since MISO approval.

13  
14 **Q. What is the anticipated outcome if a variance analysis is initiated with MISO for**  
15 **the Project due to cost?**

16 A. Other than requiring a variance analysis, the MISO Tariff does not dictate a particular  
17 outcome of a variance analysis initiated based on a change to the Project estimate. The  
18 Project and the LRTP Tranche 1 Portfolio are expected to continue to provide  
19 substantial economic benefits well in excess of the minimum required 1.0 benefit-to-  
20 cost ratio, even with the potential cost impacts of the Project route alternatives.  
21 Applicants would provide this information to MISO as well as any increased benefits  
22 of the Project since the last analysis was completed. The Applicants would recommend  
23 to MISO that the Project proceed as an integral and valuable part of the LRTP Tranche  
24 1 Portfolio even with an increased cost from the original MISO baseline estimates.

25  
26 **IV. CLARIFICATIONS TO THE EA**

27 **Q. Have the Applicants reviewed the EA?**

28 A. Yes. The Applicants have completed an initial review of the EA, as discussed in the  
29 Direct Testimonies of the Applicants' witness Mr. Golkowski and Brian Hunker.

30

1 **Q. Are there any clarifications to the evaluation of alternatives in the EA that should**  
2 **be made at this time?**

3 A. While the Applicants are continuing to evaluate the contents of the EA, it is important  
4 that the line crossing requirements associated with the alternative identified as Route  
5 Alternative B are clarified for purposes of its evaluation in this proceeding. Specifically,  
6 the analysis of Route Alternative B in Table 7-1 of the EA omits that to construct Route  
7 Alternative B, two crossings of the existing Minnesota Power 92 Line would be  
8 necessary. Line crossings can be complicated and must be considered when evaluating  
9 alternatives. I provide a summary of line crossing considerations in Schedule 3 to my  
10 Direct Testimony. The Applicants' Proposed Route would not require these additional  
11 crossings of the existing Minnesota Power 92 Line. This is an important differentiating  
12 factor between Route Alternative B and the Applicants' proposed route.

13

14

#### V. CONCLUSION

15 **Q. Does this complete your testimony?**

16 A. Yes.

### Riverton Alternative Corridor Reconfiguration

In Section 5.3.5 of the Application, the Applicants discuss a Rejected Route Alternative that follows the existing Minnesota Power 92 Line and 11 Line from the Cuyuna Series Compensation Station, starting at Section 7 of Irondale Township in Crow Wing County heading southeast past the existing Riverton Substation, and then turns south at Section 25 of Oak Lawn Township in Crow Wing County, following Great River Energy's MR Line for a total of 6.5 miles. This Route Alternative was originally rejected for several reasons, including impacts to Little Rabbit Lake (which is considered part of the Mississippi River) and residential lots north of Little Rabbit Lake, the Cuyuna Country State Recreation Area and the Applicants' existing electrical infrastructure south of Little Rabbit Lake, a cluster of homes built near the existing transmission line right-of-way at Highway 210, and gravel pits, the Loerch Wildlife Management Area ("WMA"), and residences along the existing right-of-way south of Highway 210.

Based on feedback from the Commission during the October 5 meeting, as well as comments received during the environmental scoping meetings, the Applicants have developed a revised version of the Riverton Area Alternative Corridor that maximizes the use of existing rights-of-way and consolidation of existing electrical infrastructure through the area to limit impacts for as many of the constraints listed above as possible. While the Applicants still prefer the proposed route through the Hay Lake area that avoids constraints in the Riverton area, and their associated impacts and costs, the Applicants submit the following route alternative for consideration in the environmental assessment as a technically feasible solution for routing through the Riverton Area.

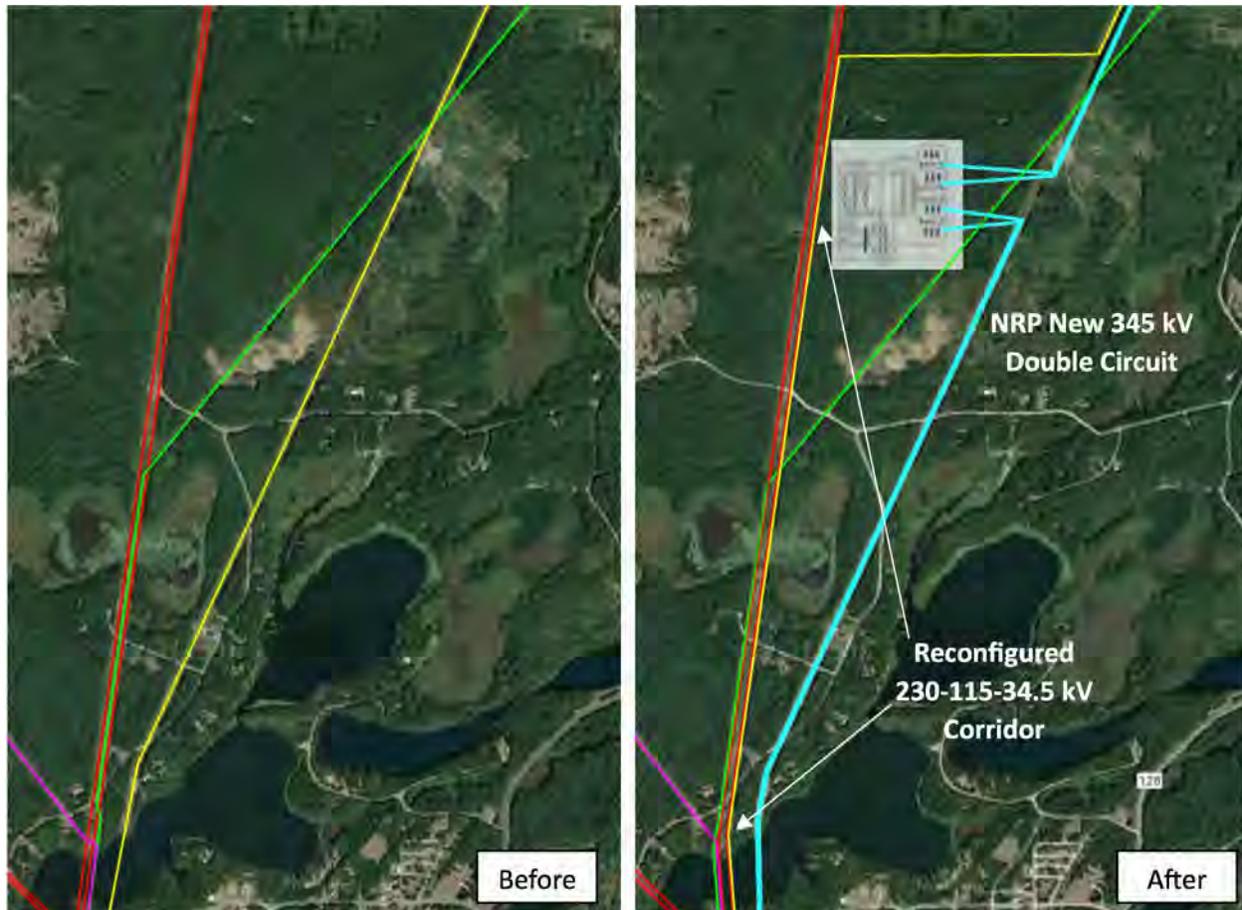
Starting at the Cuyuna Series Compensation Station, the Riverton Area Alternative Corridor would replace Minnesota Power's existing 230 kV 92 Line with the Project's new double circuit 345 kV line for approximately 1.5 miles until it crosses Little Rabbit Lake. The 92 Line would be relocated and consolidated with an existing 115 kV line in a nearby existing corridor. Following the Little Rabbit Lake crossing, the Project would shift to replacing the existing Great River Energy Riverton – Blind Lake 69 kV Line (RV Line) through the Cuyuna Country State Recreation Area for approximately 0.6 miles. The RV Line would be relocated and consolidated with an existing 115 kV line in a nearby corridor. South of Minnesota Power's existing Riverton 230/115 kV Substation, the Project would replace the Great River Energy Riverton - Wilson Lake 69 kV Line (RW Line) as it parallels the east side of the existing Great River Energy 230 kV line for approximately 1.2 miles. The RW Line would be relocated and consolidated with an existing 230 kV line in the same corridor. At the Highway 210 crossing, the entire corridor including the Project, the consolidated 230 kV and 69 kV lines, the 115 kV line, and an existing 34.5 kV distribution feeder, would be relocated to an alignment that balances impacts to homes on both sides of the highway. Approximately 1.4 miles south of Highway 210, the entire corridor would again be shifted to the west to limit impacts to homes along Nelson Road. In this part of the corridor, the Project would take over the centerline of the existing 230 kV line, with the consolidated 230 kV and 69 kV lines and the 115 kV line located to the west in the right-of-way. The Project would continue on this alignment for 1.4 miles until it rejoins the proposed alignment at Woodrow Road.

Extensive reconfigurations of existing electrical infrastructure are required to facilitate the Riverton Area Alternative Corridor as described above. The following sections provide more detail on the required reconfigurations in the different segments of the Riverton Area Alternative Corridor, including discussion of the associated impacts and costs.

### Cuyuna Series Compensation Station to Little Rabbit Lake

From the Cuyuna Series Compensation Station to Little Rabbit Lake, the proposed Northland Reliability Project's ("Project" or "NRP") double-circuit 345 kV line would overtake the existing Minnesota Power Blackberry – Riverton 230 kV line (92 Line) right-of-way for approximately 1.5 miles to Little Rabbit Lake. The existing 130-foot right-of-way for 92 Line would need to expand to 150 feet for NRP. To accommodate NRP, the existing 92 Line would need to be relocated. After being re-routed around the Cuyuna Series Compensation Station, the 92 Line would be consolidated into a common corridor with the existing Minnesota Power Riverton – Grand Rapids 115 kV Line (11 Line), Minnesota Power Riverton – Portage Lake 115 kV Line (13 Line), and a Minnesota Power 34.5 kV Distribution Feeder. The following modifications would be made to this existing corridor:

- Minnesota Power 34.5 kV Distribution Feeder to be rebuilt overhead or undergrounded as needed to make room for reconfigured 115 kV and 230 kV transmission lines (2.1 miles).
- 13 Line rebuilt single circuit 115 kV on west side of the corridor from Cuyuna Series Compensation Station site to Rabbit Lake (1.8 miles).
- 92 Line & 11 Line constructed on double-circuit 230 kV/230 kV structures on east side of the corridor from Cuyuna Series Compensation Station site to Rabbit Lake (1.8 miles).
- The existing right-of-way varies from 140-180 feet. To relocate the 230 kV transmission line into the corridor, the total right-of-way would need to be increased to 215 feet, including approximately 65 feet from the centerline of the double-circuit 230 kV line to the eastern edge of right-of-way and approximately 50 feet from the centerline of the 115 kV line to the western edge of right-of-way.

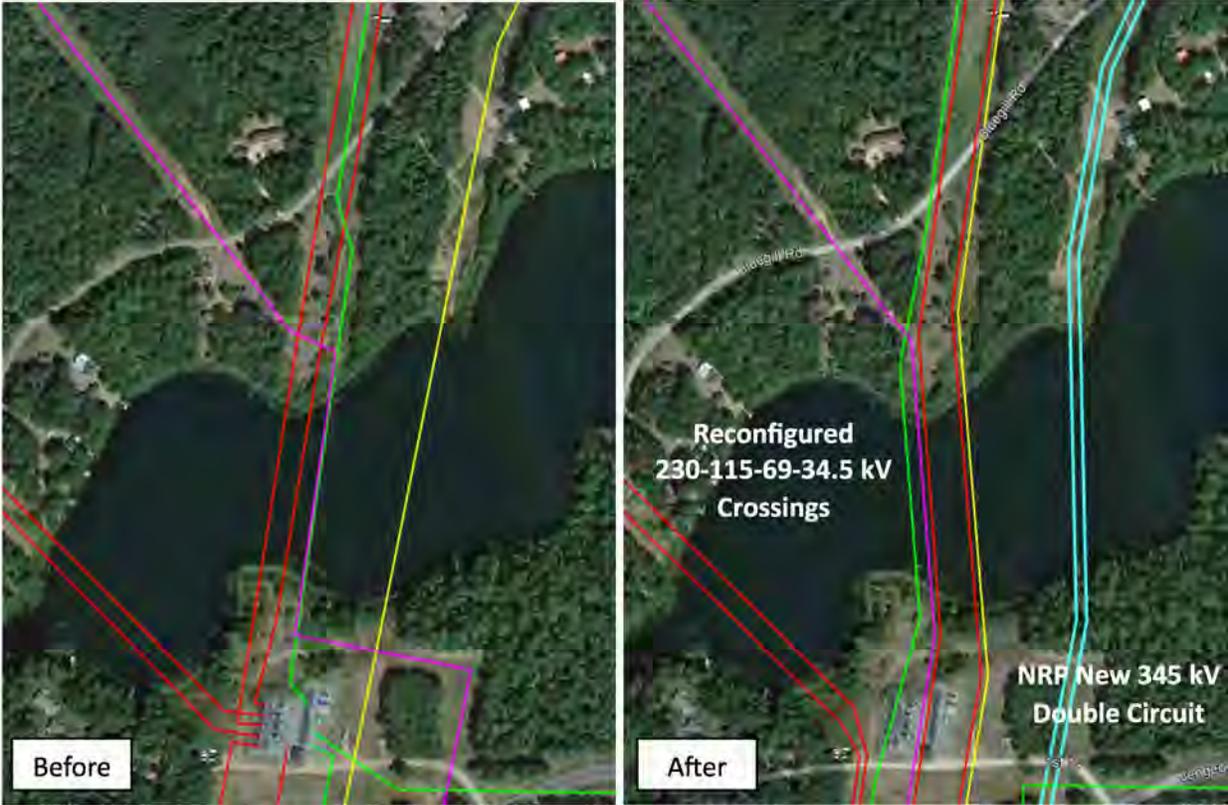


### Little Rabbit Lake Crossing

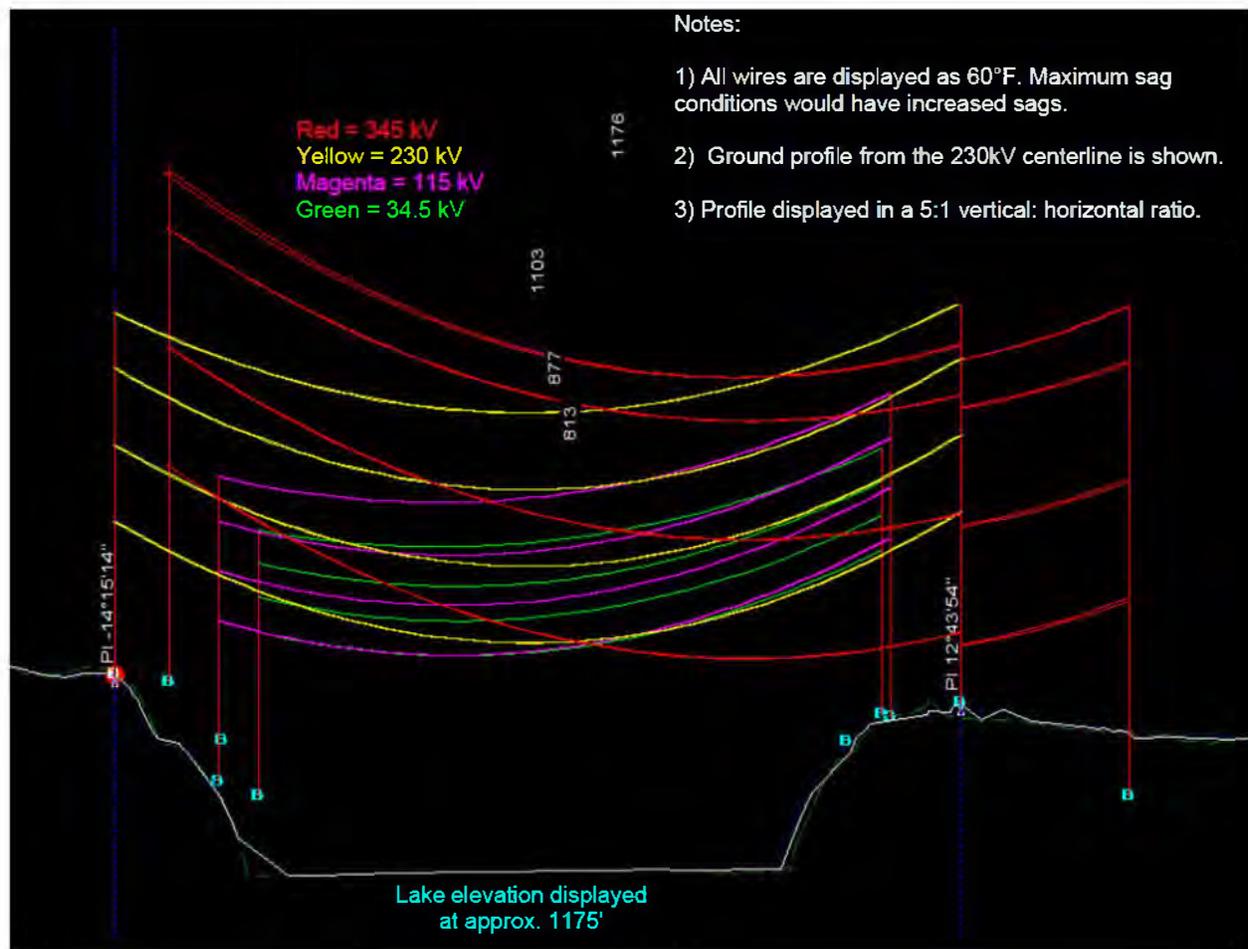
At Little Rabbit Lake, the proposed NRP double-circuit 345 kV line would overtake the existing 92 Line alignment as it crosses Little Rabbit Lake. The existing horizontally arranged 230 kV line would be replaced with a vertically oriented double-circuit 345 kV line. The estimated span length of the lake crossing is approximately 1,300 feet, which will require structures on the higher end of the range (140-180 feet) at the crossing. To accommodate NRP, the existing 92 Line would need to be relocated, continuing in the common corridor with the existing 115 kV lines as described above. The following modifications would be made to the existing transmission lines at the Little Rabbit Lake crossing:

- Minnesota Power 34.5 kV Distribution Feeder rebuilt on a single-circuit overhead crossing on west side of the Little Rabbit Lake crossing corridor. The lake crossing will change alignment slightly to shift from the new alignments south of Little Rabbit Lake to the existing alignments north of Little Rabbit Lake. The 34.5 kV alignment will use a portion of the existing 11 Line Lake crossing alignment.
- 13 Line & RV Line constructed on double-circuit 115 kV/115 kV structures parallel to the 34.5 kV circuit. North of Little Rabbit Lake, the Great River Energy 69 kV line branches northwest on its existing alignment while 13 Line continues north on single-circuit structures. South of Little Rabbit Lake, 13 Line & RV Line continue south on double-circuit structures.

- 92 Line and 11 Line constructed on double circuit 230 kV/230 kV structures across Little Rabbit Lake, paralleling the relocated 34.5 kV, 69 kV and 115 kV circuits as they cross the lake. North and south of Little Rabbit Lake, 92 Line and 11 Line continue on double-circuit structures.



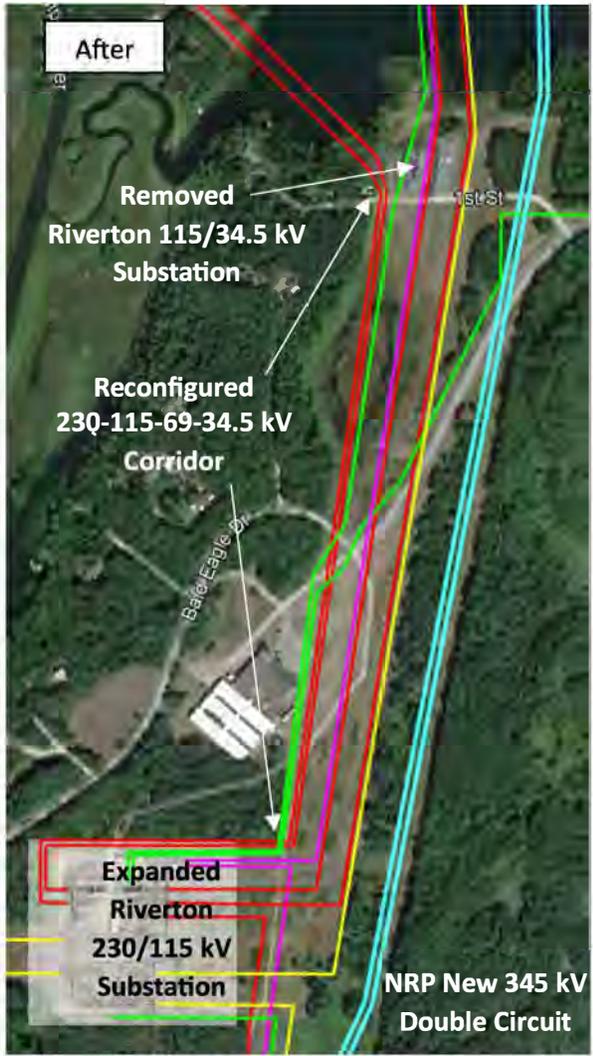
Due to the number of transmission lines crossing Little Rabbit Lake, their various operating voltages, and the expected vertical orientation of the double circuit structures at the crossing location, there will be conductors at several different heights as they cross over Little Rabbit Lake. A conceptual profile drawing of the different conductor heights crossing Little Rabbit Lake is shown below.



### Little Rabbit Lake to Riverton 230/115 kV Substation

South of Little Rabbit Lake, the proposed NRP double-circuit 345 kV line would shift east onto the alignment of the existing RV Line. This alignment would place the NRP inside the Cuyuna Country State Recreation Area for a short distance. In general, the eastern edge of the existing RV Line right-of-way would be maintained, and the additional right-of-way required for NRP (approximately 80 feet) would extend to the west. To accommodate NRP and the consolidation of corridors described in the preceding sections, the RV Line and all existing transmission lines and substations west of the proposed NRP alignment in this area would need to be reconfigured. The following modifications would be made:

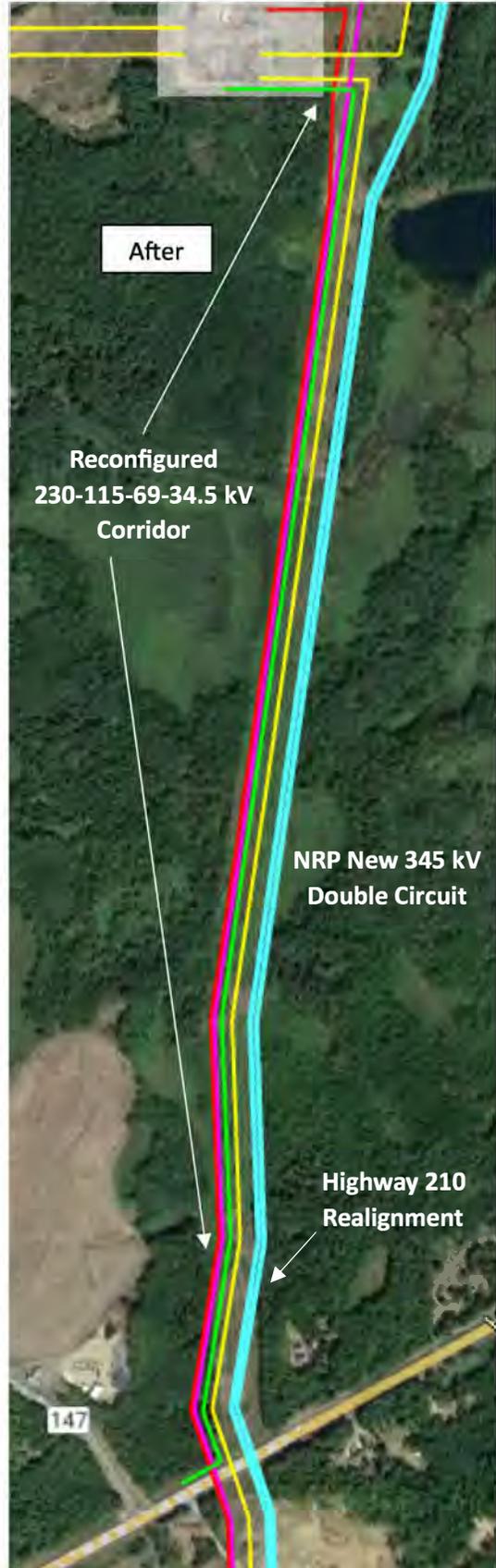
- The existing Minnesota Power Riverton 115 kV/34.5kV Substation would need to be removed to accommodate the previously described transmission line reconfigurations at the Little Rabbit Lake crossing and additional reconfigurations south of Rabbit Lake. The existing Minnesota Power Riverton 230 kV/115 kV Substation, located less than a mile to the south, would be expanded to incorporate the interconnections presently tied to the Riverton 115 kV/34.5 kV Substation, including 115 kV transmission lines, 115 kV/34.5 kV transformers and 34.5 kV feeders. A second 230 kV/115 kV transformer with a tertiary-connected shunt reactor would be added at the Riverton 230 kV/115 kV Substation to accommodate the expansion of the 115 kV bus. The majority of the expansion would be completed within the existing Riverton 230 kV/115 kV Substation fence line, but the fence may need to be expanded in some areas.
- Existing Minnesota Power 34.5 kV distribution feeders would be reconfigured and extended to the new 34.5 kV bus at the expanded Riverton 230 kV/115 kV Substation. Reconfigured feeders would be undergrounded as necessary to avoid conflicting with overhead transmission lines.
- The existing Minnesota Power Riverton – Brainerd 115 kV Line (12 Line) would be reconfigured to terminate at the expanded Riverton 230 kV/115 kV Substation, requiring a short span into a new line entrance.
- The existing Minnesota Power Riverton – Pequot Lakes 115 kV Line (51 Line) and Minnesota Power Riverton – Baxter 115 kV Line (130 Line) would be extended from structures outside the removed Riverton 115 kV/34.5 kV Substation to the expanded Riverton 230 kV/115 kV Substation on double-circuit 115 kV/115 kV structures following the existing 12 Line alignment and the north side of the Riverton 230 kV/115 kV Substation to new line entrances on the west side of the expanded substation (approximately 4,100 feet).
- 92 Line & 11 Line would continue south on double-circuit 230 kV/230 kV structures, shifting onto the existing 92 Line alignment as they pass by the former site of the Riverton 115 kV/34.5 kV Substation and continuing to their respective line entrance locations at the expanded Riverton 230 kV/115 kV Substation (approximately 4,100 feet).
- 13 Line & RV Line would continue south on double-circuit 115 kV/115 kV structures, crossing over the former site of the Riverton 115 kV/34.5 kV Substation and continuing to the expanded Riverton 230 kV/115 kV Substation along the alignment of the existing Riverton – Riverton 115 kV Line (“60 Line”), a total of approximately 3,850 feet. 60 Line would no longer be necessary following the removal of the Riverton 115 kV/34.5 kV Substation and relocation of its interconnections.
- Following construction of the double-circuit 13 Line & RV Line, the existing RV Line running through the Cuyuna Country State Recreation Area would be removed to make space for the construction of the NRP double-circuit 345 kV/345 kV line.



### South of Riverton 230 kV/115 kV Substation to Highway 210 Crossing

South of the Riverton 230 kV/115kV Substation, the proposed NRP double-circuit 345 kV/345 kV line would shift slightly west onto the alignment of the existing Great River Energy Riverton – Wilson Lake 69kV Line (RW Line), paralleling the existing Great River Energy Riverton – Mud Lake 230kV Line (MR Line) with a minimum 110-foot centerline to centerline offset as proposed in other parts of the route. The Riverton Area Alternative Corridor would follow this alignment past the Crow Wing County landfill until just north of Highway 210. At the Highway 210 crossing, the alignment of the NRP and existing 230 kV, 115 kV, 69 kV, and 34.5 kV lines will be reconfigured to limit impacts to homes on the north and south sides of the highway. To accommodate NRP, existing transmission and distribution lines in this corridor will need to be rebuilt. The following modifications would be made to this existing corridor:

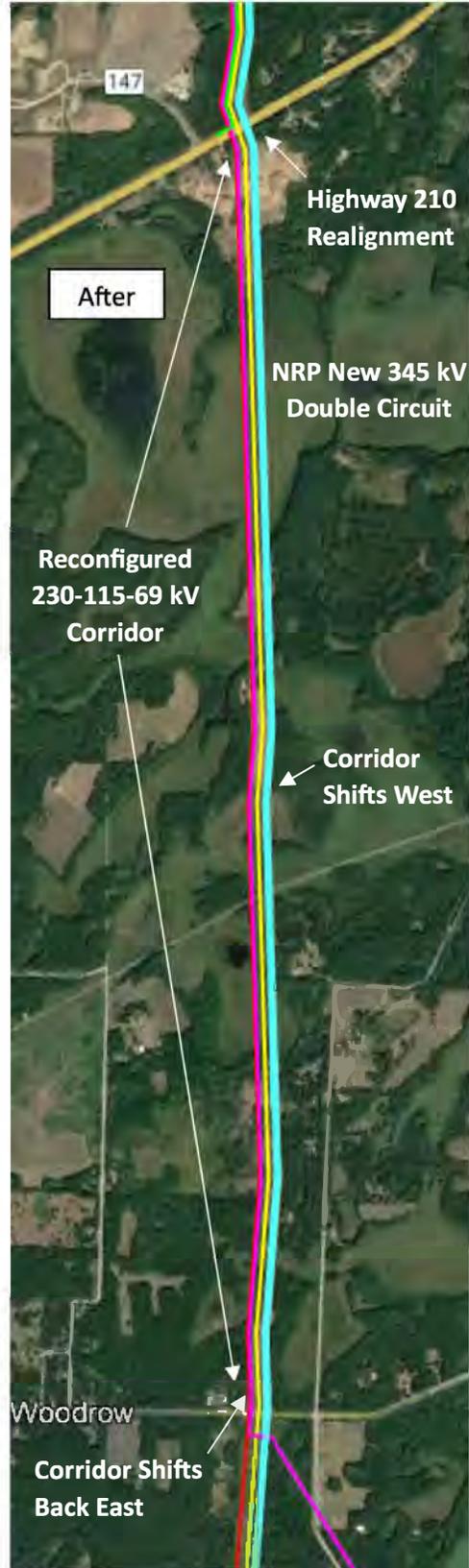
- The existing Great River Energy 69 kV RW Line will be relocated onto double-circuit 230 kV/115 kV structures with the Great River Energy 230 kV MR Line for the entire segment, generally following the existing MR Line alignment until the Highway 210 crossing (approximately 1.5 miles).
- The existing Minnesota Power Riverton – Brainerd 115 kV Line (12 Line) will be rebuilt on single circuit 115 kV structures for the entire length of this segment, generally on or near its existing alignment to optimize corridor width (approximately 1.5 miles).
- The existing Minnesota Power 34.5 kV Distribution Feeder will be relocated or undergrounded as needed from Riverton 230 kV/115 kV Substation to Highway 210 (approximately 1.4 miles) to further reduce right-of-way requirements for the common corridor.
- The existing right-of-way in this corridor is generally 235 feet. After relocating the RW Line, approximately 100 feet of additional right-of-way would be required to accommodate the NRP double-circuit 345 kV/345 kV line. The additional right-of-way is required on the east side of the corridor, with the exception of the Highway 210 crossing realignment shown below.



### Highway 210 Crossing to Proposed Route

South of Highway 210, the proposed NRP double-circuit 345 kV line would shift slightly west back onto the alignment of the existing Great River Energy Riverton – Wilson Lake 69kV Line (RW Line), paralleling the existing Great River Energy’s Riverton – Mud Lake 230 kV Line (MR Line) with a minimum 110-foot centerline to centerline offset as proposed in other parts of the route. The NRP would follow this alignment for approximately 1.4 miles south of Highway 210. At that point, the NRP would shift west to overtake the MR Line alignment, maintaining the eastern edge of the right-of-way for another 1.4 miles until shifting back to the east where it meets up again with the Applicants’ proposed route near Woodrow Road. To accommodate NRP, existing transmission and distribution lines in this corridor would need to be rebuilt on a combination of new and existing alignments to reduce impacts to residences. The following modifications would be made to this existing corridor:

- The existing Great River Energy 69 kV RW Line will be relocated onto double circuit 230kV-115kV structures with the Great River Energy 230 kV MR Line for the entire segment, following the existing MR Line alignment for 1.4 miles and then shifting west within the corridor for the remaining approximately 1.4 miles.
- The existing Minnesota Power Riverton – Brainerd 115 kV Line (12 Line) will be rebuilt on single-circuit 115 kV structures for the entire length of this segment, following its existing alignment for the first 1.4 miles and then shifting west for the remaining approximately 1.4 miles.
- The existing right-of-way in this corridor is generally 235 feet. After relocating the RW Line, an additional 100 feet of right-of-way would be required to accommodate the NRP double-circuit 345 kV line. The additional right-of-way is required on the east side of the corridor for approximately the first 1.4 miles. At that point, the entire corridor shifts west to limit impacts to homes, and the additional 100 feet of right-of-way is required on the west side of the corridor for the remaining approximately 1.4 miles until it shifts back east where it meets up with the Proposed Route near Woodrow Road.



## **VIII.I OBLIGATION TO NEGOTIATE INTERCONNECTION AGREEMENTS**

The Selected Developer(s) and any Transmission Owner(s) whose facilities will interconnect to the Competitive Transmission Facilities that the Selected Developer is obligated to construct shall each take commercially reasonable efforts to finalize and execute any required Transmission-to-Transmission Interconnection Agreements at least one hundred and twenty (120) calendar days before the scheduled in service date of the Competitive Transmission Project.

## **IX. VARIANCE ANALYSIS**

After the Transmission Provider Board approves an Eligible Project for inclusion in Appendix A of the MTEP, certain circumstances or events may significantly affect the cost, schedule, and or the ability of Selected Developers and Transmission Owners to complete and place into service the facilities comprising an Eligible Project for which they are responsible as specified in the MTEP. Under these circumstances or events, the Transmission Provider may need to perform a Variance Analysis in order to further understand the reasons for such circumstances or events and to evaluate any potential impacts that they may have on the successful completion of the Project or on the Transmission System.

### **IX.A. Applicability and Scope of Variance Analysis**

The provisions set forth in this Section IX of Attachment FF are only applicable to Eligible Projects (and the facilities that comprise these projects) approved by the Transmission Provider Board for inclusion in Appendix A of the MTEP after December 1, 2015. These provisions become applicable upon: (i) the date the Transmission Provider Board approves the respective Eligible Project for facilities that are not Competitive Transmission Facilities; or (ii) the date the Selected Developer Agreement has been executed or filed unexecuted with the Commission for Competitive Transmission Facilities. Facilities comprising Eligible Projects shall remain subject to the provisions of Attachment FF Section IX until such facilities have been placed into service and placed under the Transmission Provider's functional control.

#### **IX.B. Variance Analysis Governance**

The Competitive Transmission Executive Committee shall have the exclusive and final authority to oversee and implement Variance Analysis, including the decision to implement any of the appropriate Variance Analysis Outcomes pursuant to Section IX.E of this Attachment FF. Such exclusive and final authority shall: (1) be subject to the Dispute Resolution provisions of Section IX.G of this Attachment FF and to Attachment HH; and (2) shall not prejudice any rights or obligations the Transmission Provider, Selected Developer(s), and incumbent Transmission Owner(s) have to make filings before the Commission.

#### **IX.C. Grounds for Variance Analysis**

The following circumstances or events shall trigger the Transmission Provider's Variance Analysis for facilities included in an Eligible Project.

### **IX.C.1. Cost Increase**

If the Transmission Provider determines that the estimated cost to complete an entity's portion of an approved Eligible Project (e.g. the competitively bid facilities of the Competitive Transmission Project or the facilities assigned to an incumbent Transmission Owner included in an Eligible Project(s) either has exceeded or is projected to exceed the Baseline Cost Estimate as set forth in Section IX.C.1.1 by twenty-five percent (25%) or more, the Transmission Provider shall initiate a Variance Analysis.

The Transmission Provider will not consider any portion of cost increases under this section to the extent that the Selected Developer has agreed to internalize such costs through an accepted binding containment mechanism(s). However in the event that the accepted binding cost-containment mechanism(s) are applied and the remaining estimated cost increase still has exceeded or is projected to exceed the threshold, the Transmission Provider shall initiate a Variance Analysis.

#### **IX.C.1.1. Baseline Cost Estimate**

The Baseline Cost Estimate for an entity's portion of an Eligible Project shall be set as follows: (i) for Competitive Transmission Facilities the Baseline Cost Estimate shall be the project cost estimate provided in the Selected Proposal as agreed to in the Selected Developer Agreement;

and (ii) for the facilities assigned to an incumbent Transmission Owner included in the Eligible Project not eligible for the Competitive Transmission Process, as described in Attachment FF Section VIII.A of the Tariff, the Baseline Cost Estimate shall be the project cost estimate provided by the respective Transmission Owner through their status update provided upon achieving Milestone #2 pursuant to the Business Practices Manuals. The Baseline Cost Estimate for facilities included in an Eligible Project shall be adjusted appropriately based upon any approved change orders or as necessary based on the outcome of any Variance Analysis conducted for such facilities.

In the event that an entity's portion of an Eligible Project is reassigned pursuant to Section IX.E.3 of this Attachment FF, the Transmission Provider shall adjust the Baseline Cost Estimate to reflect the cost estimates and supporting information submitted to the Transmission Provider by the applicable Transmission Owner during Variance Analysis. The Transmission Provider shall include such information in any filing made to the Commission pursuant to Section IX.D.4.E of this Attachment FF.

#### **IX.C.2. Schedule Delays**

If the Transmission Provider determines that the in-service date of facilities included in an approved Eligible Project has been or is projected to be

delayed beyond the in-service date as established in MTEP Appendix A, the Transmission Provider shall meet with the Selected Developer(s), incumbent Transmission Owner(s), if applicable, interconnecting Transmission Owner(s), and any entities responsible for facilities to which the delayed facilities interconnect to discuss whether such delay creates a significant risk of one or more NERC reliability standards violations as well as any other material issues, including service obligations, economic or public policy needs that may be jeopardized as a result of the delay. If any such issues are identified, the Transmission Provider shall, in consultation with these entities, develop a plan, as necessary, to address potential NERC reliability standards violations as well as any other issues that may be of material concern arising from the delay of the transmission facilities.

If the potential NERC reliability standards violations, or other issues of material concern, cannot be adequately addressed by the entity responsible for constructing the delayed facilities, the Transmission Provider will take appropriate action; including but not limited to, determining that Reassignment is necessary to complete the transmission solution as set forth in Section IX.E.3 of this Attachment FF.

### **IX.C.3. Default under the Selected Developer Agreement**

If the Transmission Provider determines that a Selected Developer is in Default under a Selected Developer Agreement for an Eligible Project pursuant to

the terms thereof.

#### **IX.C.4 Inability to Complete Facilities**

If the Transmission Provider makes a determination that a Selected Developer or an incumbent Transmission Owner will be unable to complete facilities for which it has been designated to construct; where such determination may be based on, but is not limited to the following:

- a. A Selected Developer's or an incumbent Transmission Owner's inability to secure necessary approvals, permits, certificates, financing, resources, needed expertise and/or third party support identified in the Selected Proposal, property rights, rights of way, or is otherwise unable or unlikely to construct the facilities;
- b. A Selected Developer's or an incumbent Transmission Owner's notification to the Transmission Provider that it is unable or unwilling to proceed with construction of its facilities for which it has been designated to construct;
- c. A Selected Developer or an incumbent Transmission Owner's abandonment of the facilities it has been designated to construct;
- d. A determination by the Transmission Provider that a Selected Developer is no longer a Qualified Transmission Developer; and
- e. A determination by the Transmission Provider that reassignment is necessary pursuant to Section IX.E.3 of this Attachment FF.

In selecting the appropriate Variance Analysis Outcome to apply where the Transmission Provider has determined that a Selected Developer or an incumbent Transmission Owner will be unable to complete the facilities for which it has been designated to construct, the Transmission Provider will consider, but is not limited to considering the following, in addition to the general factors set forth in Section IX.D.2.1:

- (i) The reasons that the Selected Developer or the Transmission Owner was unable or was unlikely to construct the facilities;
- (ii) Whether the facilities are still needed;
- (iii) Whether a Mitigation Plan, as further described in Section IX.E.2 of this Attachment FF, is available that could remedy the ground(s) for Variance Analysis, including consideration of the extent to which it will cost; and
- (iv) Whether reassignment, as further described in Section IX.E.3 of this Attachment FF, is available, including the impacts of reassigning the facilities to another entity.

#### **IX.C.5 Undisclosed Assignments**

If the Transmission Provider determines that the Selected Developer has assigned the Competitive Transmission Facilities, Competitive Transmission Project, or Selected Developer Agreement to an entity not disclosed in its Proposal as required by Section VIII.D.5.12 or on terms materially different than

those disclosed in the Proposal, except for assignments to a Project Finance Entity pursuant to Article 14.4 of the Selected Developer Agreement.

**IX.D. Variance Analysis Procedure**

Variance Analysis shall commence when the Transmission Provider makes an initial determination that one or more of the grounds for Variance Analysis as described in Section IX.C of this Attachment FF exists. The Transmission Provider will adhere to the following steps, as further detailed in the applicable Business Practices Manuals, in performing a Variance Analysis:

**IX.D.1. Initial Inquiry and Confirmation of Grounds for Variance Analysis**

Upon making an initial determination that one or more of the grounds for Variance Analysis as described in Section IX.C of this Attachment FF exists, the Transmission Provider shall notify the applicable Selected Developer or Transmission Owner in writing that Variance Analysis has commenced, including the ground(s) for commencing Variance Analysis, and a brief description of the Transmission Provider's concerns. The applicable Selected Developer or incumbent Transmission Owner shall be provided an opportunity to be heard by the Transmission Provider and present to the Transmission Provider its position on whether the identified ground(s) for Variance Analysis exist and what outcome it believes is appropriate along with supporting facts and documentation. If the Transmission Provider determines that the ground(s) for Variance Analysis do not

exist after considering the Selected Developer or Transmission Owner's response and any other relevant information, the Transmission Provider shall terminate the Variance Analysis. If the Transmission Provider continues to believe that reasonable grounds for Variance Analysis exist after considering the Selected Developer or Transmission Owner's response and any other relevant information, the Transmission Provider shall continue to commence Variance Analysis and so notify the Selected Developer or Transmissions Owner.

#### **IX.D.2. Determination of Variance Analysis Outcome**

If the Transmission Provider continues to believe that reasonable ground(s) for Variance Analysis exists pursuant to the process described in Section IX.D.1 of this Attachment FF, the Transmission Provider shall further investigate the circumstances or events and the relevant facts surrounding the facilities identified in Section IX.D.1 above. Upon completing its investigation, the Transmission Provider shall make a determination of which Variance Analysis Outcome to apply, as described in Section IX.E of this Attachment FF. In determining which Variance Analysis Outcome to apply, the Transmission Provider shall consider the general factors set forth in Section IX.D.2.1 and the appropriate factors of Sections IX.E of this Attachment FF.

##### **IX.D.2.1. General Factors in Variance Analysis Outcome Determination**

Before deciding to impose any Variance Analysis Outcome

authorized by the Tariff in Sections IX.E of this Attachment FF, the Transmission provider shall consider the following factors:

- A. The causes of, or reasons for, the circumstances or events triggering Variance Analysis, including the degree of fault of the applicable Selected Developer or incumbent Transmission Owner;
- B. The potential impacts to the Transmission System and the MTEP, including potential reliability, economic, or public policy impacts;
- C. The degree of completion of the Eligible Projects or facilities;
- D. A comparison of the estimated costs of each outcome;
- E. A comparison of the degree to which each outcome will likely result in the successful completion of or increase the ability to complete the facilities and/or Eligible Projects; and
- F. A comparison of the degree to which each outcome will alleviate the ground(s) for Variance Analysis.

**IX.D.3. Implementation of Variance Analysis Outcome**

Upon completing the procedures detailed in Section IX.D.2 of this Attachment FF, the Transmission Provider shall perform the following as further detailed in the Business Practices Manuals:

- A. Inform the applicable Selected Developer(s) or incumbent Transmission Owner and any other affected parties of the Variance Analysis Outcome in writing;

- B. Post a description of the Variance Analysis Outcome and the reason(s) it was selected on the Transmission Provider's website, redacting any confidential information and or Critical Energy Infrastructure Information (CEII) as necessary. The Transmission Provider shall be authorized to publicly disclose confidential information, limited in scope to the specific information needed to explain the reason(s) Variance Analysis was triggered and why the Transmission Provider selected the Variance Analysis Outcome for implementation;
- C. Implement the Variance Analysis Outcome in coordination with the applicable Selected Developer(s), incumbent Transmission Owner(s), and any other affected parties;
- D. If implementation of the Variance Analysis Outcome results in a mitigation plan to be placed into effect that alters the schedule, cost, design, or scope of a Competitive Transmission Facility, the Transmission Provider and Selected Developer shall amend the Selected Developer Agreement to include the requirements of the mitigation plan or the Transmission Provider shall file such plan with the Commission unexecuted; and
- E. If implementation of the Variance Analysis Outcome results in Reassignment or Cancellation of Competitive Transmission Facilities, the Transmission Provider shall file a Notice of

Termination with the Commission to terminate the Selected Developer Agreement pursuant to the provisions of the Selected Developer Agreement. In the event that the Transmission Provider files a Notice of Termination pursuant to Section IX.E of this Attachment FF or otherwise discusses confidential information in the course of administrative or judicial proceedings, the Transmission Provider may request that the information be treated as confidential and non-public pursuant to 18 C.F.R. §1b.20 and 388.112.

#### **IX.E. Variance Analysis Outcomes**

In determining which Variance Analysis outcome to apply, the Transmission Provider shall apply the procedures specified in Section IX.D of this Attachment FF.

##### **IX.E.1. No Action**

The Transmission Provider may determine to take no action when Variance Analysis is triggered. In determining whether to take no action in Variance Analysis, the Transmission Provider will consider, but is not limited to, the following:

- A. The causes of, or reasons for, the circumstances or events triggering Variance Analysis, including the degree of fault of the applicable Selected Developer or incumbent Transmission Owner;

- B. The potential impacts to the Transmission System and the MTEP, including any potential reliability, economic, or public policy impacts;
- C. The degree of completion of the Eligible Projects or facilities; and
- D. The cost and impacts of implementing another Variance Analysis Outcome pursuant to Sections IX.E.2 through IX.E.4 of this Attachment FF as compared to taking no action.

**IX.E.2. Mitigation Plan(s)**

The Transmission Provider may allow a Selected Developer or incumbent Transmission Owner to alleviate the ground(s) for the Variance Analysis through a mitigation plan. If the Transmission Provider determines that a delay in the applicable facilities and/or Eligible Project's in-service date may cause the Transmission Provider or one or more Transmission Owners, Selected Developers, or non-Members to violate any Applicable Reliability Standards, the Transmission Provider shall identify the potential violation(s) and direct the impacted entities to develop a mitigation plan in coordination with the Transmission Provider. The Transmission Provider, the impacted Transmission Owners(s) and/or Selected Developers, as applicable, shall take any and all reasonable actions necessary to meet the requirements of the mitigation plan and Applicable Reliability Standards.

Mitigation plans may also be utilized to address ground(s) for Variance Analysis arising under Sections IX.C.1 through IX.C.5 that do not involve a delay of the in-service date that potentially causes violations of Applicable Reliability Standards, should the Transmission Provider determine it is appropriate. In determining whether to require a mitigation plan, the Transmission Provider will consider the factors set forth in Sections IX.D.2.1 and IX.E.1 of this Attachment FF as well as, but not limited to:

- A. The extent to which the ground(s) for Variance Analysis can be remedied through a mitigation plan, if successfully implemented, including the extent to which cost can be restored to baseline and the required in-service date realized;
- B. The willingness of the Selected Developer(s) or incumbent Transmission Owner(s) to implement the mitigation plan, including their willingness to bear the costs thereof;
- C. The resources and ability of the Selected Developer(s) or incumbent Transmission Owner(s) to successfully implement the mitigation plan; and
- D. Whether the Transmission Owner(s) that would receive the reassigned facilities would be better able to alleviate the ground(s) for Variance Analysis than the Selected Developer.

The mitigation measures may include, without limitation, any one or

combination of the following components: (i) an updated implementation plan; (ii) an operating procedure; or (iii) alternative facilities and or projects to mitigate reliability violations. If a mitigation plan is used, the Transmission Provider and Selected Developer shall work together to amend the Selected Developer Agreement to reflect the mitigation plan. In the event that the Selected Developer or incumbent Transmission Owner refuses to execute the Transmission Provider's proposed mitigation plan or offer a substitute plan reasonably acceptable to the Transmission Provider, the Transmission Provider may elect either to file its proposed mitigation plan with the Commission unexecuted, select an alternate Variance Analysis Outcome or, in if the Selected Developer is a signatory to the ISO Agreement, proceed thereunder.

### **IX.E.3. Reassignment**

The Transmission Provider may determine to reassign Competitive Transmission Facilities in accordance with Section IX.E.3.1 of this Attachment FF. Reassignment shall also be proper if a Selected Developer fails to maintain its Qualified Transmission Developer status after the expiration of any applicable cure period. If a Selected Developer is the incumbent Transmission Owner whose service area is the service area for which the facilities triggering Variance Analysis are located, the Transmission Provider shall seek recourse through the ISO Agreement or FERC, as appropriate. In all other cases, the Transmission Provider will consider the factors set forth in Sections IX.D.2.1, IX.E.1, and IX.E.2 of this Attachment FF as well as the following, in

determining whether Reassignment is applied including but not limited to:

- A. Whether a mitigation plan would be sufficient to alleviate the ground(s) for Variance Analysis;
- B. The actions that the incumbent Transmission Owner(s), to whom the facilities would be reassigned to if the Transmission Provider selects the Reassignment Variance Analysis Outcome, would reasonably be required to take to successfully complete the facilities;
- C. The incremental costs of the Reassignment Variance Analysis Outcome; and
- D. The extent of any potential delay that the Reassignment Variance Analysis Outcome may cause and any potential impacts on reliability.

If the Transmission Provider selects the Reassignment Variance Analysis Outcome, the Selected Developer(s) shall be obligated to work cooperatively and in good faith with the Transmission Provider, the incumbent Transmission Owner(s), and the affected Transmission Owner(s) and/or non-MISO transmission owners, to implement the transition.

#### **IX.E.3.1. Procedure for Reassignment**

Prior to making any determination to reassign facilities or projects, the Transmission Provider shall consult with the entity or entities to which such facilities or projects would be assigned to ascertain: (1) the

willingness of such entities to develop, own, operate, and maintain such facilities or project; (2) the estimated costs submitted by such entities and the certainty of such estimates; and (3) the proposed schedule submitted by such entity or entities for developing the reassigned facilities or projects and the degree of certainty of such schedule. Reassigned facilities and or projects will be offered to the applicable Transmission Owner(s), as defined below:

- A. Ownership and the responsibility to construct facilities which are connected to a single Transmission Owner's system belong to that Transmission Owner;
- B. Ownership and the responsibilities to construct facilities which are connected between two (2) or more Owners' facilities belong equally to each Transmission Owner, unless such Transmission Owners otherwise agree; and
- C. Ownership and the responsibility to construct facilities which are connected between a Transmission Owner(s)' system and a system or systems that are not part of the Transmission Provider belong to such Transmission Owner(s) unless the Transmission Owner(s) and the non-Transmission Provider party or parties otherwise agree.

If the applicable Transmission Owner(s) decline to construct the reassigned facilities and or Eligible Project, the Transmission Provider will reassign, as applicable, the facilities and/or Eligible Projects through

the Competitive Transmission Developer Selection Process, as described in Section VIII of Attachment FF of the Tariff.

#### **IX.E.4. Cancellation of Facilities and or Projects**

The Transmission Provider may determine to cancel Eligible Projects and/or facilities comprising such projects. In determining whether to cancel Eligible Projects or facilities, the Transmission Provider will consider the factors set forth in Sections IX.D.2.1, IX.E.1, IX.E.2, and X.E.3 of this Attachment FF.

#### **IX.F. Variance Analysis Confidentiality**

The Transmission Provider shall not disclose to the public that a Variance Analysis has commenced until such time as it has confirmed its initial determination that a ground for Variance Analysis exists pursuant with Section IX.D.1 of this Attachment FF. Notwithstanding the preceding sentence, the Transmission Provider shall be allowed to disclose that it is commencing a Variance Analysis to third parties, including interconnecting Transmission Owners, Selected Developers, or non-Members from whom the Transmission Provider requires information to determine whether the ground(s) for Variance Analysis exist. However, no confidential information will be disclosed when the Transmission Provider solicits information from third parties unless and to the extent such disclosure is needed to obtain information necessary to determine any potential NERC reliability standards violations, service obligation issues, and economic or public policy needs that may be jeopardized.

In the event that the Transmission Provider determines pursuant to Section IX.D.1 of this Attachment FF that ground(s) for Variance Analysis do not exist, the Transmission provider shall treat any information collected pursuant to Section IX.D.1 as Project Confidential Information. In the event that the Transmission Provider determines pursuant to IX.D.1 of this Attachment FF that ground(s) for Variance Analysis do exist, the Transmission provider shall be authorized to share Project Confidential Information with such third parties as the Transmission Provider determines are reasonably necessary in order to enable the Transmission Provider to obtain needed input and information to identify any potential system reliability impacts of Variance Analysis Outcomes, including impacts from any potential NERC reliability standards violations, service obligation issues, and economic or public policy needs that may be jeopardized. The Transmission Provider shall consult with the Selected Developer and or the incumbent Transmission Owner prior to sharing any such confidential information for the purposes of discussing reasonable confidentiality safeguards.

#### **IX.G. Variance Analysis Dispute Resolution**

All disputes by the affected Selected Developer or Transmission Owner shall be addressed in accordance with the provisions of Attachment HH, except that disputes involving the termination of a Selected Developer Agreement shall be addressed in accordance with the Dispute Resolution provisions of the Selected Developer Agreement.

#### **IX.H Project Financial Security**

## Northland Reliability Project: Discussion of Line Crossings

“Line crossings” refers to the construction of a new high-voltage transmission line in a configuration where it must traverse over or under an existing high-voltage transmission line, placing the conductors of one transmission line physically over the conductors of the other transmission line. Line crossings are generally technically possible. However, high-voltage transmission line crossings create unique safety, reliability, and resiliency concerns, while also contributing to increased cost and environmental impacts due to the need for taller and larger structures. Consequently, good utility practice is to minimize new line crossings to the greatest practical extent when routing new high-voltage transmission lines.

New high-voltage transmission line crossings create safety risks, as discussed in Section 3.5.4 of the Application, because under normal operating conditions one line may need to remain energized while maintenance work is occurring on the other transmission line at the same location. To minimize the safety concerns relating to construction or maintenance work on a transmission line that crosses another transmission line, all transmission lines at the crossing location may need to be taken out of service during the activity. Taking multiple circuits out of service can stress the remaining system components and lead to overloads and voltage issues, and potentially even stability concerns should there be a contingency (“loss of”) of another system element at the same time. The placement of the new double-circuit 345 kV transmission line proposed for the Project physically over the top of existing 345 kV, 230 kV, or 115 kV transmission lines reduces system resiliency. In the event of a failure in the structures or conductors of the line crossing over the top, it may also take a lower line out of service, resulting in a double outage as well as structural damage to both transmission lines – complicating and increasing restoration times. There can also be energy price impacts of multiple outages because the energy must be diverted on to other lines, increasing congestion. As a result of these reliability and congestion issues, outage availability and the ability to construct and maintain the transmission lines at the crossing location may be restricted.

Finally, line crossings can also lead to increased costs and environmental impacts due to the need for taller structures to facilitate the crossing while maintaining required electrical (line to line) clearances. In some cases, a crossing requires a more robust anti-cascade type of structural design (e.g. a “dead-end”) to limit resiliency concerns from structural failures. Taller and more robust structures require more material, larger and potentially greater quantity of foundations, and in some cases Federal Aviation Administration (FAA) lighting.

As a result of these concerns, the Applicants have designed the proposed route to limit the total number of line crossings for the new double-circuit 345 kV transmission line over the existing 230 kV transmission line to one location, which cannot be avoided based on the locations of Project substations. To site the proposed Project and simultaneously minimize human and environmental impacts while avoiding multiple additional line crossings, the Applicants proposed to realign the placement of the existing transmission lines. For example: in the northern portion of Segment 1 the Project is proposed to be routed on the east side of the existing 230 kV. To avoid having to cross the existing line to route on the west side for a portion due to routing constraints, the Applicants have proposed to move the existing 115 kV to the west side of the existing 230kV line and construct the Project within the route previously occupied by the 115 kV. In all, the proposed route for the Project includes six realignments – see Section 2.1.5.4 and Section 4.6 of the Application for additional details. In addition to these realignments, the

## **Northland Reliability Project: Discussion of Line Crossings**

Applicants have designed the Project to specifically eliminate an existing line crossing in Segment 2 – see Section 3.5.4 of the Application for additional details.

The Applicants prefer that any route alternatives evaluated in the Environmental Assessment take a similar approach, realigning existing transmission lines to avoid establishing new line crossings. Moreover, applicants assert that any alternative that necessitates additional transmission line crossings, are impracticable as they would be counterproductive to the purpose and need of the project.

## **APPENDIX D: MPUC Order Granting Certificate of Need and Issuing Route Permit**

BEFORE THE MINNESOTA PUBLIC UTILITIES COMMISSION

Katie J. Sieben	Chair
Hwikwon Ham	Commissioner
Audrey C. Partridge	Commissioner
Joseph K. Sullivan	Commissioner
John A. Tuma	Commissioner

In the Matter of the Application of Minnesota Power and Great River Energy for a Certificate of Need and Route Permit for an Approximately 180-mile, Double Circuit 345-kV Transmission Line

ISSUE DATE: February 28, 2025

DOCKET NO. E-015, ET-2/CN-22-416

DOCKET NO. E-015, ET-2/TL-22-415

ORDER GRANTING CERTIFICATE OF NEED AND ISSUING ROUTE PERMIT

**PROCEDURAL HISTORY**

On August 4, 2023, Minnesota Power and Great River Energy (collectively Applicants or Permittees) filed a combined certificate of need and route permit application to construct the Northland Reliability Project.

On November 15, 2023, the Commission issued its Order Accepting Applications as Complete and Establishing Procedural Requirements. In the order, the Commission authorized joint hearings and combined environmental review for the certificate of need and route permit dockets, and requested that the Office of Administrative Hearings assign an administrative law judge (ALJ) to preside over public hearings and prepare a full report including findings of fact, conclusions of law, and recommendations.

On February 13, 2024, the Department of Commerce, Energy Environmental Review and Analysis staff (EERA) filed recommendations regarding the appropriate scope of the environmental assessment that it would prepare to analyze Applicants' proposal and various alternatives to it.

On March 6, 2024, the Commission issued an order adopting EERA's recommended scope of the environmental assessment with modifications.

On March 22, 2024, EERA filed its Environmental Assessment Scoping Decision.

On June 28, 2024, EERA filed the Northland Reliability Project Environmental Assessment.

On July 1, 2024, EERA filed a revised Northland Reliability Project Environmental Assessment.

On November 8, 2024, the Office of Administrative Hearings filed the ALJ's Findings of Fact, Conclusions of Law, and Recommendations (ALJ Report).

On November 25, 2024, LIUNA Minnesota and North Dakota filed comments on the ALJ Report, and EERA and Applicants filed exceptions to the report. On the same date, Stanley Erickson and Don Loehr filed exceptions and the Department of Natural Resources (DNR) filed comments in the route-permit docket.

On December 23, 2024, the Commission issued a Notice of Comment Period that included questions for Applicants and also invited comments from all interested persons and participants.

By January 22, 2025, comments from stakeholders and numerous members of the public were filed into the record.

On January 23, 2025, this matter came before the Commission.

## **FINDINGS AND CONCLUSIONS**

### **I. The Project**

Applicants seek a certificate of need and route permit for the Northland Reliability Project (Project), which involves constructing or replacing roughly 180 miles of transmission lines and making improvements to the power grid. Of the 180 miles, approximately 140 would be a new, double-circuit 345-kilovolt (kV) transmission line that would connect the existing Iron Range Substation to a new Cuyuna Series Compensation Station and the existing Benton County Substation. The remaining 40 miles would replace two existing approximately 20-mile high-voltage transmission lines—one from the Benton County Substation to the new Xcel Energy Big Oaks Substation and the other from the Benton County Substation to the existing Xcel Energy Sherco Substation in Sherburne County.

Grid improvements in the Project include expansions of the existing Iron Range and Benton County Substations, rerouting existing transmission lines at those substations, constructing a new Cuyuna Series Compensation Station near the existing Riverton Substation, and rerouting an existing transmission line in the Riverton area.

Applicants stated that the Project is needed to maintain transmission system reliability and to optimize regional transfer capability as coal-fired generation ceases in northern Minnesota and renewable generation comes online in the upper Midwest. Applicants also stated that 85% of the proposed route is located along existing high-voltage transmission lines. The Project is scheduled to be in service by June 2030.

In response to comments on the draft route permit and from the public hearings, Applicants developed two routes: a Modified Proposed Route and a Co-Location Maximization Route. The Modified Proposed Route is based on the originally proposed route but includes certain route and alignment alternatives. The Co-Location Maximization Route uses the Modified Proposed Route but incorporates additional constructible opportunities for achieving the maximized co-location of transmission line infrastructure.

## II. Public Comments

Members of the public commented throughout this proceeding, both at public hearings and through written comments. The Commission appreciates the input from the public and interested stakeholders, particularly those affected by the Project.

## III. ALJ Report

The ALJ held public hearings daily from July 22 to July 26, 2024, and received written comments on the combined application through August 5, 2024. Based on the combined application, Environmental Assessment, testimony at the hearings, written comments, and other evidence in the record, the ALJ issued her report. The ALJ concluded that the relevant statutory and rule criteria had been satisfied and recommended that the Commission grant Applicants a certificate of need and issue a route permit, with modifications, for the Co-Location Maximization Route.

After a thorough review of the record, the Commission concurs with most of the ALJ's findings, conclusions, and recommendations, and will therefore adopt the ALJ Report to the extent it is consistent with the Commission's decisions herein.

## IV. Environmental Assessment

The Commission authorized joint hearings and combined environmental review of Applicants' certificate of need and route permit applications.<sup>1</sup> For purposes of environmental review, the Commission requested that EERA prepare an Environmental Assessment pursuant to Minn. Stat. § 216E.04, subd. 5.<sup>2</sup> Following seven public meetings and an associated comment period, EERA prepared a scoping decision that identified possible impacts of the Project and mitigation measures to ameliorate those impacts—including routing alternatives and alternatives to the Project itself—to be analyzed in the Environmental Assessment.

EERA subsequently prepared and filed into the record the Environmental Assessment, which the ALJ ultimately found to be complete.<sup>3</sup> The Commission concurs with the ALJ and finds that the Environmental Assessment and the record created at the public hearings and during the comment period comprehensively address the issues identified in the scoping decision.

## V. Certificate of Need

Under Minnesota law, “[n]o large energy facility shall be sited or constructed in Minnesota without the issuance of a certificate of need by the commission[...].”<sup>4</sup> The transmission line

---

<sup>1</sup> Order Accepting Applications as Complete and Establishing Procedural Requirements, Ordering Paragraph 4 (November 15, 2023).

<sup>2</sup> *Id.* at Ordering Paragraph 5.

<sup>3</sup> ALJ Report, Finding 745.

<sup>4</sup> Minn. Stat. § 216B.243, subd. 2.

Applicants proposed to construct meets the statutory definition of a “large energy facility.”<sup>5</sup> The requirements of Minn. Stat. § 216B.243 and Minn. R. 7849.0120 must be satisfied for the Commission to grant a certificate of need. No party opposed granting Applicants a certificate of need for the Project.

The ALJ applied the certificate of need requirements to the record and concluded that the Project satisfied the certificate of need criteria.<sup>6</sup> The Commission concurs with the ALJ’s comprehensive analysis and thorough examination of the certificate of need criteria in the statute and rule and will therefore grant a certificate of need to Applicants for the Project, finding that:

- the factors set forth in Minn. R. 7849.0120(A), have been met and the probable result of denying the application would likely be an adverse effect upon the future adequacy, reliability, or efficiency of energy supply to the applicant, to the applicant’s customers, or to the people of Minnesota and neighboring states;
- the factors set forth in Minn. R. 7849.0120(B), have been met and a more reasonable and prudent alternative to the Project has not been demonstrated by a preponderance of the evidence in the record;
- the factors set forth in Minn. R. 7849.0120(C), have been met and the preponderance of the evidence in the record demonstrates that the Project will provide benefits to society in a manner compatible with protecting the natural and socioeconomic environments, including human health; and
- the factors set forth in Minn. R. 7849.0120(D), have been met and the record does not demonstrate that the design, construction, or operation of the proposed facility, or a suitable modification of the proposed facility, will fail to comply with relevant policies, rules, and regulations of other state and federal agencies and local governments.

#### **A. Cost Recovery**

The ALJ found that the estimated cost to construct the Co-Location Maximization Route to be approximately \$1.1 billion to \$1.6 billion.<sup>7</sup> To ensure that Project costs are reasonable and prudently incurred, the Commission will require Minnesota Power to bear the burden of proof in any future regulatory proceeding related to the recovery of any costs above \$1,210,000,000. Nothing prevents the Applicant from seeking recovery of additional amounts through the Transmission Cost Recovery Rider.

#### **B. MISO Variance Analysis**

The Commission will require Applicants to inform the Commission of the initiation of the Midcontinent Independent System Operator (MISO) Variance Analysis under Attachment FF

---

<sup>5</sup> See Minn. Stat. § 216B.2421, subd. 2.

<sup>6</sup> ALJ Report, Conclusion 8.

<sup>7</sup> ALJ Report, Finding 191.

within 5 business days of initiation.<sup>8</sup> Applicants must file all copies of information submitted to the MISO Variance Analysis process. Disclosures must be consistent with Applicants' MISO Tariff.

## **VI. Route Permit**

The ALJ recommended that the Commission approve Applicants' Co-Location Maximization Route with modifications. The Commission agrees that a modified Co-Location Maximization Route best satisfies the route permit criteria set forth in Minn. Stat. § 216E.03, subd. 7(a) and Minn. R. 7850.4100. But the Commission disagrees with the ALJ on a few segments of the route. The Commission will therefore issue a route permit to Applicants authorizing the Co-Location Maximization Route as modified in this order.

In determining which route segments to adopt, the Commission considered the many alternatives commenters proposed. The Commission appreciates the participation of other governmental agencies, including the DNR, in this proceeding. The DNR's input helped effectively identify potential impacts and possible mitigation measures.

Disagreement among commenters about the Project's route focused primarily on the following five regions.

### **A. Iron Range Substation Region**

#### **1. Comments**

The ALJ recommended modifying Applicants' route in the Iron Range Substation region to include route alternative A3, which is 1.4 miles long and would cross an existing transmission line in two places. The ALJ found that "A3 strikes the most reasonable balance between the various competing policy objectives and concerns of stakeholders."<sup>9</sup>

EERA disagreed with the ALJ that A3 was the most appropriate route and instead recommended that the Commission approve Applicants' proposed route consistent with Finding 717 in the ALJ Report.<sup>10</sup> EERA noted that A3 would have more impacts on residences than the Co-Location Maximization Route and would create substantial reliability concerns by crossing an existing transmission line twice. For the same reasons, Applicants advocated for their proposed route and for rejecting A3.

#### **2. Commission Action**

The Commission agrees with EERA and Applicants that Applicants' route is preferable to A3 due to A3's closer proximity to residences and the reliability concerns raised by its two crossings

---

<sup>8</sup> Attachment FF is part of the MISO Tariff.

<sup>9</sup> ALJ Report, Finding 97.

<sup>10</sup> Finding 717 in the ALJ Report states, "In the Iron Range Substation Region, the Applicants' Proposed Route, which in this region is the same as the Co-Location Maximization Route, is most consistent with the Commission's routing criteria. In the [Environmental Assessment], EERA compared the Applicants' Proposed Route with alternative routes A1 through A4."

of an existing transmission line. The Commission will therefore reject ALJ Findings 97 and 737 and ALJ Conclusions 11 and 14 and adopt Applicants' route and EERA's modified findings 97 and 737 filed on November 25, 2024.

## **B. Hill City to Little Pine Region**

### **1. Comments**

In the Hill City to Little Pine region, the ALJ found Applicants' Co-Location Maximization Route to be the most consistent with the Commission's routing criteria.<sup>11</sup>

A landowner proposed alternative alignment 1 (AA1), which would shift Applicants' route west to avoid private property. Applicants modified AA1 to avoid a planned building site on a landowner's property and incorporated modified AA1 into its Co-Location Maximization Route. The modified AA1 would relocate Minnesota Power's 92 line and 11 line west to allow for the Project to be located on the existing 92 line right-of-way. According to Applicants, the modified AA1 would increase the mid-range Project cost by \$7.1 million.

### **2. Commission Action**

The Commission agrees with the ALJ and will adopt Applicants' route in the Hill City to Little Pine region. The Commission is not persuaded, however, that it should adopt the modification to AA1 because the increased cost to ratepayers may not be warranted. Instead, for the property identified in AA1, the Commission will require Applicants to continue the proposed route to the south and east of the 92 line without the proposed realignment, and Permittees must work with the affected landowners to provide mitigation or relocation.

## **C. Cole Lake to Riverton Region**

### **1. Comments**

The ALJ recommended that the Commission modify Applicants' Co-Location Maximization Route to include route alternatives E4 or E5 in the Cole Lake to Riverton region. Property owners near Little Rabbit Lake also supported E4 or E5 but other members of the public opposed those route alternatives because of the impacts to their properties.

In its exceptions, EERA stated that Applicants' Co-location Maximization Route was more appropriate in the Cole Lake to Riverton region than E4 or E5. EERA also noted that even though the ALJ recommended route alternatives E4 or E5, she made a finding that the Co-Location Maximization Route is the most consistent with the Commission's routing criteria.<sup>12</sup> In support of its recommendation, EERA observed that E4 and E5 would introduce substantial

---

<sup>11</sup> ALJ Report, Finding 720.

<sup>12</sup> Finding 724 in the ALJ Report states, "In the Cole Lake to Riverton Region, the Co-Location Maximization Route is most consistent with the Commission's routing criteria. In this region, the [Environmental Assessment] compared the Applicants' Proposed Route to alignment alternative 3 (AA3), route alternatives E1 through E5, alignment alternatives 8, 9, and 10 (AA8, AA9, and AA10), and route alternative G."

reliability concerns with six crossings of existing transmission lines. Furthermore, E4 and E5 would cross the Mississippi River twice and would require more new transmission line rights-of-way than the Co-Location Maximization Route.

In addition to the reasons EERA articulated, Applicants stated that the modifications necessary to make routes E4 and E5 feasible would likely result in residential displacement. Further, Applicants asserted that E4 and E5 were not constructible as proposed because both would cross directly over the existing Riverton Substation, which would create reliability concerns and necessitate a costly relocation of the substation. Applicants did not specifically quantify the cost of such a relocation, and the property owners near Little Rabbit Lake disputed the need to relocate the Riverton Substation.

## **2. Commission Action**

The Commission agrees with EERA that Applicants' Co-Location Maximization Route best satisfies the Commission's routing criteria. The record does not support adopting E4 and E5 because the routes would require two additional crossings of the Mississippi River, create reliability concerns with six crossings of existing transmission lines, and would necessitate establishing more rights-of-way than Applicants' route, which primarily utilizes existing transmission line rights-of-way. In light of the applicable routing criteria, these factors strongly support the Applicants' Co-Location Maximization Route in this region, even without weighing the potential impacts to the existing Riverton Substation. For these reasons, the Commission will reject the ALJ's Finding 737 and Conclusions 11 and 14 and will instead adopt Applicants' route and EERA's modification to findings 116 and 737 filed on November 25, 2024.

To reduce the number of structures at the Mississippi Crossing in the Cole Lake to Riverton region, the Commission will require Applicants to extend the co-location at the Mississippi River in Perry Lake Township as proposed by Applicants in Attachment 1 of their January 10, 2025 filing.

## **D. Long Lake Region**

### **1. Comments**

The ALJ found that utilizing Applicants' Co-Location Maximization Route along with route alternatives H4 and H7 *or* route alternative H1 was most consistent with the Commission's routing criteria.<sup>13</sup> Applicants agreed with the ALJ with respect to H4 and H7 but disagreed about route alternative H1. Applicants asserted that H1 would result in impacts to landowners who do not support that route alternative, and it would impact a vineyard that the Co-Location Maximization Route avoids. Route alternatives H4 and H7 are more consistent with the routing criteria, in Applicants' view, because they maximize the distance of the Project from residences, minimize the impacts on private land, and make the greatest use of tax-forfeited land compared to other route alternatives in the area.

Members of the public Stan Erickson and Don Loehr opposed any routes that would sever and fragment the 250 acres of forestland on their properties, but they supported a modified H4 and

---

<sup>13</sup> ALJ Report, Finding 738.

H7 that would locate the line, once it reached the northern boundary of Erickson's property, on the eastern boundary of the 3,000-foot route width leading to and through Applicants' modified H4 and H7. Applicants did not oppose this modification.

## **2. Commission Action**

The Commission agrees with the ALJ and Applicants that route alternatives H4 and H7 best satisfy the routing criteria and should be adopted. The Commission considers H4 and H7 preferable to H1 for the reasons Applicants identified. Accordingly, the Commission will reject ALJ Finding 738 and Conclusions 11 and 14.

The Commission appreciates Erickson's and Loehr's efforts in working with Applicants to find an acceptable route placement. The Commission agrees with the placement and will therefore direct Applicants' to route the Project to and through Applicants' modified H4 and H7, but when it reaches the northern boundary of Erickson's property, to locate the line on the eastern boundary of the 3,000-foot route width leading to and through Applicants' modified H4 and H7.

The Commission will also direct Applicants to expand the route width at the already expanded area at the intersection of Minnesota Highway 18, CSAH 23 and County Road 159 in Crow Wing County by an additional 1,000 feet to the north to allow Applicants to work with the landowners in this portion of the route to identify acceptable routes from west to east in this area.

When Applicants come to the Commission for cost recovery of the Project, for the portion between Platte Township Crow Wing County and Mayhew Township Morrison County, the realignments of the existing 230 kV lines, Applicants must provide information justifying any realignments incorporated into the Project.

### **E. Benton County Elk River Region**

The ALJ found that the Co-Location Maximization Route in the Benton County Elk River region is most consistent with the Commission's routing factors.<sup>14</sup> The Commission agrees with the ALJ and will adopt the Co-Location Maximization Route in that region.

### **F. Additional Findings and Conclusions**

Consistent with its findings and conclusions in this order, the Commission will adopt Applicants' alternative modifications to ALJ Conclusion 11 as filed on November 25, 2024, to the extent it aligns with other decisions made by the Commission.

---

<sup>14</sup> *Id.*

## **VII. Other Actions**

### **A. Permit Conditions**

The ALJ found that the permit conditions revised by Applicants and as modified by EERA in its reply comments were reasonable and should be incorporated into the route permit.<sup>15</sup> The Commission agrees with the ALJ and will therefore incorporate those conditions.

### **B. Tribal Engagement**

The Leech Lake Band of Ojibwe Tribal Employment Rights Office (TERO) submitted comments stating that the Project “presents a significant opportunity for the development of career skills among tribal members, and collaboration with the Tribal Employment Rights Office serves as a crucial pathway to unlocking these opportunities.”<sup>16</sup> Applicants did not oppose working with the Leech Lake Band of Ojibwe TERO.

The Commission will require Permittees to engage with the Leech Lake Band of Ojibwe TERO and develop opportunities for Tribal economic and workforce development related to the Project. For any construction (including decommissioning work) along the route, Permittees will coordinate with the Leech Lake Band of Ojibwe TERO to ensure that the Project includes opportunities for, including but not limited to, the hiring and training of tribal members and the utilization of tribal businesses. Permittees must report on their efforts to coordinate with TERO and the results of the coordination including, but not limited to, tribal members hired and the use of tribal businesses within 30 days after construction of the Project has been completed.

### **C. Continued Engagement with Landowners**

The Co-Location Maximization Route will be approved as proposed by Applicants and as modified herein. The approved Co-Location Maximization Route includes an anticipated centerline that incorporates certain shifting of existing transmission lines to accommodate structures that have been erected near existing transmission lines as detailed in Section III of Applicants’ January 10, 2025 filing or result in the boxing in of properties of less than 40 acres with transmission lines on three sides. Permittees must continue to work with landowners in advance of the plan and profile filing to explore possible mitigations or property purchases that would eliminate the need for shifting the existing transmission lines. As part of the plan and profile filing, Permittees must file a report that includes a description of their resolutions, proposed actions, and final design for review by EERA. After all transactions for these particular parcels are completed and in all cost recovery proceedings for this line in front of the Commission, Permittees must update this report. Permittees must provide copies of these reports to the landowners included in the reports along with a description of how to make comments to the Commission on the substance of the report.

---

<sup>15</sup> ALJ Report, Finding 740.

<sup>16</sup> Leech Lake Band of Ojibwe Comments, p. 1 (November 21, 2023).

## D. Reporting Requirement

Applicants must file revised Project cost estimates in 2022 dollars reflecting the Commission's decision within 60 days of this order.

### ORDER

1. The Commission adopts the ALJ Report to the extent it is consistent with the Commission's decisions.
2. The Commission grants a certificate of need to Minnesota Power and Great River Energy for the Northland Reliability Project.
3. Minnesota Power shall bear the burden of proof in any future regulatory proceeding related to the recovery of any costs above \$1,210,000,000. Nothing prevents the Applicant from seeking recovery of additional amounts through the Transmission Cost Recovery Rider.
4. Applicants must inform the Commission of the initiation of Midcontinent Independent System Operator (MISO) Variance Analysis under Attachment FF within 5 business days of initiation. Applicants must file all copies of information submitted to the MISO Variance Analysis process. Disclosures must be consistent with Applicants' MISO Tariff.
5. The Commission issues a route permit to Minnesota Power and Great River Energy for the Northland Reliability Project authorizing the Co-Location Maximization Route proposed by Applicants, as modified below:
  - a. Iron Range Substation Region
    - i. The Commission rejects ALJ Findings 97 and 737 and ALJ Conclusions 11 and 14.
    - ii. The Commission adopts Applicants' route and EERA's modified findings 97 and 737 filed on November 25, 2024.
  - b. Hill City to Little Pine Region
    - i. The Commission adopts Applicants' route.
    - ii. For the property identified in AA1, Applicants must continue the proposed route to the south and east of the 92 line without the proposed realignment, and Permittees must work with the affected landowners to provide mitigation or relocation.
  - c. Cole Lake to Riverton Region
    - i. The Commission rejects the ALJ's Finding 737 and Conclusions 11 and 14.
    - ii. The Commission adopts Applicants' route and EERA's modification to findings 116 and 737 filed on November 25, 2024.
    - iii. Applicants must extend the co-location at the Mississippi River in Perry Lake Township to reduce the number of structures at the

Mississippi Crossing as proposed by Applicants in Attachment 1 of their January 10, 2025 filing.

- d. Long Lake Region
    - i. The Commission adopts H4/H7, Applicants' modified route alternative.
    - ii. The Commission rejects ALJ Finding 738 and Conclusions 11 and 14.
    - iii. Applicants' route must follow to and through Applicants' modified H4/H7, but when it reaches the northern boundary of Erickson's property, locate the line on the eastern boundary of the 3,000-foot route width leading to and through Applicants' modified H4/H7.
    - iv. Applicants must expand the route width at the already expanded area at the intersection of Minnesota Highway 18, CSAH 23 and County Road 159 in Crow Wing County by another 1,000 feet to the north to allow Applicants to work with the landowners in this portion of the route to identify acceptable routes from west to east in this area.
    - v. When Applicants come to the Commission for cost recovery of the Project, for the portion between Platte Township Crow Wing County and Mayhew Township Morrison County, the realignments of the existing 230 kV lines, Applicants must provide information justifying any realignments incorporated into the Project.
  - e. Benton County Elk River Region
    - i. The Commission adopts the Co-Location Maximization Route.
  - f. Additional Findings and Conclusions
    - i. The Commission adopts Applicants' alternative modifications to ALJ Conclusion 11 as filed on 11/25/2024 to the extent it aligns with other decisions made by the Commission.
6. The Commission incorporates the conditions recommended by the ALJ into the route permit.
7. Permittees must engage with the Leech Lake Band of Ojibwe Tribal Employment Rights Office (TERO) and develop opportunities for Tribal economic and workforce development related to the Northland Reliability Project. For any construction (including decommissioning work) along the route, Permittees will coordinate with the Leech Lake Band of Ojibwe TERO to ensure that the Project includes opportunities for, including but not limited to, the hiring and training of Tribal members and the utilization of Tribal businesses. Permittees must report on their efforts to coordinate with TERO and the results of the coordination including, but not limited to, Tribal members hired and use of Tribal businesses within 30 days after construction of the Project has been completed.
8. The Co-Location Maximization Route is approved as proposed by Applicants, as modified herein. The approved Co-Location Maximization Route includes an anticipated centerline that incorporates certain shifting of existing transmission lines to accommodate

structures that have been erected near existing transmission lines as detailed in Section III of Applicants' January 10, 2025 filing or result in the boxing in of properties of less than 40 acres with transmission lines on three sides. Permittees must continue to work with landowners in advance of the plan and profile filing to explore possible mitigations or property purchases that would eliminate the need for shifting the existing transmission lines. As part of the plan and profile filing, Permittees must file a report that includes a description of their resolutions, proposed actions, and final design for review by EERA. After all transactions for these particular parcels are completed and at all cost recovery proceedings for this line in front of the Commission, Permittees must update this report. Permittees must provide copies of these reports to the landowners included in the reports along with a description of how to make comments to the Commission on the substance of the report.

9. Within 60 days of the date of this order, Applicants must file revised Project cost estimates in 2022 dollars reflecting the Commission's decision herein.
10. This order shall become effective immediately.

BY ORDER OF THE COMMISSION



Will Seuffert  
Executive Secretary



This document can be made available in alternative formats (e.g., large print or audio) by calling 651.296.0406 (voice). Persons with hearing or speech impairment may call using their preferred Telecommunications Relay Service or email [consumer.puc@state.mn.us](mailto:consumer.puc@state.mn.us) for assistance.

**STATE OF MINNESOTA PUBLIC UTILITIES COMMISSION**

**ROUTE PERMIT FOR  
NORTHLAND RELIABILITY PROJECT**

**A HIGH-VOLTAGE TRANSMISSION LINE AND ASSOCIATED FACILITIES**

**IN**

**AITKIN, BENTON, CROW WING, ITASCA, MORRISON, AND SHERBURNE COUNTIES**

**ISSUED TO**

**MINNESOTA POWER AND GREAT RIVER ENERGY**

**PUC DOCKET NO. 22-415**

In accordance with the requirements of Minnesota Statutes Chapter 216E and Minnesota Rules Chapter 7850 this route permit is hereby issued to:

**MINNESOTA POWER AND GREAT RIVER ENERGY**

Minnesota Power and Greater River Energy are authorized by this route permit to construct and operate an approximately 180-mile 345 kV double-circuit transmission line in Aitkin, Benton, Crow Wing, Itasca, Morrison, and Sherburne Counties, Minnesota

The high-voltage transmission line shall be constructed within the route identified in this route permit and in compliance with the conditions specified in this route permit.

Approved and adopted this 28th day of February 2025

BY ORDER OF THE COMMISSION



---

Will Seuffert,  
Executive Secretary

## CONTENTS

<b>1</b>	<b>ROUTE PERMIT</b> .....	<b>1</b>
1.1	Pre-emption .....	1
<b>2</b>	<b>TRANSMISSION FACILITY DESCRIPTION</b> .....	<b>1</b>
2.1	Structures.....	9
2.2	Conductors.....	9
2.3	Substations and Associated Facilities .....	10
<b>3</b>	<b>DESIGNATED ROUTE</b> .....	<b>11</b>
<b>4</b>	<b>RIGHT-OF-WAY</b> .....	<b>12</b>
<b>5</b>	<b>GENERAL CONDITIONS</b> .....	<b>13</b>
5.1	Route Permit Distribution.....	13
5.2	Access to Property .....	13
5.3	Construction and Operation Practices.....	13
5.3.1	Field Representative.....	13
5.3.2	Employee Training - Route Permit Terms and Conditions.....	14
5.3.3	Independent Third-Party Monitoring.....	14
5.3.4	Public Services, Public Utilities, and Existing Easements .....	14
5.3.5	Temporary Workspace .....	15
5.3.6	Noise.....	15
5.3.7	Aesthetics .....	15
5.3.8	Soil Erosion and Sediment Control.....	15
5.3.9	Wetlands and Water Resources.....	16
5.3.10	Vegetation Management .....	17
5.3.11	Application of Pesticides .....	17
5.3.12	Invasive Species.....	17
5.3.13	Noxious Weeds.....	18
5.3.14	Roads.....	18
5.3.15	Archaeological and Historic Resources .....	18
5.3.16	Avian Protection.....	19
5.3.17	Drainage Tiles .....	19
5.3.18	Restoration .....	19
5.3.19	Cleanup.....	19
5.3.20	Pollution and Hazardous Wastes .....	19
5.3.21	Damages .....	20
5.4	Electrical Performance Standards.....	20
5.4.1	Grounding.....	20

5.4.2	Electric Field .....	20
5.4.3	Interference with Communication Devices .....	20
5.5	Other Requirements .....	21
5.5.1	Safety Codes and Design Requirements .....	21
5.5.2	Other Permits and Regulations .....	21
<b>6</b>	<b>SPECIAL CONDITIONS .....</b>	<b>21</b>
6.1	Vegetation Management Plan .....	22
6.2	Agricultural Impact Mitigation Plan .....	22
6.3	Dust Control .....	23
6.4	Wildlife-Friendly Erosion Control.....	23
6.5	Project Lighting .....	23
6.6	Vegetation Clearing Before Construction .....	23
6.7	Substation Construction .....	24
6.8	Tribal Employment and Training.....	24
6.9	Cost Recovery.....	24
6.10	MISO Variance Analysis .....	24
6.11	Landowner Engagement .....	24
6.12	Revised Project Cost .....	25
<b>7</b>	<b>DELAY IN CONSTRUCTION .....</b>	<b>25</b>
<b>8</b>	<b>COMPLAINT PROCEDURES.....</b>	<b>25</b>
<b>9</b>	<b>COMPLIANCE REQUIREMENTS.....</b>	<b>26</b>
9.1	Pre-Construction Meeting .....	26
9.2	Plan and Profile .....	26
9.3	Status Reports.....	27
9.4	In-Service Date .....	27
9.5	As-Builts .....	27
9.6	GPS Data.....	27
9.7	Right of Entry .....	27
<b>10</b>	<b>ROUTE PERMIT AMENDMENT.....</b>	<b>28</b>
<b>11</b>	<b>TRANSFER OF ROUTE PERMIT .....</b>	<b>28</b>
<b>12</b>	<b>REVOCATION OR SUSPENSION OF ROUTE PERMIT .....</b>	<b>28</b>

**ATTACHMENTS**

Attachment 1 – Complaint Handling Procedures for Permitted Energy Facilities

Attachment 2 – Compliance Filing Procedures for Permitted Energy Facilities

Attachment 3 – Route Permit Maps

## **1 ROUTE PERMIT**

The Minnesota Public Utilities Commission (Commission) hereby issues this route permit to Minnesota Power and Great River Energy (Permittee) pursuant to Minnesota Statutes Chapter 216E and Minnesota Rules Chapter 7850. This route permit authorizes the Permittee to construct and operate an approximately 180-mile double-circuit 345 kV transmission line and associated facilities in Aitkin, Benton, Crow Wing, Itasca, Morrison, and Sherburne Counties, Minnesota (Northland Reliability Project, henceforth known as Transmission Facility or Project). The high-voltage transmission line shall be constructed within the route identified in this route permit and in compliance with the conditions specified in this route permit.

### **1.1 Pre-emption**

Pursuant to Minn. Stat. § 216E.10, this route permit shall be the sole route approval required for construction of the transmission facilities and this route permit shall supersede and preempt all zoning, building, or land use rules, regulations, or ordinances promulgated by regional, county, local and special purpose governments.

## **2 TRANSMISSION FACILITY DESCRIPTION**

Minnesota Power and Great River Energy will construct and co-own an approximately 180-mile 345 kV double-circuit transmission line that consists of two segments:

1) Segment 1: construction of a new, approximately 140-mile long, double-circuit 345 kilovolt transmission line connecting the expanded Iron Range Substation, a new Cuyuna Series Compensation Station (described below), and the new Cherry Park Substation; and

2) Segment 2: replacement of two existing high-voltage transmission lines. a) Replace an approximately 20-mile 230 kV line with two 345 kV circuits from the Cherry Park Substation to the new Xcel Energy Big Oaks Substation along existing high-voltage transmission right-of-way on double-circuit 345 kV structures; and b) Replace an approximately 20-mile 345 kV line from the Cherry Park Substation to the existing Xcel Energy Sherco Substation in Sherburne County along existing high-voltage transmission right-of-way using double-circuit 345 kV structures.

The Transmission Facility is located in the following:

County	Local Government	Township (N)	Range (W)	Section
Itasca	Unorganized Territory of Little Sand Lake	55	23	19
Itasca	Unorganized Territory of Little Sand Lake	55	23	20
Itasca	Unorganized Territory of Little Sand Lake	55	23	29
Itasca	Unorganized Territory of Little Sand Lake	55	23	30
Itasca	Unorganized Territory of Little Sand Lake	55	23	31
Itasca	Unorganized Territory of Little Sand Lake	55	23	32
Itasca	Trout Lake Township	55	24	25
Itasca	Trout Lake Township	55	24	36
Itasca	Blackberry Township	54	24	1
Itasca	Blackberry Township	54	24	2
Itasca	Blackberry Township	54	24	10
Itasca	Blackberry Township	54	24	11
Itasca	Blackberry Township	54	24	15
Itasca	Blackberry Township	54	24	16
Itasca	Blackberry Township	54	24	20
Itasca	Blackberry Township	54	24	21
Itasca	Blackberry Township	54	24	29
Itasca	Blackberry Township	54	24	30
Itasca	Blackberry Township	54	24	31
Itasca	Splithand Township	53	24	6
Itasca	Splithand Township	53	24	7
Itasca	Wildwood Township	53	25	12
Itasca	Wildwood Township	53	25	13
Itasca	Wildwood Township	53	25	23
Itasca	Wildwood Township	53	25	24
Itasca	Wildwood Township	53	25	25
Itasca	Wildwood Township	53	25	26
Itasca	Wildwood Township	53	25	35
Aitkin	Unorganized Territory of Northwest Aitkin	52	25	2
Aitkin	Unorganized Territory of Northwest Aitkin	52	25	3
Aitkin	Unorganized Territory of Northwest Aitkin	52	25	10
Aitkin	Unorganized Territory of Northwest Aitkin	52	25	15

County	Local Government	Township (N)	Range (W)	Section
Aitkin	Unorganized Territory of Northwest Aitkin	52	25	16
Aitkin	Unorganized Territory of Northwest Aitkin	52	25	21
Aitkin	Unorganized Territory of Northwest Aitkin	52	25	22
Aitkin	Unorganized Territory of Northwest Aitkin	52	25	28
Aitkin	Unorganized Territory of Northwest Aitkin	52	25	29
Aitkin	Unorganized Territory of Northwest Aitkin	52	25	31
Aitkin	Unorganized Territory of Northwest Aitkin	52	25	32
Aitkin	Hill Lake Township	52	26	36
Aitkin	Unorganized Territory of Northwest Aitkin	51	25	6
Aitkin	Macville Township	51	26	1
Aitkin	Macville Township	51	26	2
Aitkin	Macville Township	51	26	9
Aitkin	Macville Township	51	26	10
Aitkin	Macville Township	51	26	11
Aitkin	Macville Township	51	26	16
Aitkin	Macville Township	51	26	17
Aitkin	Macville Township	51	26	18
Aitkin	Macville Township	51	26	19
Aitkin	Macville Township	51	26	20
Aitkin	Macville Township	51	26	30
Aitkin	Macville Township	51	26	31
Aitkin	Macville Township	51	26	32
Aitkin	Unorganized Territory of Northwest Aitkin	51	27	36
Aitkin	Unorganized Territory of Northwest Aitkin	50	26	6
Aitkin	Unorganized Territory of Northwest Aitkin	50	27	1
Aitkin	Unorganized Territory of Northwest Aitkin	50	27	12

County	Local Government	Township (N)	Range (W)	Section
Aitkin	Unorganized Territory of Northwest Aitkin	50	27	13
Aitkin	Unorganized Territory of Northwest Aitkin	50	27	14
Aitkin	Unorganized Territory of Northwest Aitkin	50	27	23
Aitkin	Unorganized Territory of Northwest Aitkin	50	27	24
Aitkin	Unorganized Territory of Northwest Aitkin	50	27	26
Aitkin	Unorganized Territory of Northwest Aitkin	50	27	27
Aitkin	Unorganized Territory of Northwest Aitkin	50	27	33
Aitkin	Unorganized Territory of Northwest Aitkin	50	27	34
Crow Wing	Little Pine Township	138	25	13
Crow Wing	Little Pine Township	138	25	23
Crow Wing	Little Pine Township	138	25	24
Crow Wing	Little Pine Township	138	25	26
Crow Wing	Little Pine Township	138	25	34
Crow Wing	Little Pine Township	138	25	35
Crow Wing	Ross Lake Township	137	25	3
Crow Wing	Ross Lake Township	137	25	4
Crow Wing	Ross Lake Township	137	25	9
Crow Wing	Ross Lake Township	137	25	10
Crow Wing	Ross Lake Township	137	25	16
Crow Wing	Ross Lake Township	137	25	17
Crow Wing	Ross Lake Township	137	25	20
Crow Wing	Ross Lake Township	137	25	29
Crow Wing	Ross Lake Township	137	25	30
Crow Wing	Ross Lake Township	137	25	31
Crow Wing	Fairfield Township	137	26	36
Crow Wing	Perry Lake Township	136	26	2
Crow Wing	Perry Lake Township	136	26	3
Crow Wing	Perry Lake Township	136	26	9
Crow Wing	Perry Lake Township	136	26	10

County	Local Government	Township (N)	Range (W)	Section
Crow Wing	Perry Lake Township	136	26	11
Crow Wing	Perry Lake Township	136	26	15
Crow Wing	Perry Lake Township	136	26	16
Crow Wing	Perry Lake Township	136	26	17
Crow Wing	Perry Lake Township	136	26	19
Crow Wing	Perry Lake Township	136	26	20
Crow Wing	Perry Lake Township	136	26	21
Crow Wing	Perry Lake Township	136	26	29
Crow Wing	Perry Lake Township	136	26	30
Crow Wing	Perry Lake Township	136	26	31
Crow Wing	Wolford Township	47	29	16
Crow Wing	Wolford Township	47	29	17
Crow Wing	Wolford Township	47	29	20
Crow Wing	Wolford Township	47	29	21
Crow Wing	Wolford Township	47	29	29
Crow Wing	Wolford Township	47	29	30
Crow Wing	Wolford Township	47	29	31
Crow Wing	City of Trommald	47	29	32
Crow Wing	City of Trommald	46	29	5
Crow Wing	Irondale Township	46	29	6
Crow Wing	Irondale Township	46	29	7
Crow Wing	Irondale Township	46	29	8
Crow Wing	Irondale Township	46	29	18
Crow Wing	City of Riverton	46	29	18
Crow Wing	Irondale Township	46	29	19
Crow Wing	City of Riverton	46	29	19
Crow Wing	Irondale Township	46	30	13
Crow Wing	Oak Lawn Township	46	30	24
Crow Wing	Oak Lawn Township	46	30	25
Crow Wing	Oak Lawn Township	46	30	36
Crow Wing	Oak Lawn Township	45	30	1
Crow Wing	Oak Lawn Township	45	30	12
Crow Wing	Oak Lawn Township	45	30	13
Crow Wing	Oak Lawn Township	45	30	24
Crow Wing	Oak Lawn Township	45	30	25
Crow Wing	Nokay Lake Township	45	29	19
Crow Wing	Nokay Lake Township	45	29	30

County	Local Government	Township (N)	Range (W)	Section
Crow Wing	Nokay Lake Township	45	29	31
Crow Wing	Nokay Lake Township	45	29	32
Crow Wing	Nokay Lake Township	45	29	33
Crow Wing	Maple Grove Township	44	29	4
Crow Wing	Maple Grove Township	44	29	5
Crow Wing	Maple Grove Township	44	29	9
Crow Wing	Maple Grove Township	44	29	16
Crow Wing	Maple Grove Township	44	29	20
Crow Wing	Maple Grove Township	44	29	21
Crow Wing	Maple Grove Township	44	29	28
Crow Wing	Maple Grove Township	44	29	29
Crow Wing	Maple Grove Township	44	29	30
Crow Wing	Maple Grove Township	44	29	31
Crow Wing	Maple Grove Township	44	29	32
Crow Wing	Platte Lake Township	43	29	6
Crow Wing	Platte Lake Township	43	29	7
Crow Wing	Platte Lake Township	43	29	18
Crow Wing	Platte Lake Township	43	29	19
Crow Wing	Platte Lake Township	43	29	30
Crow Wing	Platte Lake Township	43	29	31
Morrison	Pulaski Township	42	29	6
Morrison	Pulaski Township	42	29	7
Morrison	Pulaski Township	42	29	18
Morrison	City of Harding	42	29	18
Morrison	Pulaski Township	42	29	19
Morrison	City of Harding	42	29	19
Morrison	Pulaski Township	42	29	30
Morrison	Pulaski Township	42	29	31
Morrison	Granite Township	41	29	6
Morrison	Granite Township	41	29	7
Morrison	Granite Township	41	29	18
Morrison	Granite Township	41	29	19
Morrison	Granite Township	41	29	30
Morrison	Granite Township	41	29	31
Morrison	Pierz Township	40	30	11
Morrison	Pierz Township	40	30	14
Morrison	Pierz Township	40	30	23

County	Local Government	Township (N)	Range (W)	Section
Morrison	Pierz Township	40	30	26
Morrison	Pierz Township	40	30	35
Morrison	Buckman Township	39	30	2
Morrison	Buckman Township	39	30	11
Morrison	Buckman Township	39	30	14
Morrison	Buckman Township	39	30	23
Morrison	Buckman Township	39	30	26
Morrison	Buckman Township	39	30	35
Benton	Graham Township	38	30	2
Benton	Graham Township	38	30	11
Benton	Graham Township	38	30	14
Benton	Graham Township	38	30	23
Benton	Graham Township	38	30	26
Benton	Graham Township	38	30	35
Benton	Mayhew Lake Township	37	30	2
Benton	Mayhew Lake Township	37	30	11
Benton	Mayhew Lake Township	37	30	14
Benton	Mayhew Lake Township	37	30	23
Benton	Mayhew Lake Township	37	30	26
Benton	Mayhew Lake Township	37	30	35
Benton	Minden Township	36	30	2
Benton	Minden Township	36	30	11
Benton	Minden Township	36	30	14
Benton	Minden Township	36	30	23
Benton	Minden Township	36	30	26
Benton	Minden Township	36	30	35
Benton	City of St. Cloud	36	30	35
Benton	Minden Township	36	30	36
Benton	St. George Township	36	29	31
Sherburne	Haven Township	35	30	1
Sherburne	Haven Township	35	30	2
Sherburne	Haven Township	35	30	12
Sherburne	Palmer Township	35	29	1
Sherburne	Palmer Township	35	29	2
Sherburne	Palmer Township	35	29	3
Sherburne	Palmer Township	35	29	4
Sherburne	Palmer Township	35	29	5

County	Local Government	Township (N)	Range (W)	Section
Sherburne	Palmer Township	35	29	6
Sherburne	Palmer Township	35	29	7
Sherburne	Palmer Township	35	29	12
Sherburne	Palmer Township	35	29	13
Sherburne	Palmer Township	35	29	17
Sherburne	Palmer Township	35	29	18
Sherburne	Palmer Township	35	29	19
Sherburne	Palmer Township	35	29	20
Sherburne	Palmer Township	35	29	24
Sherburne	Palmer Township	35	29	25
Sherburne	Palmer Township	35	29	28
Sherburne	Palmer Township	35	29	29
Sherburne	Palmer Township	35	29	33
Sherburne	Palmer Township	35	29	34
Sherburne	Palmer Township	35	29	35
Sherburne	Palmer Township	35	29	36
Sherburne	Becker Township	34	28	7
Sherburne	Becker Township	34	28	8
Sherburne	Becker Township	34	28	16
Sherburne	Becker Township	34	28	17
Sherburne	Becker Township	34	28	20
Sherburne	Becker Township	34	28	21
Sherburne	Becker Township	34	28	28
Sherburne	Becker Township	34	28	29
Sherburne	City of Becker	34	28	32
Sherburne	Becker Township	34	28	33
Sherburne	City of Becker	34	28	33
Sherburne	Becker Township	34	29	1
Sherburne	Becker Township	34	29	2
Sherburne	Becker Township	34	29	12
Sherburne	Becker Township	34	29	13
Sherburne	Becker Township	34	29	24
Sherburne	City of Becker	34	29	24
Sherburne	Becker Township	34	29	25
Sherburne	City of Becker	34	29	25
Sherburne	City of Becker	34	29	35
Sherburne	City of Becker	34	29	36

County	Local Government	Township (N)	Range (W)	Section
Sherburne	Becker Township	33	28	4
Sherburne	Becker Township	33	28	5
Sherburne	City of Becker	33	28	6
Sherburne	Becker Township	33	28	7
Sherburne	City of Becker	33	28	7
Sherburne	Becker Township	33	28	8
Sherburne	Becker Township	33	28	9
Sherburne	Becker Township	33	28	18
Sherburne	City of Becker	33	28	18
Sherburne	City of Becker	33	29	1
Sherburne	City of Becker	33	29	2
Sherburne	City of Becker	33	29	11
Sherburne	City of Becker	33	29	12
Sherburne	City of Becker	33	29	13

## 2.1 Structures

The transmission line will primarily consist of double-circuit, tubular steel monopole structures with V-string insulators. These structures will be approximately 130 to 170 feet above ground and spaced 800 to 1,000 feet apart depending upon the terrain and environmental constraints. The average diameter of the monopole foundations will be 7 to 10 feet, with specialty structures, including double pole structures, having wider foundation diameters. The diameter of each monopole will be narrower than the diameter of each foundation.

Portions of the Transmission Facility in Sherburne County will consist of triple-circuit, tubular steel monopole structures with a 69 kV underbuild position to accommodate an existing 69-kV transmission line. These monopoles will include V-string and I-string insulators for the 345 kV and 69 kV conductors, respectively. Structures will be approximately 140 to 180 feet above ground and spaced 600 to 800 apart.

Where existing transmission lines will be realigned, relocated, reconfigured, or replaced, the structure types will include, but are not limited to, typical wood or steel monopole or H-frame structures. These structures will be approximately 60 to 180 feet above ground and spaced 300 feet to 1,000 feet apart, depending on the structure type used.

## 2.2 Conductors

The Permittees will use two different conductor types for the project: a horizontally bundled

twisted pair-type aluminum conductor steel reinforced (T2-ACSR) or similar type and a bundled aluminum conductor steel supported (ACSS) or similar type.

The table below details the specifications of the various structure and conductor types as presented in the route permit application.

The table below details the Specifications on the various structure and conductor types as presented in the route permit application.

Line Type	Conductor	Structure		Foundation	Height	Span
		Type	Material			
Double-Circuit 345/345 kV	T2-ACSR or ACSS	Monopole	Steel	Concrete Pier	130-170	800 – 1,000
Single-Circuit 230 kV	T2-ACSR or ACSS	H-frame	Wood	Direct Embed	65-90	700-900
Single-Circuit 115 kV	T2-ACSR or ACSS	H-frame	Wood	Direct Embed	60-80	600-800
Single-Circuit 69 kV Rebuild	T2-ACSR or ACSS	Monopole	Wood	Direct Embed	60-80	300-500
Triple-Circuit 345/345/69 kV	T2-ACSR or ACSS	Monopole	Steel	Concrete Pier	140-180	600-800

### 2.3 Substations and Associated Facilities

The project will involve expansion and/or construction of the following substations:

- Expansion of the existing Iron Range Substation, located near Grand Rapids;
- Expansion of the existing Benton County Substation, located near St. Cloud (to be called the Cherry Park Substation),
- Construction of a new Cuyuna Series Compensation Station near the existing Riverton Substation

### 3 DESIGNATED ROUTE

The route designated by the Commission is depicted on the route maps attached to this route permit (Designated Route). The Designated Route is generally described as follows:

From Minnesota Power's Iron Range Substation, the Route extends south for one mile and then turns west for 0.75 miles, south for 0.5 miles, and west for 0.75 miles, before joining Minnesota Power's 230 kV 92 Line right-of-way. The Route then follows Minnesota Power's 92 Line right-of-way for approximately 30 miles. The Route expands to the west to approximately 3,000 feet at its widest point for about 4,000 feet north-south near Swatara, Minnesota and then south of Swatara, Minnesota the Route expands approximately 3,000 feet to the east for about 1.75 miles (about 9,800 feet) where it passes an Enbridge pumping station and crosses Minnesota Power's ±250 kV high-voltage direct-current transmission line. The Route then continues to follow the 92 Line right-of-way for approximately 27 miles. Approximately one mile south of the Mississippi River crossing in Wolford Township, the Route includes a 1,000-foot-wide corridor from the east to allow re-build of Minnesota Power's 115 kV 13 Line. The Route continues south for about 1.25 miles and then splits into two arms to allow Minnesota Power's 11 Line, 13 Line, and 92 Line to be co-located mostly within the existing rights-of-way for the 11 Line and 13 Line on the western arm and for the new double-circuit 345 kV transmission line to occupy the existing 92 Line right-of-way on the eastern arm. Each arm extends for about 2.75 miles before entering the north side of the new Minnesota Power Cuyuna Series Compensation Station.

Continuing south from the Cuyuna Series Compensation Station, the Route extends to the southwest and south for 8.5 miles through the Riverton area following, multiple existing transmission line rights-of-way to the Riverton Substation. Beginning at the Riverton Substation, the Route parallels Great River Energy's 230 kV MR Line right-of-way, crossing Highway 210, and heads south to Highway 18. At Highway 18, the Route expands to approximately 4,000 feet east-west and approximately 4,000 feet north-south and then at Highway 18 turns east along new right-of-way for 0.5 miles before turning southeast along Great River Energy's 69 kV RW Line for about 3 miles. The Route then turns south and has a 3,000-foot width for about 3.25 miles and then turns diagonal southwest for approximately 2.5 miles with a 2,000-foot width before re-joining Great River Energy's MR Line. The Route then continues south following Great River Energy's MR Line for 48 miles to Great River Energy's Cherry Park Substation, which is adjacent to Great River Energy's existing Benton County Substation.

South of the Cherry Park Substation (adjacent to the existing Benton County Substation), the Route primarily centers on Great River Energy's existing 230 kV MR Line and 345 kV GRE-BS Line from the Cherry Park Substation to Xcel Energy's new Big Oaks Substation

and Xcel Energy's Sherco Substation, respectively. For the final 2.5 miles of the Route into the Big Oaks Substation the Route deviates from the existing MR Line primarily following roads east across Highway 10 and south along Sherburne Avenue.

The Designated Route includes an anticipated alignment and a right-of-way. The right-of-way is the physical land needed for the safe operation of the transmission line. The Permittee shall locate the alignment and associated right-of-way within the Designated Route unless otherwise authorized by this route permit or the Commission. The Designated Route provides the Permittee with flexibility for minor adjustments of the alignment and right-of-way to accommodate landowner requests and unforeseen conditions.

Any modifications to the Designated Route or modifications that would result in right-of-way placement outside the Designated Route shall be specifically reviewed by the Commission in accordance with Minn. R. 7850.4900 and Section 10 of this route permit.

#### **4 RIGHT-OF-WAY**

This route permit authorizes the Permittee to obtain a new permanent right-of-way for the transmission lines authorized by this Route Permit of approximately 150 feet in width for each line. The permanent right-of-way is typically 75 feet on both sides of the 345kV transmission line measured from its centerline or alignment. Some areas of the Transmission Facility may require wider rights-of-way based on actual design conditions.

The anticipated alignment is intended to minimize potential impacts relative to the criteria identified in Minn. R. 7850.4100. The final alignment must generally conform to the anticipated alignment identified on the route maps unless changes are requested by individual landowners and agreed to by the Permittee or for unforeseen conditions that are encountered or as otherwise provided for by this route permit.

Any right-of-way or alignment modifications within the Designated Route shall be located so as to have comparable overall impacts relative to the factors in Minn. R. 7850.4100, as does the right-of-way and alignment identified in this route permit and shall be specifically identified and documented in and approved as part of the plan and profile submitted pursuant to Section 9.2 of this route permit.

Where the transmission line parallels existing highway and other road rights-of-way, the transmission line right-of-way shall occupy and utilize the existing right-of-way to the maximum extent possible; consistent with the criteria in Minn. R. 7850.4100, and the other requirements of this route permit; and for highways under the jurisdiction of the Minnesota Department of

Transportation (MnDOT), the procedures for accommodating utilities in trunk highway rights-of-way.

## **5 GENERAL CONDITIONS**

The Permittee shall comply with the following conditions during construction and operation of the Transmission Facility over the life of this route permit.

### **5.1 Route Permit Distribution**

Within 30 days of issuance of this route permit, the Permittee shall provide all affected landowners with a copy of this route permit and the complaint procedures. An affected landowner is any landowner or designee that is within or adjacent to the Designated Route. In no case shall a landowner receive this route permit and complaint procedures less than five days prior to the start of construction on their property. The Permittee shall also provide a copy of this route permit and the complaint procedures to the applicable regional development commissions, county environmental offices, and city and township clerks. The Permittee shall file with the Commission an affidavit of its route permit and complaint procedures distribution within 30 days of issuance of this route permit.

### **5.2 Access to Property**

The Permittee shall notify landowners prior to entering or conducting maintenance within their property, unless otherwise negotiated with the landowner. The Permittee shall keep records of compliance with this section and provide them upon the request of the Minnesota Department of Commerce (Department of Commerce) staff or Commission staff.

### **5.3 Construction and Operation Practices**

The Permittee shall comply with the construction practices, operation and maintenance practices, and material specifications described in the permitting record for this Transmission Facility unless this route permit establishes a different requirement in which case this route permit shall prevail.

#### **5.3.1 Field Representative**

The Permittee shall designate a field representative responsible for overseeing compliance with the conditions of this route permit during construction of the Transmission Facility. This person shall be accessible by telephone or other means during normal business hours throughout site preparation, construction, cleanup, and restoration.

The Permittee shall file with the Commission the name, address, email, phone number, and emergency phone number (if different) of the field representative at least 14 days prior to the pre-construction meeting. The Permittees need to only provide the field representative's contact information to those landowners that are the subject of the Permittees' vegetation clearing or plan and profile submission and additional landowners may be notified separately when the Permittees are ready to proceed with a vegetation clearing or plan and profile filing for other Transmission Facility areas. The Permittees shall provide the field representative's contact information to affected landowners, local government units and other interested persons at least 14 days prior to the pre-construction meeting. The Permittee may change the field representative at any time upon notice to the Commission, affected landowners, local government units and other interested persons. The Permittee shall file with the Commission an affidavit of distribution of its field representative's contact information at least five days prior to the pre-construction meeting and upon changes to the field representative.

### **5.3.2 Employee Training - Route Permit Terms and Conditions**

The Permittee shall train all employees, contractors, and other persons involved in the Transmission Facility construction regarding the terms and conditions of this route permit. The Permittee shall keep records of compliance with this section and provide them upon the request of Department of Commerce staff or Commission staff.

### **5.3.3 Independent Third-Party Monitoring**

Prior to construction, the Permittee shall propose a scope of work and identify an independent third-party monitor to conduct construction monitoring on behalf of the Department of Commerce. The scope of work shall be developed in consultation with and approved by the Department of Commerce. This third-party monitor will report directly to and will be under the control of the Department of Commerce with costs borne by the Permittee. Department of Commerce staff shall keep records of compliance with this section and will ensure that status reports detailing the construction monitoring are filed with the Commission in accordance with scope of work approved by the Department of Commerce.

### **5.3.4 Public Services, Public Utilities, and Existing Easements**

During Transmission Facility construction, the Permittee shall minimize any disruption to public services or public utilities. To the extent disruptions to public services or public utilities occur these shall be temporary, and the Permittee shall restore service promptly. Where any impacts to utilities have the potential to occur the Permittee shall work with both landowners and local entities to determine the most appropriate mitigation measures if not already considered as part of this route permit.

The Permittee shall cooperate with county and city road authorities to develop appropriate signage and traffic management during construction. The Permittee shall keep records of compliance with this section and provide them upon the request of Department of Commerce staff or Commission staff.

#### **5.3.5 Temporary Workspace**

The Permittee shall limit temporary easements to special construction access needs and additional staging or lay-down areas required outside of the authorized right-of-way. Temporary space shall be selected to limit the removal and impacts to vegetation. The Permittee shall obtain temporary easements outside of the authorized transmission line right-of-way from affected landowners through rental agreements. Temporary easements are not provided for in this route permit.

The Permittee may construct temporary driveways between the roadway and the structures to minimize impact using the shortest route feasible. The Permittee shall use construction mats to minimize impacts on access paths and construction areas. The Permittee shall submit the location of temporary workspaces and driveways with the plan and profile pursuant to Section 9.1.

#### **5.3.6 Noise**

The Permittee shall comply with noise standards established under Minn. R. 7030.0010 to 7030.0080. The Permittee shall limit construction and maintenance activities to daytime working hours to the extent practicable.

#### **5.3.7 Aesthetics**

The Permittee shall consider input pertaining to visual impacts from landowners or land management agencies prior to final location of structures, rights-of-way, and other areas with the potential for visual disturbance. The Permittee shall use care to preserve the natural landscape, minimize tree removal and prevent any unnecessary destruction of the natural surroundings in the vicinity of the Transmission Facility during construction and maintenance. The Permittee shall work with landowners to locate the high-voltage transmission line to minimize the loss of agricultural land, forest, and wetlands, and to avoid homes and farmsteads. The Permittee shall place structures at a distance, consistent with sound engineering principles and system reliability criteria, from intersecting roads, highways, or trail crossings.

#### **5.3.8 Soil Erosion and Sediment Control**

The Permittee shall implement those erosion prevention and sediment control practices recommended by the Minnesota Pollution Control Agency (MPCA) Construction Stormwater Program. If construction of the Transmission Facility disturbs more than one acre of land or is sited in an area designated by the MPCA as having potential for impacts to water resources, the Permittee shall obtain a National Pollutant Discharge Elimination System/State Disposal System Construction Stormwater Permit from the MPCA that provides for the development of a Stormwater Pollution Prevention Plan that describes methods to control erosion and runoff.

The Permittee shall implement reasonable measures to minimize erosion and sedimentation during construction and shall employ perimeter sediment controls, protect exposed soil by promptly planting, seeding, using erosion control blankets and turf reinforcement mats, stabilizing slopes, protecting storm drain inlets, protecting soil stockpiles, and controlling vehicle tracking. Contours shall be graded as required so that all surfaces provide for proper drainage, blend with the natural terrain, and are left in a condition that will facilitate re-vegetation and prevent erosion. All areas disturbed during construction of the Transmission Facility shall be returned to pre-construction conditions.

### **5.3.9 Wetlands and Water Resources**

The Permittee shall develop wetland impact avoidance measures and implement them during construction of the Transmission Facility. Measures shall include spacing and placing the power poles at variable distances to span and avoid wetlands, watercourses, and floodplains. Unavoidable wetland impacts as a result of the placement of poles shall be limited to the immediate area around the poles. To minimize impacts, the Permittee shall construct in wetland areas during frozen ground conditions where practicable and according to permit requirements by the applicable permitting authority. When construction during winter is not possible, the Permittee shall use wooden or composite mats to protect wetland vegetation.

The Permittee shall contain soil excavated from the wetlands and riparian areas and not place it back into the wetland or riparian area. The Permittee shall access wetlands and riparian areas using the shortest route possible in order to minimize travel through wetland areas and prevent unnecessary impacts. The Permittee shall not place staging or stringing set up areas within or adjacent to wetlands or water resources, as practicable. The Permittee shall assemble power pole structures on upland areas before they are brought to the site for installation.

The Permittee shall restore wetland and water resource areas disturbed by construction activities to pre-construction conditions in accordance with the requirements of applicable state and federal permits or laws and landowner agreements. The Permittee shall meet the USACE, Minnesota Department of Natural Resources (DNR), Minnesota Board of Water and Soil Resources, and local units of government wetland and water resource requirements.

### **5.3.10 Vegetation Management**

The Permittee shall minimize the number of trees to be removed in selecting the right-of-way specifically preserving to the maximum extent practicable windbreaks, shelterbelts, living snow fences, and vegetation in areas such as trail and stream crossings where vegetative screening may minimize aesthetic impacts, to the extent that such action do not violate sound engineering principles or system reliability criteria.

The Permittee shall remove tall growing species located within the transmission line right-of-way that endanger the safe and reliable operation of the transmission line. The Permittee shall leave undisturbed, to the extent possible, existing low growing species in the right-of-way or replant such species in the right-of-way to blend the difference between the right-of-way and adjacent areas, to the extent that the low growing vegetation will not pose a threat to the transmission line or impede construction.

### **5.3.11 Application of Pesticides**

The Permittee shall restrict pesticide use to those pesticides and methods of application approved by the Minnesota Department of Agriculture (MDA), DNR, and the U.S. Environmental Protection Agency (EPA). Selective foliage or basal application shall be used when practicable. All pesticides shall be applied in a safe and cautious manner so as not to damage adjacent properties including crops, orchards, tree farms, apiaries, or gardens. The Permittee shall contact the landowner at least 14 days prior to pesticide application on their property. The Permittee may not apply any pesticide if the landowner requests that there be no application of pesticides within the landowner's property. The Permittee shall provide notice of pesticide application to landowners and beekeepers operating Minnesota Department of Agriculture registered apiaries within three miles of the pesticide application area at least 14 days prior to such application. The Permittees shall use the Minnesota Department of Agriculture's Apiary Registry (<https://mn.beecheck.org/map>) to identify apiaries for purposes of compliance with this condition. The Permittee shall keep pesticide communication and application records and provide them upon the request of Department of Commerce staff or Commission staff.

### **5.3.12 Invasive Species**

The Permittee shall employ best management practices to avoid the potential introduction and spread of invasive species on lands disturbed by Transmission Facility construction activities. The Permittee shall develop an Invasive Species Prevention Plan and file it with the Commission at least 14 days prior to the pre-construction meeting. The Permittee shall comply with the most recently filed Invasive Species Prevention Plan.

### **5.3.13 Noxious Weeds**

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

### **5.3.14 Roads**

The Permittee shall advise the appropriate governing bodies having jurisdiction over all state, county, city, or township roads that will be used during the construction phase of the Transmission Facility. Where practical, existing roadways shall be used for all activities associated with construction of the Transmission Facility. Oversize or overweight loads associated with the Transmission Facility shall not be hauled across public roads without required permits and approvals.

The Permittee shall construct the fewest number of site access roads required. Access roads shall not be constructed across streams and drainage ways without the required permits and approvals. Access roads shall be constructed in accordance with all necessary township, county or state road requirements and permits.

The Permittee shall promptly repair private roads or lanes damaged when moving equipment or when accessing construction workspace, unless otherwise negotiated with the affected landowner.

### **5.3.15 Archaeological and Historic Resources**

The Permittee shall make every effort to avoid impacts to archaeological and historic resources when constructing the Transmission Facility. In the event that a resource is encountered, the Permittee shall consult with the State Historic Preservation Office and the State Archaeologist. Where feasible, avoidance of the resource is required. Where not feasible, mitigation must include an effort to minimize Transmission Facility impacts on the resource consistent with State Historic Preservation Office and State Archaeologist requirements.

Prior to construction, the Permittee shall train workers about the need to avoid cultural properties, how to identify cultural properties, and procedures to follow if undocumented cultural properties, including gravesites, are found during construction. If human remains are encountered during construction, the Permittee shall immediately halt construction and

promptly notify local law enforcement and the State Archaeologist. The Permittee shall not resume construction at such location until authorized by local law enforcement or the State Archaeologist. The Permittee shall keep records of compliance with this section and provide them upon the request of Department of Commerce staff or Commission staff.

#### **5.3.16 Avian Protection**

The Permittee in cooperation with the DNR shall identify areas of the transmission line where bird flight diverters will be incorporated into the transmission line design to prevent large avian collisions attributed to visibility issues. Standard transmission design shall incorporate adequate spacing of conductors and grounding devices in accordance with Avian Power Line Interaction Committee standards to eliminate the risk of electrocution to raptors with larger wingspans that may simultaneously come in contact with a conductor and grounding devices. The Permittee shall submit documentation of its avian protection coordination with the plan and profile pursuant to Section 9.2.

#### **5.3.17 Drainage Tiles**

The Permittee shall avoid, promptly repair, or replace all drainage tiles broken or damaged during all phases of the Transmission Facility's life unless otherwise negotiated with the affected landowner. The Permittee shall keep records of compliance with this section and provide them upon the request of Department of Commerce staff or Commission staff.

#### **5.3.18 Restoration**

The Permittee shall restore the right-of-way, temporary workspaces, access roads, abandoned right-of-way, and other public or private lands affected by construction of the Transmission Facility. Restoration within the right-of-way must be compatible with the safe operation, maintenance, and inspection of the transmission line. Within 60 days after completion of all restoration activities, the Permittee shall file with the Commission a Notice of Restoration Completion.

#### **5.3.19 Cleanup**

The Permittee shall remove and properly dispose of all construction waste and scrap from the right-of-way and all premises on which construction activities were conducted upon completion of each task. The Permittee shall remove and properly dispose of all personal litter, including bottles, cans, and paper from construction activities daily.

#### **5.3.20 Pollution and Hazardous Wastes**

The Permittee shall take all appropriate precautions to protect against pollution of the environment. The Permittee shall be responsible for compliance with all laws applicable to the generation, storage, transportation, clean up and disposal of all waste generated during construction and restoration of the Transmission Facility.

#### **5.3.21 Damages**

The Permittee shall fairly restore or compensate landowners for damage to crops, fences, private roads and lanes, landscaping, drain tile, or other damages sustained during construction. The Permittee shall keep records of compliance with this section that includes the date the Permittees were notified of the damages and when the restoration or compensation was completed and provide them upon the request of Department of Commerce staff or Commission staff.

### **5.4 Electrical Performance Standards**

#### **5.4.1 Grounding**

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

#### **5.4.2 Electric Field**

The Permittee shall design, construct, and operate the transmission line in such a manner that the electric field measured one meter above ground level immediately below the transmission line shall not exceed 8.0 kV/m rms.

#### **5.4.3 Interference with Communication Devices**

If interference with radio or television, satellite, wireless internet, GPS-based agriculture navigation systems or other communication devices is caused by the presence or operation of

the Transmission Facility, the Permittee shall take whatever action is necessary to restore or provide reception equivalent to reception levels in the immediate area just prior to the construction of the Transmission Facility. The Permittee shall keep records of compliance with this section and provide them upon the request of Department of Commerce staff or Commission staff.

## **5.5 Other Requirements**

### **5.5.1 Safety Codes and Design Requirements**

The Permittee shall design the transmission line and associated facilities to meet or exceed all relevant local and state codes, the National Electric Safety Code, and North American Electric Reliability Corporation requirements. This includes standards relating to clearances to ground, clearance to crossing utilities, clearance to buildings, strength of materials, clearances over roadways, right-of-way widths, and permit requirements.

### **5.5.2 Other Permits and Regulations**

The Permittee shall comply with all applicable state statutes and rules. The Permittee shall obtain all required permits for the Transmission Facility and comply with the conditions of those permits unless those permits conflict with or are preempted by federal or state permits and regulations.

At least 14 days prior to the pre-construction meeting, the Permittee shall file with the Commission an Other Permits and Regulations Submittal that contains a detailed status of all permits, authorizations, and approvals that have been applied for specific to the Transmission Facility. The Other Permits and Regulations Submittal shall also include the permitting agency name; the name of the permit, authorization, or approval being sought; contact person and contact information for the permitting agency or authority; brief description of why the permit, authorization, or approval is needed; application submittal date; and the date the permit, authorization, or approval was issued or is anticipated to be issued.

The Permittee shall demonstrate that it has obtained all necessary permits, authorizations, and approvals by filing an affidavit stating as such and an updated Other Permits and Regulations Submittal prior to commencing construction. The Permittee shall provide a copy of any such permits, authorizations, and approvals at the request of Department of Commerce staff or Commission staff.

## **6 SPECIAL CONDITIONS**

The special conditions shall take precedence over other conditions of this permit should there be a conflict.

### **6.1 Vegetation Management Plan**

The Permittees shall develop a vegetation management plan (VMP) in coordination with Department of Commerce, Energy Environmental Review and Analysis (EERA) and DNR. The vegetation management plan and documentation of the coordination efforts between the permittees and the coordinating agencies shall be filed at least 14 days prior to the plan and profile for the project. The Permittee shall provide all affected landowners with a copy of the plan; an electronic copy (including by website address) shall be sufficient. The Permittees shall file an affidavit of its distribution of the VMP to landowners with the Commission. Such notice to landowners may be provided for only those portions of the Project that are the subject of the plan for vegetation clearing for each phase of the Project.

The vegetation management plan must include the following:

- Management objectives addressing short term goals (seeding and establishment) and long-term goals (life of the project).
- A description of planned restoration and vegetation management activities, including how the route will be prepared, timing of activities, how seeding will occur (broadcast, drilling, etc.), and the types of seed mixes to be used.
- A description of tree removal/planting activities and the timing of such activities.
- A description of how the route will be monitored and evaluated to meet management goals.
- A description of the management tools used to maintain vegetation (e.g., mowing, spot spraying, hand removal, fire, grazing, etc.), including the timing and frequency of maintenance activities.

### **6.2 Agricultural Impact Mitigation Plan**

In coordination with the Minnesota Department of Agriculture (MDA), the Permittees shall prepare an agricultural impact mitigation plan (AIMP). The AIMP shall be filed at least 14 days prior to any pre-construction meeting. The Permittees shall provide all affected landowners with a copy of the plan.

### **6.3 Dust Control**

The Permittees shall utilize non-chloride products for dust control during construction.

### **6.4 Wildlife-Friendly Erosion Control**

The Permittees shall use only “bio-netting” or “natural netting” types and mulch products without synthetic (plastic) fiber additives.

### **6.5 Project Lighting**

The Permittees must use shielded and downward facing lighting and LED lighting that minimizes blue hue for all new project substation and compensation station facilities. Downward facing lighting must be clearly visible on the plan and profile(s) submitted for the project.

### **6.6 Vegetation Clearing Before Construction**

If the Permittees will clear vegetation for any portion of the Transmission Facility prior to completion of the design necessary to provide a plan and profile contemplated under Section 9, the Permittees shall file with the Commission at least 14 days prior to such vegetation clearing activities:

- The Vegetation Management Plan contemplated under Section 6.1 of this Route Permit that is applicable to any portion of the Transmission Facility being proposed for vegetation clearing;
- A map showing the area proposed for vegetation removal and its location within the Designated Route and compared to the right-of-way identified in this route permit;
- A statement of confirmation that the Permittees have obtained, or will obtain before commencing, necessary land rights and agency permits for the vegetation removal in this area;
- The Permittees’ plan for notification of Field Representative for landowners in the identified area; and
- If the Permittees have made any modifications to the right-of-way or alignment within the Designated Route from that identified in this route permit, the Permittee shall demonstrate that the right-of-way to be cleared of vegetation will be located so as to

have comparable overall impacts relative to the factors in Minn. R. 7850.4100, as does the right-of-way and alignment identified in this route permit.

### **6.7 Substation Construction**

Notwithstanding any other requirement in this Permit, Permittees may commence construction of the substations identified in Section 2.3 of this Permit, provided that Permittees comply, as applicable, with Sections 9.1 and 9.2 of this Permit with respect to the specific scope of the construction activities sought to be conducted by Permittees.

### **6.8 Tribal Employment and Training**

Permittees shall engage with the Leech Lake Band of Ojibwe Tribal Employment Rights Office (TERO) and develop opportunities for Tribal economic and workforce development related to the Northland Reliability Project. For any construction (including decommissioning work) along the route, Permittees will coordinate with the Leech Lake Bank of Ojibwe TERO to ensure that the Project includes opportunities for, including but not limited to, the hiring and training of Tribal members and the utilization of Tribal businesses. Permittees shall report on their efforts to coordinate with TERO and the results of the coordination including, but not limited to, Tribal members hired and use of Tribal businesses within 30 days after construction of the Project has been completed.

### **6.9 Cost Recovery**

Minnesota Power shall bear the burden of proof in any future regulatory proceeding related to the recovery of any costs above \$1,210,000,000. Nothing prevents the Applicant from seeking recovery of additional amounts through the Transmission Cost Recovery Rider.

### **6.10 MISO Variance Analysis**

Applicants shall inform the Commission of the initiation of Midcontinent Independent System Operator (MISO) Variance Analysis under Attachment FF within 5 business days of the initiation. Applicants shall file any and all copies of information submitted to the MISO Variance Analysis process. Disclosures shall be consistent with Applicants' MISO Tariff.

### **6.11 Landowner Engagement**

The Co-Location Maximization Route is approved as proposed by Applicants, as modified herein. The approved Co-Location Maximization Route includes an anticipated centerline that incorporates certain shifting of existing transmission lines to accommodate structures that have

been erected near existing transmission lines as detailed in Section III of Applicants' January 10, 2025 filing or result in the boxing in of properties of less than 40 acres with transmission lines on three sides. Permittees shall continue to work with landowners in advance of the plan and profile filing to explore possible mitigations or property purchases that would eliminate the need for shifting the existing transmission lines. As part of the plan and profile filing, Permittees shall file a report that includes a description of their resolutions, proposed actions, and final design for review by EERA. After all transactions for these particular parcels are completed and at all cost recovery proceedings for this line in front of the Commission, Permittees must update this report. Permittees shall provide copies of these reports to the landowners included in the reports along with a description of how to make comments to the Commission on the substance of the report.

#### **6.12 Revised Project Cost**

Within 60 days of the date of this order, Applicants must file revised Project cost estimates in 2022 dollars reflecting the Commission's decision herein.

### **7 DELAY IN CONSTRUCTION**

If the Permittee has not commenced construction or improvement of the route within four years after the date of issuance of this route permit the Permittee shall file a Failure to Construct Report and the Commission shall consider suspension of this route permit in accordance with Minn. R. 7850.4700.

### **8 COMPLAINT PROCEDURES**

At least 14 days prior to the pre-construction meeting, the Permittee shall file with the Commission the complaint procedures that will be used to receive and respond to complaints. The complaint procedures shall be in accordance with the requirements of Minn. R. 7829.1500 or Minn. R. 7829.1700, and as set forth in the complaint procedures attached to this route permit.

Upon request, the Permittee shall assist Department of Commerce staff or Commission staff with the disposition of unresolved or longstanding complaints. This assistance shall include, but is not limited to, the submittal of complaint correspondence and complaint resolution efforts.

## **9 COMPLIANCE REQUIREMENTS**

Failure to timely and properly make compliance filings required by this route permit is a failure to comply with the conditions of this route permit. Compliance filings must be electronically filed with the Commission.

### **9.1 Pre-Construction Meeting**

Prior to the start of construction, the Permittee shall participate in a pre-construction meeting with Department of Commerce and Commission staff to review pre-construction filing requirements, scheduling, and to coordinate monitoring of construction and site restoration activities. Because the Project may be constructed in segments, multiple pre-construction meetings and submissions under Section 9.2 are allowed. Within 14 days following the pre-construction meeting, the Permittee shall file with the Commission a summary of the topics reviewed and discussed and a list of attendees. The Permittee shall indicate in the filing the anticipated construction start date.

### **9.2 Plan and Profile**

At least 14 days prior to the pre-construction meeting, the Permittee shall file with the Commission, and provide the Department of Commerce, and the counties where the Transmission Facility, or portion of the Transmission Facility, will be constructed with a plan and profile of the right-of-way and the specifications and drawings for right-of-way preparation, construction, structure specifications and locations, cleanup, and restoration for the Transmission Facility. The documentation shall include maps depicting the plan and profile including the right-of-way, alignment, and structures in relation to the route and alignment approved per this route permit.

The Permittee may not commence construction until the earlier of (i) 30 days after the pre-construction meeting or (ii) or until the Commission staff has notified the Permittee in writing that it has completed its review of the documents and determined that the planned construction is consistent with this route permit.

If the Commission notifies the Permittee in writing within 30 days after the pre-construction meeting that it has completed its review of the documents and planned construction, and finds that the planned construction is not consistent with this route permit, the Permittee may submit additional and/or revised documentation and may not commence construction until the Commission has notified the Permittee in writing that it has determined that the planned construction is consistent with this route permit.

If the Permittee intends to make any significant changes in its plan and profile or the specifications and drawings after submission to the Commission, the Permittee shall notify the Commission, the Department of Commerce, and county staff at least five days before implementing the changes. No changes shall be made that would be in violation of any of the terms of this route permit.

### **9.3 Status Reports**

The Permittee shall file with the Commission monthly Construction Status Reports beginning with the pre-construction meeting and until completion of restoration. Construction Status Reports shall describe construction activities and progress, activities undertaken in compliance with this route permit, and shall include text and photographs.

If the Permittee does not commence construction of the Transmission Facility within six months of this route permit issuance, the Permittee shall file with the Commission Pre-Construction Status Reports on the anticipated timing of construction every six months beginning with the issuance of this route permit until the pre-construction meeting.

### **9.4 In-Service Date**

At least three days before the Transmission Facility is to be placed into service, the Permittee shall notify the Commission of the date on which the Transmission Facility will be placed into service and the date on which construction was completed.

### **9.5 As-Builts**

Within 90 days after completion of construction, the Permittee shall submit to the Commission copies of all final as-built plans and specifications developed during the Transmission Facility construction.

### **9.6 GPS Data**

Within 90 days after completion of construction, the Permittee shall submit to the Commission, in the format requested by the Commission, geo-spatial information (*e.g.*, ArcGIS compatible map files, GPS coordinates, associated database of characteristics) for all structures associated with the Transmission Facility and each substation connected.

### **9.7 Right of Entry**

The Permittee shall allow Commission designated representatives to perform the following,

upon reasonable notice, upon presentation of credentials and at all times in compliance with the Permittee's site safety standards:

- (a) To enter upon the facilities easement of the property for the purpose of obtaining information, examining records, and conducting surveys or investigations.
- (b) To bring such equipment upon the facilities easement of the property as is necessary to conduct such surveys and investigations.
- (c) To sample and monitor upon the facilities easement of the property.  
To examine and copy any documents pertaining to compliance with the conditions of this route permit.

## **10 ROUTE PERMIT AMENDMENT**

This route permit may be amended at any time by the Commission. Any person may request an amendment of the conditions of this route permit by submitting a request to the Commission in writing describing the amendment sought and the reasons for the amendment. The Commission will mail notice of receipt of the request to the Permittee. The Commission may amend the conditions after affording the Permittee and interested persons such process as is required under Minn. R. 7850.4900.

## **11 TRANSFER OF ROUTE PERMIT**

The Permittee may request at any time that the Commission transfer this route permit to another person or entity (transferee). In its request, the Permittee must provide the Commission with:

- (a) the name and description of the transferee;
- (b) the reasons for the transfer;
- (c) a description of the facilities affected; and
- (d) the proposed effective date of the transfer.

The transferee must provide the Commission with a certification that it has read, understands and is able to comply with the plans and procedures filed for the Transmission Facility and all conditions of this route permit. The Commission may authorize transfer of the route permit after affording the Permittee, the transferee, and interested persons such process as is required under Minn. R. 7850.5000.

## **12 REVOCATION OR SUSPENSION OF ROUTE PERMIT**

The Commission may initiate action to revoke or suspend this route permit at any time. The Commission shall act in accordance with the requirements of Minn. R. 7850.5100, to revoke or suspend this route permit.

**ATTACHMENT 1**  
Complaint Handling Procedures for Permitted Energy Facilities

**MINNESOTA PUBLIC UTILITIES COMMISSION  
COMPLAINT HANDLING PROCEDURES FOR  
PERMITTED ENERGY FACILITIES**

**A. Purpose**

To establish a uniform and timely method of reporting and resolving complaints received by the permittee concerning permit conditions for site or route preparation, construction, cleanup, restoration, operation, and maintenance.

**B. Scope**

This document describes complaint reporting procedures and frequency.

**C. Applicability**

The procedures shall be used for all complaints received by the permittee and all complaints received by the Minnesota Public Utilities Commission (Commission) under Minn. R. 7829.1500 or Minn. R. 7829.1700 relevant to this permit.

**D. Definitions**

**Complaint:** A verbal or written statement presented to the permittee by a person expressing dissatisfaction or concern regarding site or route preparation, cleanup or restoration, or other permit conditions. Complaints do not include requests, inquiries, questions or general comments.

**Substantial Complaint:** A written complaint alleging a violation of a specific permit condition that, if substantiated, could result in permit modification or suspension pursuant to the applicable regulations.

**Unresolved Complaint:** A complaint which, despite the good faith efforts of the permittee and a person, remains unresolved or unsatisfactorily resolved to one or both of the parties.

**Person:** An individual, partnership, joint venture, private or public corporation, association, firm, public service company, cooperative, political subdivision, municipal corporation, government agency, public utility district, or any other entity, public or private; however organized.

## **E. Complaint Documentation and Processing**

1. The permittee shall designate a representative responsible for filing complaints to the Commission's eDocket system. This person's name, phone number and email address shall accompany all complaint submittals. The name and contact information for the representative shall be kept current in eDockets.
2. A person presenting the complaint should, to the extent possible, include the following information in their communications:
  - a. name, address, phone number, and email address;
  - b. initial date of the complaint;
  - c. tract, parcel number, or address of the complaint;
  - d. a summary of the complaint; and
  - e. whether the complaint relates to a permit violation, a construction practice issue, or other type of complaint.
3. The permittee shall document all complaints by maintaining a record of all applicable information concerning the complaint, including the following:
  - a. docket number and project name;
  - b. name of complainant, address, phone number and email address;
  - c. precise description of property or parcel number;
  - d. name of permittee representative receiving complaint and date of receipt;
  - e. nature of complaint and the applicable permit condition(s);
  - f. summary of activities undertaken to resolve the complaint; and
  - g. a statement on the final disposition of the complaint.

## **F. Reporting Requirements**

The permittee shall commence complaint reporting at the beginning of project construction and continue through the term of the permit, unless otherwise required below. The permittee shall report all complaints to the Commission according to the following schedule:

**Immediate Reports:** All substantial complaints shall be reported to the Commission the same day received, or on the following working day for complaints received after working hours. Such reports are to be directed to the Commission's Public Advisor at 1-800-657-3782 (voice messages are acceptable) or [publicadvisor.puc@state.mn.us](mailto:publicadvisor.puc@state.mn.us). For e-mail reporting, the email

subject line should read "PUC EFP Complaint" and include the appropriate project docket number.

**Monthly Reports:** During project construction, restoration, and operation, a summary of all complaints, including substantial complaints received or resolved during the preceding month, shall be filed by the 15th of each month to Will Seuffert, Executive Secretary, Public Utilities Commission, using the eDockets system. The eDockets system is located at: <https://www.edockets.state.mn.us/EFiling/home.jsp>. If no complaints were received during the preceding month, the permittee shall file a summary indicating that no complaints were received.

If a project has submitted twelve consecutive months of complaint reports with no complaints, monthly reports can terminate by a letter to eDockets notifying the Commission of such action. If a substantial complaint is received (by the company or the Commission) following termination of the monthly complaint report, as noted above, the monthly reporting should commence for a period of six months following the most recent complaint or upon resolution of all pending complaints.

If a permittee is found to be in violation of this section, the Commission may reinstate monthly complaint reporting for the remaining permit term or enact some other commensurate requirement via notification by the Executive Secretary or some other action as decided by the Commission.

#### **G. Complaints Received by the Commission**

Complaints received directly by the Commission from aggrieved persons regarding the permit or issues related to site or route preparation, construction, cleanup, restoration, or operation and maintenance will be promptly sent to the permittee.

The permittee shall notify the Commission when the issue has been resolved. The permittee will add the complaint to the monthly reports of all complaints. If the permittee is unable to find resolution, the Commission will use the process outlined in the Unresolved Complaints Section to process the issue.

#### **H. Commission Process for Unresolved Complaints**

Complaints raising substantial and unresolved permit issues will be investigated by the Commission. Staff will notify the permittee and appropriate people if it determines that the

complaint is a substantial complaint. With respect to such complaints, the permittee and complainant shall be required to submit a written summary of the complaint and its current position on the issues to the Commission. Staff will set a deadline for comments. As necessary, the complaint will be presented to the Commission for consideration.

**I. Permittee Contacts for Complaints and Complaint Reporting**

Complaints may be filed by mail or email to the permittee's designated complaint representative, or to the Commission's Public Advisor at 1-800-657-3782 or [publicadvisor.puc@state.mn.us](mailto:publicadvisor.puc@state.mn.us). The name and contact information for the permittee's designated complaint representative shall be kept current in the Commission's eDocket system.

**ATTACHMENT 2**  
Compliance Filing Procedures for Permitted Energy Facilities

**MINNESOTA PUBLIC UTILITIES COMMISSION  
COMPLIANCE FILING PROCEDURE FOR  
PERMITTED ENERGY FACILITIES**

**A. Purpose**

To establish a uniform and timely method of submitting information required by Commission energy facility permits.

**B. Scope and Applicability**

This procedure encompasses all known compliance filings required by permit.

**C. Definitions**

**Compliance Filing:** A filing of information to the Commission, where the information is required by a Commission site or route permit.

**D. Responsibilities**

1. The permittee shall file all compliance filings with Will Seuffert, Executive Secretary, Public Utilities Commission, through the eDockets system. The eDockets system is located at:  
<https://www.edockets.state.mn.us/EFiling/home.jsp>

General instructions are provided on the eDockets website. Permittees must register on the website to file documents.

2. All filings must have a cover sheet that includes:
  - a. Date
  - b. Name of submitter/permittee
  - c. Type of permit (site or route)
  - d. Project location
  - e. Project docket number
  - f. Permit section under which the filing is made
  - g. Short description of the filing

3. Filings that are graphic intensive (e.g., maps, engineered drawings) must, in addition to being electronically filed, be submitted as paper copies and on CD. Paper copies and CDs should be sent to: 1) Will Seuffert, Executive Secretary, Minnesota Public Utilities Commission, 121 7th Place East, Suite 350, St. Paul, MN 55101-2147, and 2) Department of Commerce, Energy Environmental Review and Analysis, 85 7th Place East, Suite 500, St. Paul, MN 55101-2198.

The Commission may request a paper copy of any electronically filed document.

**PERMIT COMPLIANCE FILINGS<sup>1</sup>**

PERMITTEE: Minnesota Power and Great River Energy  
PERMIT TYPE: High-Voltage Transmission Line Route  
PROJECT LOCATION: Aitkin, Benton, Crow Wing, Itasca, Morrison, and Sherburne Counties  
PUC DOCKET NUMBER: E015,ET2/TL-22-415

Filing Number	Permit Section	Description of Compliance Filing	Due Date

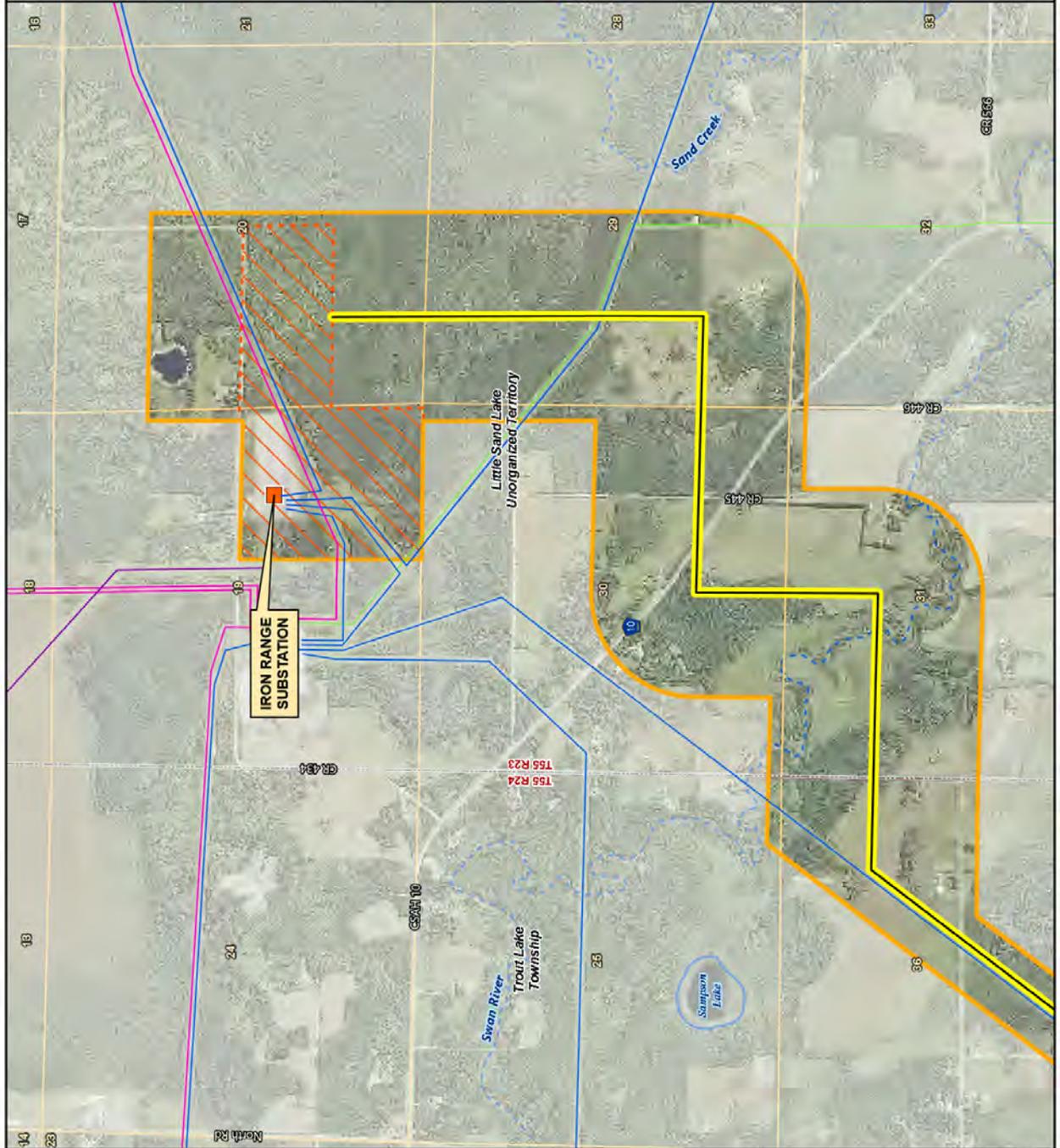
---

<sup>1</sup> This compilation of permit compliance filings is provided for the convenience of the permittee and the Commission. It is not a substitute for the permit; the language of the permit controls.

**ATTACHMENT 3**  
Route Permit Maps

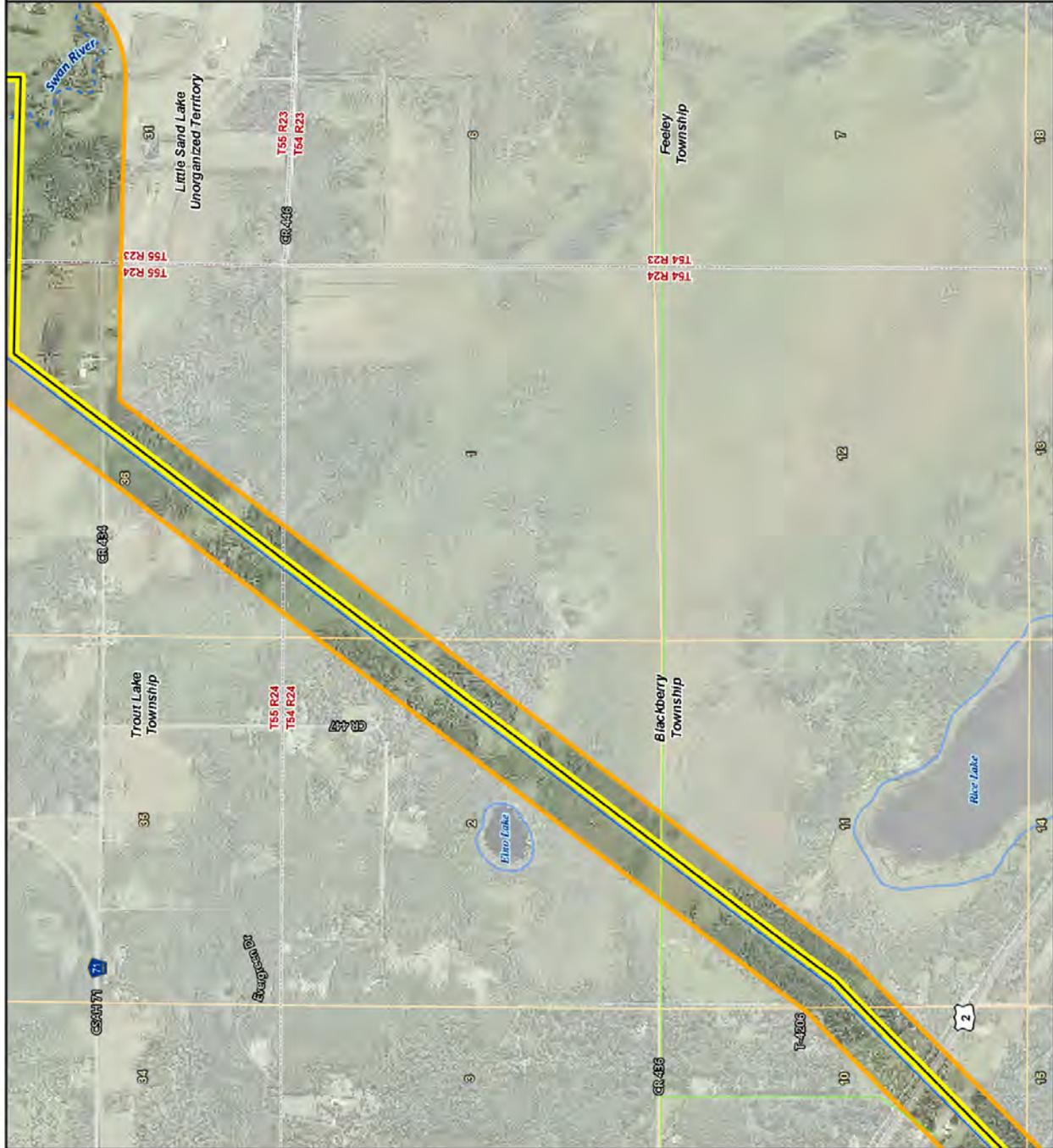
**Detailed Map  
Northland Reliability  
Project (NRP) Route  
Page 1 of 64**

-  NRP ROUTE
-  NRP ANTICIPATED CENTERLINE
-  NRP ANTICIPATED RIGHT-OF-WAY
-  REPLACE GREENS LINE
-  REPLACE NRP LINE
-  REBUILD EXISTING 69KV
-  DOUBLE CIRCUIT 230/115KV 02 LINE/11 LINE
-  SHIFT DOUBLE CIRCUIT 230/69KV (MR LINE/ BF LINE)
-  SHIFT MR INCREASED, 230KV
-  SHIFT 92 LINE, 230KV
-  REBUILD EXISTING TRANSMISSION LINES
-  IRON RANGE SUBSTATION
-  EXISTING TRANSMISSION LINE
-  69 KV
-  115 KV
-  230 KV
-  345 KV OR GREATER
-  SUBSTATION SITING AREA
-  MUNICIPAL BOUNDARY
-  PWR WATERCOURSE
-  PWR WATERBODY



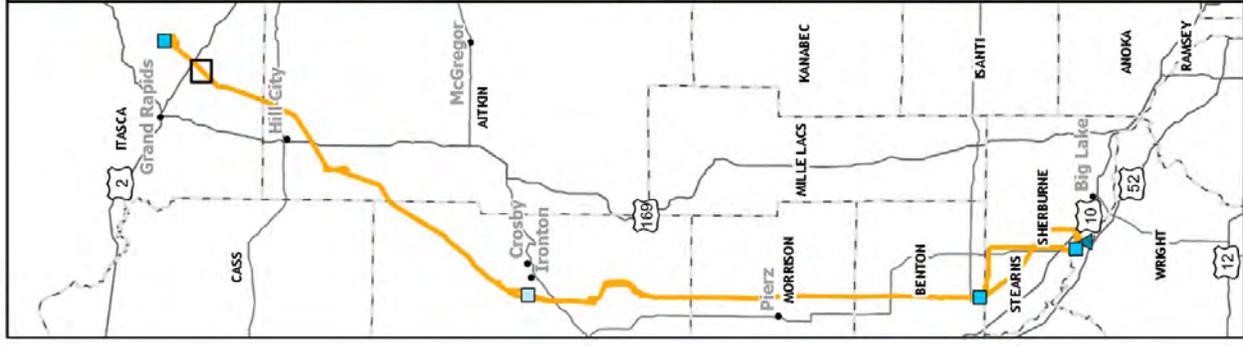
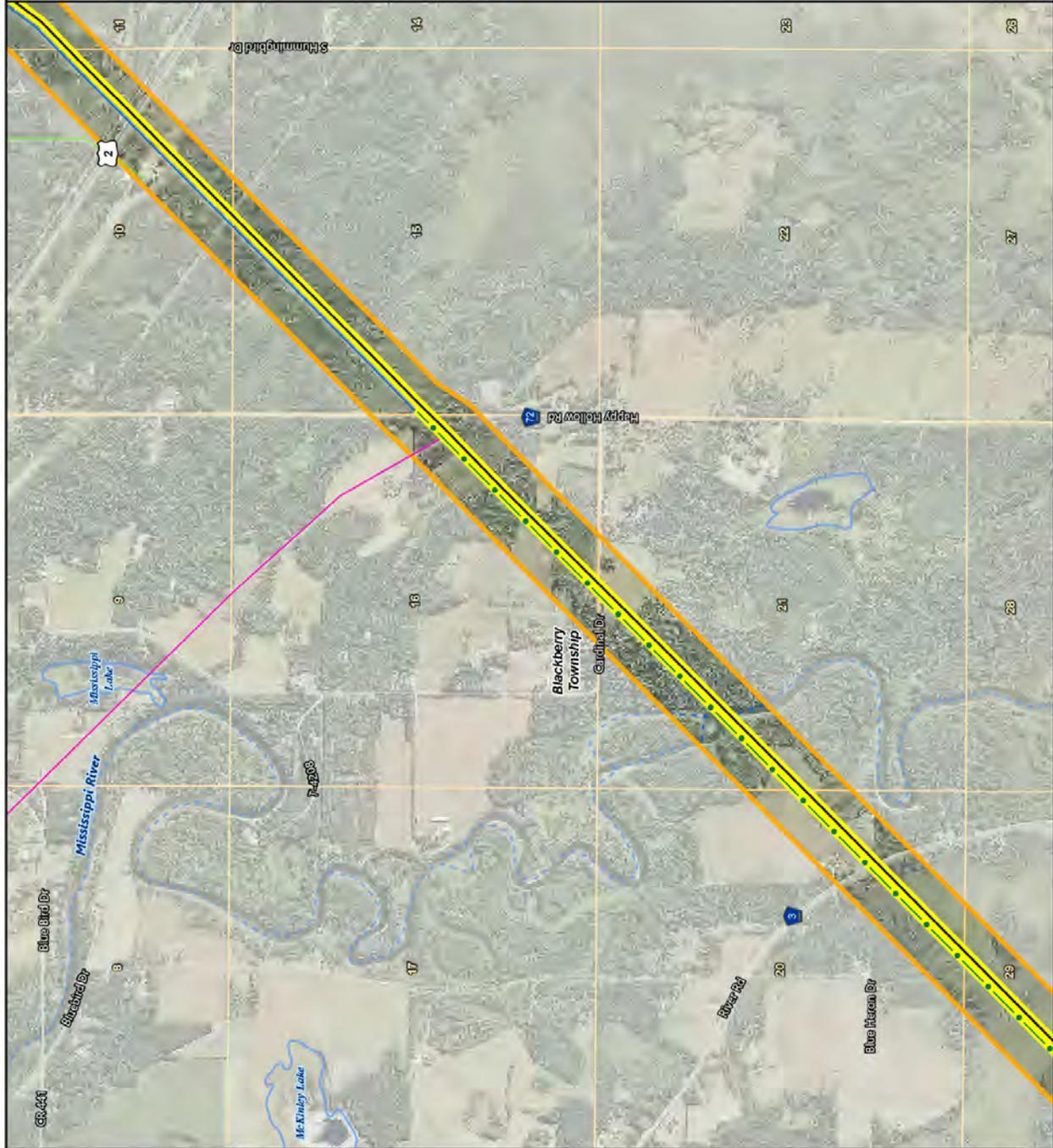
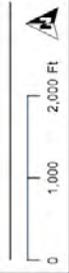
**Detailed Map  
Northland Reliability  
Project (NRP) Route  
Page 2 of 64**

-  NRP ROUTE
-  NRP ANTICIPATED CENTERLINE
-  NRP ANTICIPATED RIGHT-OF-WAY
-  REPLACE CREEKS LINE
-  REPLACE NRP LINE
-  REBUILD EXISTING 69KV
-  DOUBLE CIRCUIT 230/138KV 02 LINE/11 LINE
-  SHIFT DOUBLE CIRCUIT 230/69KV (MR LINE/ BF LINE)
-  SHIFT MR INCREASED, 230KV
-  SHIFT 92 LINE, 230KV
-  REBUILD EXISTING TRANSMISSION LINES
-  EXISTING TRANSMISSION LINE
-  69 KV
-  230 KV
-  MUNICIPAL BOUNDARY
-  PWA WATERCOURSE
-  PWA WATERBODY



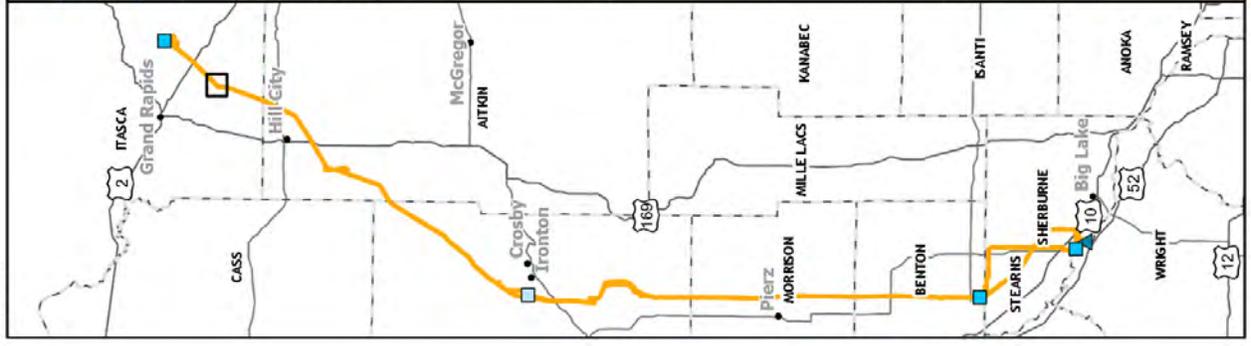
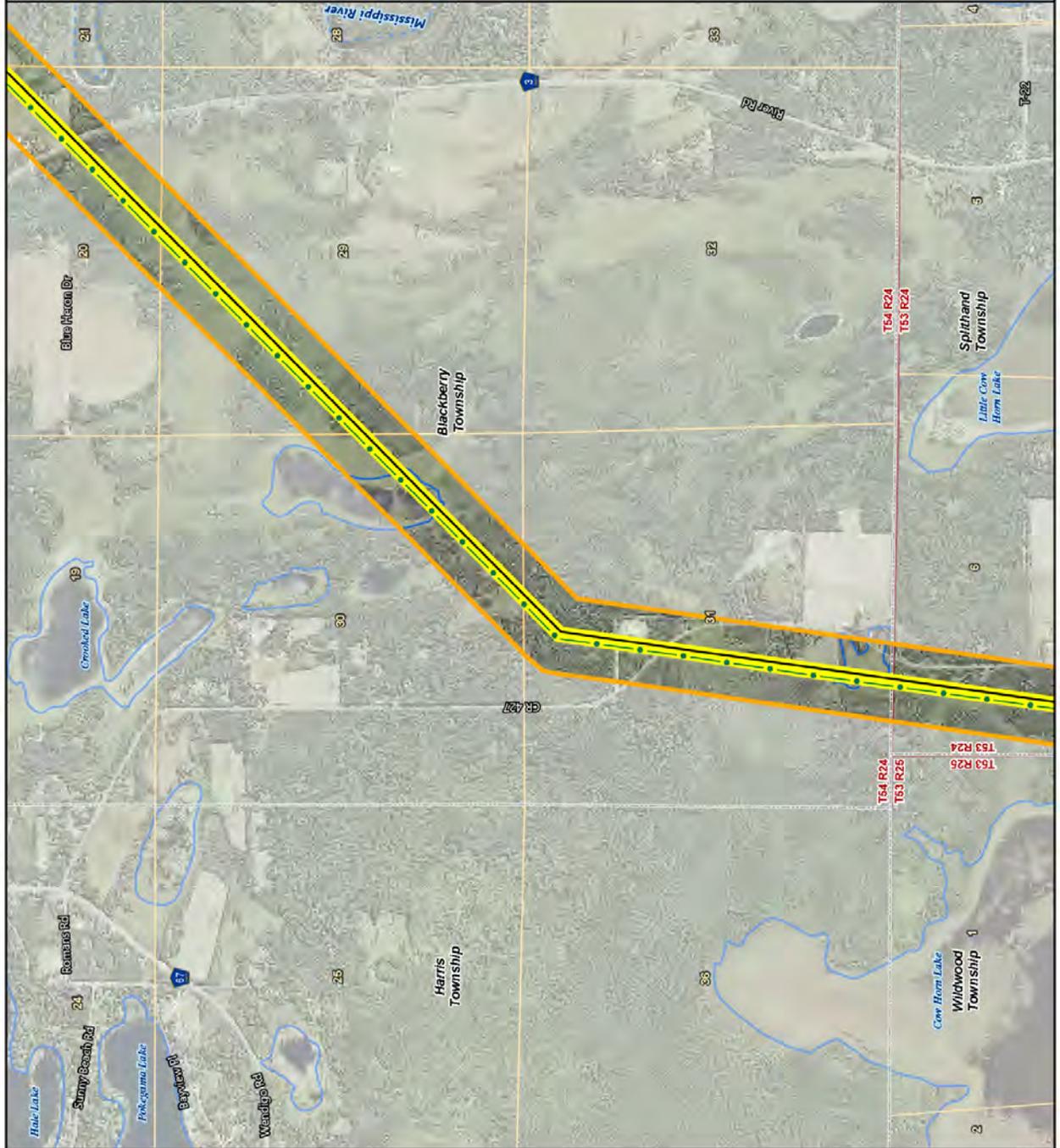
**Detailed Map  
Northland Reliability  
Project (NRP) Route  
Page 3 of 64**

-  NRP ROUTE
-  NRP ANTICIPATED CENTERLINE
-  NRP ANTICIPATED RIGHT-OF-WAY
-  REPLACE CREEPS LINE
-  REPLACE MR LINE
-  REBUILD EXISTING 69KV
-  DOUBLE CIRCUIT 230/115KV 02 LINE/11 LINE
-  SHIFT DOUBLE CIRCUIT 230/69KV (MR LINE/ BF LINE)
-  SHIFT MR ACQUIRED, 230KV
-  SHIFT 92 LINE, 230KV
-  REBUILD EXISTING TRANSMISSION LINES
-  EXISTING TRANSMISSION LINE
-  69 KV
-  115 KV
-  230 KV
-  MUNICIPAL BOUNDARY
-  PWA WATERCOURSE
-  PWA WATERBODY



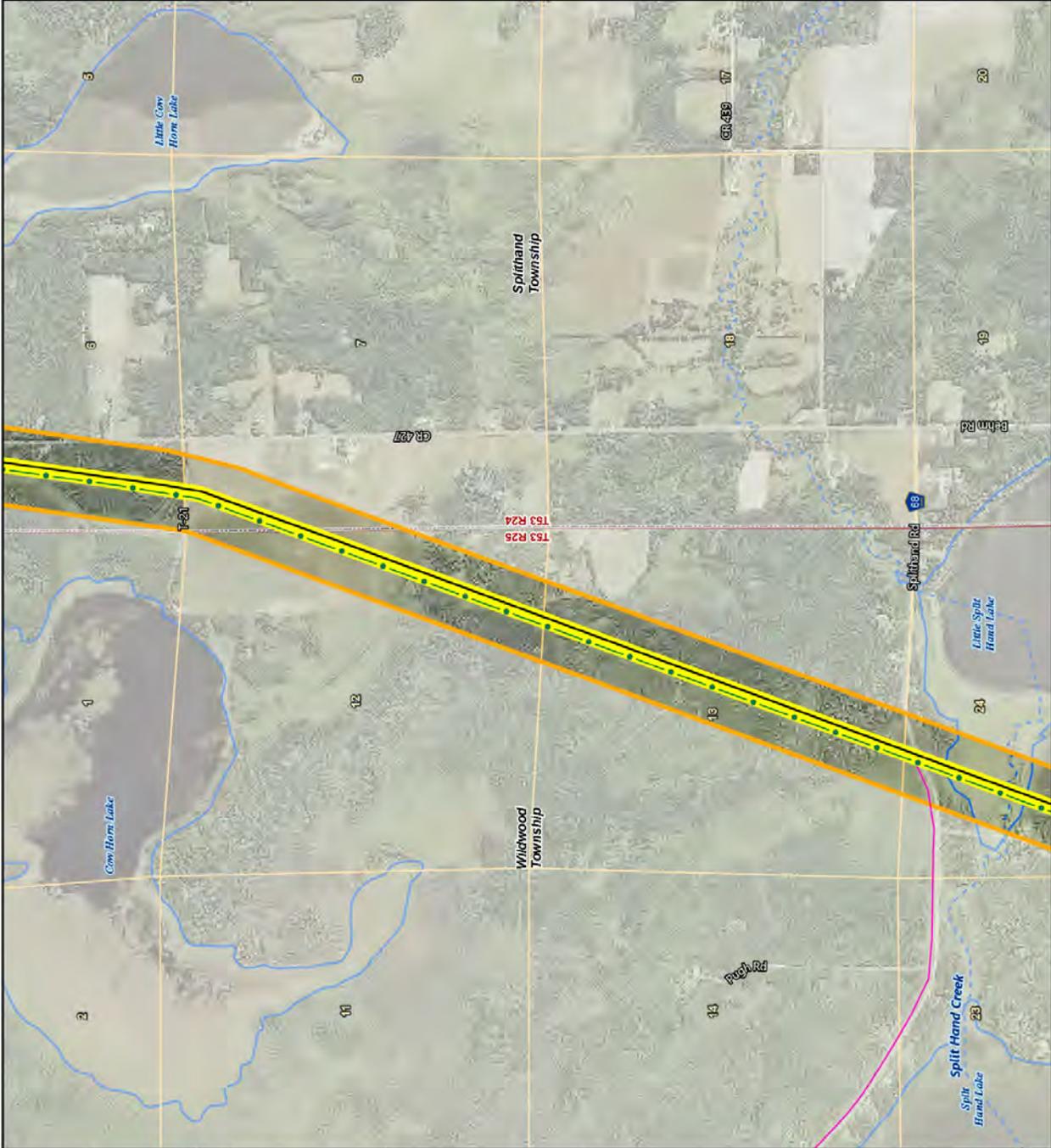
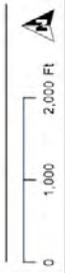
**Detailed Map  
Northland Reliability  
Project (NRP) Route  
Page 4 of 64**

-  NRP ROUTE
-  NRP ANTICIPATED CENTERLINE
-  NRP ANTICIPATED RIGHT-OF-WAY
-  REPLACE CREEKS LINE
-  REPLACE NRP LINE
-  REBUILD EXISTING 69KV
-  DOUBLE CIRCUIT 230/138KV 02 LINE/11 LINE
-  SHIFT DOUBLE-CIRCUIT 230/69KV (MR LINE/ BF LINE)
-  SHIFT MR INCREASED, 230KV
-  SHIFT 92 LINE, 230KV
-  REBUILD EXISTING TRANSMISSION LINES
-  EXISTING TRANSMISSION LINE
-  115 KV
-  230 KV
-  MUNICIPAL BOUNDARY
-  PWA WATERCOURSE
-  PWA WATERBODY



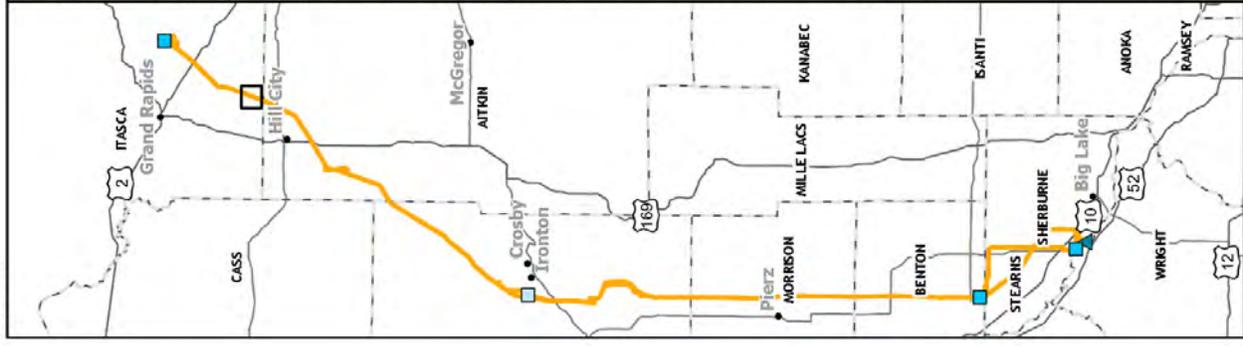
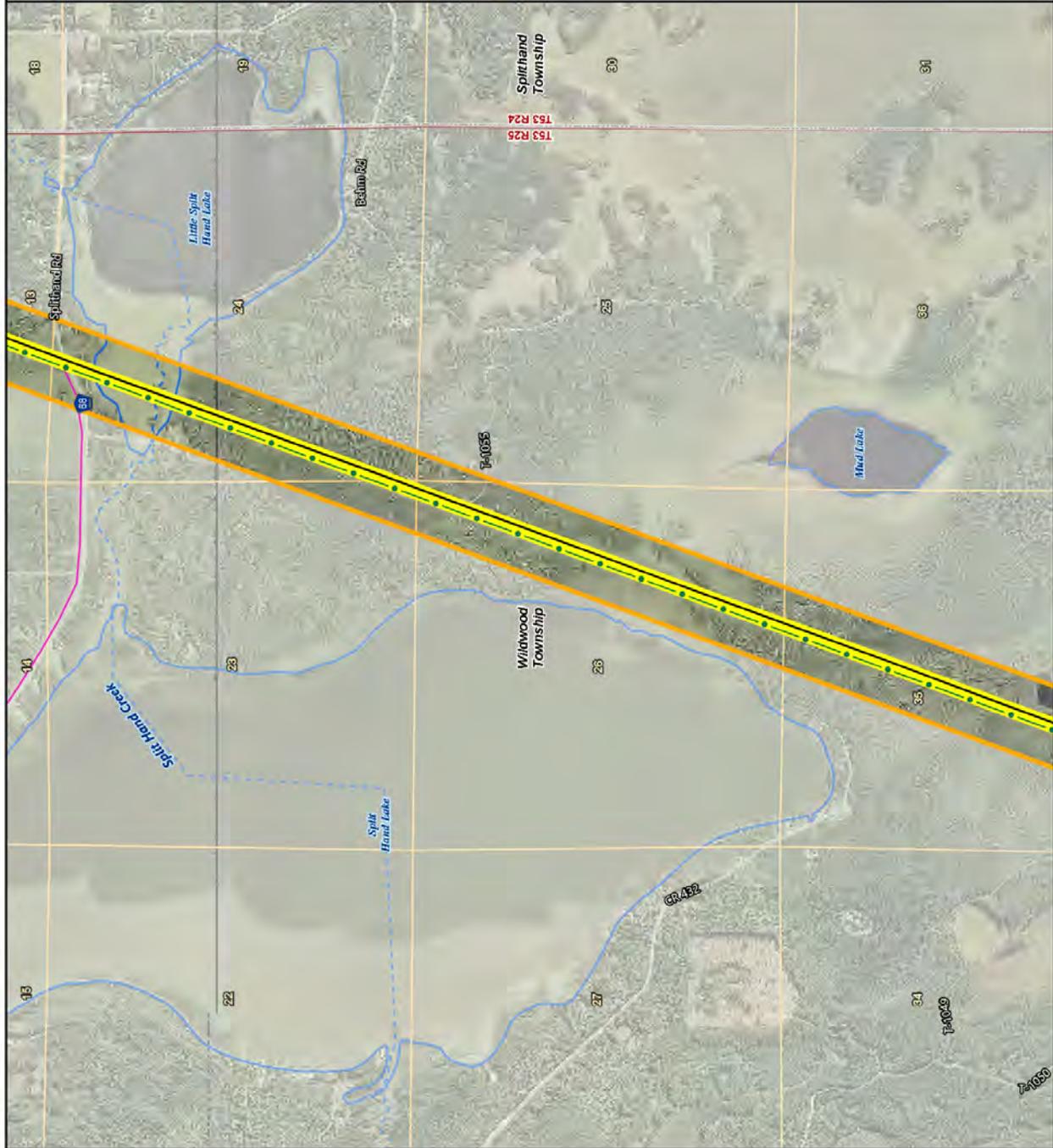
**Detailed Map  
Northland Reliability  
Project (NRP) Route  
Page 5 of 64**

-  NRP ROUTE
-  NRP ANTICIPATED CENTERLINE
-  NRP ANTICIPATED RIGHT-OF-WAY
-  REPLACE GREENS LINE
-  REPLACE NRP LINE
-  REBUILD EXISTING 69KV LINE
-  DOUBLE CIRCUIT 230/138KV 02 LINE/11 LINE
-  SHIFT DOUBLE CIRCUIT 230/69KV (MR LINE/ BF LINE)
-  SHIFT MR INCREASED, 230KV
-  SHIFT 92 LINE, 230KV
-  REBUILD EXISTING TRANSMISSION LINES
-  EXISTING TRANSMISSION LINE
-  115 KV
-  230 KV
-  MUNICIPAL BOUNDARY
-  PWA WATERCOURSE
-  PWA WATERBODY



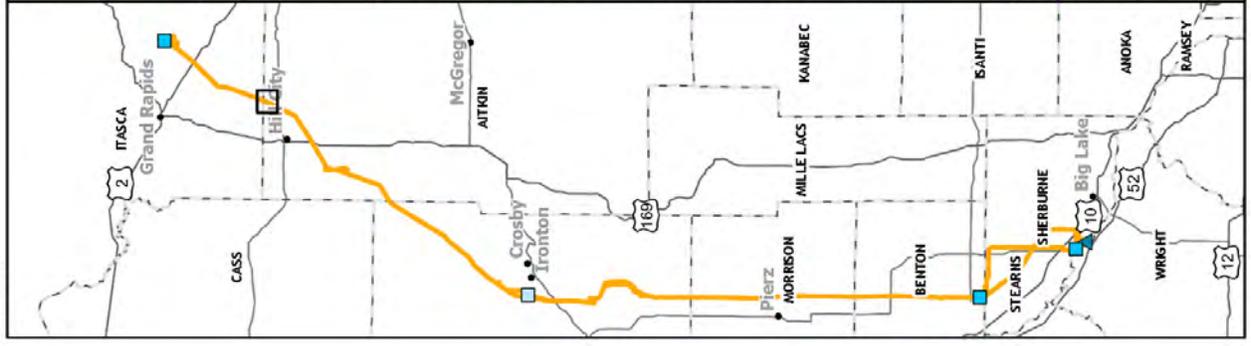
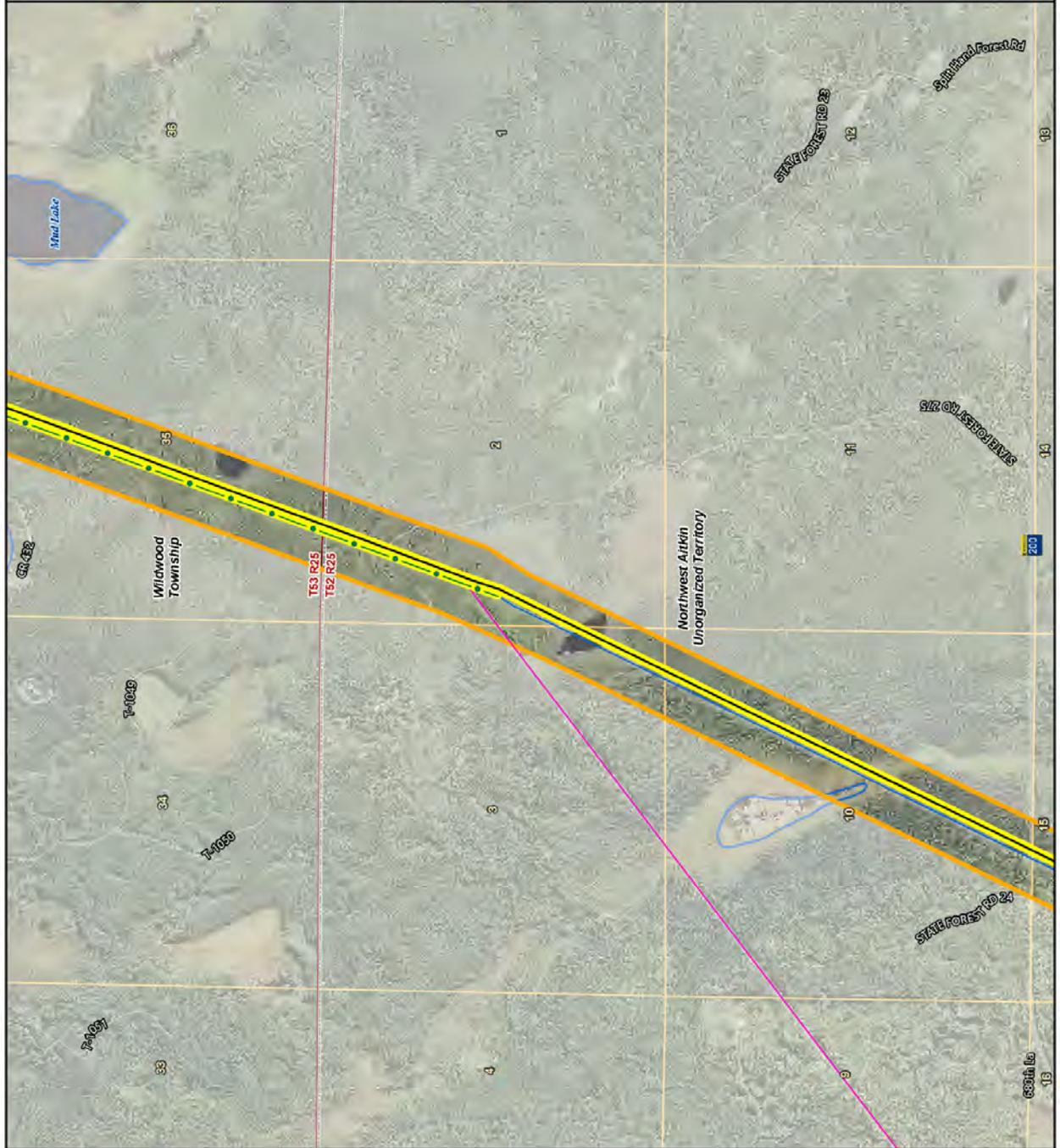
**Detailed Map  
Northland Reliability  
Project (NRP) Route  
Page 6 of 64**

- NRP ROUTE
- NRP ANTICIPATED CENTERLINE
- NRP ANTICIPATED RIGHT-OF-WAY
- REPLACE CREEKS LINE
- REPLACE R/R LINE
- REBUILD EXISTING 69KV
- DOUBLE CIRCUIT 230/115KV (2 LINE/11 LINE)
- SHIFT DOUBLE CIRCUIT 230/69KV (MR LINE/ BF LINE)
- SHIFT MR/MO/RED, 230KV
- SHIFT 92 LINE, 230KV
- REBUILD EXISTING TRANSMISSION LINES
- EXISTING TRANSMISSION LINE
- 115 KV
- 230 KV
- MUNICIPAL BOUNDARY
- P/W WATERCOURSE
- P/W WATERBODY



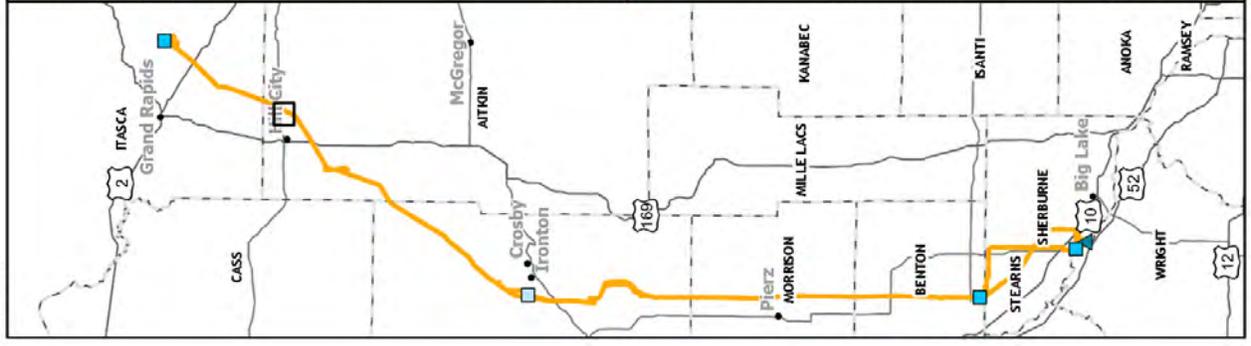
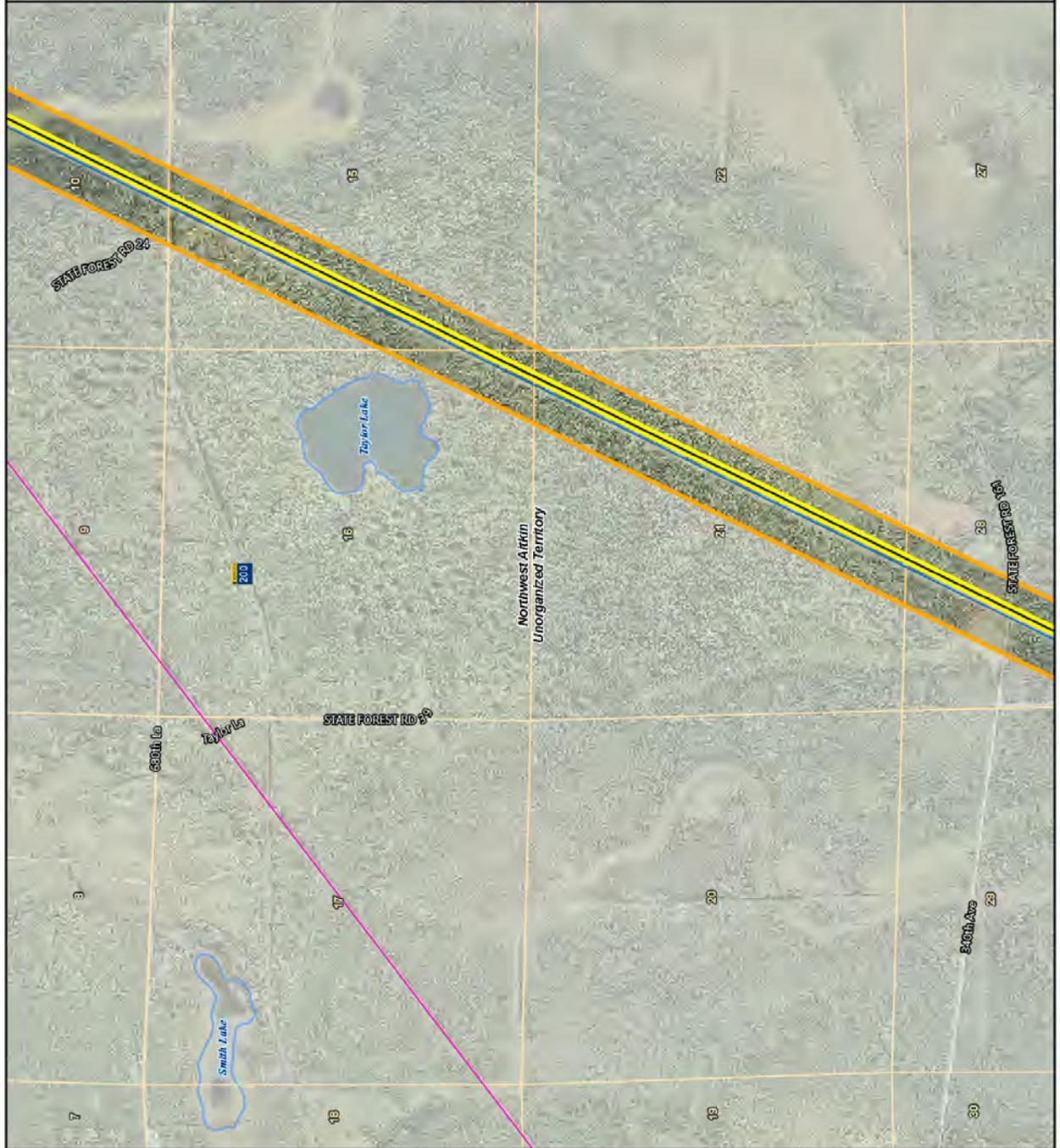
**Detailed Map  
Northland Reliability  
Project (NRP) Route  
Page 7 of 64**

- NRP ROUTE
- NRP ANTICIPATED CENTERLINE
- NRP ANTICIPATED RIGHT-OF-WAY
- REPLACE GREENS LINE
- REPLACE NRP LINE
- REBUILD EXISTING 69KV
- DOUBLE-CIRCUIT 230/115KV 02 LINE/11 LINE
- SHIFT DOUBLE-CIRCUIT 230/69KV (MR LINE/ BF LINE)
- SHIFT MR INCREASED, 230KV
- SHIFT 92 LINE, 230KV
- REBUILD EXISTING TRANSMISSION LINES
- EXISTING TRANSMISSION LINE
- 115 KV
- 230 KV
- MUNICIPAL BOUNDARY
- PWA WATERCOURSE
- PWA WATERBODY



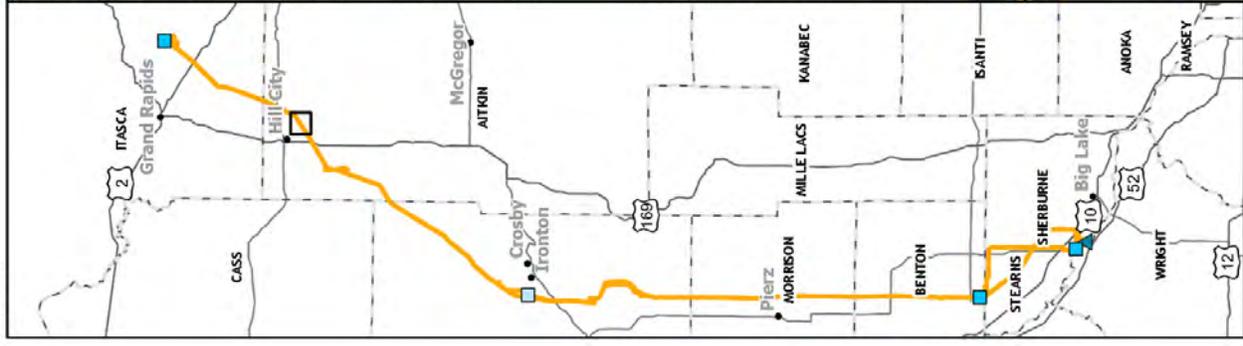
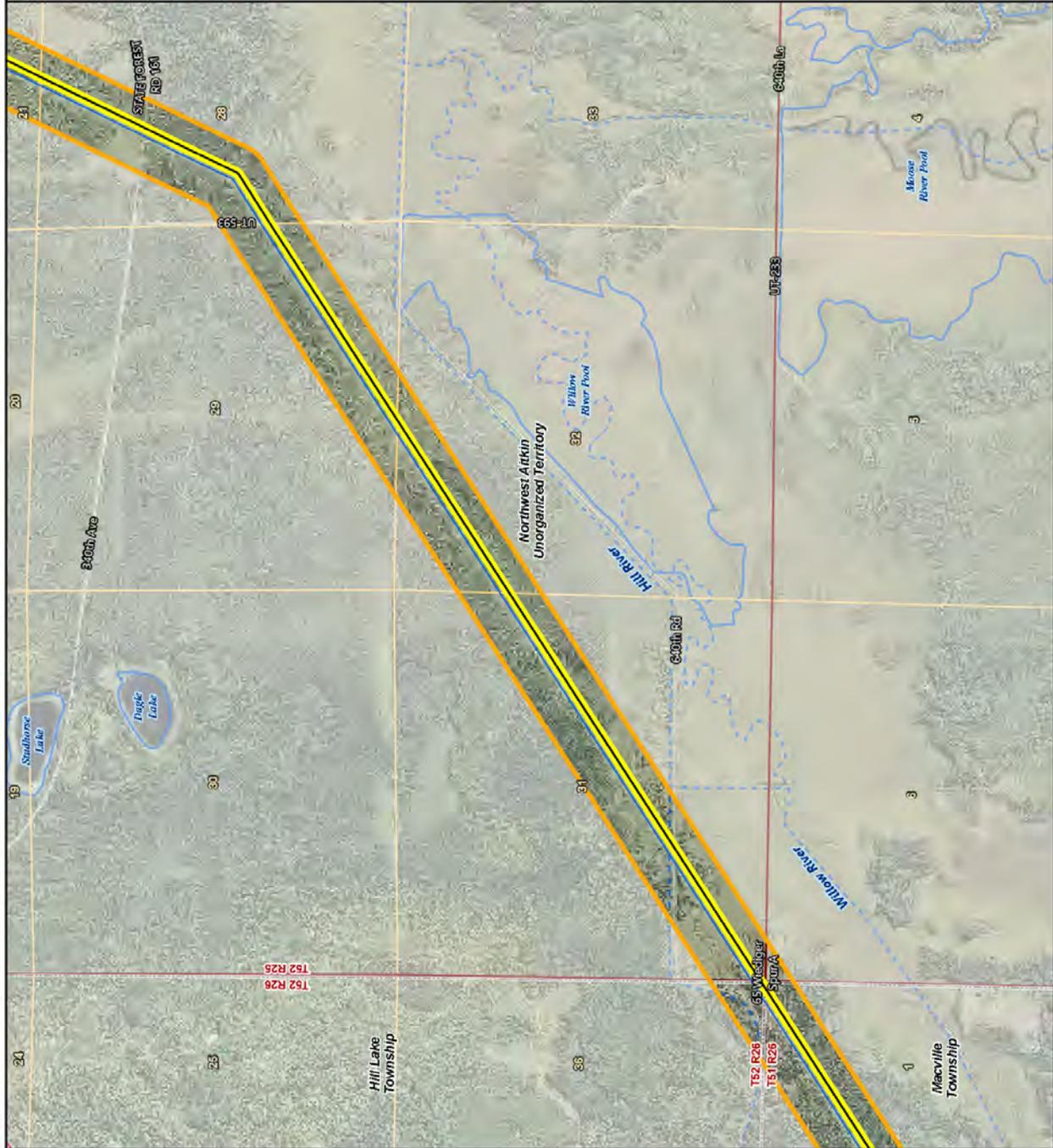
**Detailed Map  
Northland Reliability  
Project (NRP) Route  
Page 8 of 64**

-  NRP ROUTE
-  NRP ANTICIPATED CENTERLINE
-  NRP ANTICIPATED RIGHT-OF-WAY
-  REPLACE GREENS LINE
-  REPLACE MR LINE
-  REBUILD EXISTING 69KV LINE
-  DOUBLE CIRCUIT 230/138KV 02 LINE/11 LINE
-  SHIFT DOUBLE CIRCUIT 230/69KV (MR LINE/ BF LINE)
-  SHIFT MR/MC/RED, 230KV
-  SHIFT 92 LINE, 230KV
-  REBUILD EXISTING TRANSMISSION LINES
-  EXISTING TRANSMISSION LINE
-  115 KV
-  230 KV
-  MUNICIPAL BOUNDARY
-  PWA WATERCOURSE
-  PWA WATERBODY



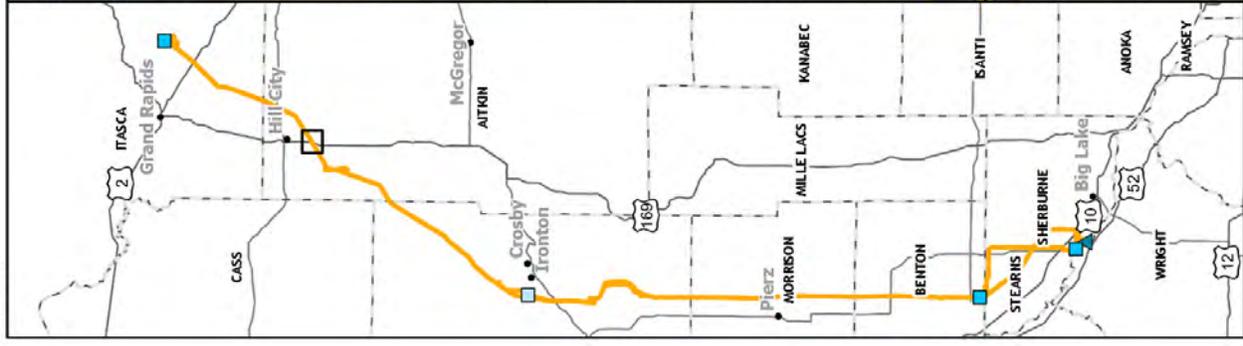
**Detailed Map  
Northland Reliability  
Project (NRP) Route  
Page 9 of 64**

-  NRP ROUTE
-  NRP ANTICIPATED CENTERLINE
-  NRP ANTICIPATED RIGHT-OF-WAY
-  REPLACE CREEKS LINE
-  REPLACE RR LINE
-  REBUILD EXISTING 69KV
-  DOUBLE CIRCUIT 230/115KV 02 LINE/11 LINE
-  SHIFT DOUBLE CIRCUIT 230/69KV (MR LINE/ BF LINE)
-  SHIFT MR AND BRED, 230KV
-  SHIFT 92 LINE, 230KV
-  REBUILD EXISTING TRANSMISSION LINES
-  EXISTING TRANSMISSION LINE
-  115 KV
-  230 KV
-  MUNICIPAL BOUNDARY
-  PWA WATERCOURSE
-  PWA WATERBODY



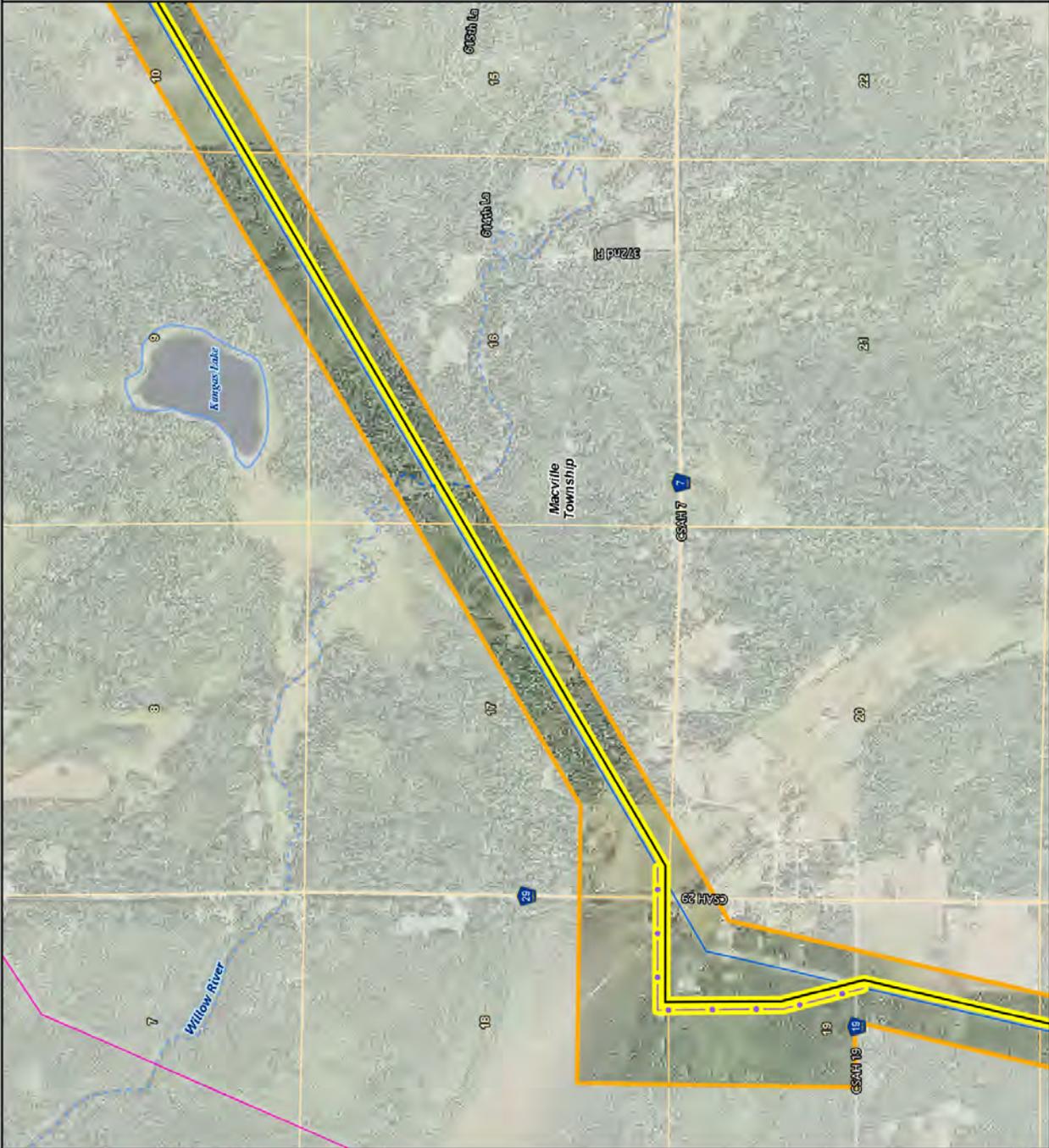
**Detailed Map  
Northland Reliability  
Project (NRP) Route  
Page 10 of 64**

-  NRP ROUTE
-  NRP ANTICIPATED CENTERLINE
-  NRP ANTICIPATED RIGHT-OF-WAY
-  REPLACE CREEKS LINE
-  REPLACE NRP LINE
-  REBUILD EXISTING 69KV
-  DOUBLE CIRCUIT 230/115KV 02 LINE/11 LINE
-  SHIFT DOUBLE-CIRCUIT 230/69KV (MR LINE/ BF LINE)
-  SHIFT MR INCREASED, 230KV
-  SHIFT 92 LINE, 230KV
-  REBUILD EXISTING TRANSMISSION LINES
-  EXISTING TRANSMISSION LINE
-  115 KV
-  230 KV
-  MUNICIPAL BOUNDARY
-  PWA WATERCOURSE
-  PWA WATERBODY



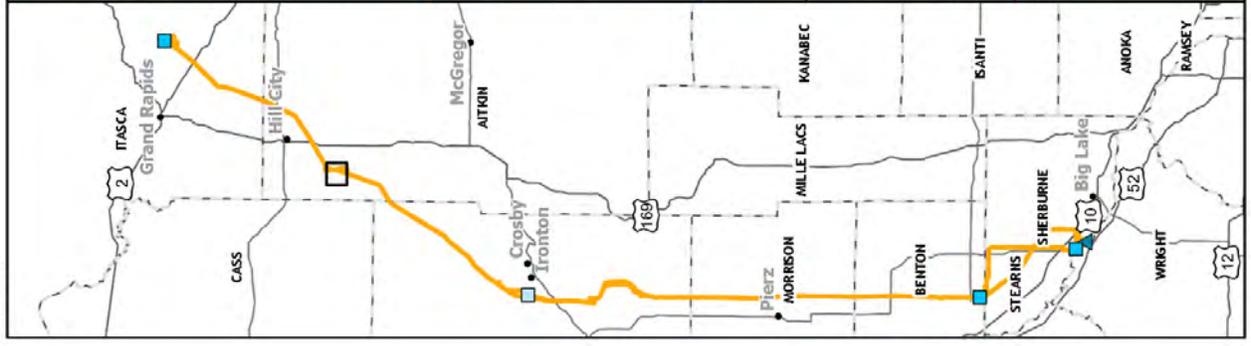
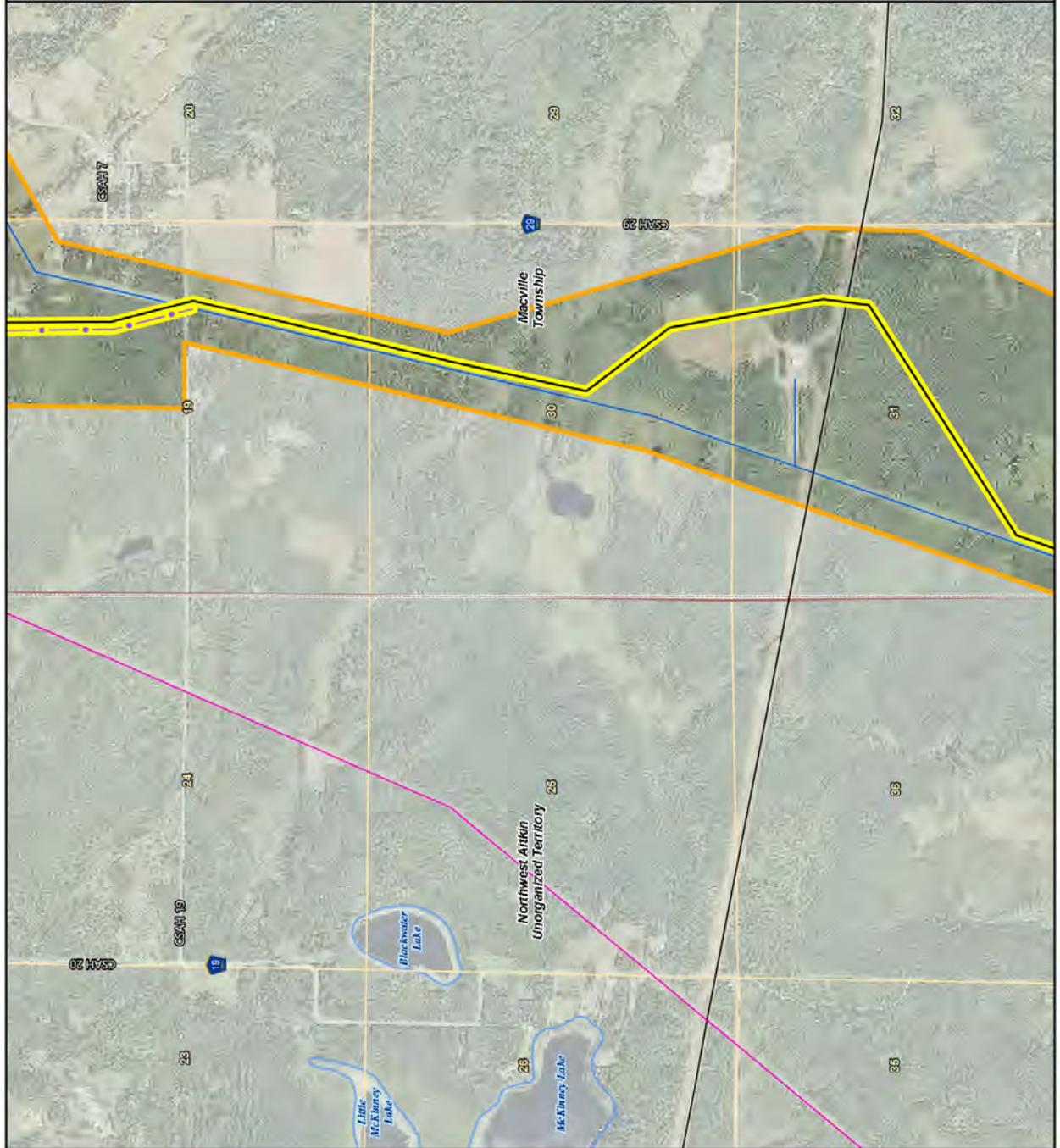
**Detailed Map  
Northland Reliability  
Project (NRP) Route  
Page 11 of 64**

-  NRP ROUTE
-  NRP ANTICIPATED CENTERLINE
-  NRP ANTICIPATED RIGHT-OF-WAY
-  REPLACE CREEKS LINE
-  REPLACE NRP LINE
-  REBUILD EXISTING 69KV LINE
-  DOUBLE CIRCUIT 230/115KV 02 LINE/11 LINE
-  SHIFT DOUBLE CIRCUIT 230/69KV (MR LINE/ BF LINE)
-  SHIFT MR INCREASED, 230KV
-  SHIFT 92 LINE, 230KV
-  REBUILD EXISTING TRANSMISSION LINES
-  EXISTING TRANSMISSION LINE
-  115 KV
-  230 KV
-  MUNICIPAL BOUNDARY
-  PWA WATERCOURSE
-  PWA WATERBODY



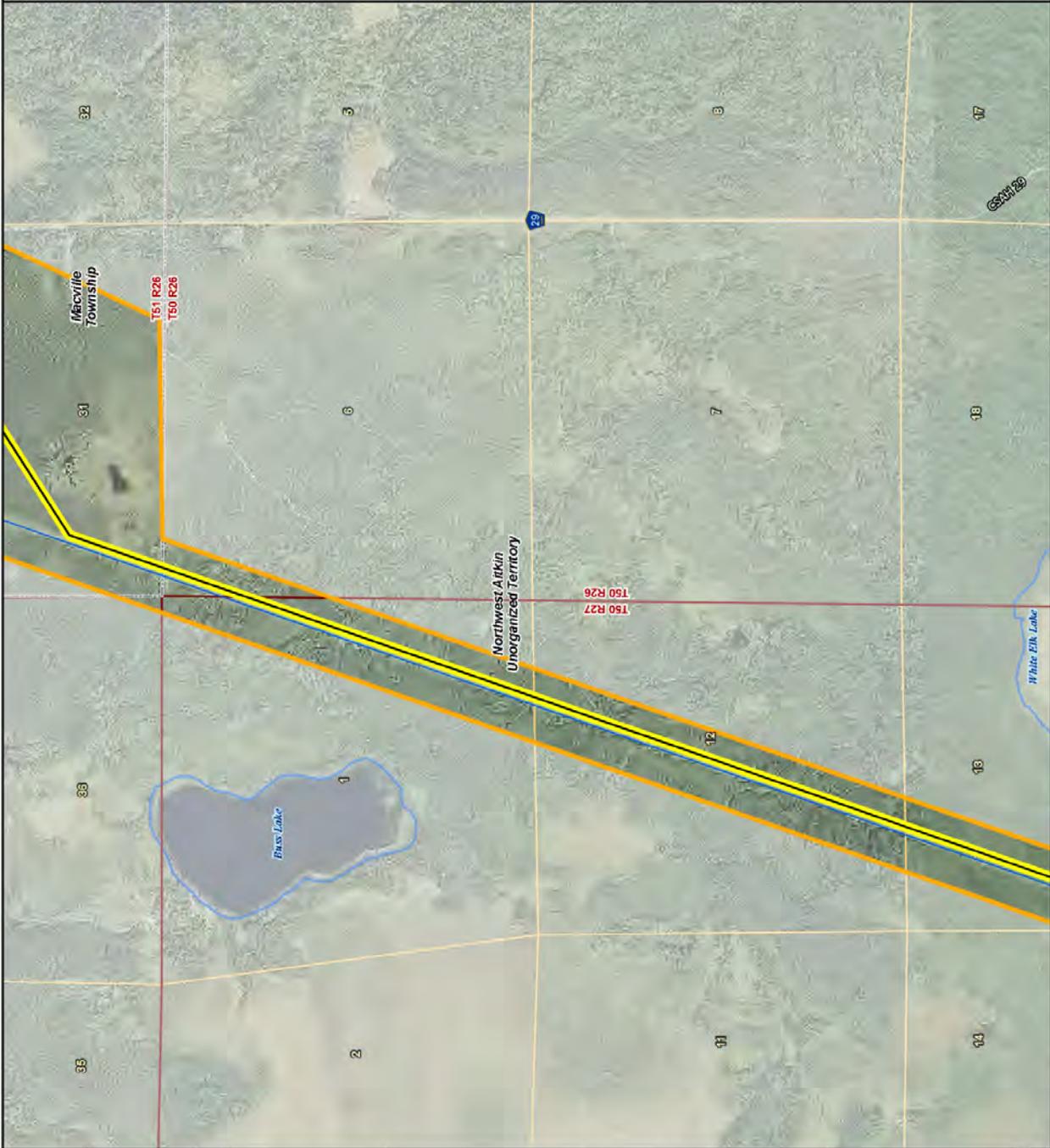
**Detailed Map  
Northland Reliability  
Project (NRP) Route  
Page 12 of 64**

-  NRP ROUTE
-  NRP ANTICIPATED CENTERLINE
-  NRP ANTICIPATED RIGHT-OF-WAY
-  REPLACE CREEPS LINE
-  REPLACE NRP LINE
-  REBUILD EXISTING 69KV LINE
-  DOUBLE CIRCUIT 230/115KV 02 LINE/11 LINE
-  SHIFT DOUBLE CIRCUIT 230/69KV (MR LINE/ BF LINE)
-  SHIFT MR MOORED, 230KV
-  SHIFT 92 LINE, 230KV
-  REBUILD EXISTING TRANSMISSION LINES
-  EXISTING TRANSMISSION LINE
-  115 KV
-  230 KV
-  250 KV
-  MUNICIPAL BOUNDARY
-  P/W WATERCOURSE
-  P/W WATERBODY



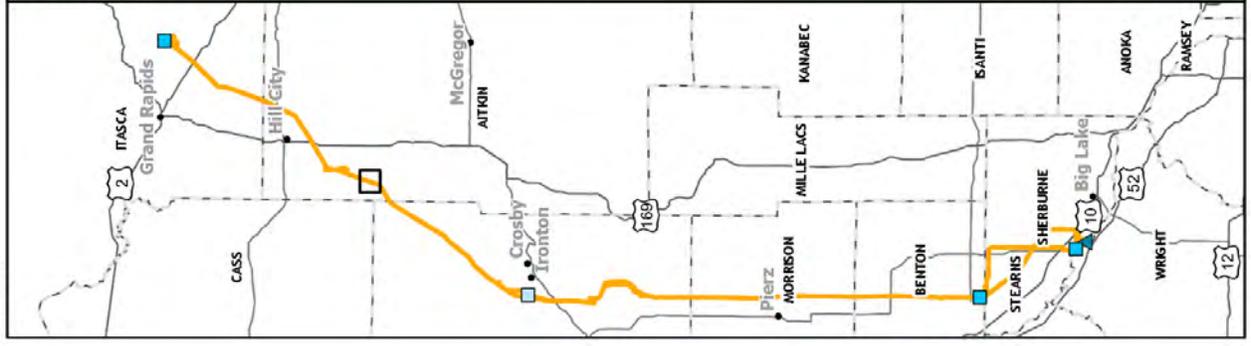
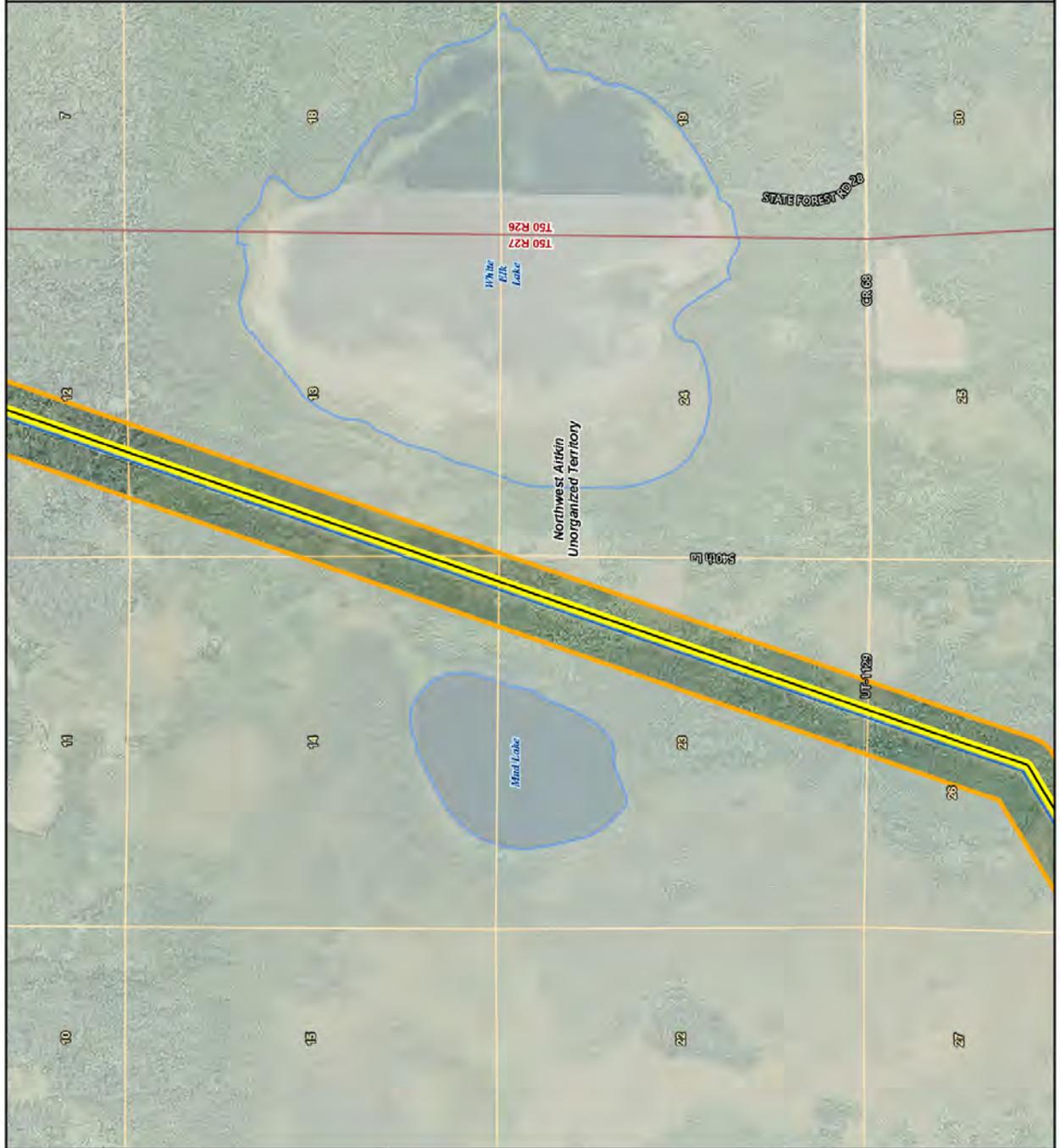
**Detailed Map  
Northland Reliability  
Project (NRP) Route  
Page 13 of 64**

- NRP ROUTE
- NRP ANTICIPATED CENTERLINE
- NRP ANTICIPATED RIGHT-OF-WAY
- REPLACE GREENS LINE
- REPLACE MR LINE
- REBUILD EXISTING 69KV
- DOUBLE CIRCUIT 230/138KV 69 LINE/11 LINE
- SHIFT DOUBLE CIRCUIT 230/69KV (MR LINE/ BF LINE)
- SHIFT MR INCREASED, 230KV
- SHIFT 92 LINE, 230KV
- REBUILD EXISTING TRANSMISSION LINES
- EXISTING TRANSMISSION LINE
- 230 KV
- MUNICIPAL BOUNDARY
- PNM WATERCOURSE
- PNM WATERBODY



**Detailed Map  
Northland Reliability  
Project (NRP) Route  
Page 14 of 64**

-  NRP ROUTE
-  NRP ANTICIPATED CENTERLINE
-  NRP ANTICIPATED RIGHT-OF-WAY
-  REPLACE CREEKS LINE
-  REPLACE NRP LINE
-  REBUILD EXISTING 69KV LINE
-  DOUBLE CIRCUIT 230/115KV (2 LINE/11 LINE)
-  SHIFT DOUBLE CIRCUIT 230/69KV (MR LINE/ BF LINE)
-  SHIFT MR INCREASED, 230KV
-  SHIFT 92 LINE, 230KV
-  REBUILD EXISTING TRANSMISSION LINES
-  EXISTING TRANSMISSION LINE
-  230 KV
-  MUNICIPAL BOUNDARY
-  PNM WATERCOURSE
-  PNM WATERBODY



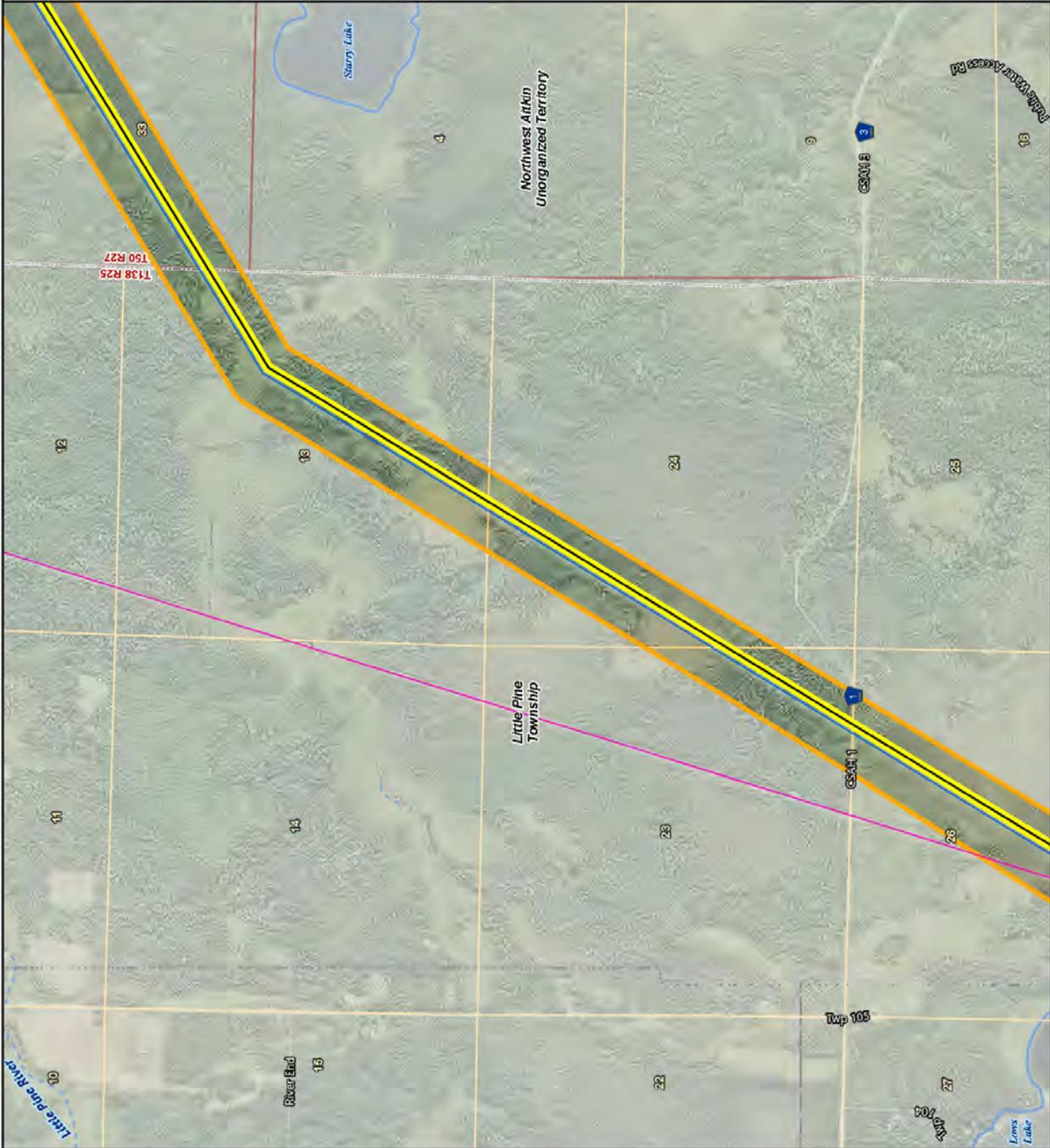
**Detailed Map  
Northland Reliability  
Project (NRP) Route  
Page 15 of 64**

-  NRP ROUTE
-  NRP ANTICIPATED CENTERLINE
-  NRP ANTICIPATED RIGHT-OF-WAY
-  REPLACE CREEKS LINE
-  REPLACE NRP LINE
-  REBUILD EXISTING 69KV
-  DOUBLE-CIRCUIT 230/138KV (2 LINE/11 LINE)
-  SHIFT DOUBLE-CIRCUIT 230/69KV (MR LINE/ BF LINE)
-  SHIFT MR INCREASED, 230KV
-  SHIFT 92 LINE, 230KV
-  REBUILD EXISTING TRANSMISSION LINES
-  EXISTING TRANSMISSION LINE
-  230 KV
-  MUNICIPAL BOUNDARY
-  PWA WATERCOURSE
-  PWA WATERBODY



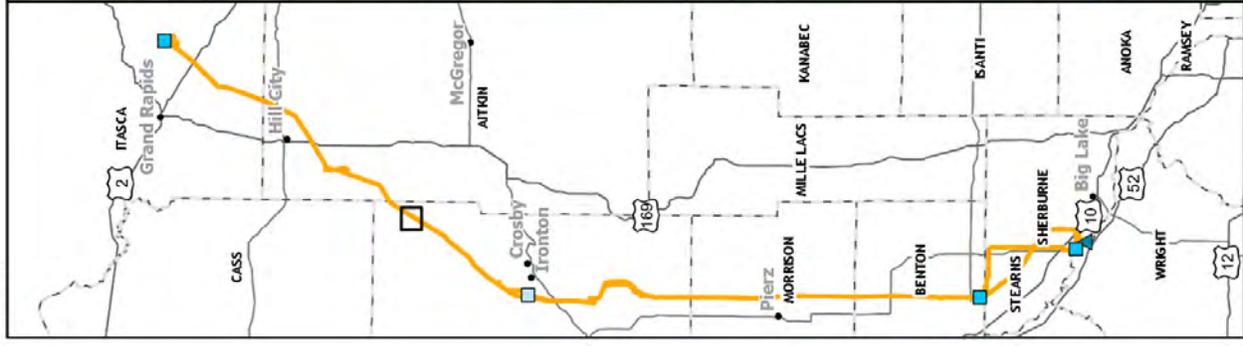
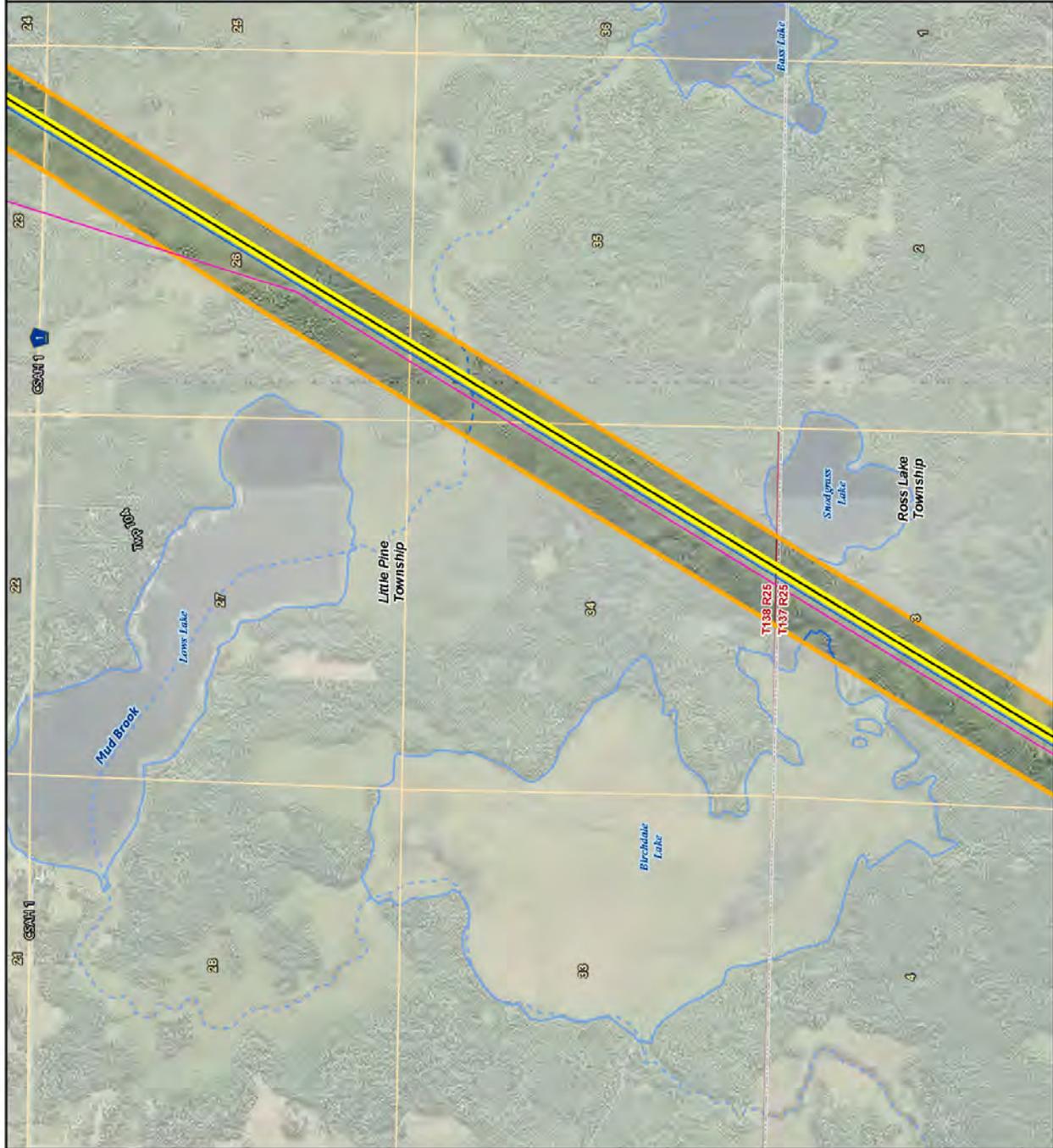
**Detailed Map  
Northland Reliability  
Project (NRP) Route  
Page 16 of 64**

- NRP ROUTE
- NRP ANTICIPATED CENTERLINE
- NRP ANTICIPATED RIGHT-OF-WAY
- REPLACE GREENS LINE
- REPLACE NRP LINE
- REBUILD EXISTING 69KV
- DOUBLE CIRCUIT 230/138KV 02 LINE/11 LINE
- SHIFT DOUBLE CIRCUIT 230/69KV (MR LINE/ BF LINE)
- SHIFT MR INCREASED, 230KV
- SHIFT 92 LINE, 230KV
- REBUILD EXISTING TRANSMISSION LINES
- EXISTING TRANSMISSION LINE
- 115 KV
- 230 KV
- MUNICIPAL BOUNDARY
- PWA WATERCOURSE
- PWA WATERBODY



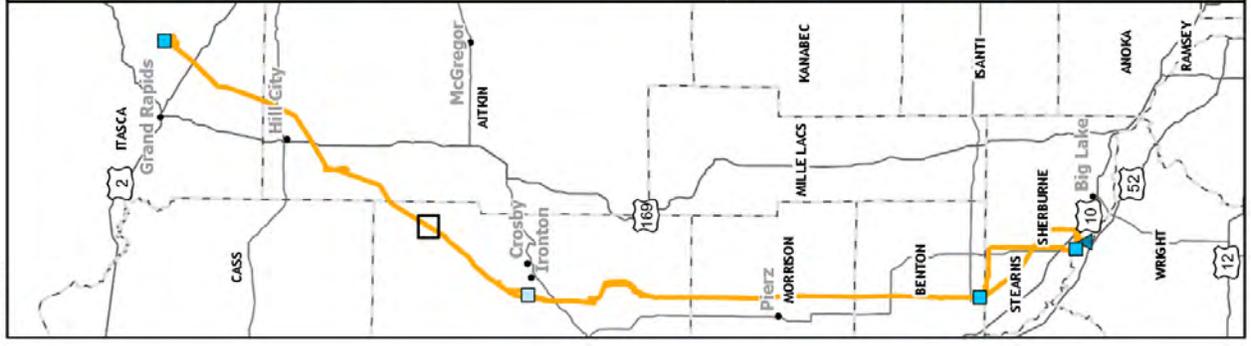
**Detailed Map  
Northland Reliability  
Project (NRP) Route  
Page 17 of 64**

-  NRP ROUTE
-  NRP ANTICIPATED CENTERLINE
-  NRP ANTICIPATED RIGHT-OF-WAY
-  REPLACE GREENS LINE
-  REPLACE MR LINE
-  REBUILD EXISTING 69KV
-  DOUBLE CIRCUIT 230/115KV 02 LINE/11 LINE
-  SHIFT DOUBLE CIRCUIT 230/69KV (MR LINE/ BF LINE)
-  SHIFT MR INCREASED, 230KV
-  SHIFT 92 LINE, 230KV
-  REBUILD EXISTING TRANSMISSION LINES
-  EXISTING TRANSMISSION LINE
-  115 KV
-  230 KV
-  MUNICIPAL BOUNDARY
-  PWA WATERCOURSE
-  PWA WATERBODY



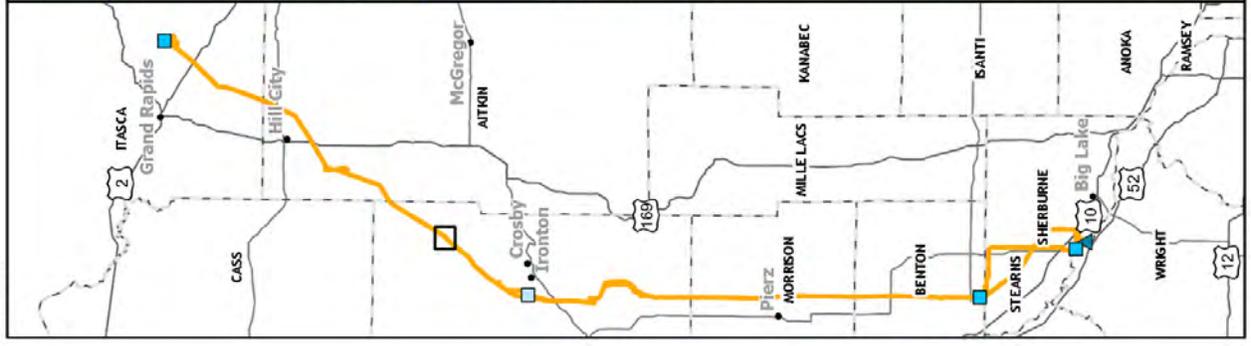
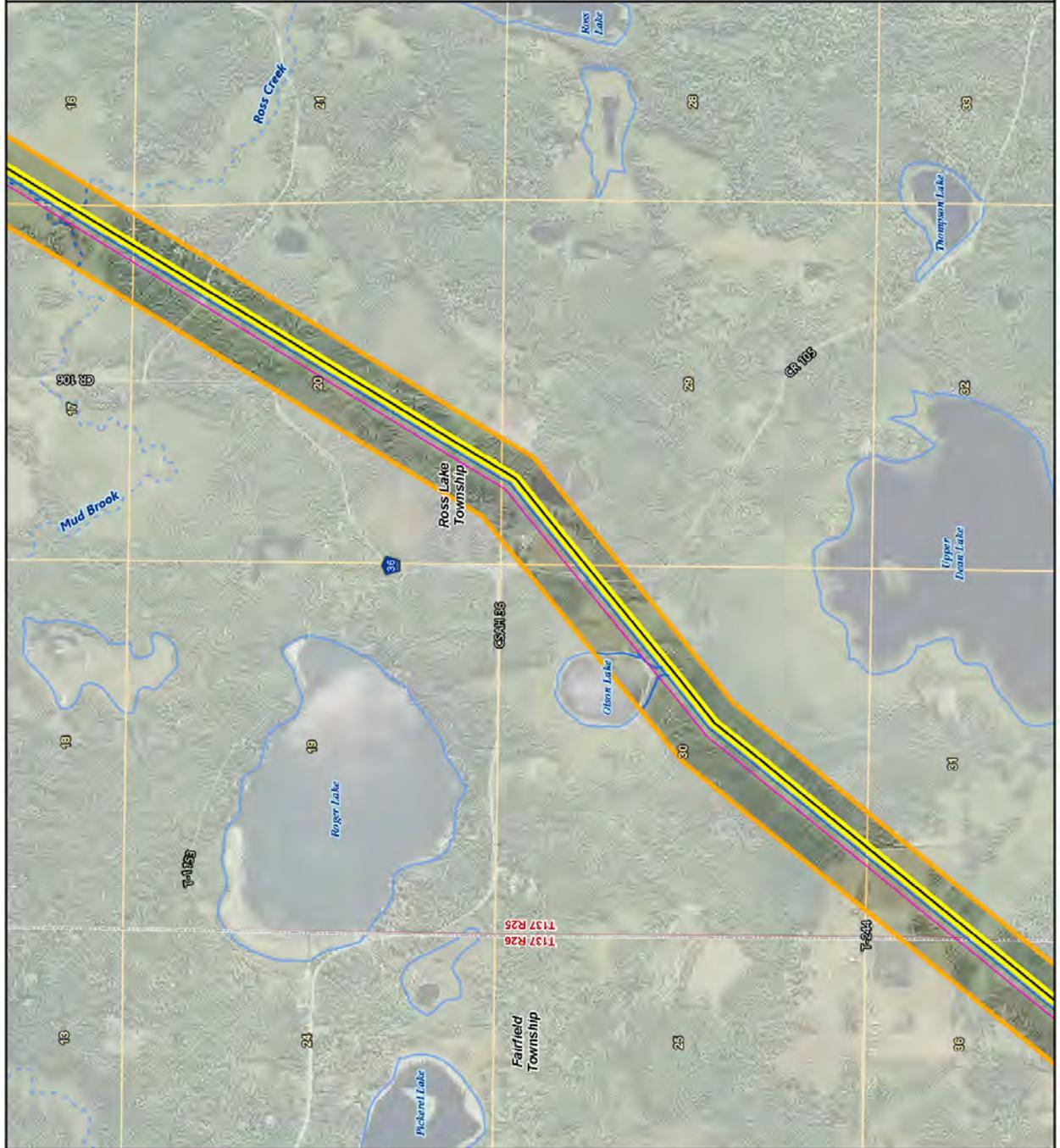
**Detailed Map  
Northland Reliability  
Project (NRP) Route  
Page 18 of 64**

-  NRP ROUTE
-  NRP ANTICIPATED CENTERLINE
-  NRP ANTICIPATED RIGHT-OF-WAY
-  REPLACE CREEKS LINE
-  REPLACE MR LINE
-  REBUILD EXISTING 69KV LINE
-  DOUBLE CIRCUIT 230/115KV 02 LINE/11 LINE
-  SHIFT DOUBLE CIRCUIT 230/69KV (MR LINE/ BF LINE)
-  SHIFT MR INCREASED, 230KV
-  SHIFT 92 LINE, 230KV
-  REBUILD EXISTING TRANSMISSION LINES
-  EXISTING TRANSMISSION LINE
-  115 KV
-  230 KV
-  MUNICIPAL BOUNDARY
-  PWA WATERCOURSE
-  PWA WATERBODY



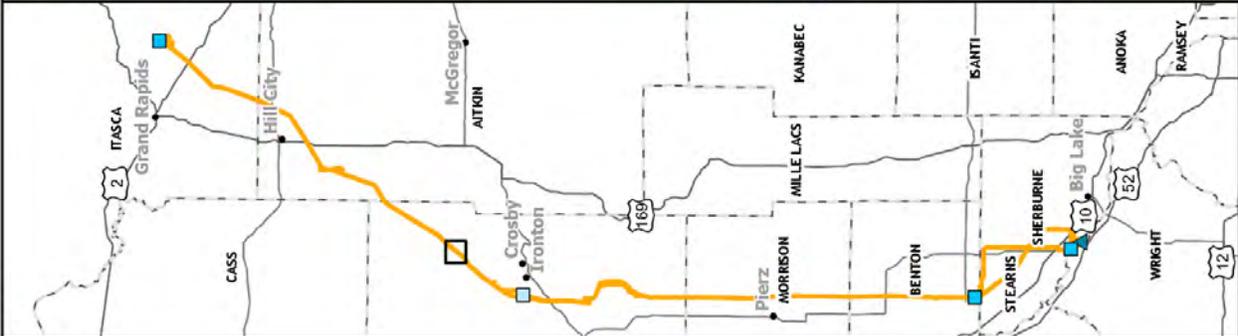
**Detailed Map  
Northland Reliability  
Project (NRP) Route  
Page 19 of 64**

-  NRP ROUTE
-  NRP ANTICIPATED CENTERLINE
-  NRP ANTICIPATED RIGHT-OF-WAY
-  REPLACE CREEKS LINE
-  REPLACE MR LINE
-  REBUILD EXISTING 69KV
-  DOUBLE CIRCUIT 230/138KV (2 LINE/11 LINE)
-  SHIFT DOUBLE CIRCUIT 230/69KV (MR LINE/ BF LINE)
-  SHIFT MR INCREASED, 230KV
-  SHIFT 92 LINE, 230KV
-  REBUILD EXISTING TRANSMISSION LINES
-  EXISTING TRANSMISSION LINE
-  115 KV
-  230 KV
-  MUNICIPAL BOUNDARY
-  PWA WATERCOURSE
-  PWA WATERBODY



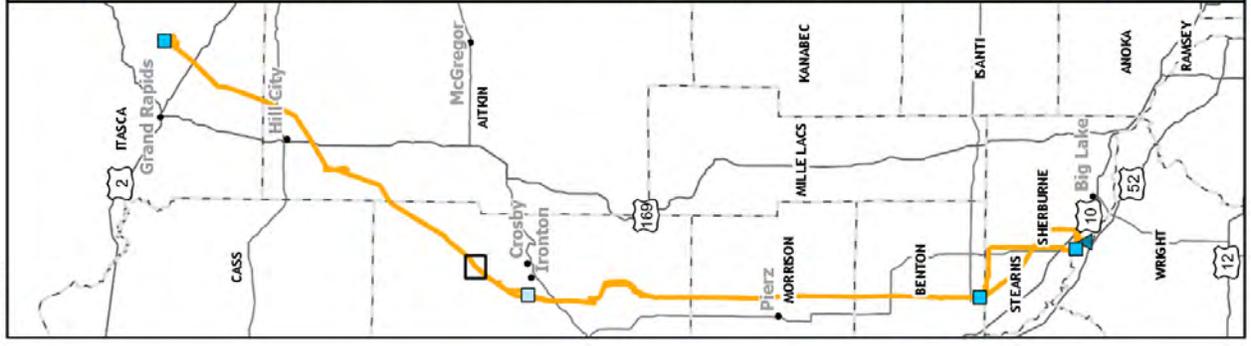
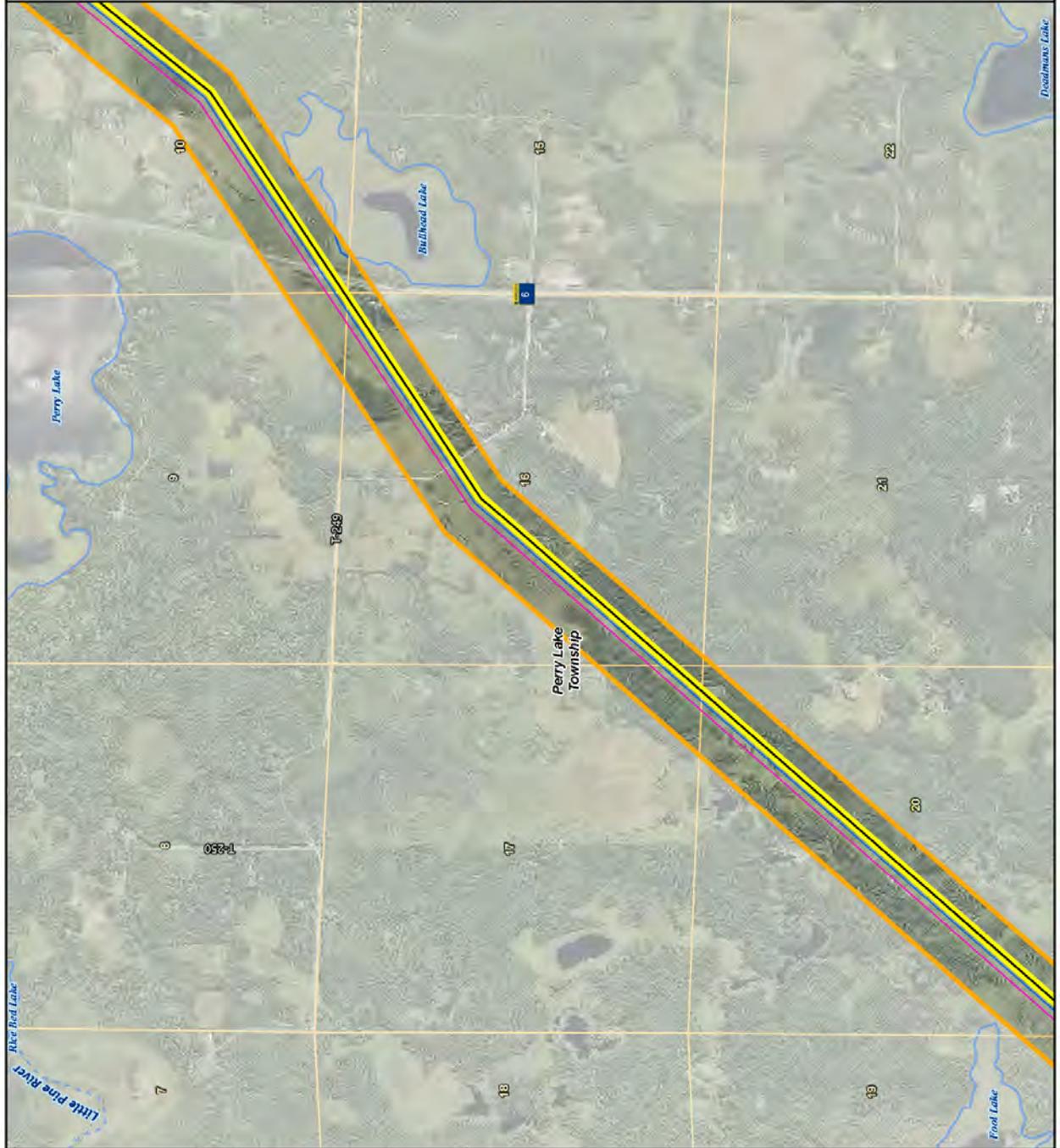
**Detailed Map  
Northland Reliability  
Project (NRP) Route  
Page 20 of 64**

-  NRP ROUTE
-  NRP ANTICIPATED CENTERLINE
-  NRP ANTICIPATED RIGHT-OF-WAY
-  REPLACE CREEPS LINE
-  REPLACE MR LINE
-  REBUILD EXISTING 69KV
-  DOUBLE CIRCUIT 230/115KV 02 LINE/11 LINE
-  SHIFT DOUBLE CIRCUIT 230/69KV (MR LINE/ BF LINE)
-  SHIFT MR INCREASED, 230KV
-  SHIFT 92 LINE, 230KV
-  REBUILD EXISTING TRANSMISSION LINES
-  EXISTING TRANSMISSION LINE
-  115 KV
-  230 KV
-  MUNICIPAL BOUNDARY
-  PWA WATERCOURSE
-  PWA WATERBODY



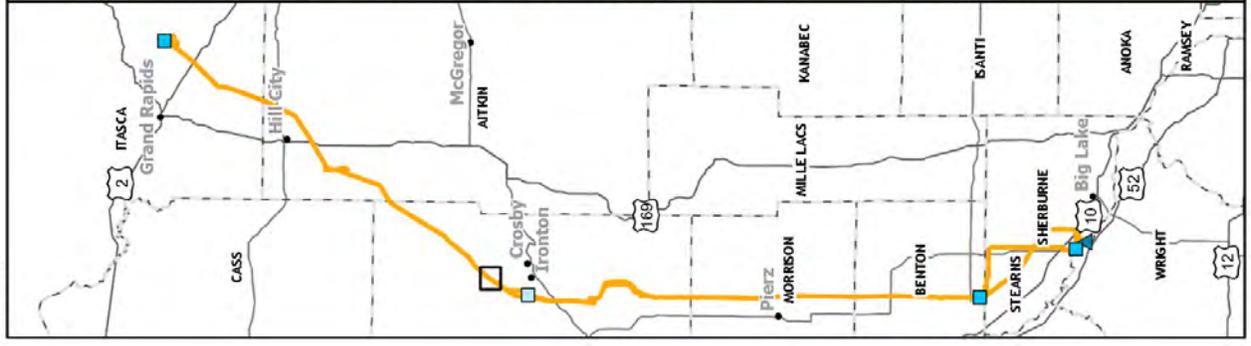
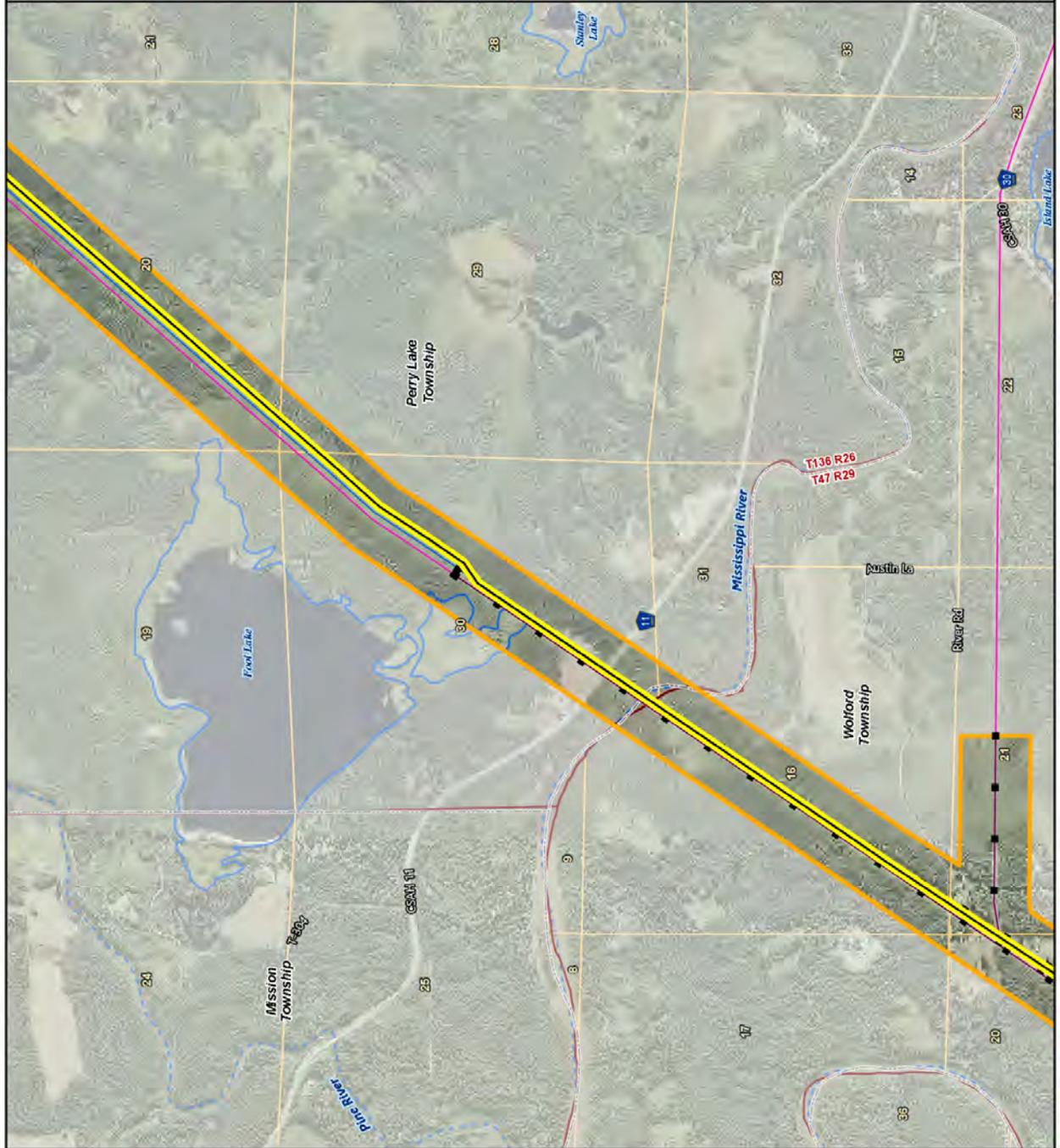
**Detailed Map  
Northland Reliability  
Project (NRP) Route  
Page 21 of 64**

-  NRP ROUTE
-  NRP ANTICIPATED CENTERLINE
-  NRP ANTICIPATED RIGHT-OF-WAY
-  REPLACE CREEKS LINE
-  REPLACE NRP LINE
-  REBUILD EXISTING 69KV
-  DOUBLE CIRCUIT 230/115KV (2 LINE/11 LINE)
-  SHIFT DOUBLE CIRCUIT 230/69KV (MR LINE/ BF LINE)
-  SHIFT MR INCREASED, 230KV
-  SHIFT 92 LINE, 230KV
-  REBUILD EXISTING TRANSMISSION LINES
-  EXISTING TRANSMISSION LINE
-  115 KV
-  230 KV
-  MUNICIPAL BOUNDARY
-  PWA WATERCOURSE
-  PWA WATERBODY



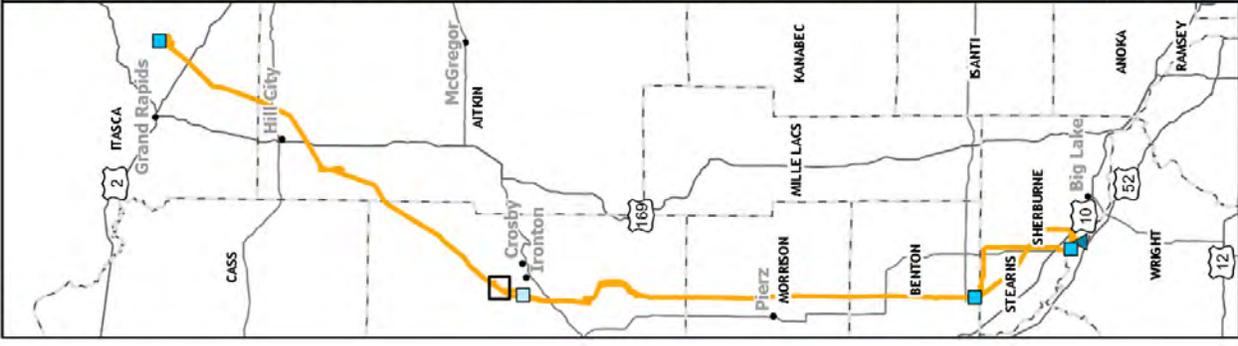
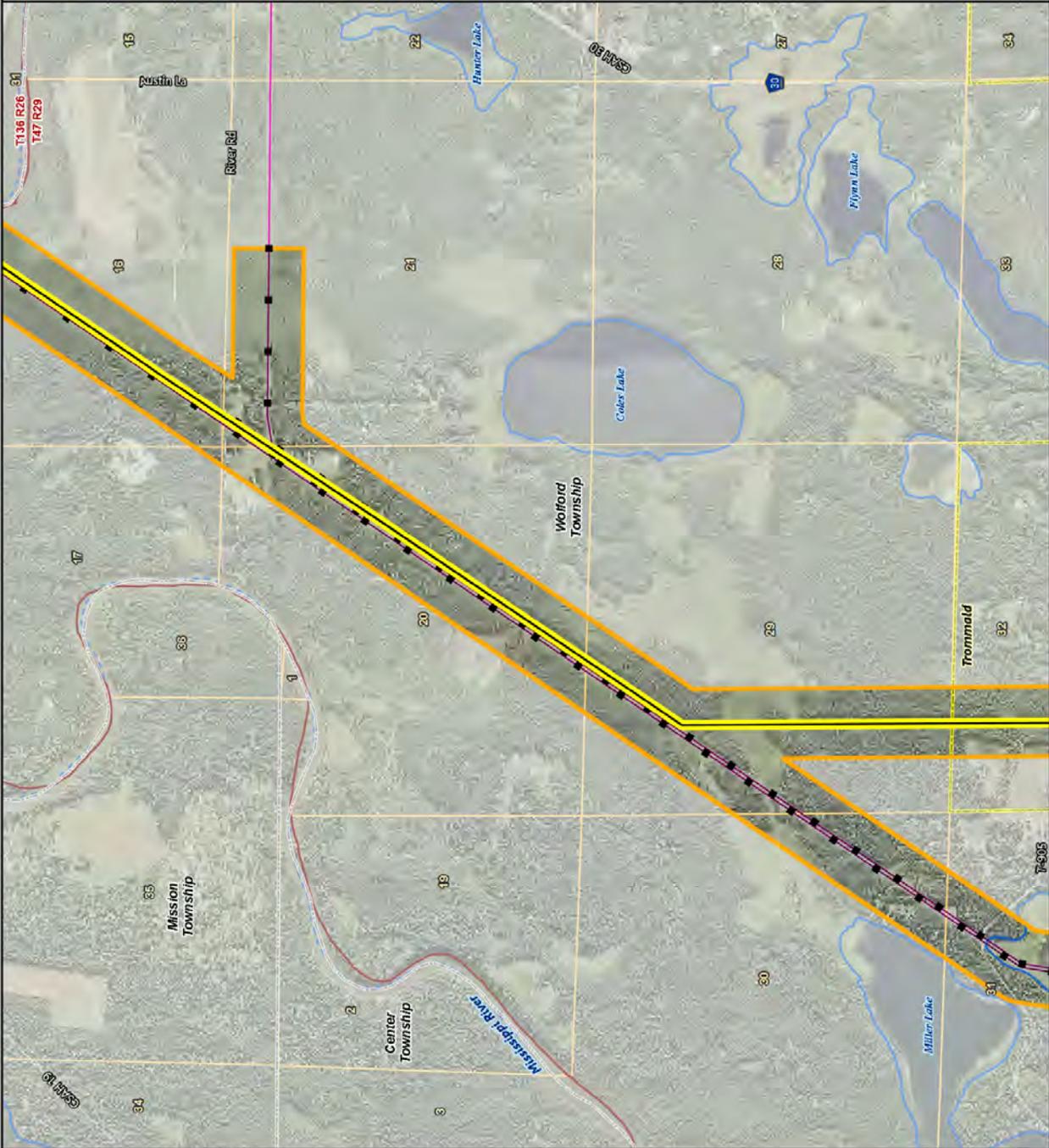
**Detailed Map  
Northland Reliability  
Project (NRP) Route  
Page 22 of 64**

- NRP ROUTE
- NRP ANTICIPATED CENTERLINE
- NRP ANTICIPATED RIGHT-OF-WAY
- REPLACE CREEPS LINE
- REPLACE MR LINE
- REBUILD EXISTING 69KV
- DOUBLE CIRCUIT 230/138KV 69 LINE/11 LINE
- SHIFT DOUBLE CIRCUIT 230/69KV (MR LINE/ BF LINE)
- SHIFT MR INCREASED, 230KV
- SHIFT 92 LINE, 230KV
- REBUILD EXISTING TRANSMISSION LINES
- EXISTING TRANSMISSION LINE
- 115 KV
- 230 KV
- MUNICIPAL BOUNDARY
- PWA WATERCOURSE
- PWA WATERBODY



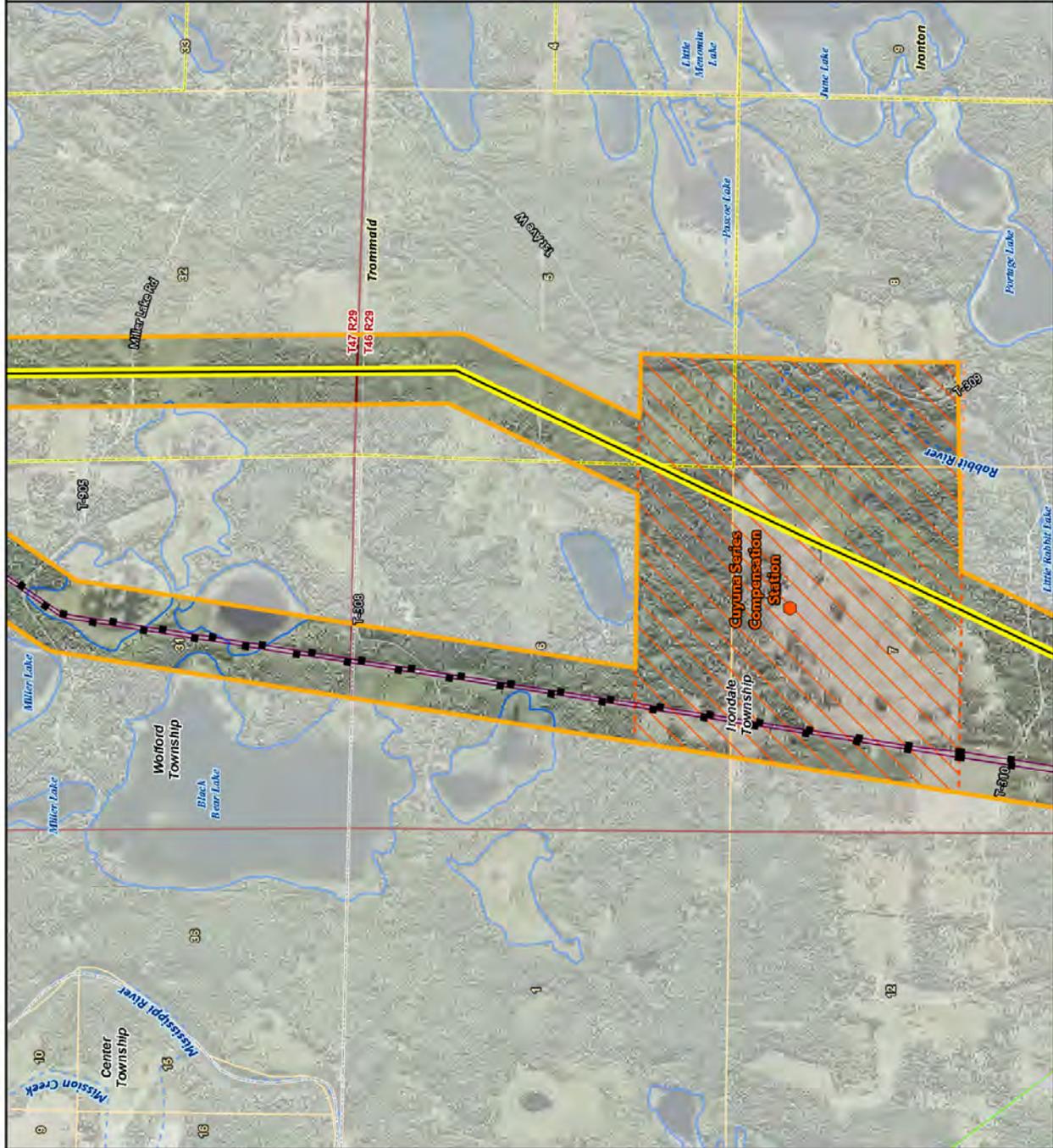
**Detailed Map  
Northland Reliability  
Project (NRP) Route  
Page 23 of 64**

- NRP ROUTE
- NRP ANTICIPATED CENTERLINE
- NRP ANTICIPATED RIGHT-OF-WAY
- REPLACE CREEPS LINE
- REPLACE NRI LINE
- REBUILD EXISTING 69KV
- DOUBLE CIRCUIT 230/115KV 02 LINE/11 LINE
- SHIFT DOUBLE CIRCUIT 230/69KV (MR LINE/ BF LINE)
- SHIFT MR INCREASED, 230KV
- SHIFT 92 LINE, 230KV
- REBUILD EXISTING TRANSMISSION LINES
- EXISTING TRANSMISSION LINE
- 115 KV
- 230 KV
- MUNICIPAL BOUNDARY
- PWA WATERCOURSE
- PWA WATERBODY



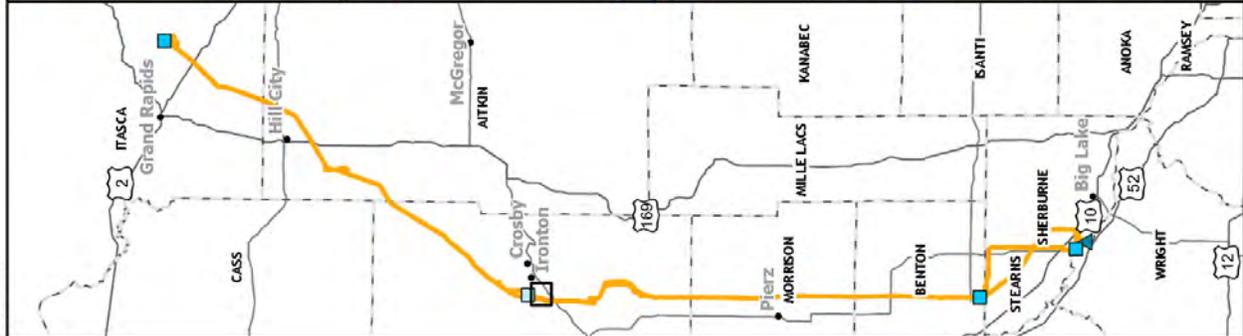
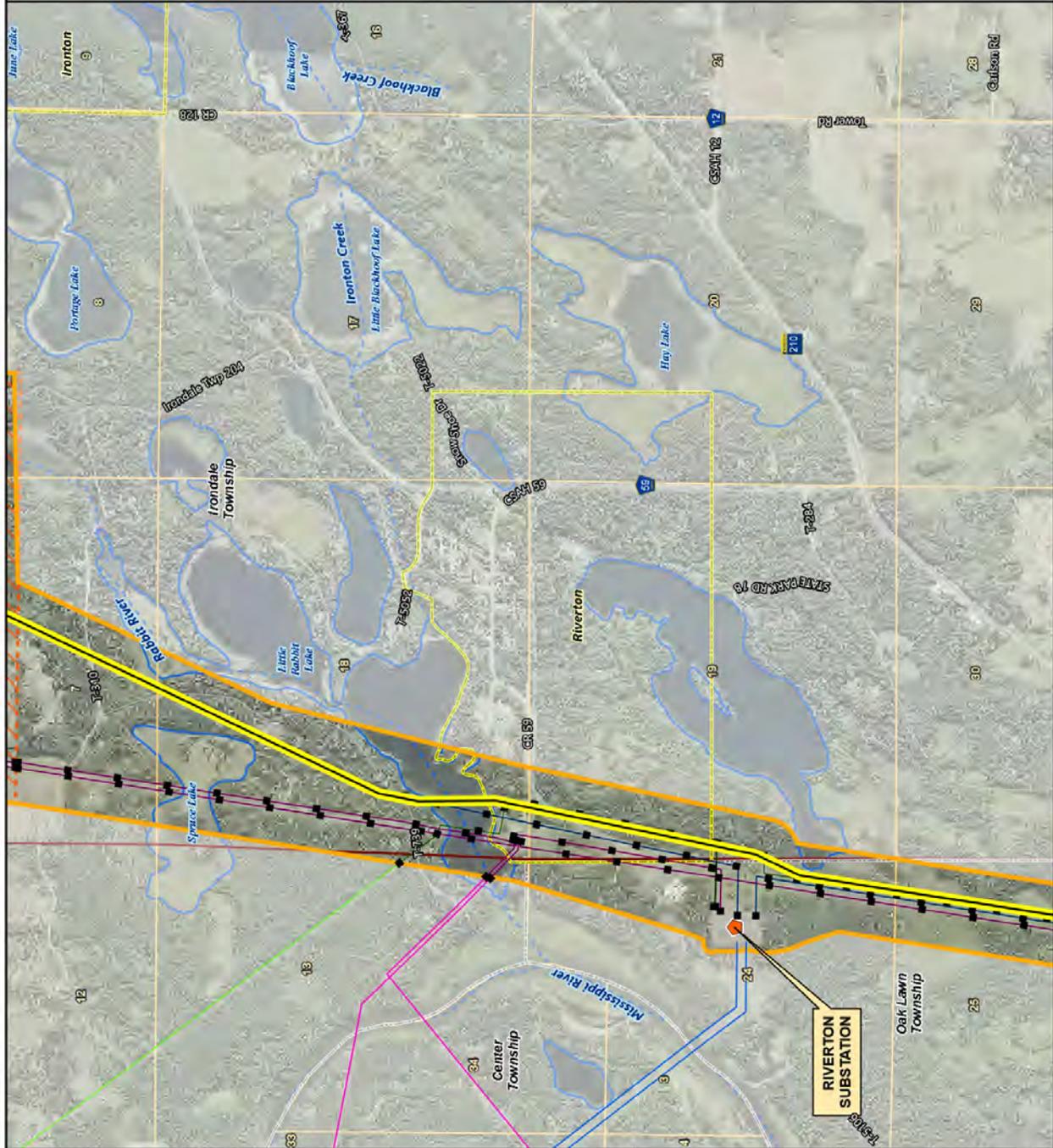
**Detailed Map  
Northland Reliability  
Project (NRP) Route  
Page 24 of 64**

-  NRP ROUTE
-  NRP ANTICIPATED CENTERLINE
-  NRP ANTICIPATED RIGHT-OF-WAY
-  REPLACE CREEKS LINE
-  REPLACE MR LINE
-  REBUILD EXISTING 69KV
-  DOUBLE CIRCUIT 230/115KV (2 LINE/11 LINE)
-  SHIFT DOUBLE CIRCUIT 230/69KV (MR LINE/ BF LINE)
-  SHIFT MR INCREASED, 230KV
-  SHIFT 92 LINE, 230KV
-  REBUILD EXISTING TRANSMISSION LINES
-  OLIVIA SERIES COMPENSATION STATION
-  EXISTING TRANSMISSION LINE
-  69 KV
-  115 KV
-  230 KV
-  SUBSTATION SITING AREA
-  MUNICIPAL BOUNDARY
-  P.W. WATERCOURSE
-  P.W. WATERBODY



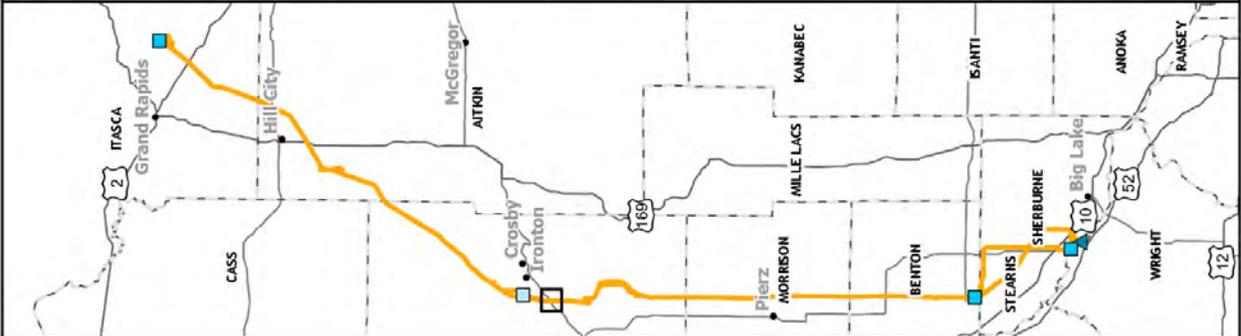
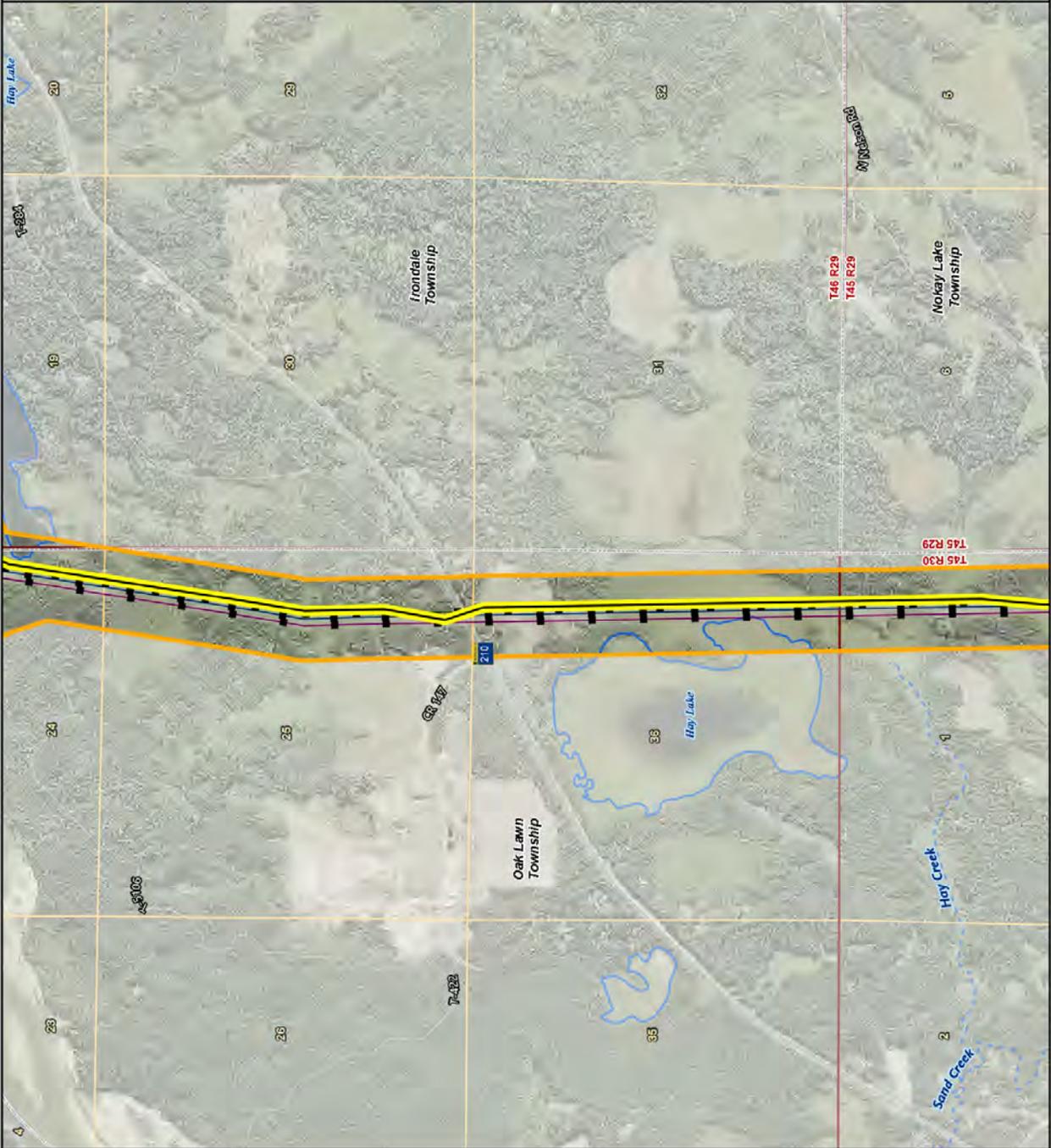
**Detailed Map  
Northland Reliability  
Project (NRP) Route  
Page 25 of 64**

-  NRP ROUTE
-  NRP ANTICIPATED CENTERLINE
-  NRP ANTICIPATED RIGHT-OF-WAY
-  REPLACE GREENS LINE
-  REPLACE MR LINE
-  REBUILD EXISTING 69KV
-  DOUBLE CIRCUIT 230/115KV (2 LINE/11 LINE)
-  SHIFT DOUBLE CIRCUIT 230/69KV (MR LINE/ BF LINE)
-  SHIFT MR INCREASED, 230KV
-  SHIFT 92 LINE, 230KV
-  REBUILD EXISTING TRANSMISSION LINES
-  RIVER TOWN SUBSTATION
-  EXISTING TRANSMISSION LINE
-  69 KV
-  115 KV
-  230 KV
-  SUBSTATION SITING AREA
-  MUNICIPAL BOUNDARY
-  PM WATERCOURSE
-  PM WATERBODY



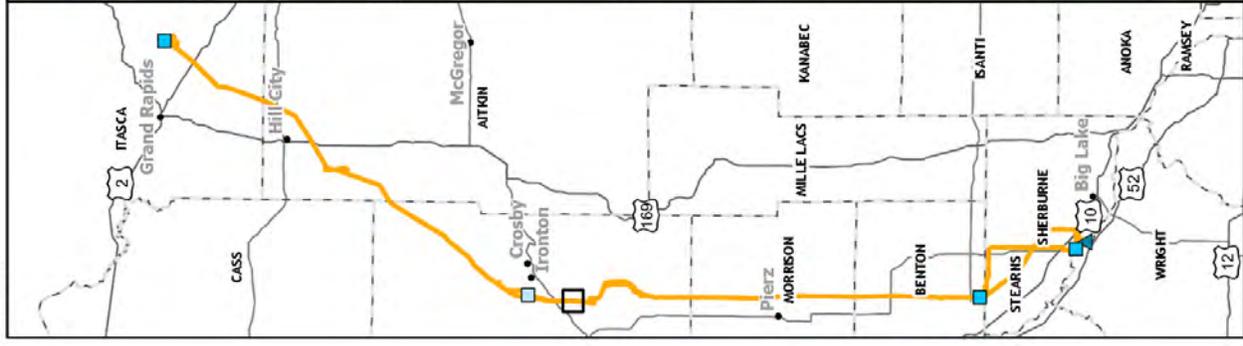
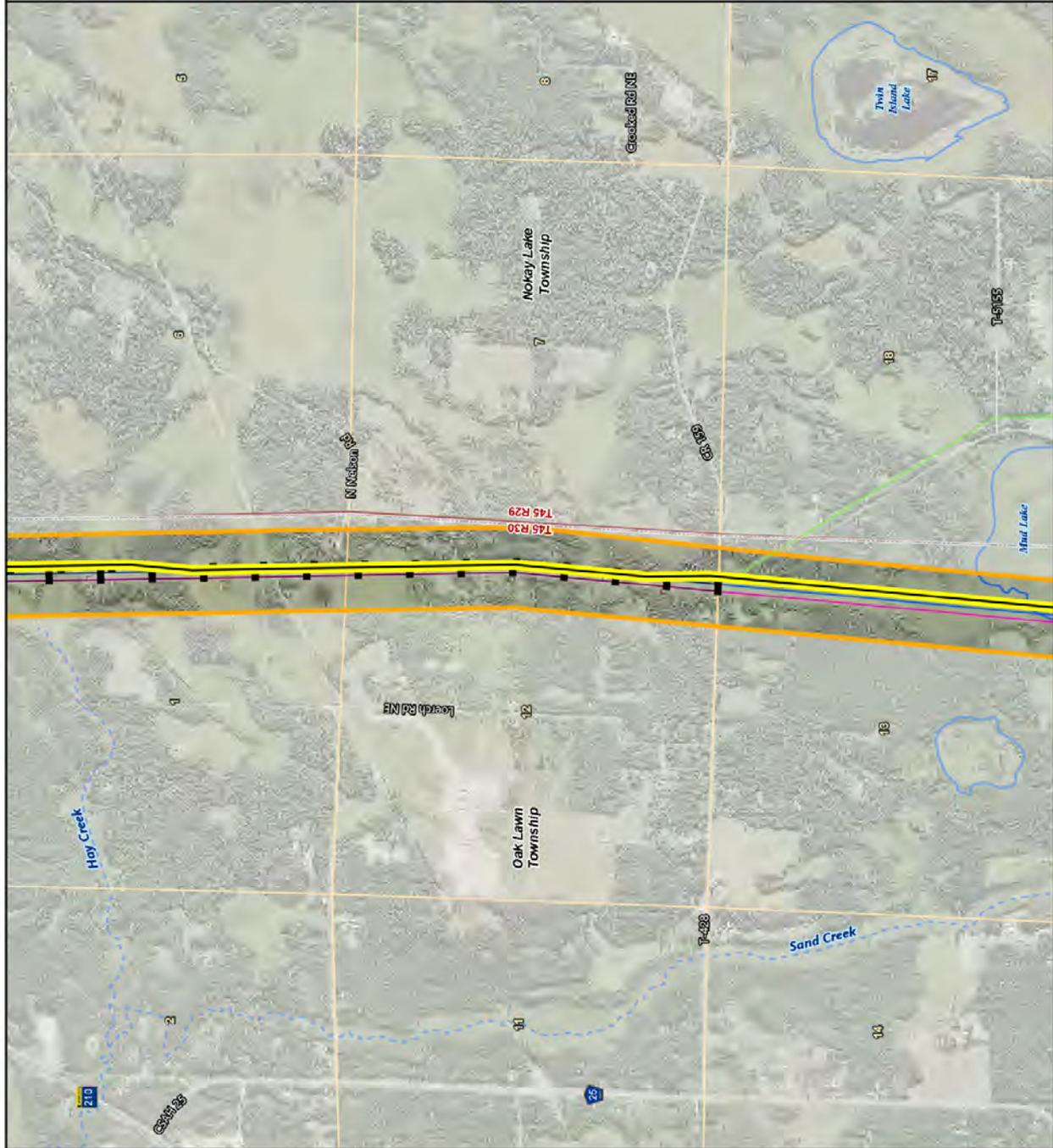
**Detailed Map  
Northland Reliability  
Project (NRP) Route  
Page 26 of 64**

-  NRP ROUTE
-  NRP ANTICIPATED CENTERLINE
-  NRP ANTICIPATED RIGHT-OF-WAY
-  REPLACE CREEKS LINE
-  REPLACE RR LINE
-  REBUILD EXISTING 69KV
-  DOUBLE CIRCUIT 230/115KV (2 LINE/11 LINE)
-  SHIFT DOUBLE CIRCUIT 230/69KV (MR LINE/ BF LINE)
-  SHIFT MR ACQUIRED, 230KV
-  SHIFT 92 LINE, 230KV
-  REBUILD EXISTING TRANSMISSION LINES
-  EXISTING TRANSMISSION LINE
-  69 KV
-  115 KV
-  230 KV
-  MUNICIPAL BOUNDARY
-  PWA WATERCOURSE
-  PWA WATERBODY



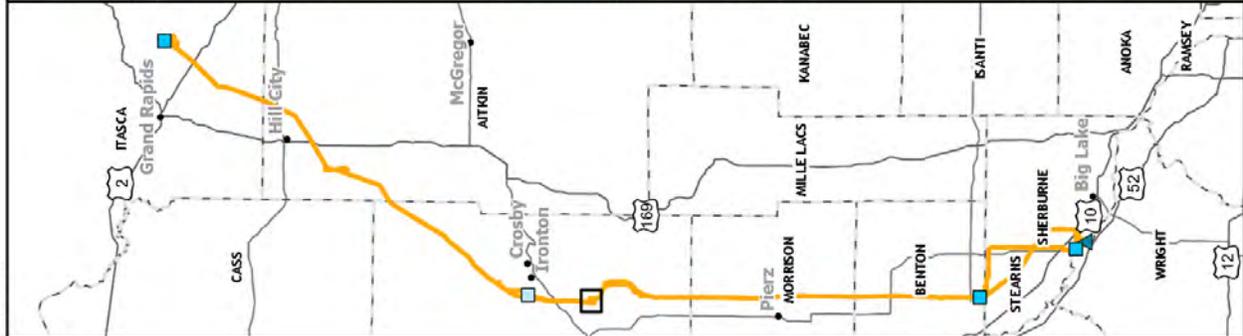
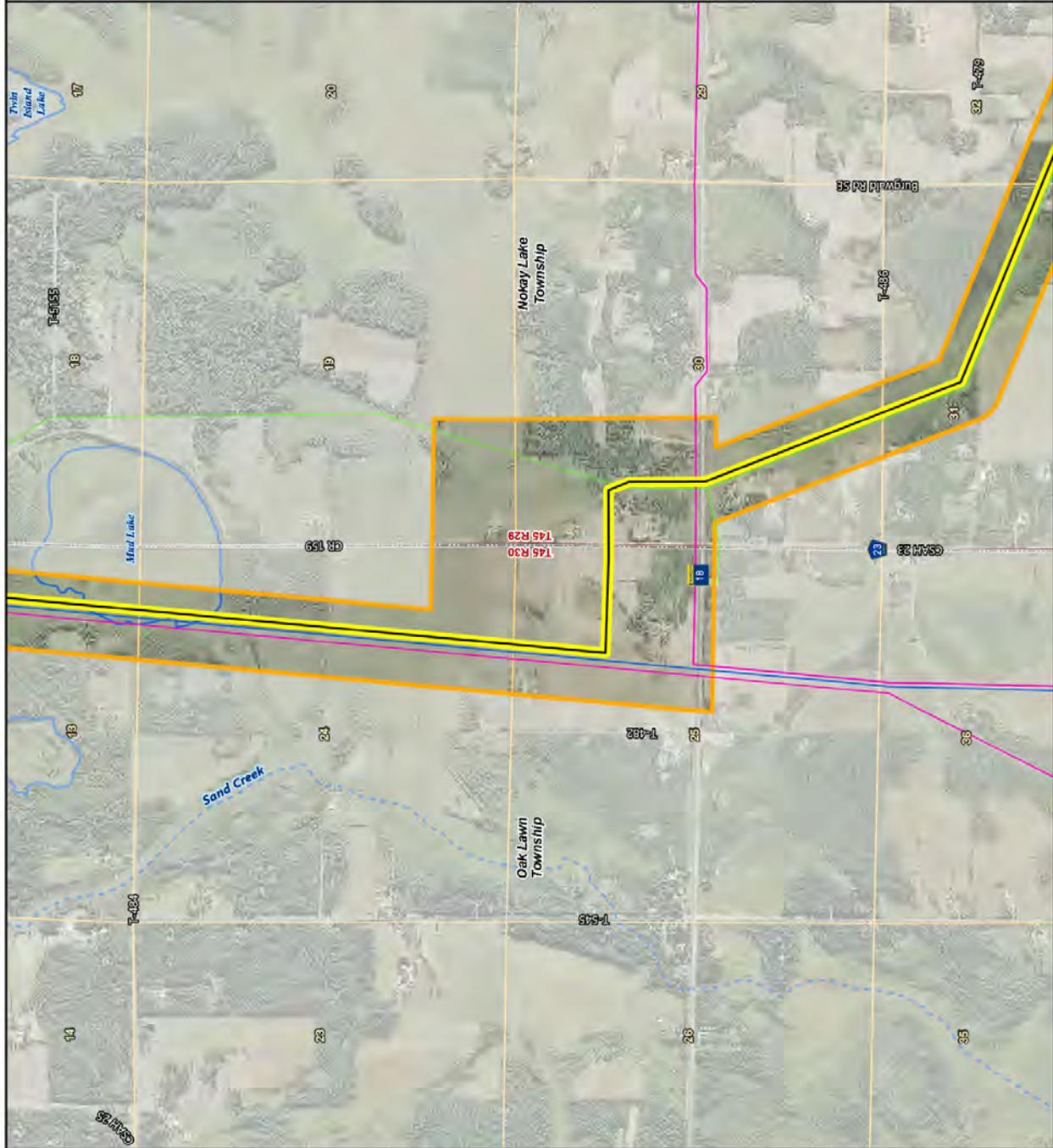
**Detailed Map  
Northland Reliability  
Project (NRP) Route  
Page 27 of 64**

-  NRP ROUTE
-  NRP ANTICIPATED CENTERLINE
-  NRP ANTICIPATED RIGHT-OF-WAY
-  REPLACE CREEKS LINE
-  REPLACE MR LINE
-  REBUILD EXISTING 69KV
-  DOUBLE CIRCUIT 230/115KV (2 LINE/11 LINE)
-  SHIFT DOUBLE CIRCUIT 230/69KV (MR LINE/ BF LINE)
-  SHIFT MR INCREASED, 230KV
-  SHIFT 92 LINE, 230KV
-  REBUILD EXISTING TRANSMISSION LINES
-  EXISTING TRANSMISSION LINE
-  69 KV
-  115 KV
-  230 KV
-  MUNICIPAL BOUNDARY
-  PWA WATERCOURSE
-  PWA WATERBODY



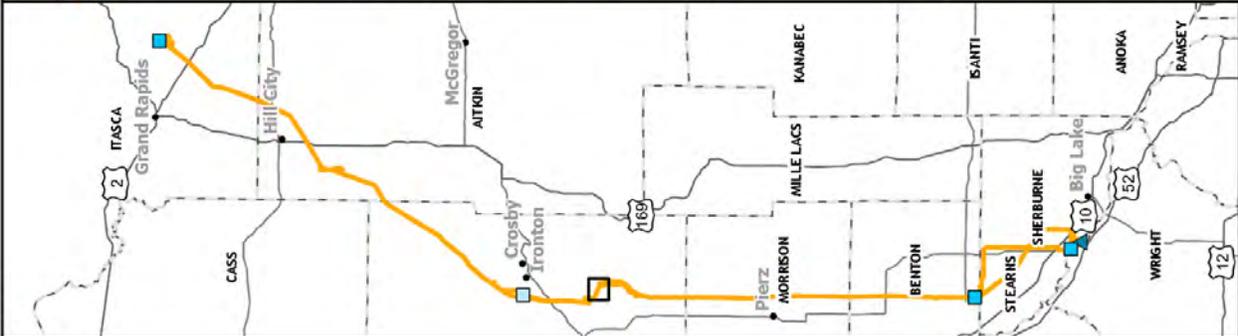
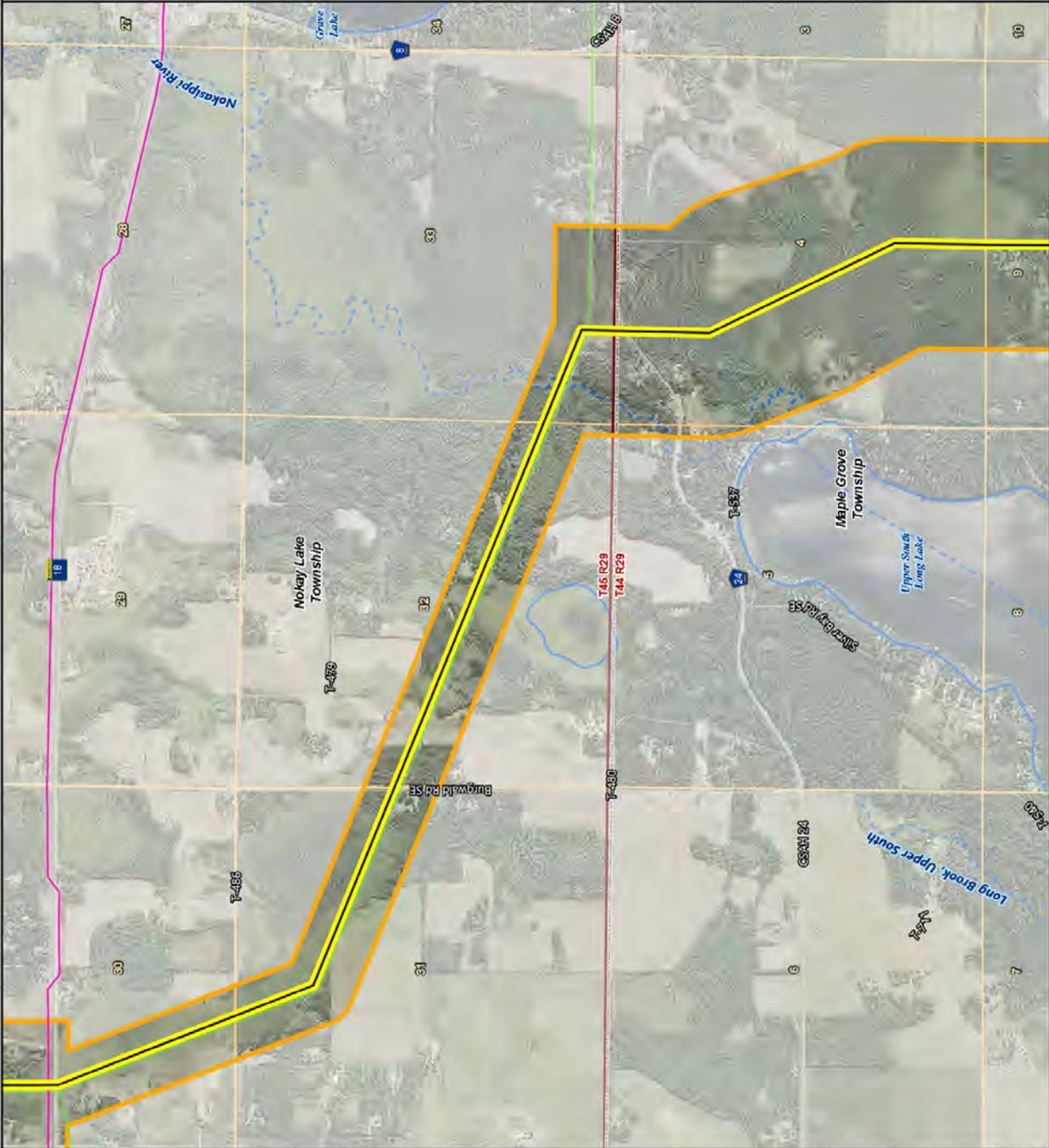
**Detailed Map  
Northland Reliability  
Project (NRP) Route  
Page 28 of 64**

-  NRP ROUTE
-  NRP ANTICIPATED CENTERLINE
-  NRP ANTICIPATED RIGHT-OF-WAY
-  REPLACE CREEKS LINE
-  REPLACE RR LINE
-  REPLACE NW LINE
-  REBUILD EXISTING 69KV
-  DOUBLE CIRCUIT 230/115KV 02 LINE/11 LINE
-  SHIFT DOUBLE CIRCUIT 230/69KV (MR LINE/ BF LINE)
-  SHIFT MR ACQUIRED, 230KV
-  SHIFT 92 LINE, 230KV
-  REBUILD EXISTING TRANSMISSION LINES
-  EXISTING TRANSMISSION LINE
-  69 KV
-  115 KV
-  230 KV
-  MUNICIPAL BOUNDARY
-  PWA WATERCOURSE
-  PWA WATERBODY



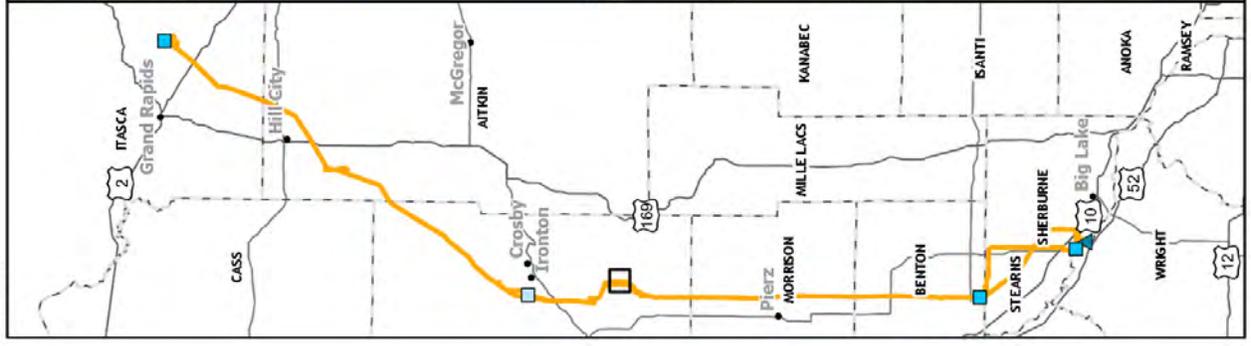
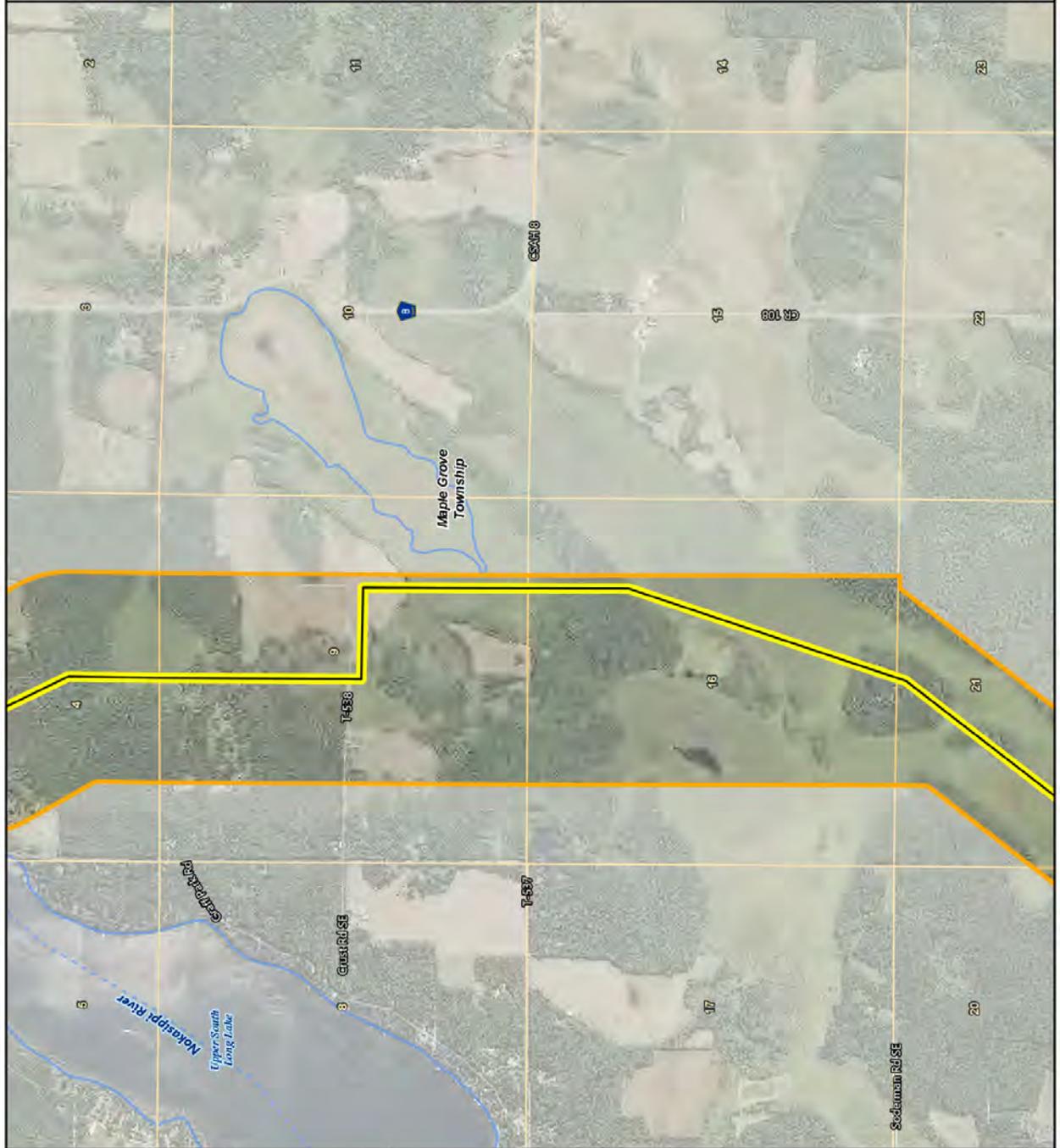
**Detailed Map  
Northland Reliability  
Project (NRP) Route  
Page 29 of 64**

-  NRP ROUTE
-  NRP ANTICIPATED CENTERLINE
-  NRP ANTICIPATED RIGHT-OF-WAY
-  REPLACE CREEK LINE
-  REPLACE NRP LINE
-  REBUILD EXISTING 69KV
-  DOUBLE CIRCUIT 230/138KV 02 LINE/11 LINE
-  SHIFT DOUBLE CIRCUIT 230/69KV (MR LINE/ BF LINE)
-  SHIFT MR INCREASED, 230KV
-  SHIFT 92 LINE, 230KV
-  REBUILD EXISTING TRANSMISSION LINES
-  EXISTING TRANSMISSION LINE
-  69 KV
-  115 KV
-  MUNICIPAL BOUNDARY
-  PWA WATERCOURSE
-  PWA WATERBODY



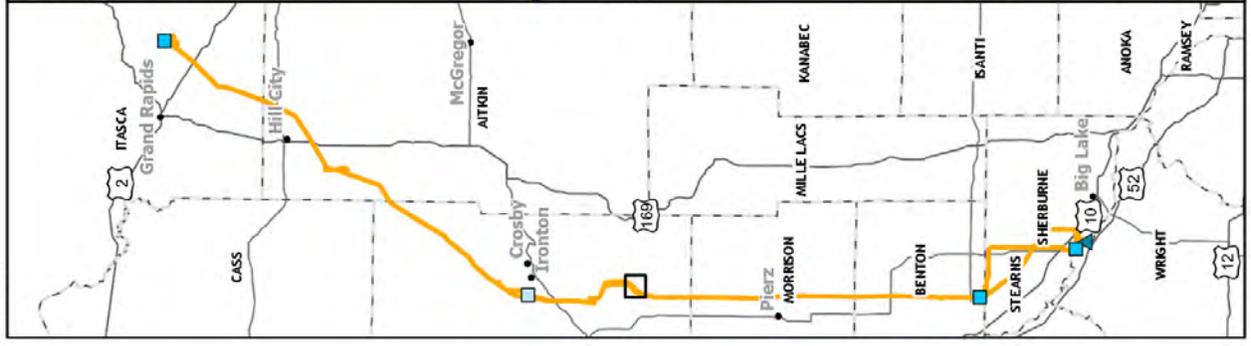
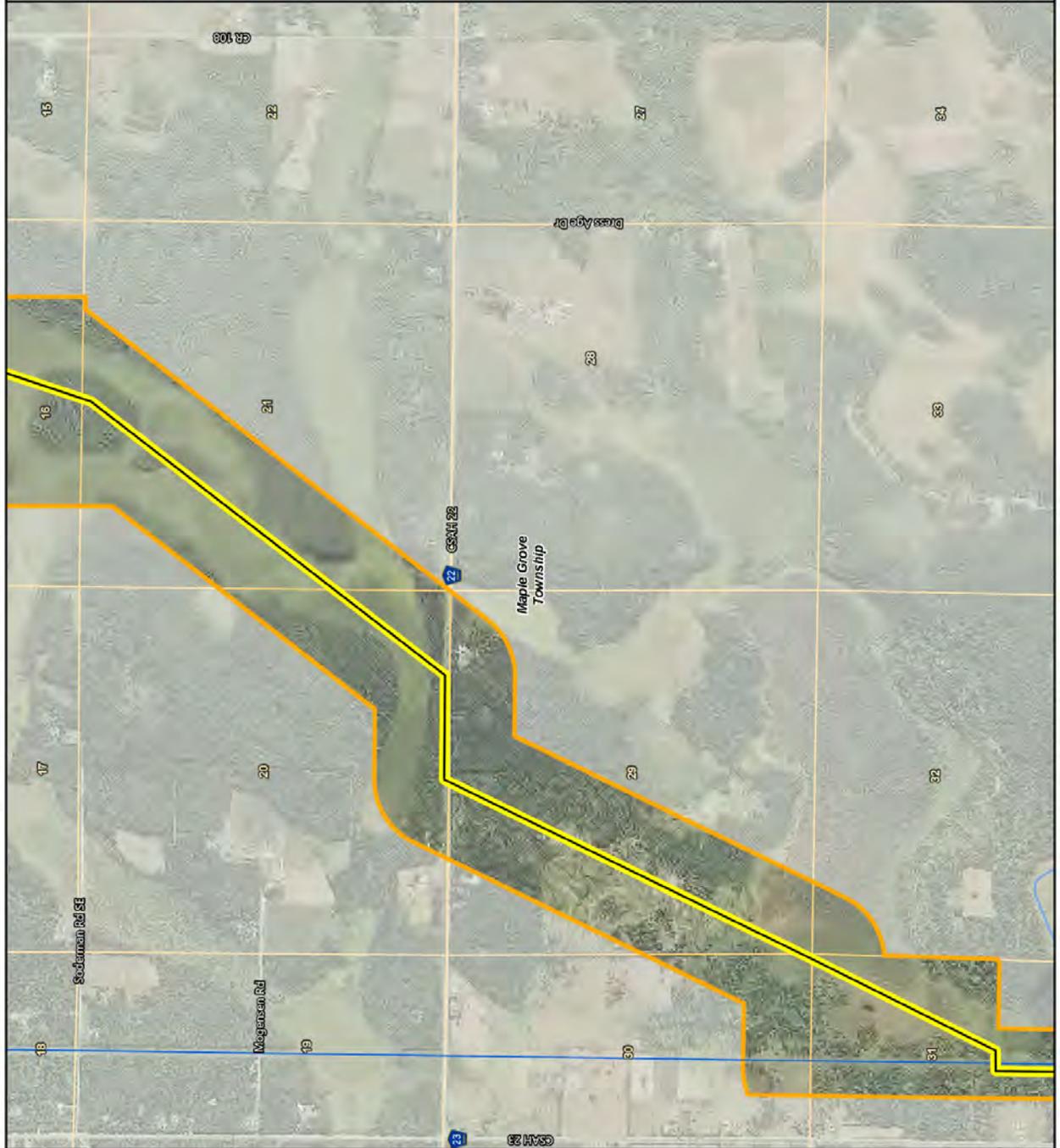
**Detailed Map  
Northland Reliability  
Project (NRP) Route  
Page 30 of 64**

-  NRP ROUTE
-  NRP ANTICIPATED CENTERLINE
-  NRP ANTICIPATED RIGHT-OF-WAY
-  REPLACE CREEPS LINE
-  REPLACE NRP LINE
-  REBUILD EXISTING 69KV LINE
-  DOUBLE CIRCUIT 230/138KV (2 LINE/11 LINE)
-  SHIFT DOUBLE CIRCUIT 230/69KV (MR LINE/ BF LINE)
-  SHIFT MR INCREASED, 230KV
-  SHIFT 92 LINE, 230KV
-  REBUILD EXISTING TRANSMISSION LINES
-  MUNICIPAL BOUNDARY
-  PWA WATERCOURSE
-  PWA WATERBODY



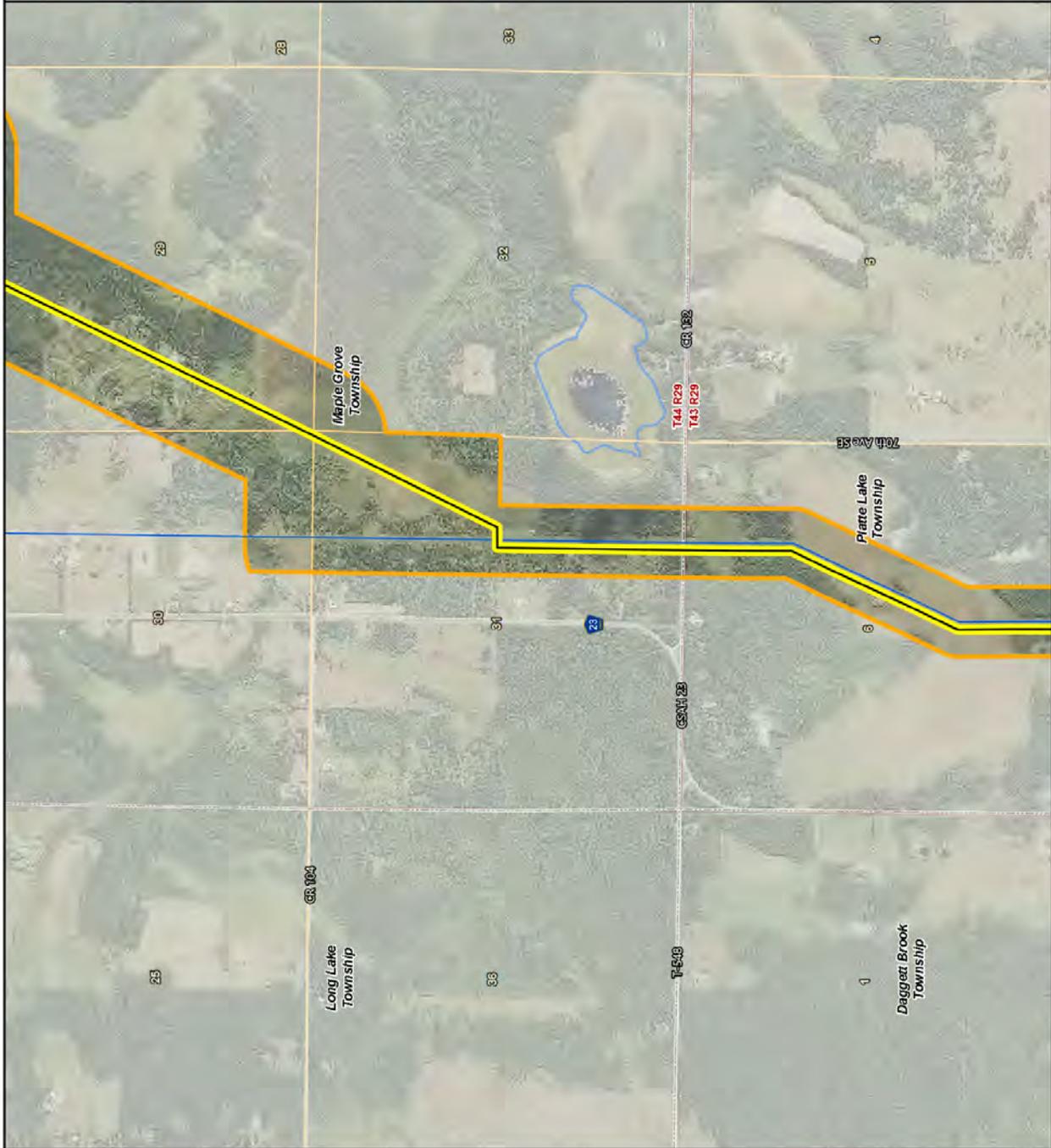
**Detailed Map  
Northland Reliability  
Project (NRP) Route  
Page 31 of 64**

-  NRP ROUTE
-  NRP ANTICIPATED CENTERLINE
-  NRP ANTICIPATED RIGHT-OF-WAY
-  REPLACE CREEKS LINE
-  REPLACE NRP LINE
-  REBUILD EXISTING 69KV LINE
-  DOUBLE CIRCUIT 230/138KV 69 LINE/11 LINE
-  SHIFT DOUBLE CIRCUIT 230/69KV (MR LINE/ BF LINE)
-  SHIFT MR MODIFIED, 230KV
-  SHIFT 92 LINE, 230KV
-  REBUILD EXISTING TRANSMISSION LINES
-  EXISTING TRANSMISSION LINE
-  230 KV
-  MUNICIPAL BOUNDARY
-  PWA WATERCOURSE
-  PWA WATERBODY



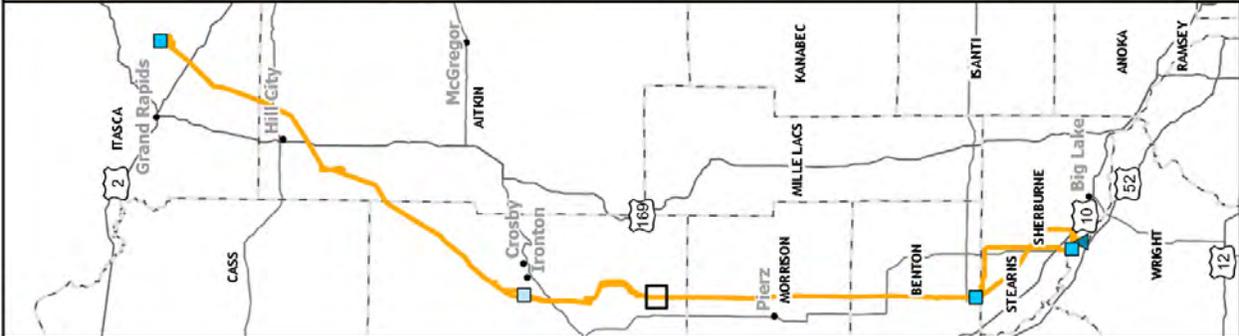
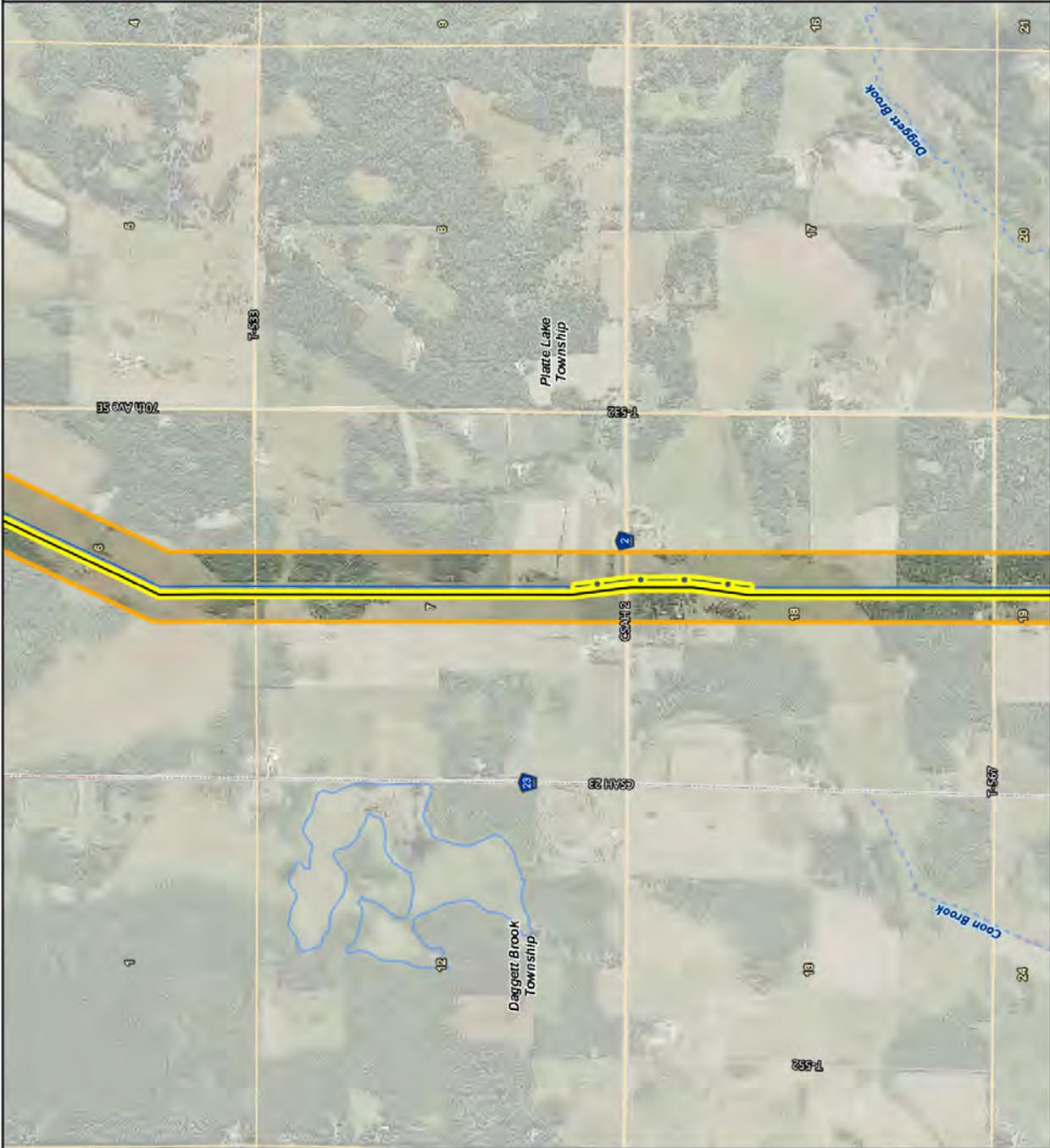
**Detailed Map  
Northland Reliability  
Project (NRP) Route  
Page 32 of 64**

-  NRP ROUTE
-  NRP ANTICIPATED CENTERLINE
-  NRP ANTICIPATED RIGHT-OF-WAY
-  REPLACE CREEK LINE
-  REPLACE NRP LINE
-  REBUILD EXISTING 69KV
-  DOUBLE CIRCUIT 230/115KV (2 LINE/11 LINE)
-  SHIFT DOUBLE CIRCUIT 230/69KV (MR LINE/ BF LINE)
-  SHIFT MR INCREASED, 230KV
-  SHIFT 92 LINE, 230KV
-  REBUILD EXISTING TRANSMISSION LINES
-  EXISTING TRANSMISSION LINE
-  230 KV
-  MUNICIPAL BOUNDARY
-  PWA WATERCOURSE
-  PWA WATERBODY



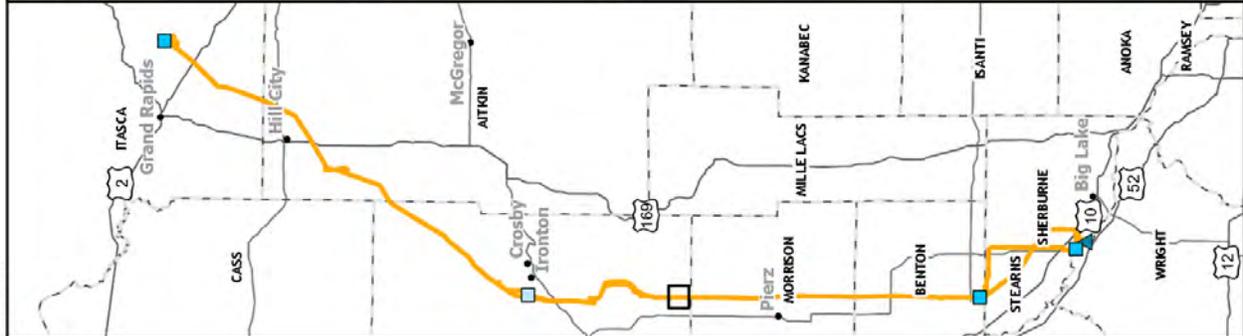
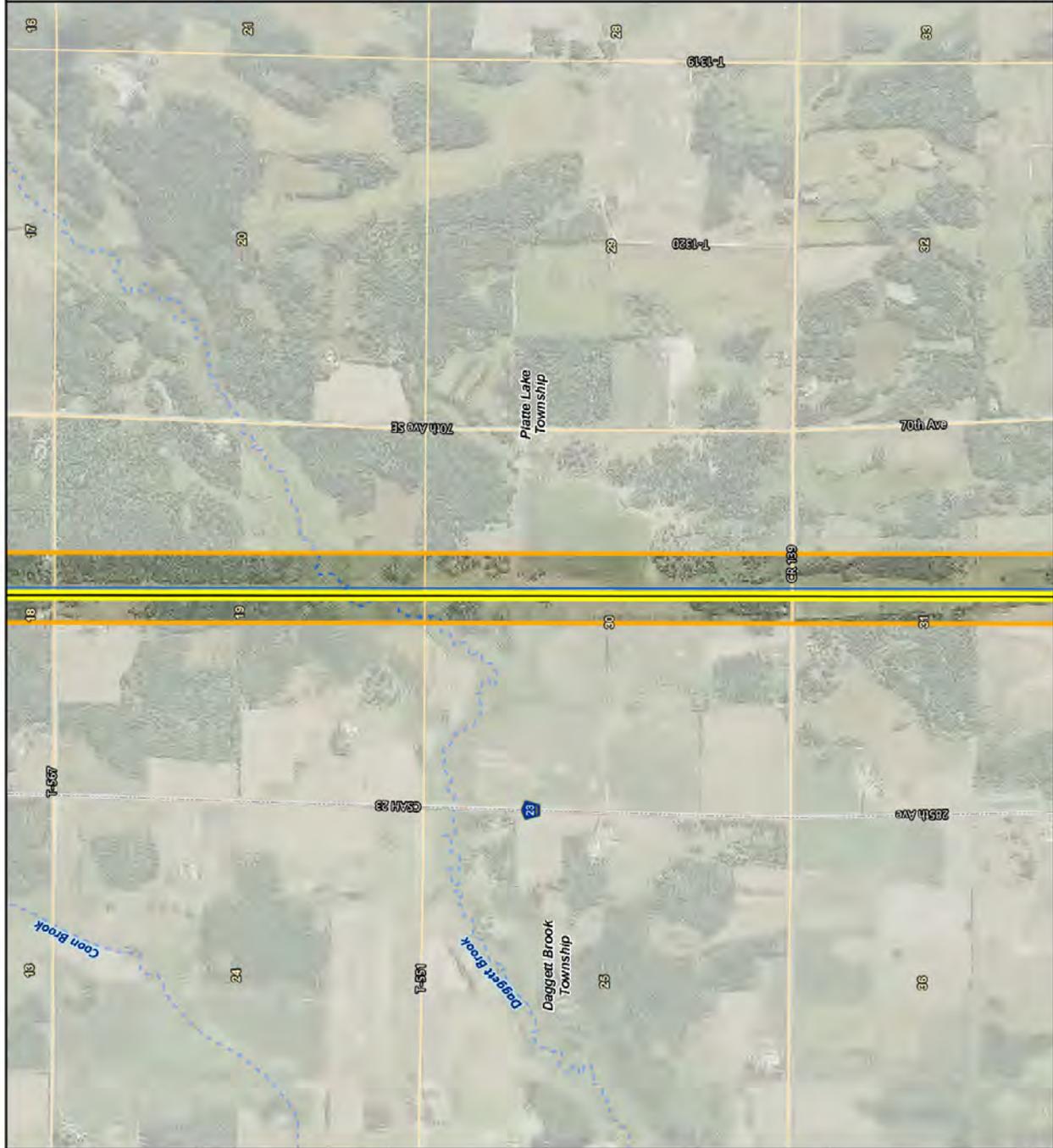
**Detailed Map  
Northland Reliability  
Project (NRP) Route  
Page 33 of 64**

-  NRP ROUTE
-  NRP ANTICIPATED CENTERLINE
-  NRP ANTICIPATED RIGHT-OF-WAY
-  REPLACE CREEPS LINE
-  REPLACE NRI LINE
-  REBUILD EXISTING 69KV LINE
-  DOUBLE CIRCUIT 230/138KV 02 LINE/11 LINE
-  SHIFT DOUBLE CIRCUIT 230/69KV (MR LINE/ BF LINE)
-  SHIFT MR INCLINED, 230KV
-  SHIFT 92 LINE, 230KV
-  REBUILD EXISTING TRANSMISSION LINES
-  EXISTING TRANSMISSION LINE
-  230 KV
-  MUNICIPAL BOUNDARY
-  PNM WATERCOURSE
-  PNM WATERBODY



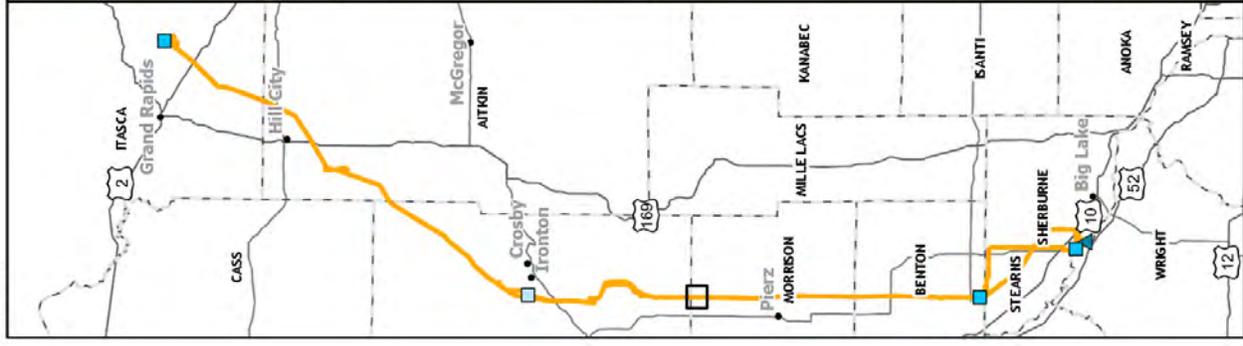
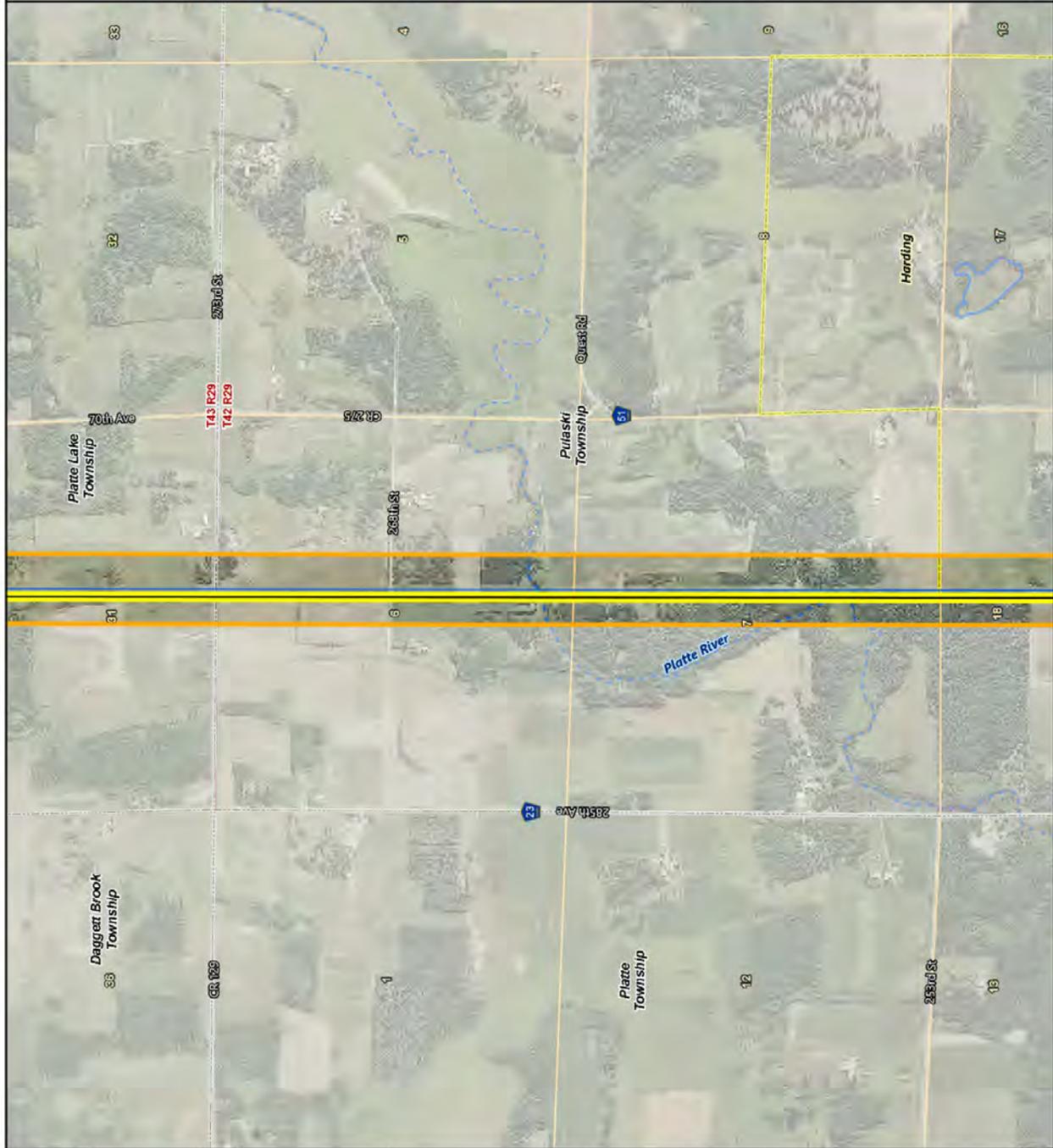
**Detailed Map  
Northland Reliability  
Project (NRP) Route  
Page 34 of 64**

-  NRP ROUTE
-  NRP ANTICIPATED CENTERLINE
-  NRP ANTICIPATED RIGHT-OF-WAY
-  REPLACE CREEKS LINE
-  REPLACE NRP LINE
-  REBUILD EXISTING 69KV
-  DOUBLE CIRCUIT 230/138KV 69 LINE/11 LINE
-  SHIFT DOUBLE CIRCUIT 230/69KV (MR LINE/ BF LINE)
-  SHIFT MR INCREASED, 230KV
-  SHIFT 92 LINE, 230KV
-  REBUILD EXISTING TRANSMISSION LINES
-  EXISTING TRANSMISSION LINE
-  230 KV
-  MUNICIPAL BOUNDARY
-  PWA WATERCOURSE
-  PWA WATERBODY



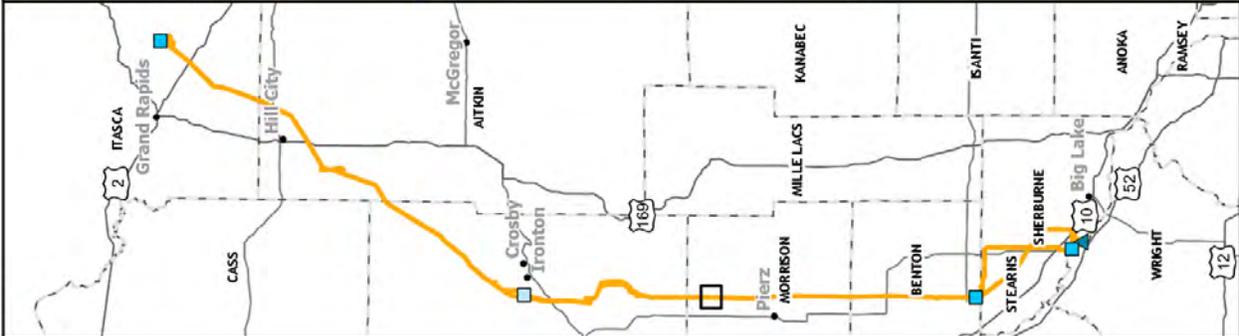
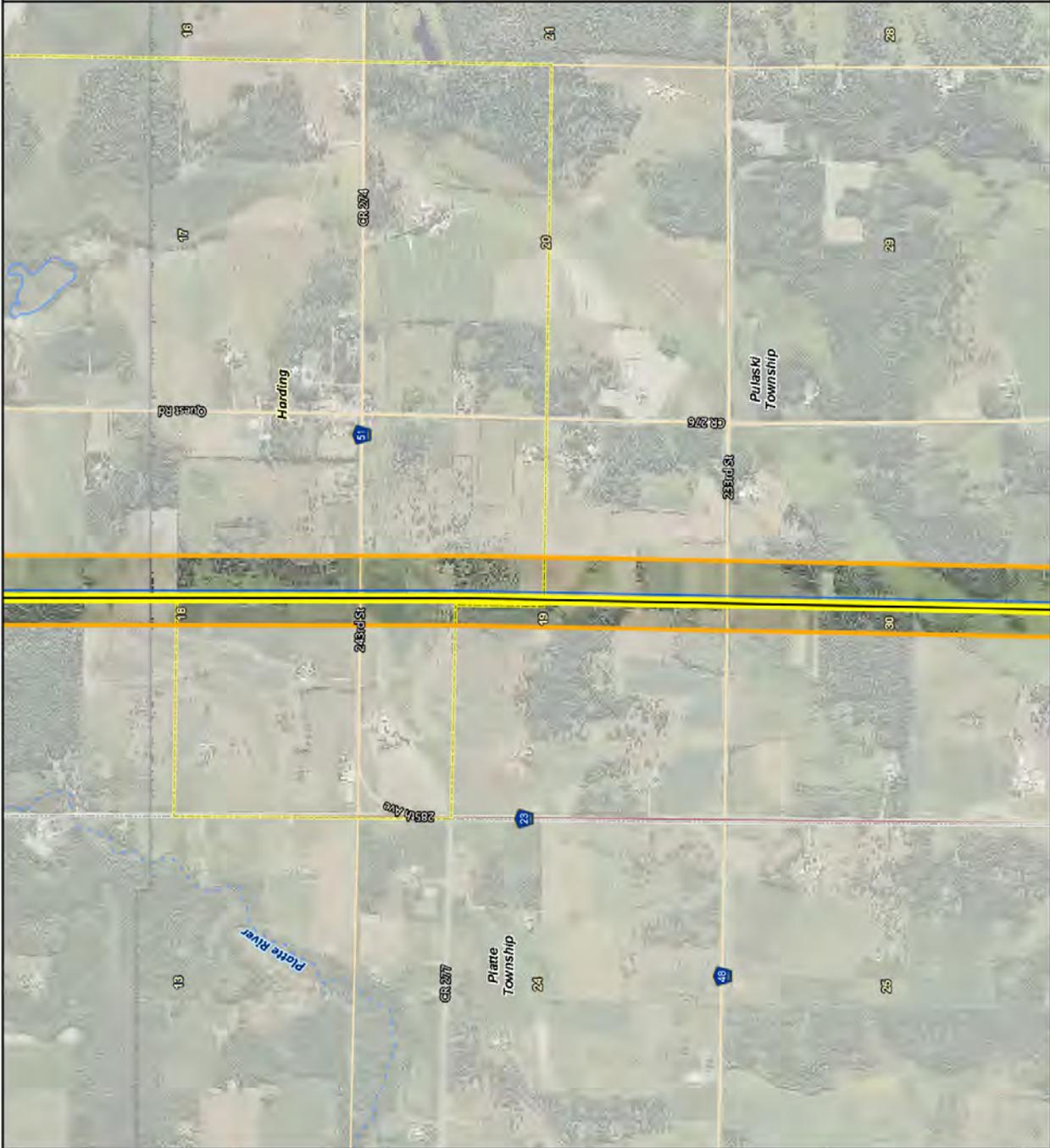
**Detailed Map  
Northland Reliability  
Project (NRP) Route  
Page 35 of 64**

-  NRP ROUTE
-  NRP ANTICIPATED CENTERLINE
-  NRP ANTICIPATED RIGHT-OF-WAY
-  REPLACE GREENS LINE
-  REPLACE MR LINE
-  REBUILD EXISTING 69KV
-  DOUBLE CIRCUIT 230/115KV (2 LINE/11 LINE)
-  SHIFT DOUBLE-CIRCUIT 230/69KV (MR LINE/ BF LINE)
-  SHIFT MR/MC/RRRD, 230KV
-  SHIFT 92 LINE, 230KV
-  REBUILD EXISTING TRANSMISSION LINES
-  EXISTING TRANSMISSION LINE
-  230 KV
-  MUNICIPAL BOUNDARY
-  PWA WATERCOURSE
-  PWA WATERBODY



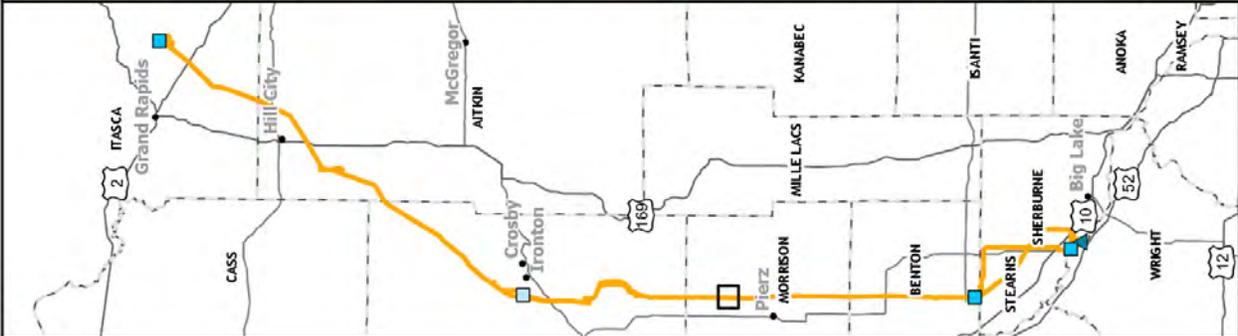
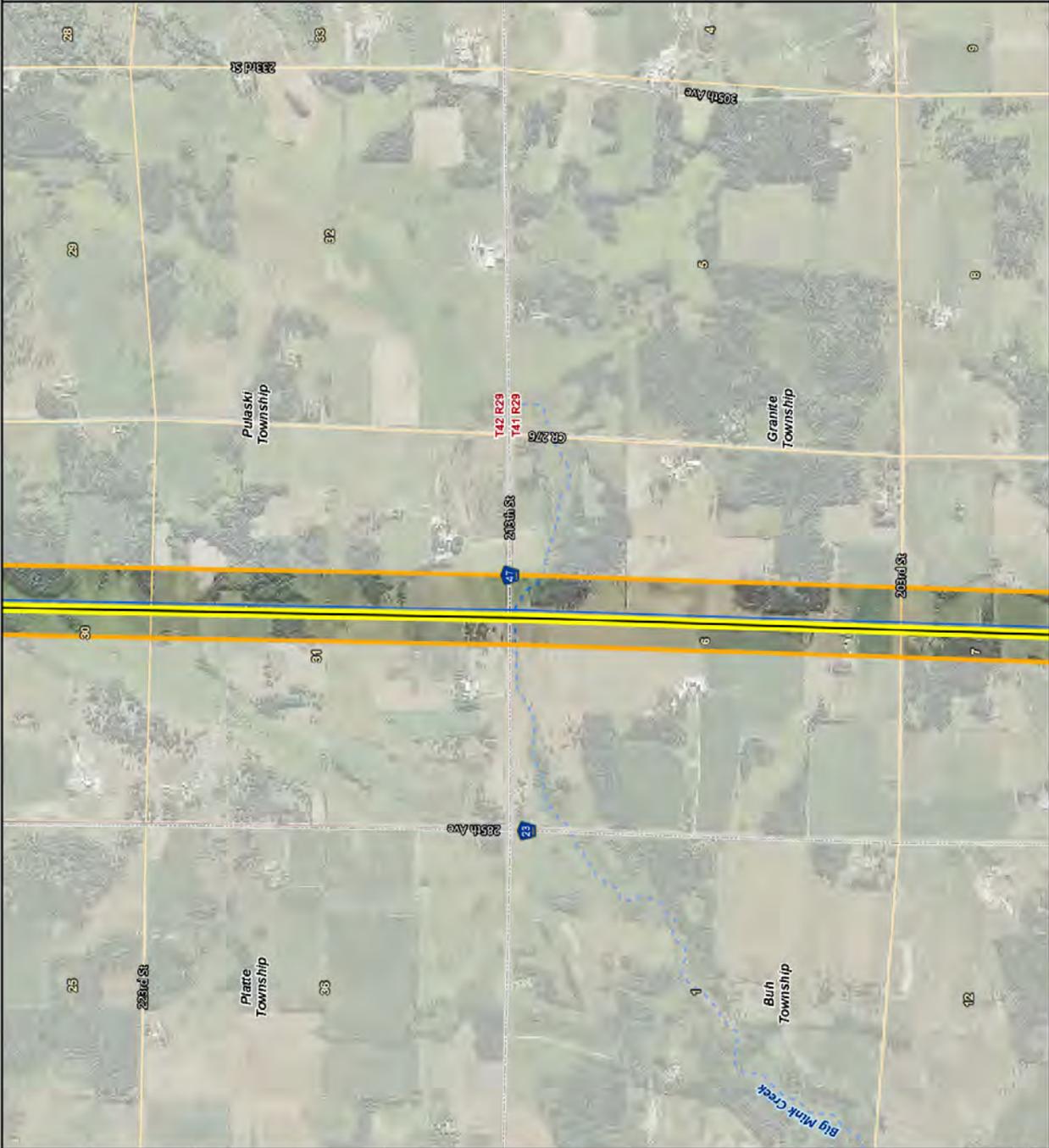
**Detailed Map  
Northland Reliability  
Project (NRP) Route  
Page 36 of 64**

-  NRP ROUTE
-  NRP ANTICIPATED CENTERLINE
-  NRP ANTICIPATED RIGHT-OF-WAY
-  REPLACE GREENS LINE
-  REPLACE MR LINE
-  REBUILD EXISTING 69KV LINE
-  DOUBLE CIRCUIT 230/115KV 02 LINE/11 LINE
-  SHIFT DOUBLE-CIRCUIT 230/69KV (MR LINE/ BF LINE)
-  SHIFT MR INCREASED, 230KV
-  SHIFT 92 LINE, 230KV
-  REBUILD EXISTING TRANSMISSION LINES
-  EXISTING TRANSMISSION LINE
-  230 KV
-  MUNICIPAL BOUNDARY
-  PWA WATERCOURSE
-  PWA WATERBODY



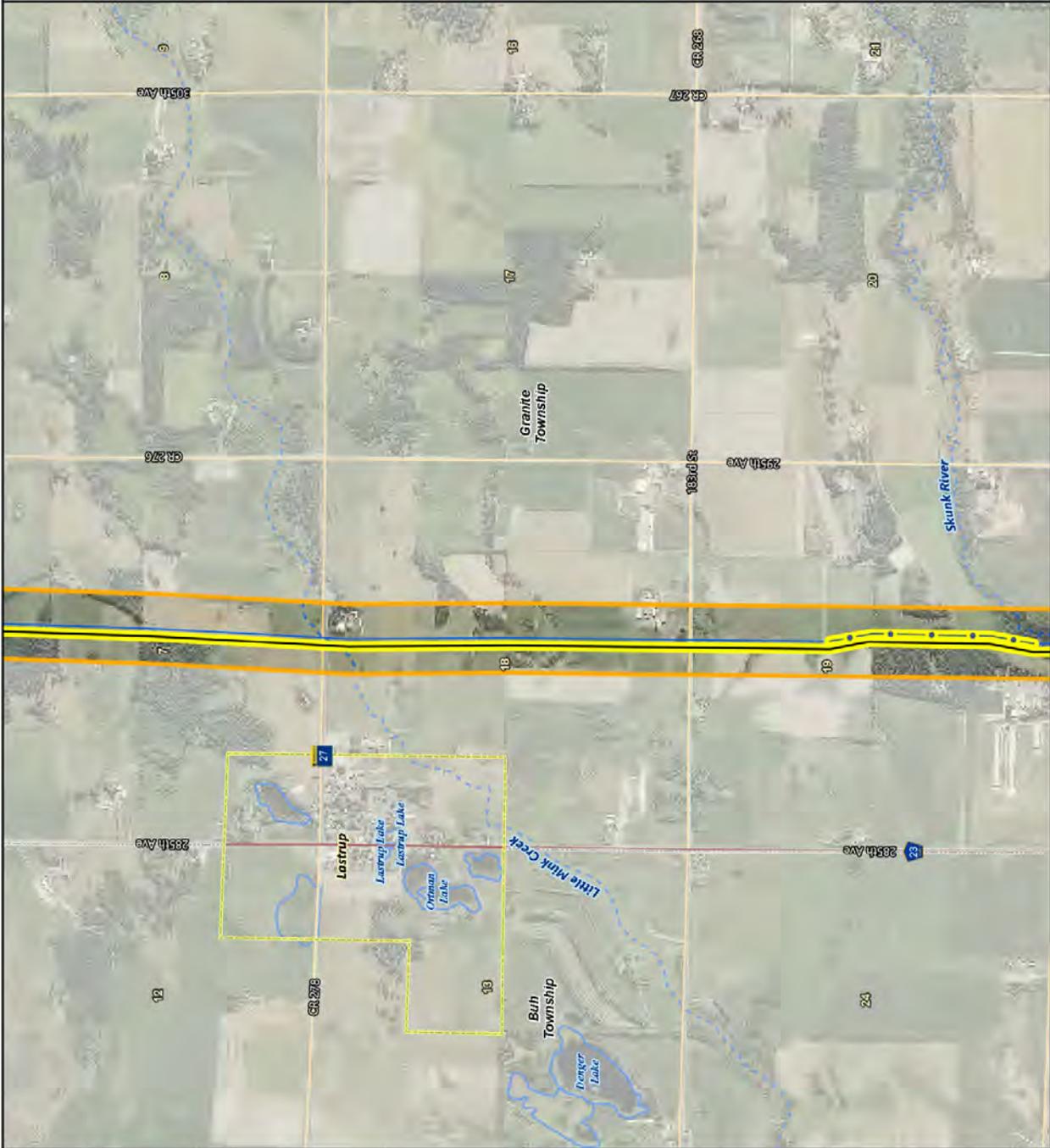
**Detailed Map  
Northland Reliability  
Project (NRP) Route  
Page 37 of 64**

-  NRP ROUTE
-  NRP ANTICIPATED CENTERLINE
-  NRP ANTICIPATED RIGHT-OF-WAY
-  REPLACE GREENS LINE
-  REPLACE NRP LINE
-  REBUILD EXISTING 69KV
-  DOUBLE CIRCUIT 230/115KV (2 LINE/11 LINE)
-  SHIFT DOUBLE CIRCUIT 230/69KV (MR LINE/ BF LINE)
-  SHIFT MR/MC/RED, 230KV
-  SHIFT 92 LINE, 230KV
-  REBUILD EXISTING TRANSMISSION LINES
-  EXISTING TRANSMISSION LINE
-  230 KV
-  MUNICIPAL BOUNDARY
-  PNM WATERCOURSE
-  PNM WATERBODY



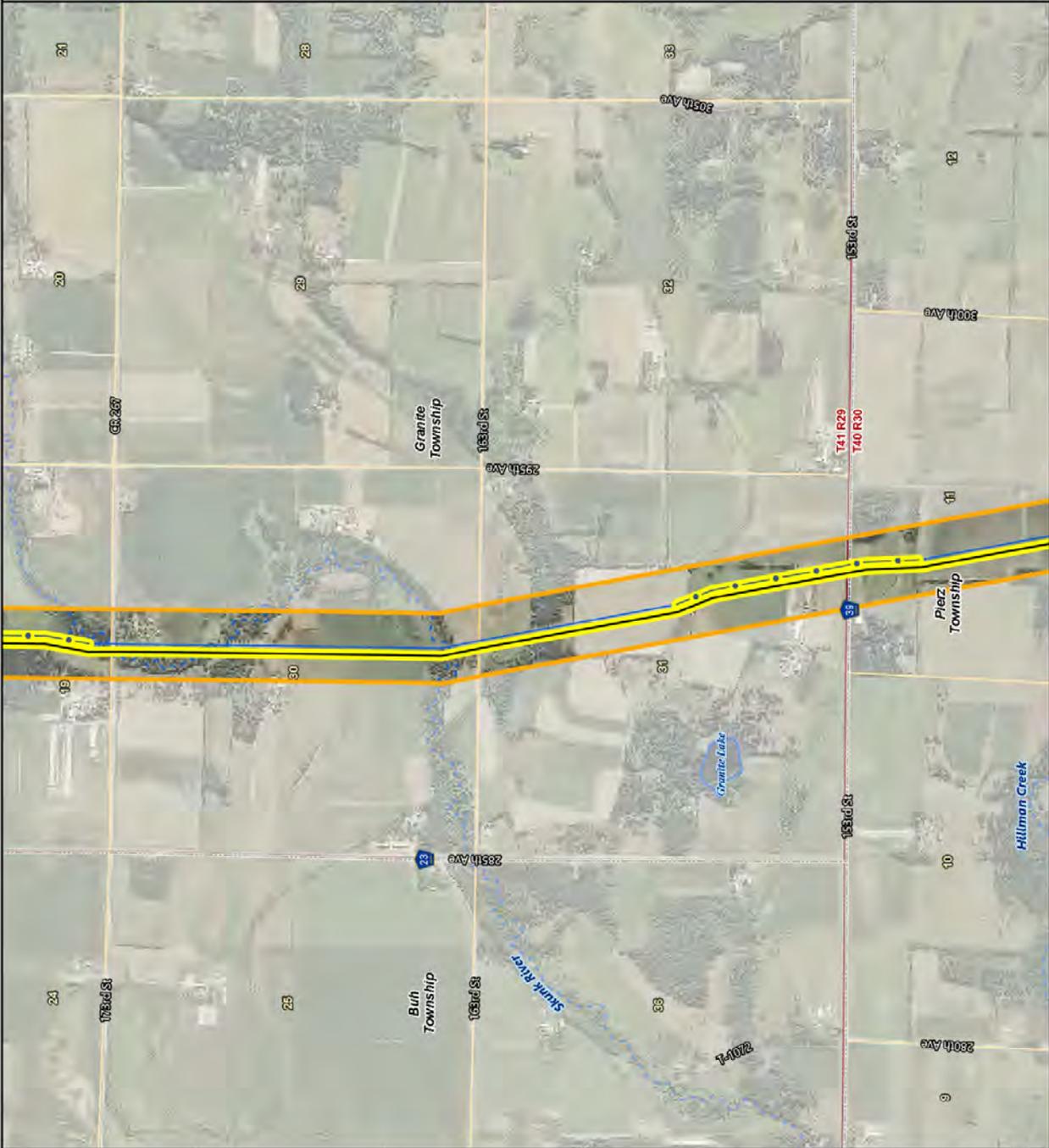
**Detailed Map  
Northland Reliability  
Project (NRP) Route  
Page 38 of 64**

-  NRP ROUTE
-  NRP ANTICIPATED CENTERLINE
-  NRP ANTICIPATED RIGHT-OF-WAY
-  REPLACE CREEKS LINE
-  REPLACE NRP LINE
-  REBUILD EXISTING 69KV
-  DOUBLE CIRCUIT 230/138KV 02 LINE/11 LINE
-  SHIFT DOUBLE CIRCUIT 230/69KV (MR LINE/ BF LINE)
-  SHIFT MR INCREASED, 230KV
-  SHIFT 92 LINE, 230KV
-  REBUILD EXISTING TRANSMISSION LINES
-  EXISTING TRANSMISSION LINE
-  230 KV
-  MUNICIPAL BOUNDARY
-  PNM WATERCOURSE
-  PNM WATERBODY



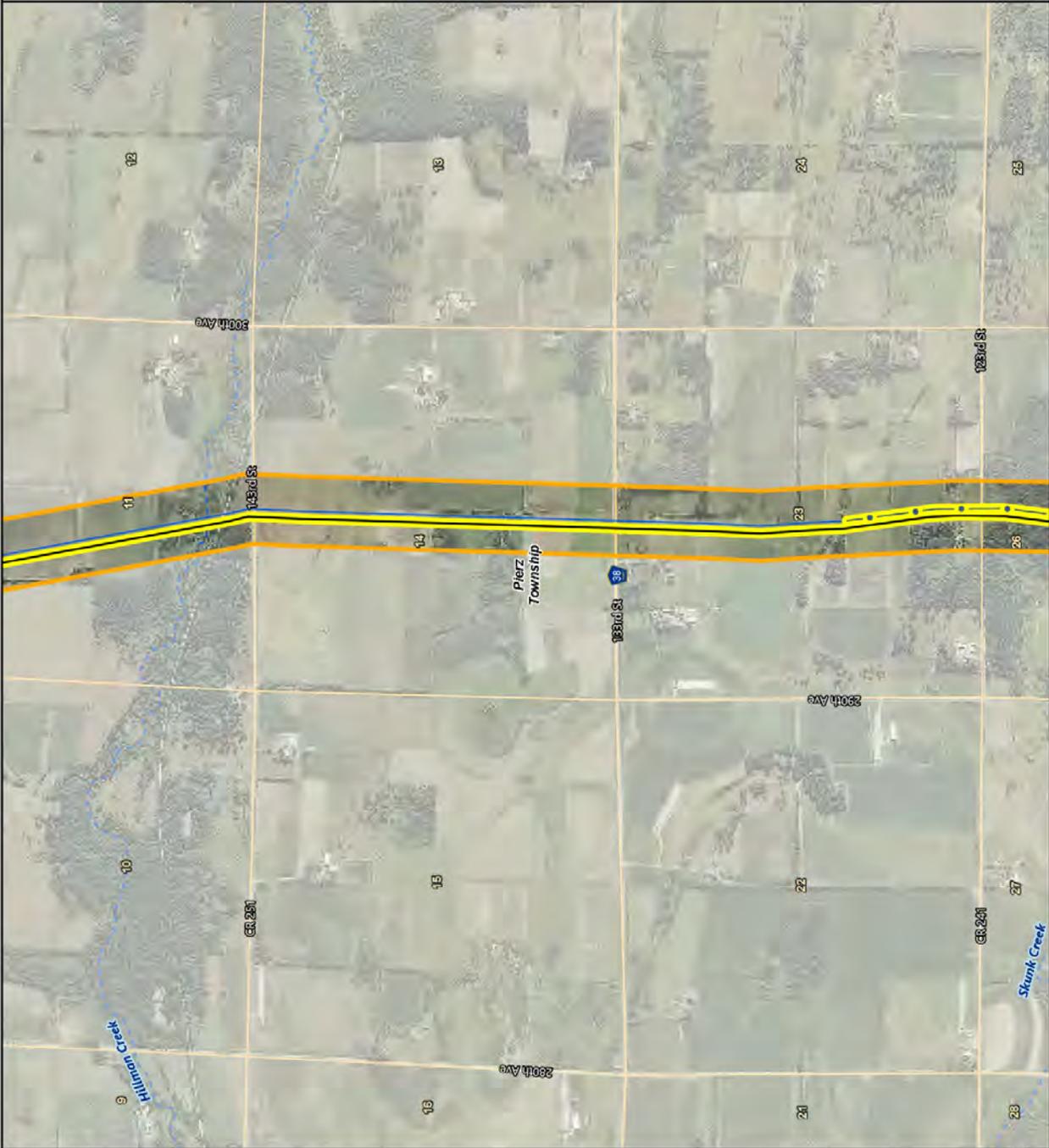
**Detailed Map  
Northland Reliability  
Project (NRP) Route  
Page 39 of 64**

-  NRP ROUTE
-  NRP ANTICIPATED CENTERLINE
-  NRP ANTICIPATED RIGHT-OF-WAY
-  REPLACE GREENS LINE
-  REPLACE MR LINE
-  REBUILD EXISTING 69KV
-  DOUBLE CIRCUIT 230/138KV 02 LINE/11 LINE
-  SHIFT DOUBLE CIRCUIT 230/69KV (MR LINE/ BF LINE)
-  SHIFT MR INCREASED, 230KV
-  SHIFT 92 LINE, 230KV
-  REBUILD EXISTING TRANSMISSION LINES
-  EXISTING TRANSMISSION LINE
-  230 KV
-  MUNICIPAL BOUNDARY
-  PWA WATERCOURSE
-  PWA WATERBODY



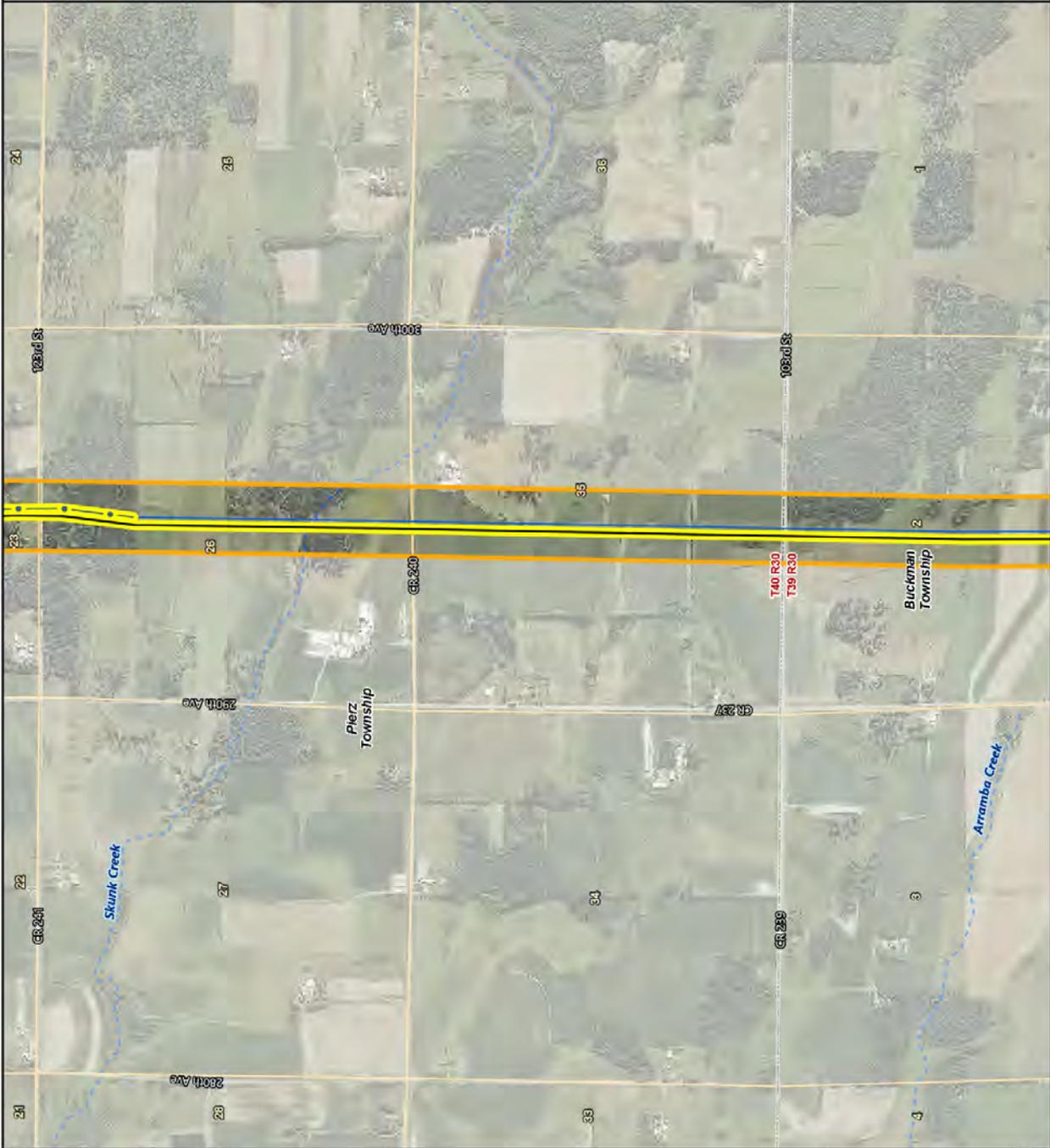
**Detailed Map  
Northland Reliability  
Project (NRP) Route  
Page 40 of 64**

-  NRP ROUTE
-  NRP ANTICIPATED CENTERLINE
-  NRP ANTICIPATED RIGHT-OF-WAY
-  REPLACE CREEKS LINE
-  REPLACE MR LINE
-  REBUILD EXISTING 69KV
-  DOUBLE CIRCUIT 230/138KV 69 LINE/11 LINE
-  SHIFT DOUBLE CIRCUIT 230/69KV (MR LINE/ BF LINE)
-  SHIFT MR INCREASED, 230KV
-  SHIFT 92 LINE, 230KV
-  REBUILD EXISTING TRANSMISSION LINES
-  EXISTING TRANSMISSION LINE
-  230 KV
-  MUNICIPAL BOUNDARY
-  PWA WATERCOURSE
-  PWA WATERBODY



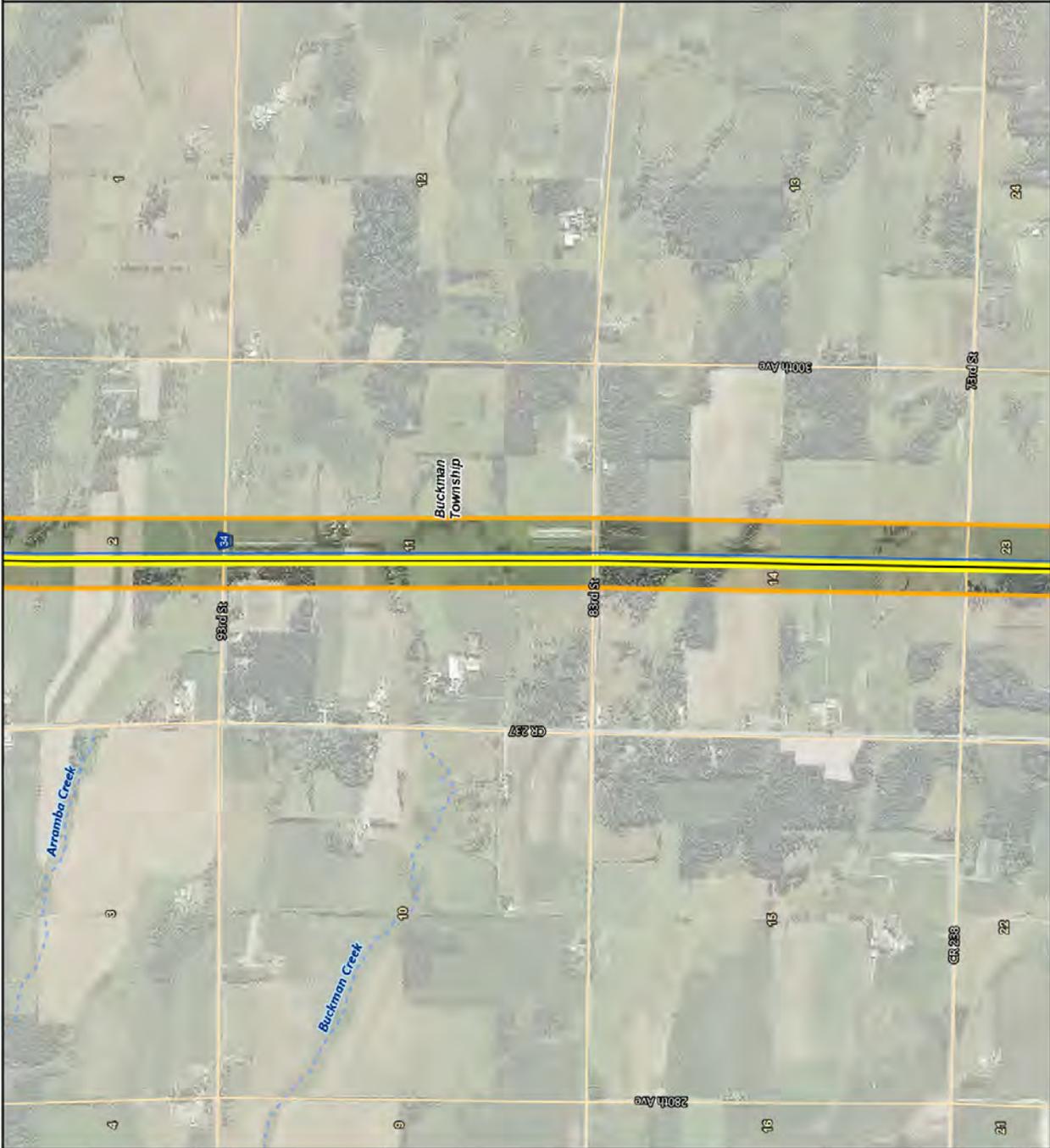
**Detailed Map  
Northland Reliability  
Project (NRP) Route  
Page 41 of 64**

-  NRP ROUTE
-  NRP ANTICIPATED CENTERLINE
-  NRP ANTICIPATED RIGHT-OF-WAY
-  REPLACE CREEKS LINE
-  REPLACE NRP LINE
-  REBUILD EXISTING 69KV LINE
-  DOUBLE CIRCUIT 230/138KV (2 LINE/11 LINE)
-  SHIFT DOUBLE-CIRCUIT 230/69KV (MR LINE/ BF LINE)
-  SHIFT MR INCREASED, 230KV
-  SHIFT 92 LINE, 230KV
-  REBUILD EXISTING TRANSMISSION LINES
-  EXISTING TRANSMISSION LINE
-  230 KV
-  MUNICIPAL BOUNDARY
-  PNM WATERCOURSE
-  PNM WATERBODY



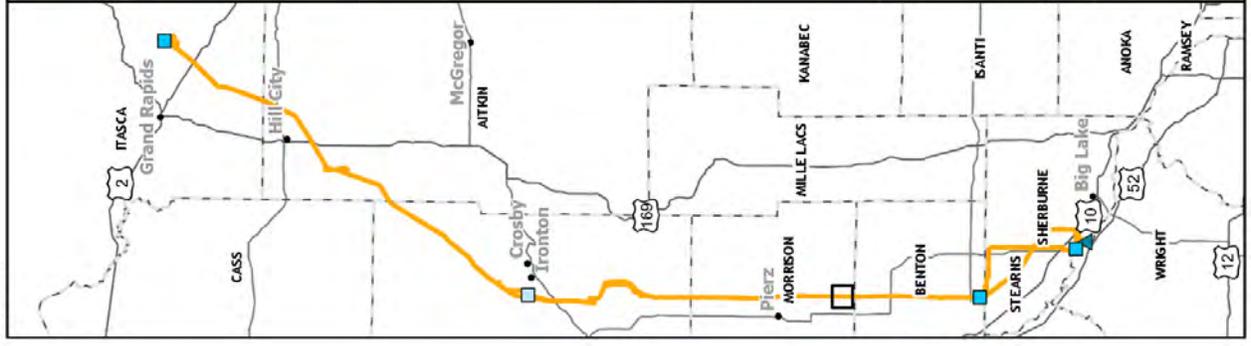
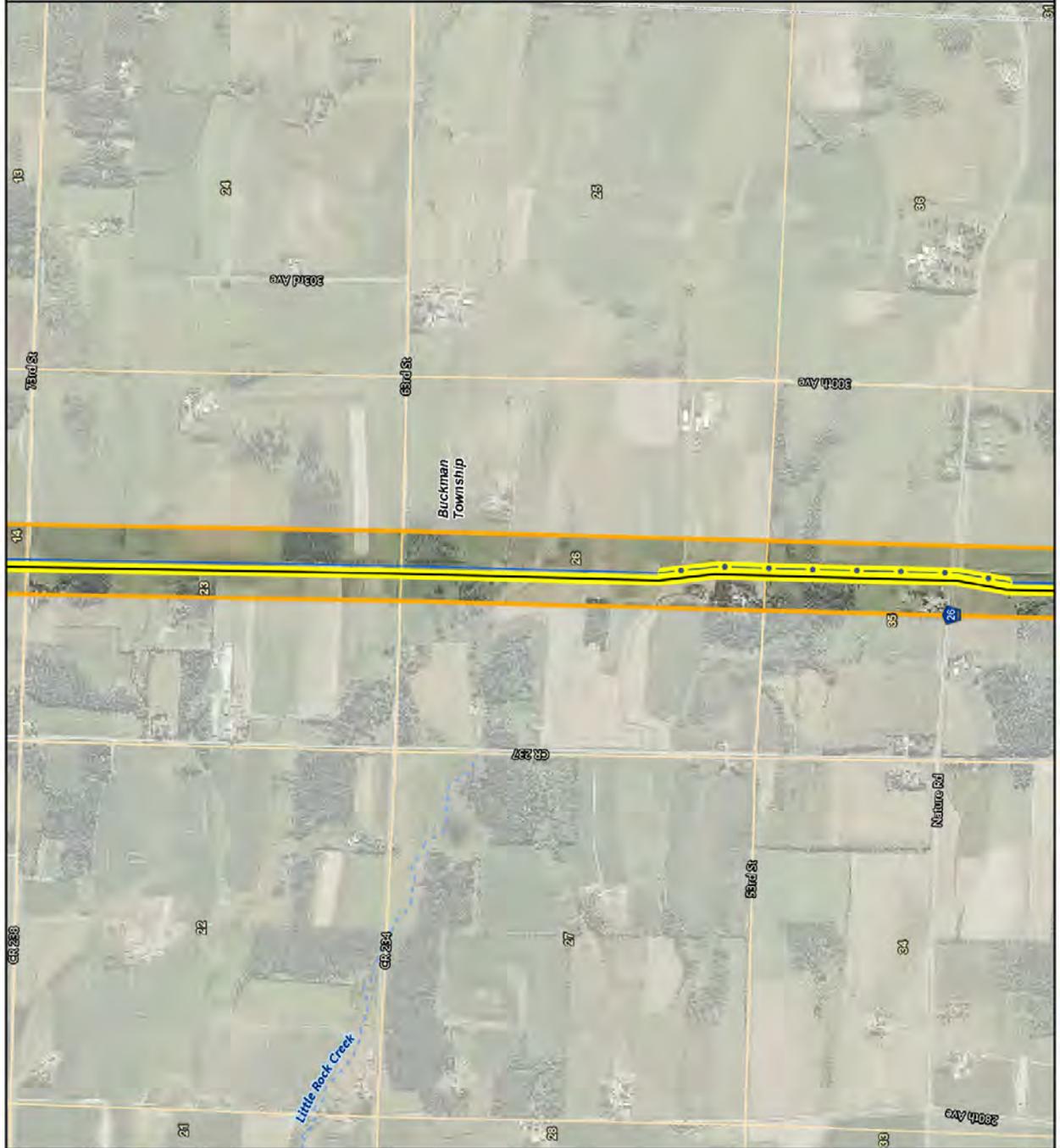
**Detailed Map  
Northland Reliability  
Project (NRP) Route  
Page 42 of 64**

-  NRP ROUTE
-  NRP ANTICIPATED CENTERLINE
-  NRP ANTICIPATED RIGHT-OF-WAY
-  REPLACE CREEKS LINE
-  REPLACE NRP LINE
-  REBUILD EXISTING 69KV
-  DOUBLE CIRCUIT 230/115KV (2 LINE/11 LINE)
-  SHIFT DOUBLE CIRCUIT 230/69KV (MR LINE/ BF LINE)
-  SHIFT MR INCREASED, 230KV
-  SHIFT 92 LINE, 230KV
-  REBUILD EXISTING TRANSMISSION LINES
-  EXISTING TRANSMISSION LINE
-  230 KV
-  MUNICIPAL BOUNDARY
-  PWA WATERCOURSE
-  PWA WATERBODY



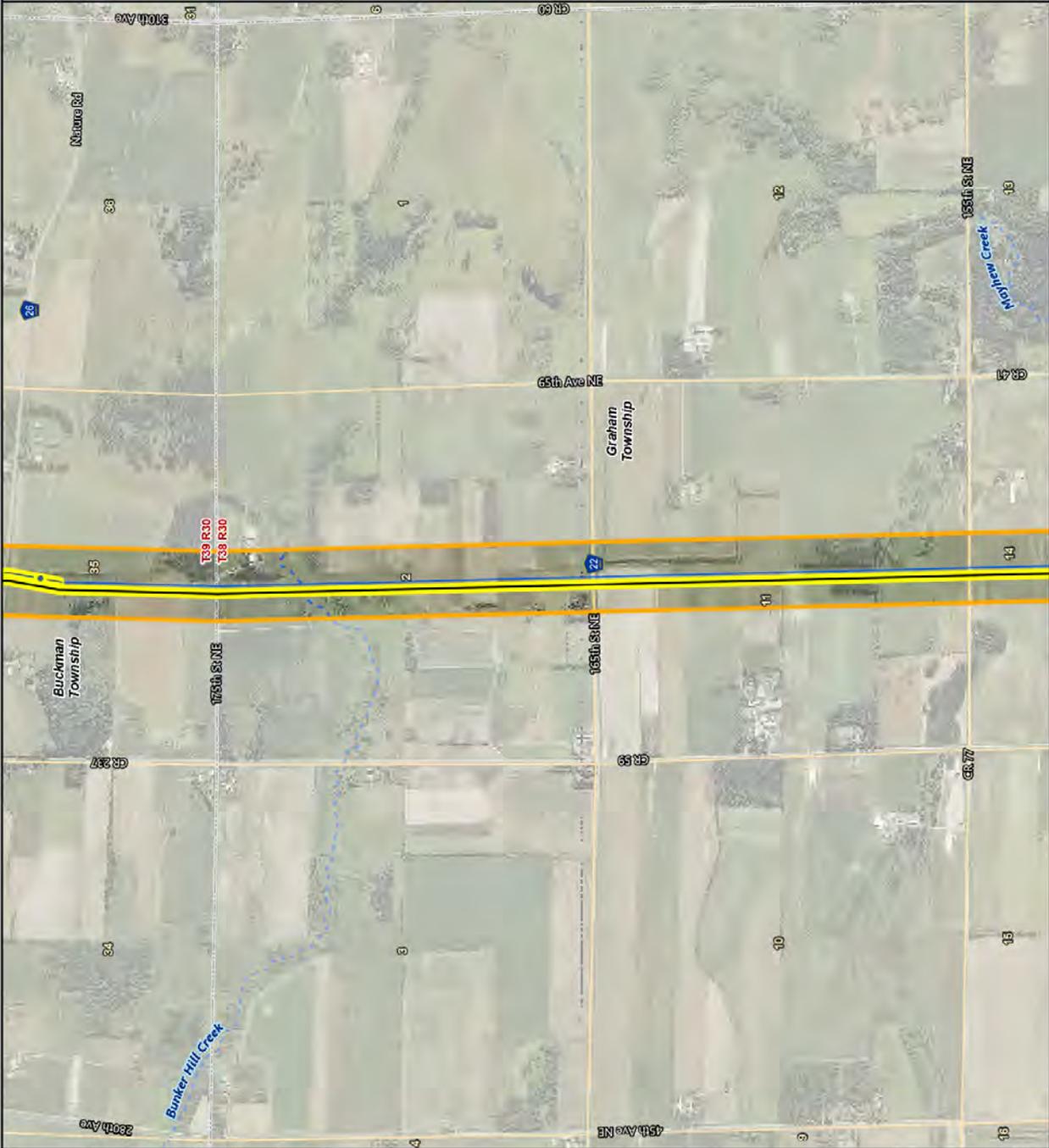
**Detailed Map  
Northland Reliability  
Project (NRP) Route  
Page 43 of 64**

-  NRP ROUTE
-  NRP ANTICIPATED CENTERLINE
-  NRP ANTICIPATED RIGHT-OF-WAY
-  REPLACE CREEKS LINE
-  REPLACE MR LINE
-  REBUILD EXISTING 69KV LINE
-  DOUBLE CIRCUIT 230/115KV 02 LINE/11 LINE
-  SHIFT DOUBLE CIRCUIT 230/69KV (MR LINE/ BF LINE)
-  SHIFT MR INCLINED, 230KV
-  SHIFT 92 LINE, 230KV
-  REBUILD EXISTING TRANSMISSION LINES
-  EXISTING TRANSMISSION LINE
-  230 KV
-  MUNICIPAL BOUNDARY
-  PWA WATERCOURSE
-  PWA WATERBODY



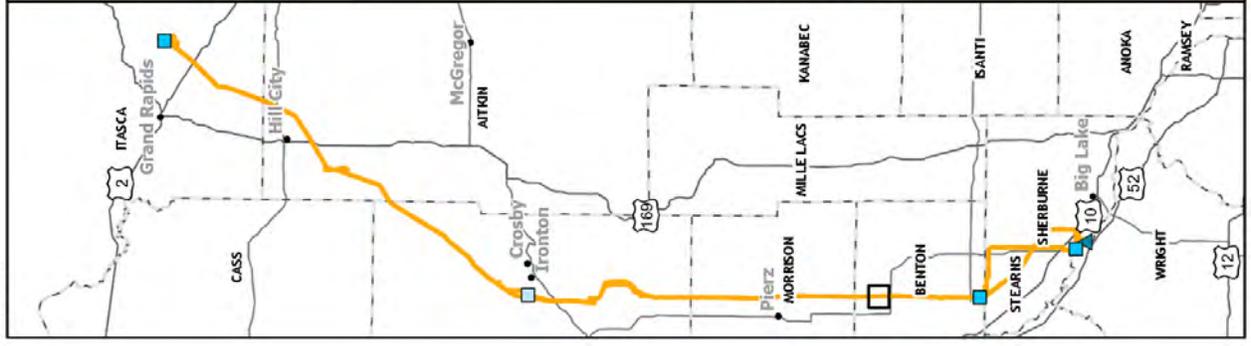
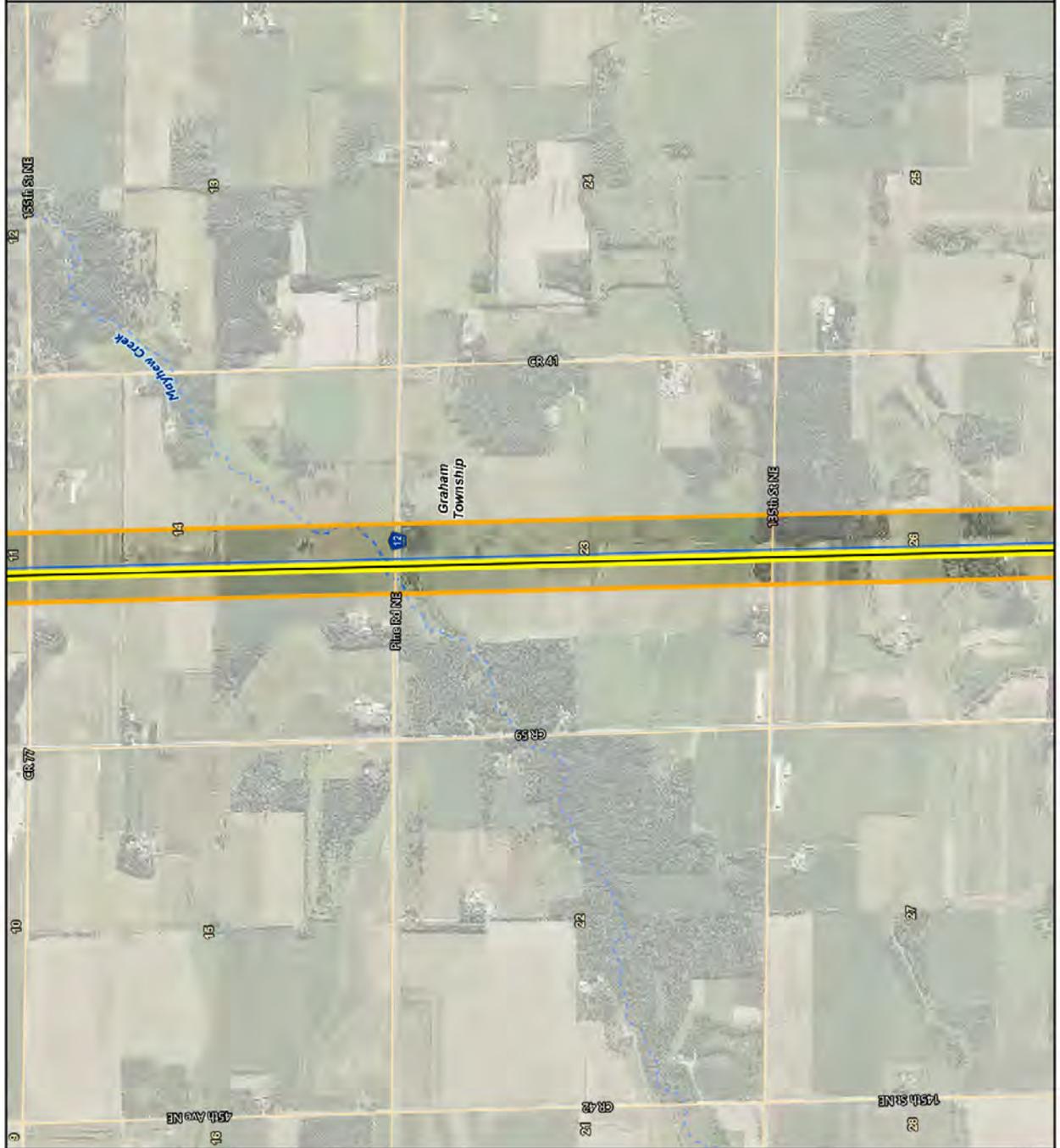
**Detailed Map  
Northland Reliability  
Project (NRP) Route  
Page 44 of 64**

- NRP ROUTE
- NRP ANTICIPATED CENTERLINE
- NRP ANTICIPATED RIGHT-OF-WAY
- REPLACE CREEK LINE
- REPLACE MR LINE
- REBUILD EXISTING 69KV
- DOUBLE CIRCUIT 230/115KV (2 LINE/11 LINE)
- SHIFT DOUBLE CIRCUIT 230/69KV (MR LINE/ BF LINE)
- SHIFT MR LOCATED, 230KV
- SHIFT 92 LINE, 230KV
- REBUILD EXISTING TRANSMISSION LINES
- EXISTING TRANSMISSION LINE
- 230 KV
- MUNICIPAL BOUNDARY
- PWA WATERCOURSE
- PWA WATERBODY



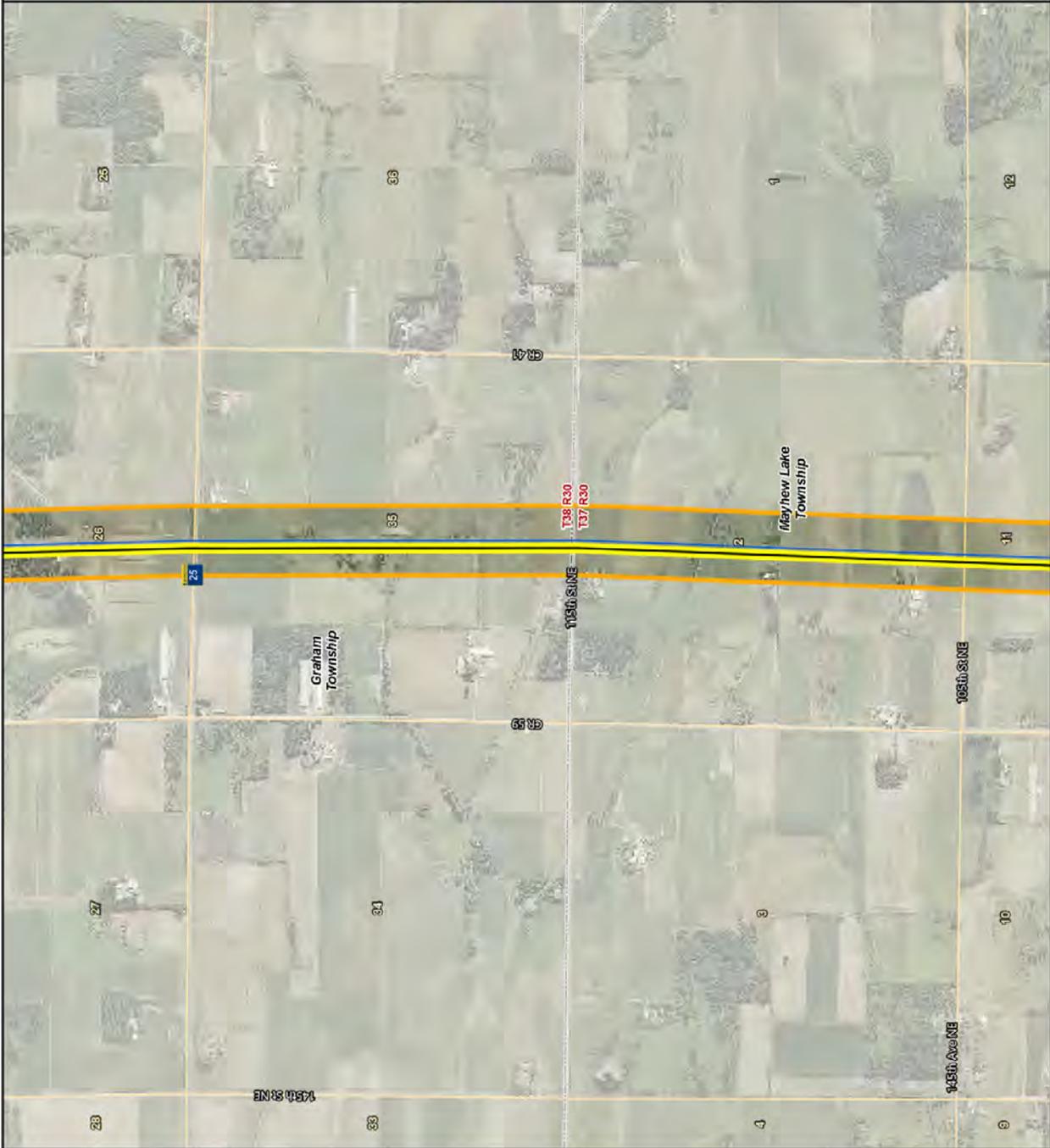
**Detailed Map  
Northland Reliability  
Project (NRP) Route  
Page 45 of 64**

-  NRP ROUTE
-  NRP ANTICIPATED CENTERLINE
-  NRP ANTICIPATED RIGHT-OF-WAY
-  REPLACE GREENS LINE
-  REPLACE MR LINE
-  REBUILD EXISTING 69KV
-  DOUBLE CIRCUIT 230/138KV (2 LINE/11 LINE)
-  SHIFT DOUBLE-CIRCUIT 230/69KV (MR LINE/ BF LINE)
-  SHIFT MR AND BRED, 230KV
-  SHIFT 92 LINE, 230KV
-  REBUILD EXISTING TRANSMISSION LINES
-  EXISTING TRANSMISSION LINE
-  230 KV
-  MUNICIPAL BOUNDARY
-  PWA WATERCOURSE
-  PWA WATERBODY



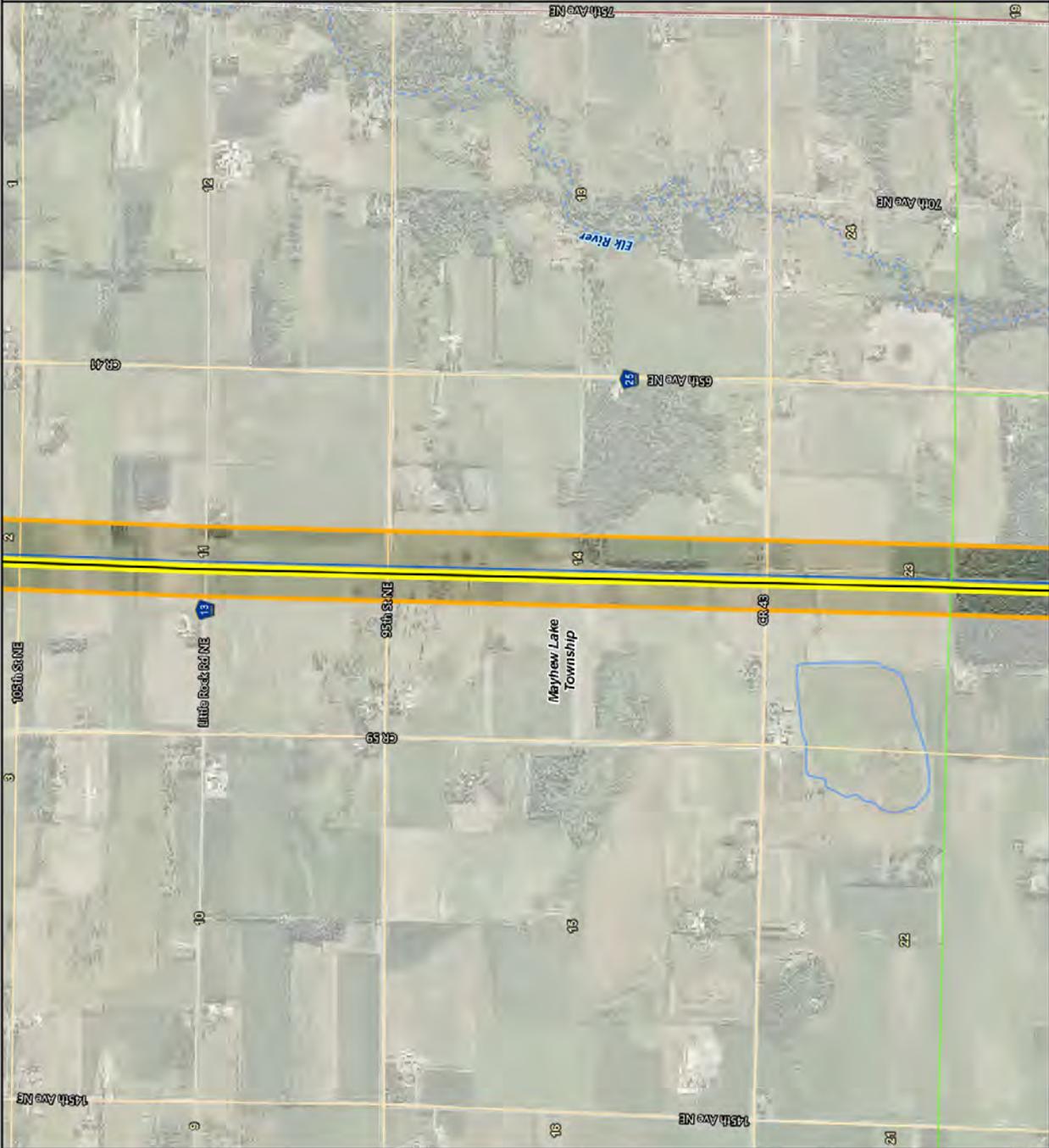
**Detailed Map  
Northland Reliability  
Project (NRP) Route  
Page 46 of 64**

-  NRP ROUTE
-  NRP ANTICIPATED CENTERLINE
-  NRP ANTICIPATED RIGHT-OF-WAY
-  REPLACE CREEKS LINE
-  REPLACE NRP LINE
-  REBUILD EXISTING 69KV
-  DOUBLE CIRCUIT 230/138KV (2 LINE/11 LINE)
-  SHIFT DOUBLE-CIRCUIT 230/69KV (MR LINE/ BF LINE)
-  SHIFT MR ACQUIRED, 230KV
-  SHIFT 92 LINE, 230KV
-  REBUILD EXISTING TRANSMISSION LINES
-  EXISTING TRANSMISSION LINE
-  230 KV
-  MUNICIPAL BOUNDARY
-  PWA WATERCOURSE
-  PWA WATERBODY



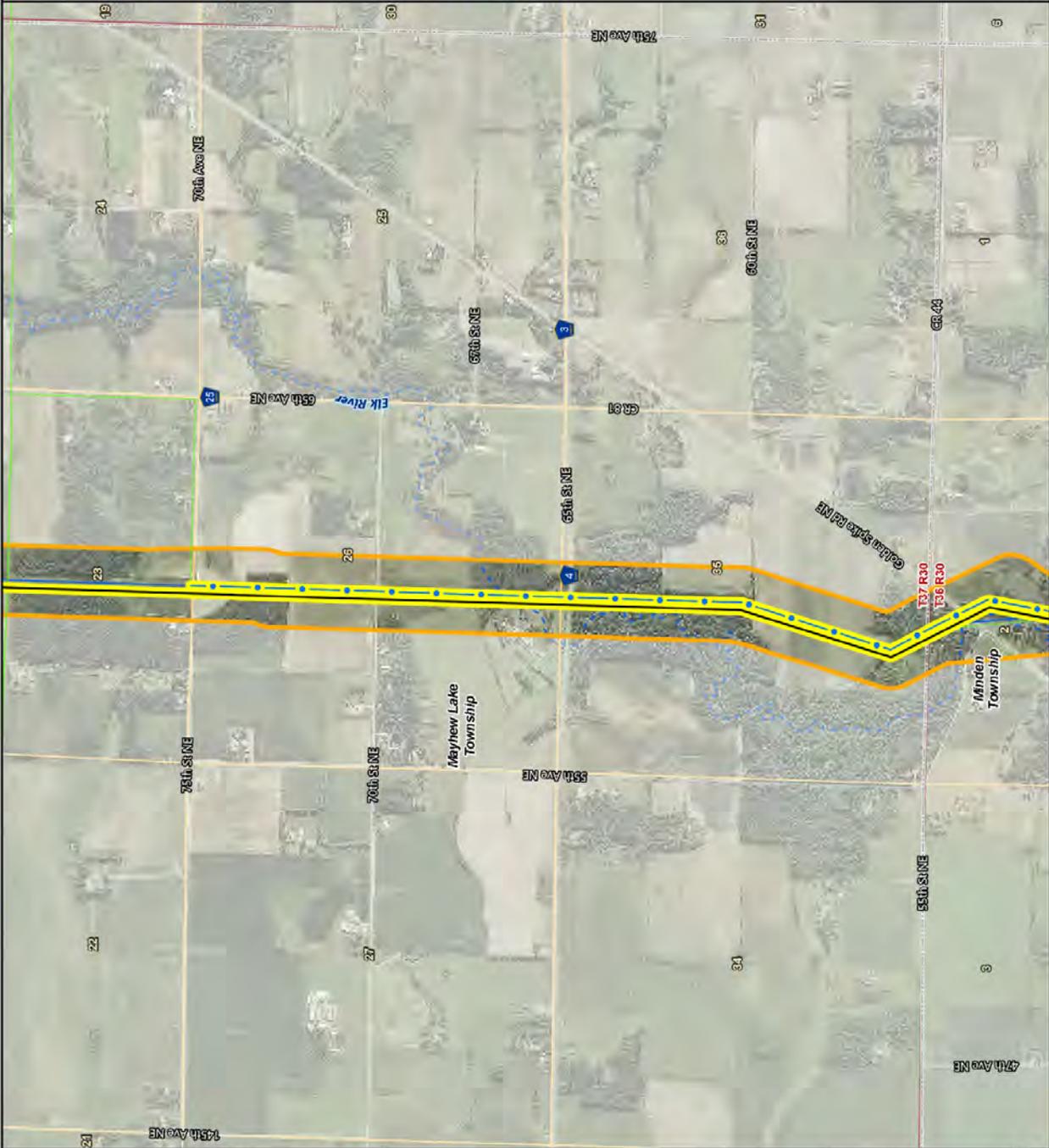
**Detailed Map  
Northland Reliability  
Project (NRP) Route  
Page 47 of 64**

-  NRP ROUTE
-  NRP ANTICIPATED CENTERLINE
-  NRP ANTICIPATED RIGHT-OF-WAY
-  REPLACE GREENS LINE
-  REPLACE MR LINE
-  REBUILD EXISTING 69KV
-  DOUBLE CIRCUIT 230/138KV 69 LINE/11 LINE
-  SHIFT DOUBLE-CIRCUIT 230/69KV (MR LINE/ BF LINE)
-  SHIFT MR ACQUIRED, 230KV
-  SHIFT 92 LINE, 230KV
-  REBUILD EXISTING TRANSMISSION LINES
-  EXISTING TRANSMISSION LINE
-  69 KV
-  230 KV
-  MUNICIPAL BOUNDARY
-  PWA WATERCOURSE
-  PWA WATERBODY



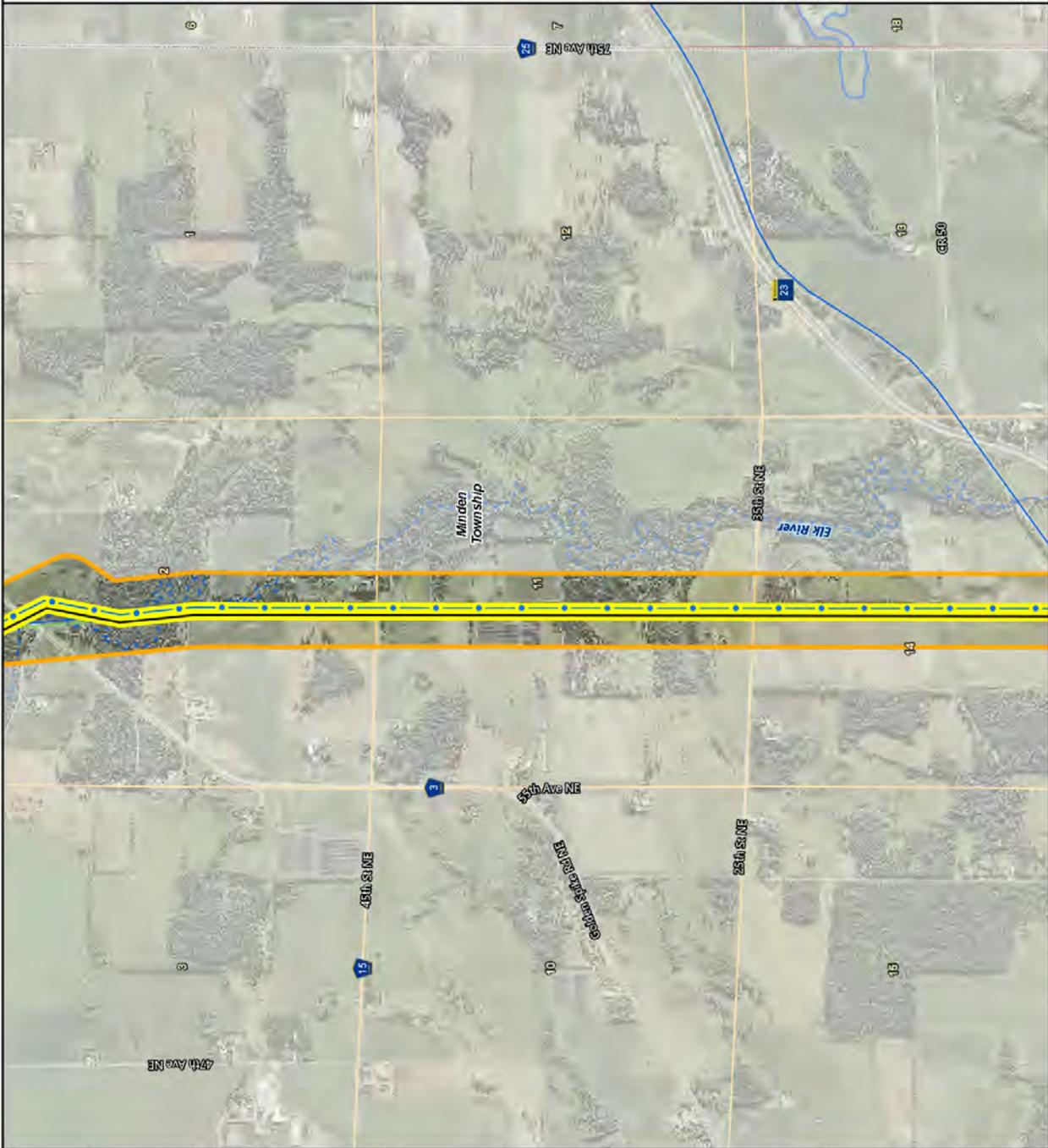
**Detailed Map  
Northland Reliability  
Project (NRP) Route  
Page 48 of 64**

- NRP ROUTE
- NRP ANTICIPATED CENTERLINE
- NRP ANTICIPATED RIGHT-OF-WAY
- REPLACE GREENS LINE
- REPLACE MR LINE
- REBUILD EXISTING 69KV
- DOUBLE CIRCUIT 230/115KV (2 LINE/11 LINE)
- SHIFT DOUBLE CIRCUIT 230/69KV (MR LINE/ BF LINE)
- SHIFT MR ACQUIRED, 230KV
- SHIFT 92 LINE, 230KV
- REBUILD EXISTING TRANSMISSION LINES
- EXISTING TRANSMISSION LINE
- 69 KV
- 230 KV
- MUNICIPAL BOUNDARY
- PWA WATERCOURSE
- PWA WATERBODY



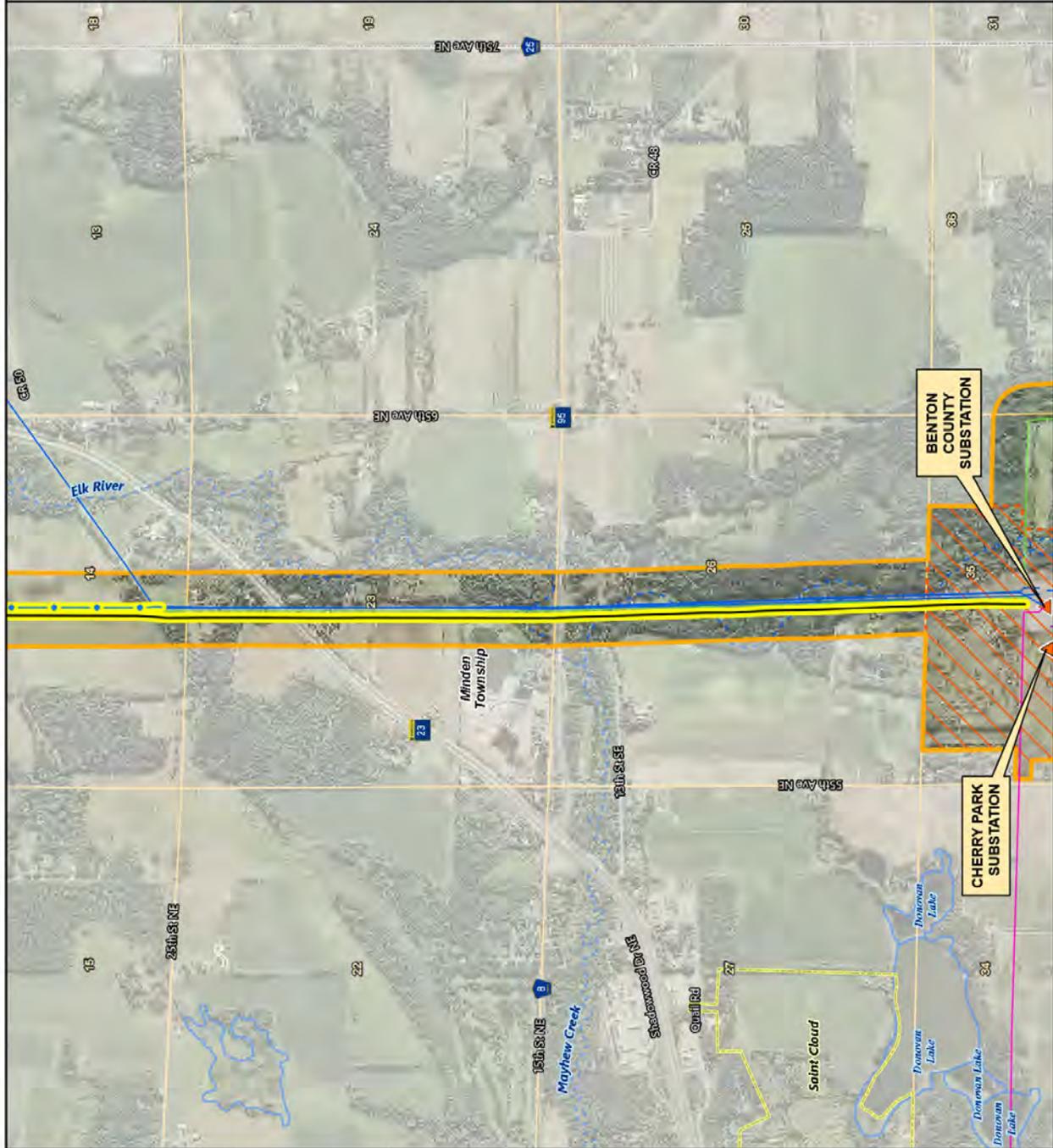
**Detailed Map  
Northland Reliability  
Project (NRP) Route  
Page 49 of 64**

-  NRP ROUTE
-  NRP ANTICIPATED CENTERLINE
-  NRP ANTICIPATED RIGHT-OF-WAY
-  REPLACE GREENS LINE
-  REPLACE MR LINE
-  REBUILD EXISTING 69KV
-  DOUBLE CIRCUIT 230/138KV 02 LINE/11 LINE
-  SHIFT DOUBLE CIRCUIT 230/69KV (MR LINE/ BF LINE)
-  SHIFT MR INCREASED, 230KV
-  SHIFT 92 LINE, 230KV
-  REBUILD EXISTING TRANSMISSION LINES
-  EXISTING TRANSMISSION LINE
-  69 KV
-  230 KV
-  MUNICIPAL BOUNDARY
-  PWA WATERCOURSE
-  PWA WATERBODY

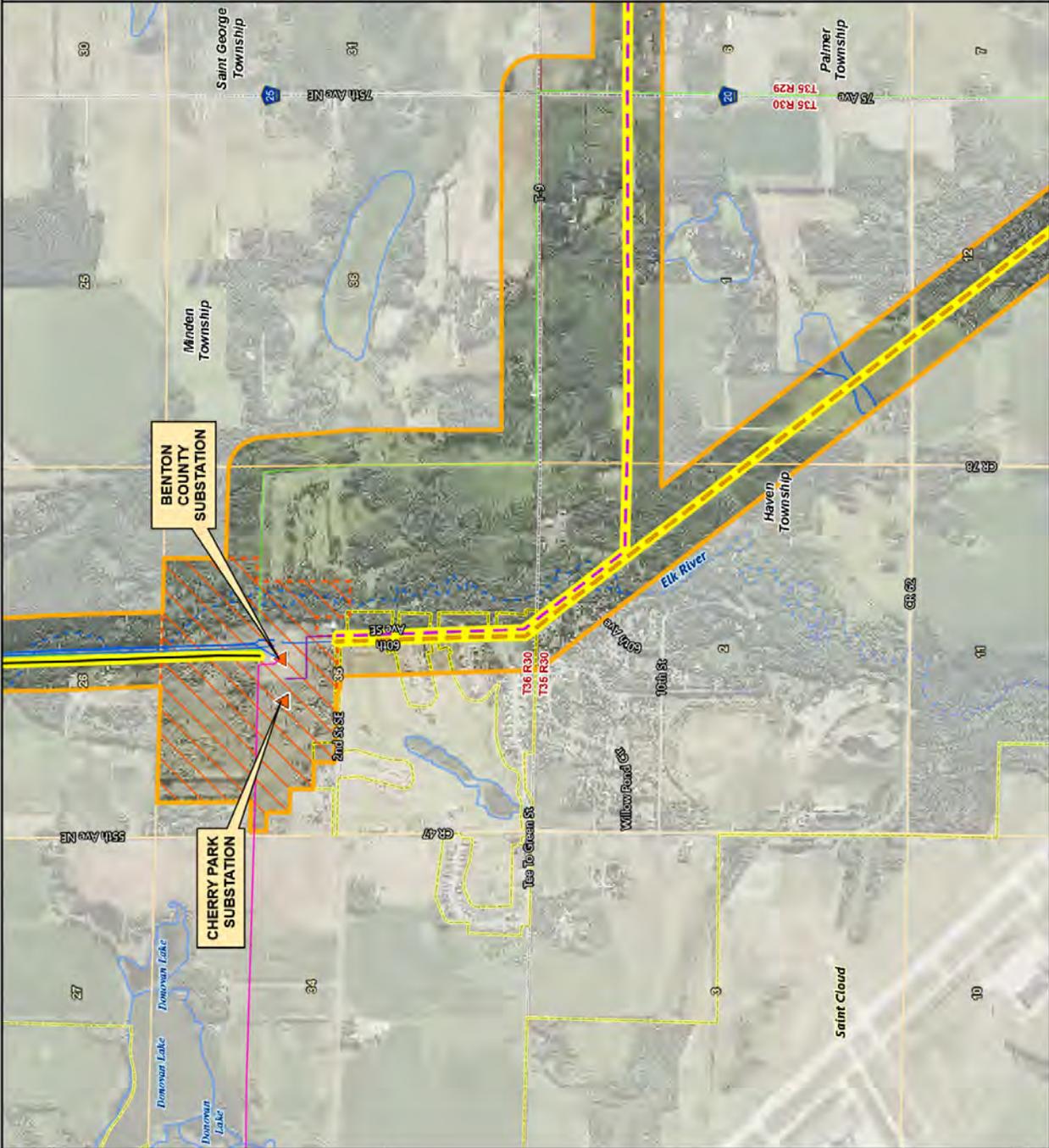
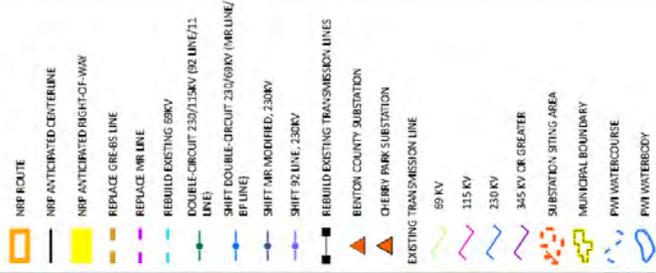


**Detailed Map  
Northland Reliability  
Project (NRP) Route  
Page 50 of 64**

-  NRP ROUTE
-  NRP ANTICIPATED CENTERLINE
-  NRP ANTICIPATED RIGHT-OF-WAY
-  REPLACE GREENS LINE
-  REPLACE NRP LINE
-  REBUILD EXISTING 69KV
-  DOUBLE CIRCUIT 230/115KV (2 LINE/11 LINE)
-  SHIFT DOUBLE CIRCUIT 230/69KV (MR LINE/ BF LINE)
-  SHIFT MR INCREASED, 230KV
-  SHIFT 92 LINE, 230KV
-  REBUILD EXISTING TRANSMISSION LINES
-  BENTON COUNTY SUBSTATION
-  CHERRY PARK SUBSTATION
-  EXISTING TRANSMISSION LINE
-  69 KV
-  115 KV
-  230 KV
-  345 KV OR GREATER
-  SUBSTATION SITING AREA
-  MUNICIPAL BOUNDARY
-  PWA WATERCOURSE
-  PWA WATERBODY

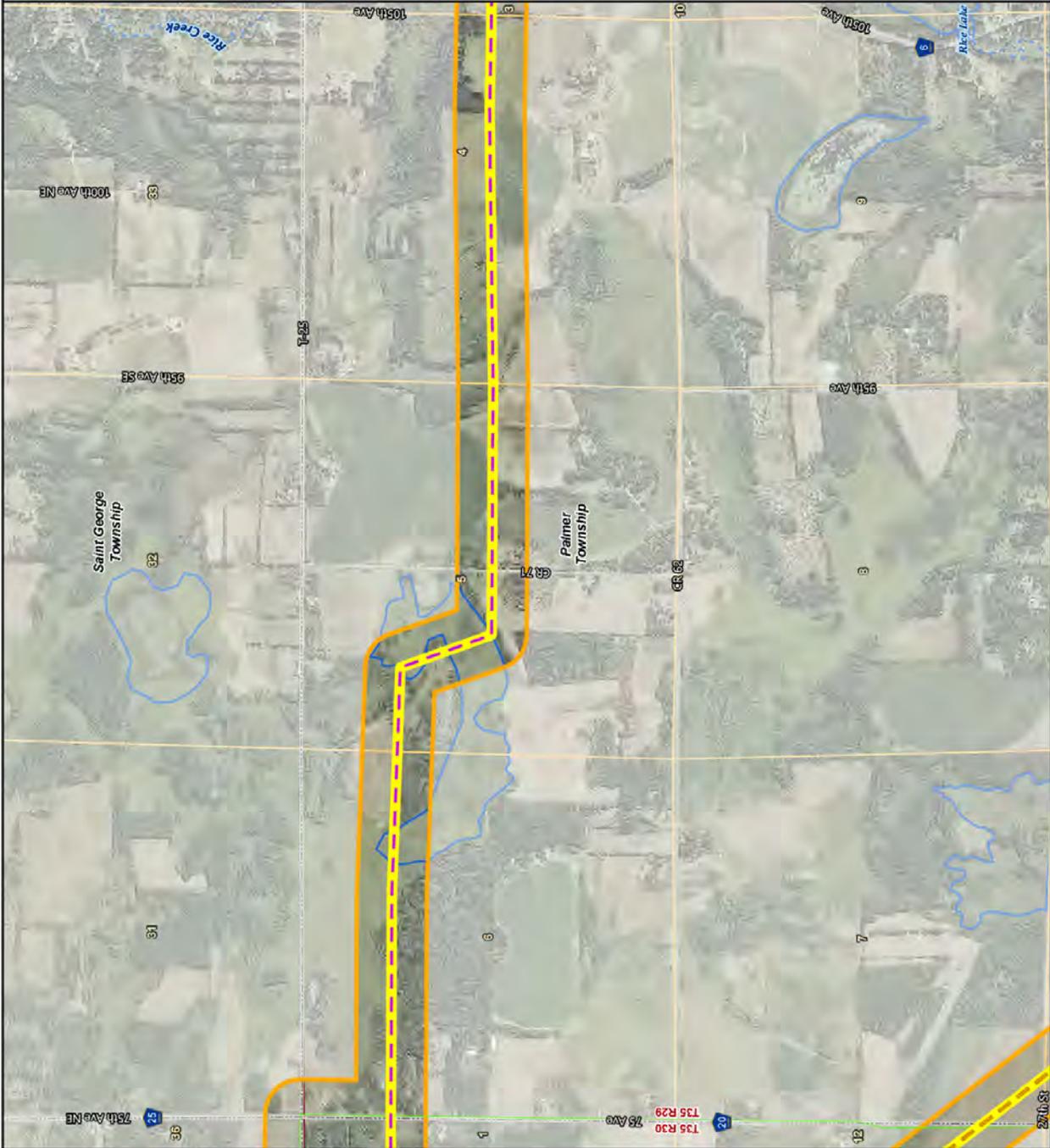


**Detailed Map  
Northland Reliability  
Project (NRP) Route  
Page 51 of 64**



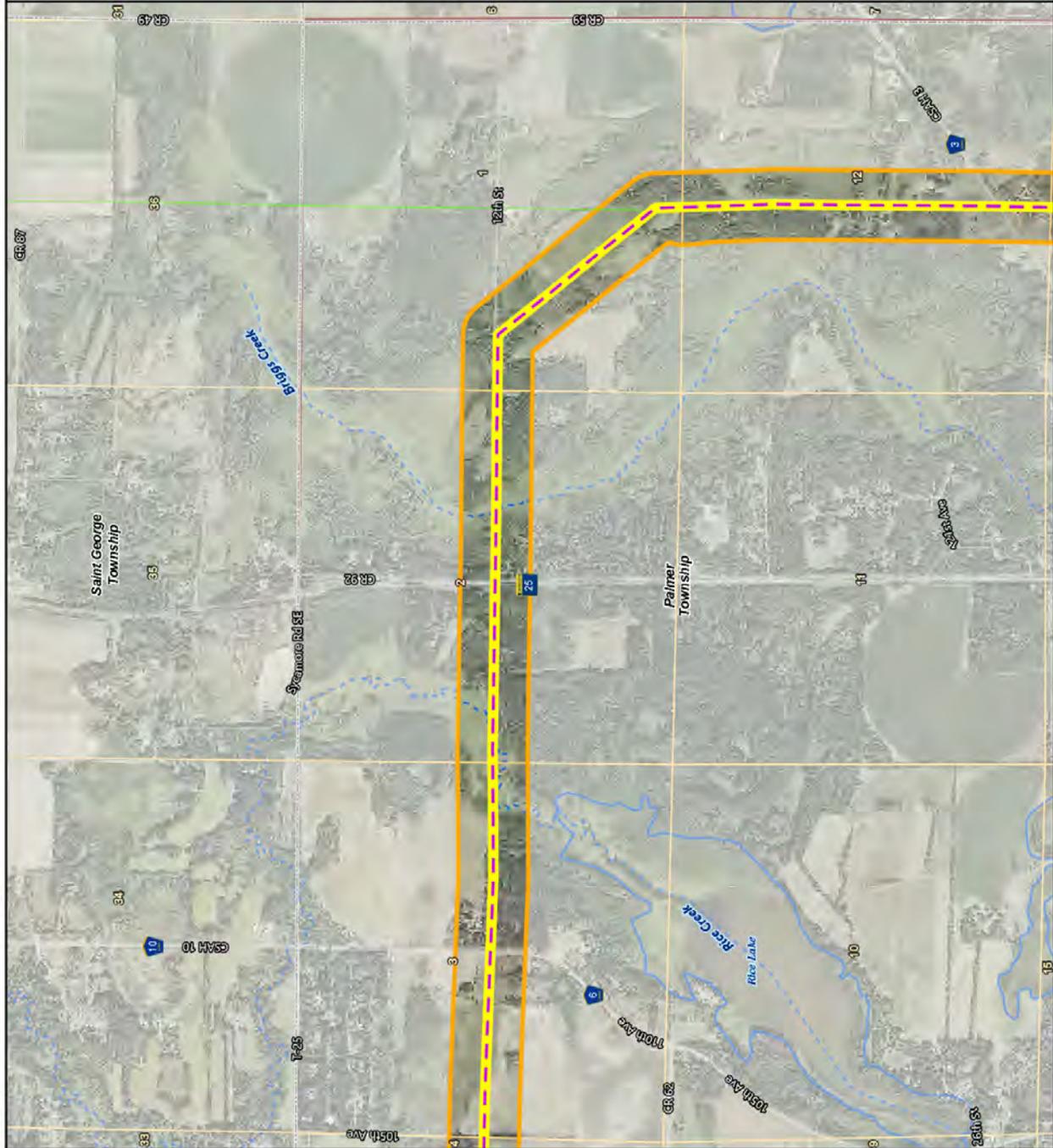
**Detailed Map  
Northland Reliability  
Project (NRP) Route  
Page 52 of 64**

-  NRP ROUTE
-  NRP ANTICIPATED CENTERLINE
-  NRP ANTICIPATED RIGHT-OF-WAY
-  REPLACE CREEK LINE
-  REPLACE NRP LINE
-  REBUILD EXISTING 69KV
-  DOUBLE-CIRCUIT 230/138KV (2 LINE/11 LINE)
-  SHIFT DOUBLE-CIRCUIT 230/69KV (MR LINE/ BF LINE)
-  SHIFT MR ACQUIRED, 230KV
-  SHIFT 92 LINE, 230KV
-  REBUILD EXISTING TRANSMISSION LINES
-  EXISTING TRANSMISSION LINE
-  69 KV
-  230 KV
-  345 KV OR GREATER
-  MUNICIPAL BOUNDARY
-  PWA WATERCOURSE
-  PWA WATERBODY



**Detailed Map  
Northland Reliability  
Project (NRP) Route  
Page 53 of 64**

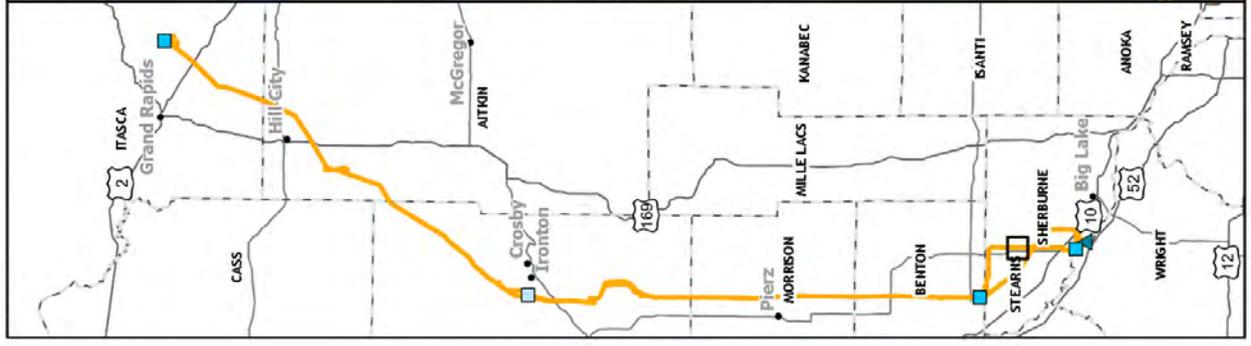
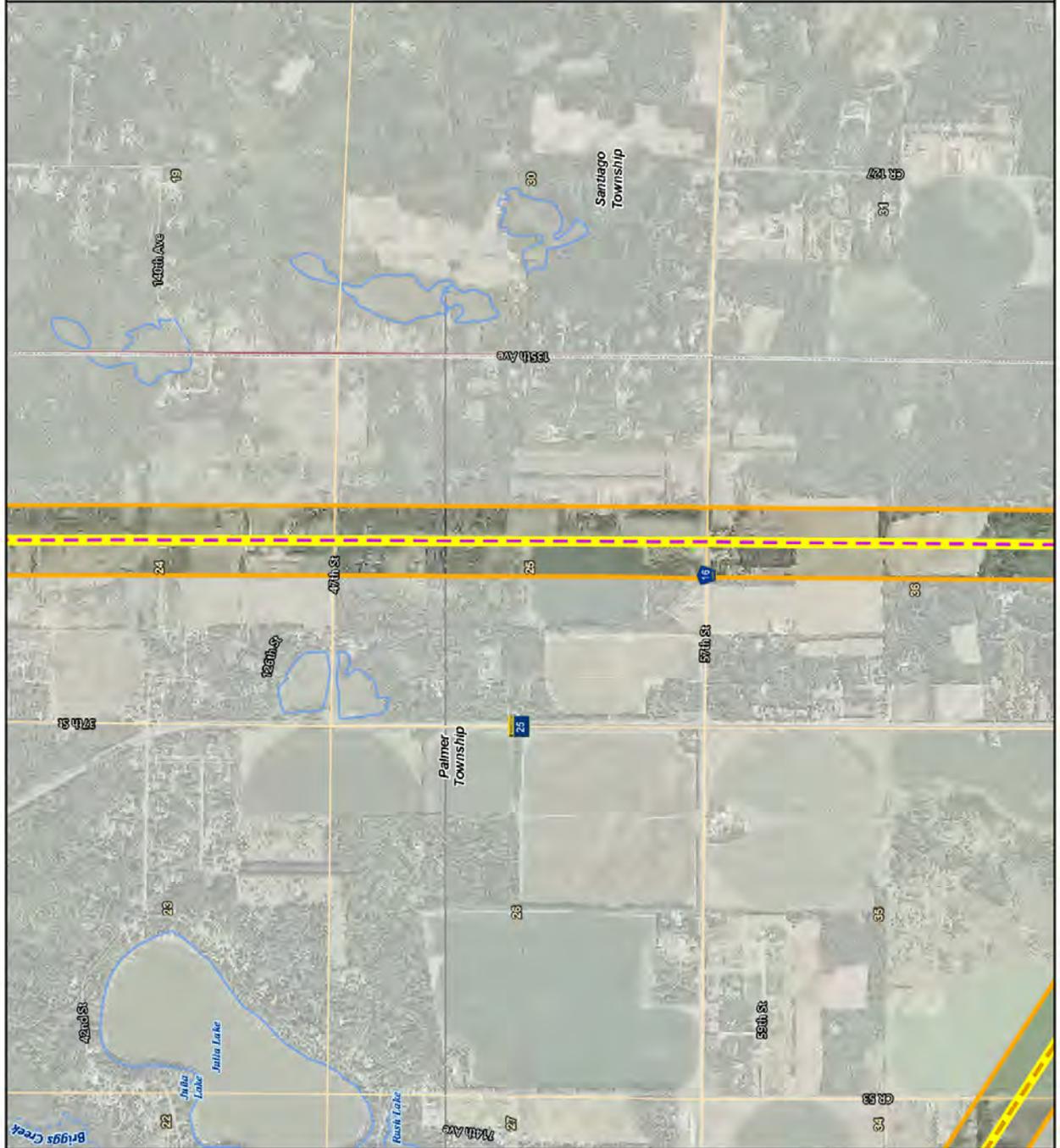
- NRP ROUTE
- NRP ANTICIPATED CENTERLINE
- NRP ANTICIPATED RIGHT-OF-WAY
- REPLACE GREENS LINE
- REPLACE NRP LINE
- REBUILD EXISTING 69KV
- DOUBLE-CIRCUIT 230/138KV (2 LINE/11 LINE)
- SHIFT MR INCREASED, 230KV
- SHIFT 92 LINE, 230KV
- REBUILD EXISTING TRANSMISSION LINES
- EXISTING TRANSMISSION LINE
- 69 KV
- 345 KV OR GREATER
- MUNICIPAL BOUNDARY
- PWA WATERCOURSE
- PWA WATERBODY





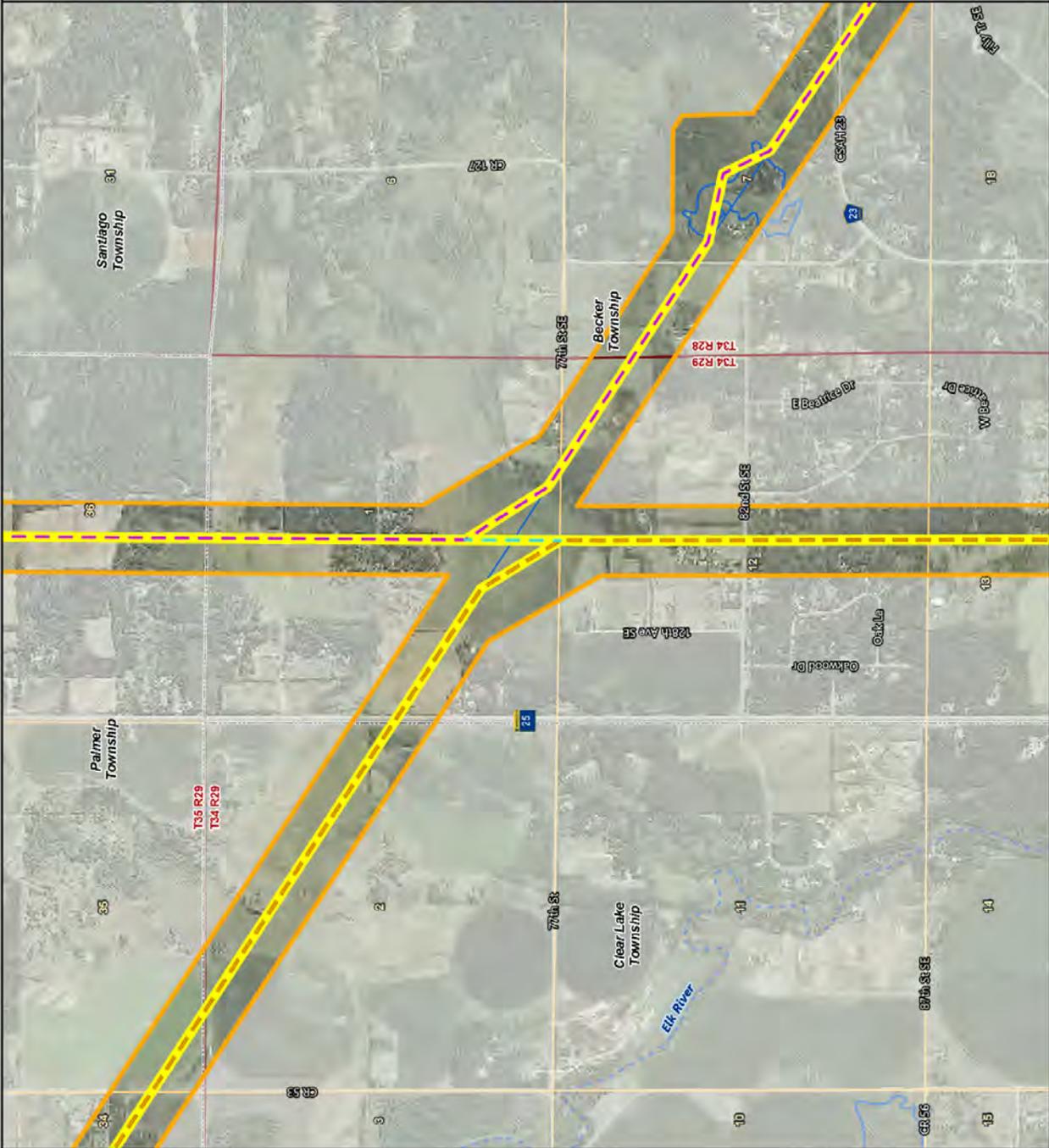
**Detailed Map  
Northland Reliability  
Project (NRP) Route  
Page 55 of 64**

-  NRP ROUTE
-  NRP ANTICIPATED CENTERLINE
-  NRP ANTICIPATED RIGHT-OF-WAY
-  REPLACE GREENS LINE
-  REPLACE NRP LINE
-  REBUILD EXISTING 69KV
-  DOUBLE CIRCUIT 230/138KV 69 LINE/11 LINE
-  SHIFT DOUBLE-CIRCUIT 230/69KV (MR LINE/ BF LINE)
-  SHIFT MR ACQUIRED, 230KV
-  SHIFT 92 LINE, 230KV
-  REBUILD EXISTING TRANSMISSION LINES
-  EXISTING TRANSMISSION LINE
-  69 KV
-  230 KV
-  345 KV OR GREATER
-  MUNICIPAL BOUNDARY
-  PFM WATERCOURSE
-  PFM WATERBODY



**Detailed Map  
Northland Reliability  
Project (NRP) Route  
Page 56 of 64**

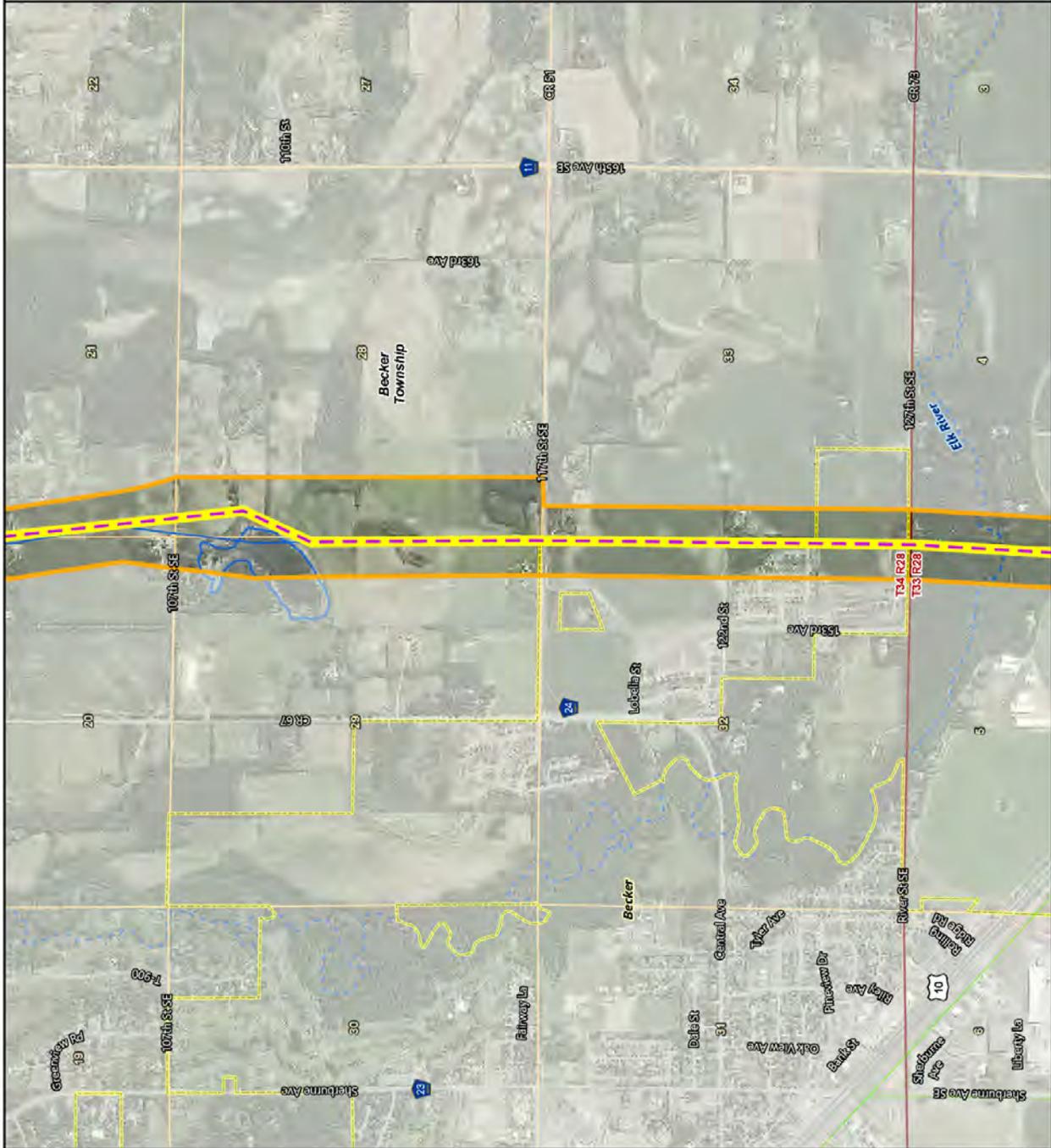
-  NRP ROUTE
-  NRP ANTICIPATED CENTERLINE
-  NRP ANTICIPATED RIGHT-OF-WAY
-  REPLACE CREEKS LINE
-  REPLACE NRP LINE
-  REBUILD EXISTING 69KV
-  DOUBLE CIRCUIT 230/138KV (2 LINE/11 LINE)
-  SHIFT DOUBLE CIRCUIT 230/69KV (MR LINE/ BF LINE)
-  SHIFT MR INCREASED, 230KV
-  SHIFT 92 LINE, 230KV
-  REBUILD EXISTING TRANSMISSION LINES
-  EXISTING TRANSMISSION LINE
-  69 KV
-  230 KV
-  345 KV OR GREATER
-  MUNICIPAL BOUNDARY
-  PFM WATERCOURSE
-  PFM WATERBODY





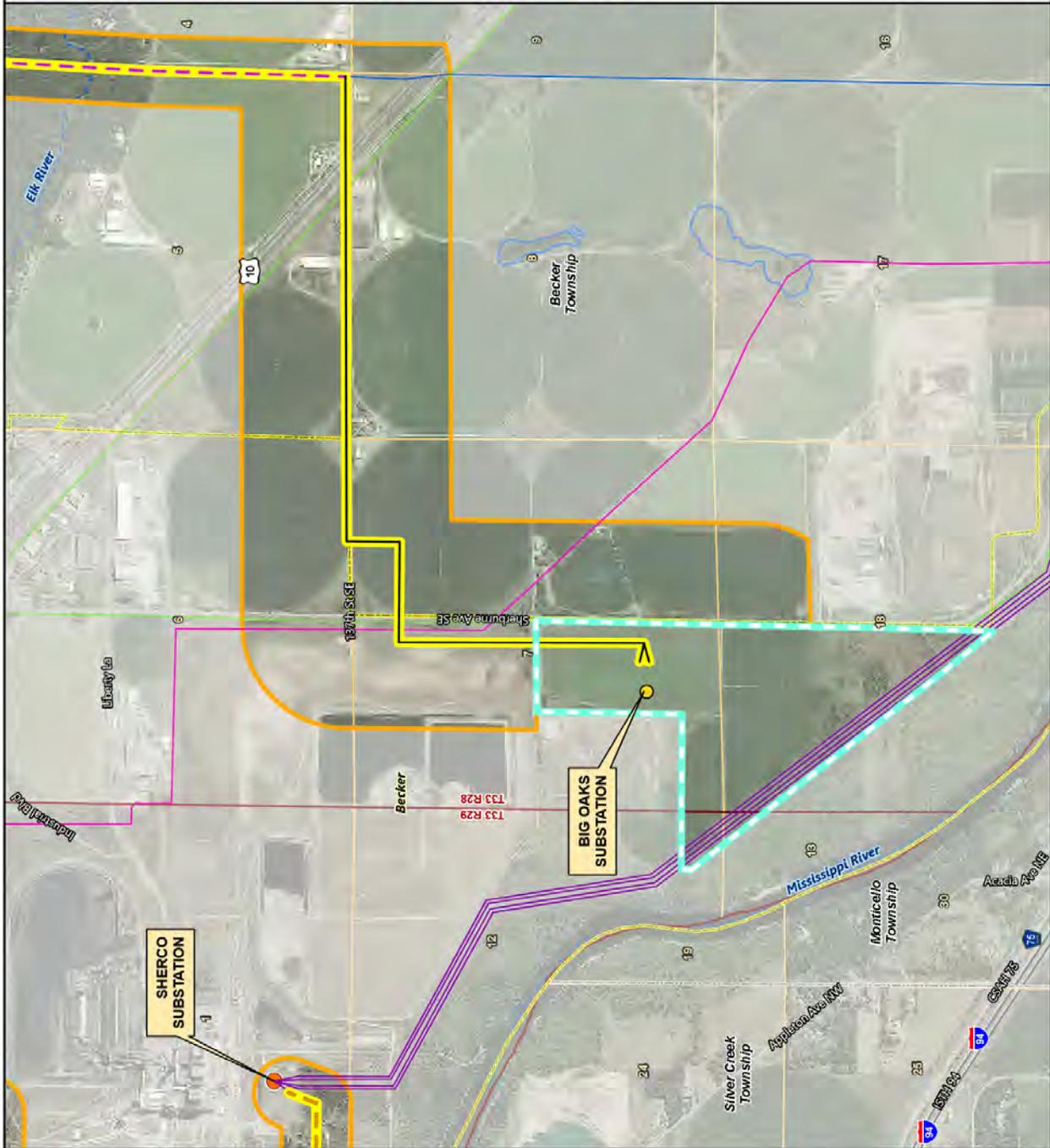
**Detailed Map  
Northland Reliability  
Project (NRP) Route  
Page 58 of 64**

-  NRP ROUTE
-  NRP ANTICIPATED CENTERLINE
-  NRP ANTICIPATED RIGHT-OF-WAY
-  REPLACE CREEKS LINE
-  REPLACE NRP LINE
-  REBUILD EXISTING 69KV
-  DOUBLE CIRCUIT 230/115KV (2 LINE/11 LINE)
-  SHIFT DOUBLE CIRCUIT 230/69KV (MR LINE/ BF LINE)
-  SHIFT MR INCREASED, 230KV
-  SHIFT 92 LINE, 230KV
-  REBUILD EXISTING TRANSMISSION LINES
-  EXISTING TRANSMISSION LINE
-  69 KV
-  230 KV
-  MUNICIPAL BOUNDARY
-  PWA WATERCOURSE
-  PWA WATERBODY



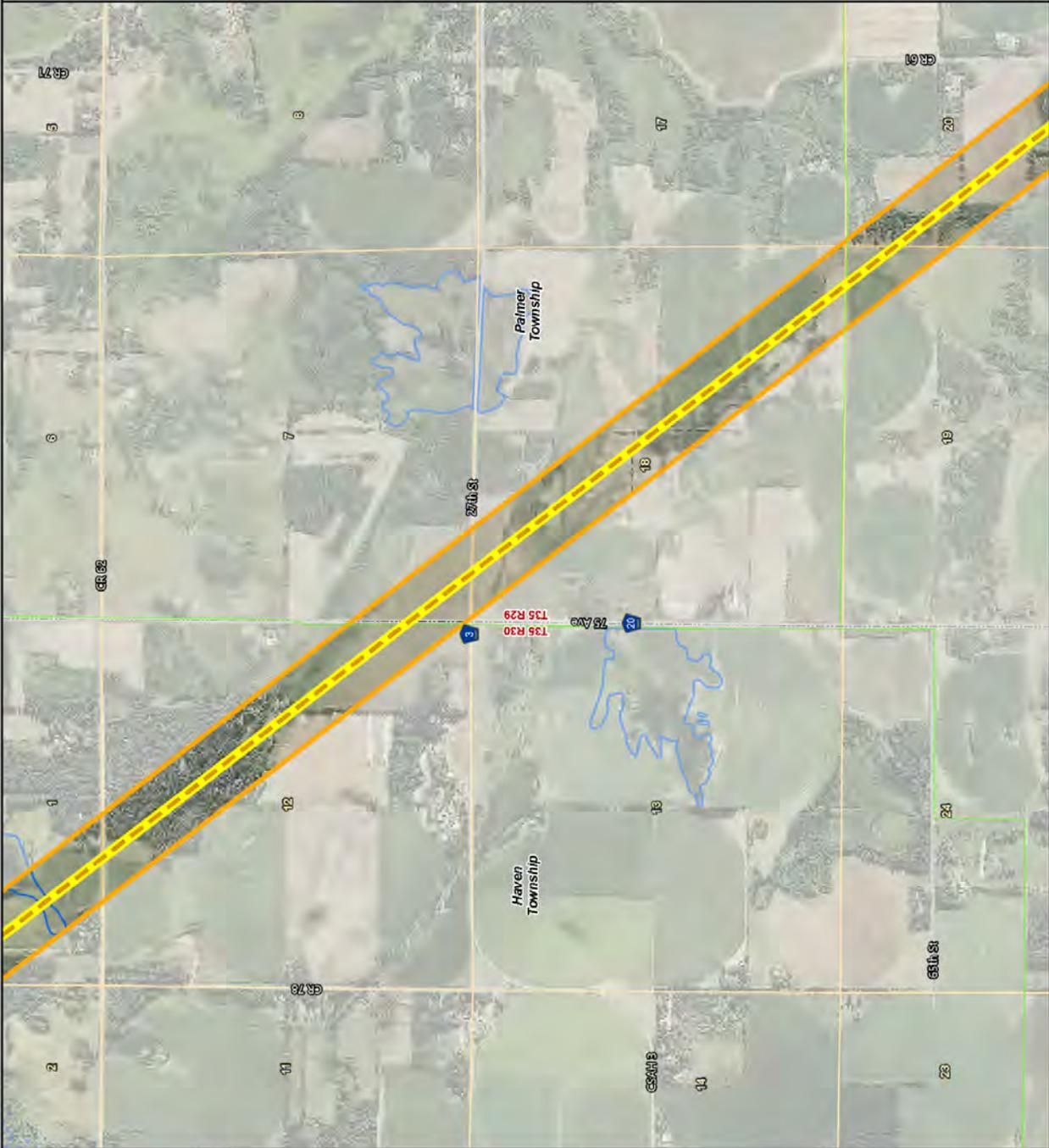
**Detailed Map  
Northland Reliability  
Project (NRP) Route  
Page 59 of 64**

- NRP ROUTE
- NRP ANTICIPATED CENTERLINE
- NRP ANTICIPATED RIGHT-OF-WAY
- REPLACE CREEK LINE
- REPLACE NRP LINE
- REBUILD EXISTING 69KV
- DOUBLE-CIRCUIT 230/115KV (2 LINE/11 LINE)
- SHIFT DOUBLE-CIRCUIT 230/69KV (MR LINE/ BF LINE)
- SHIFT MR INCREASED, 230KV
- SHIFT 92 LINE, 230KV
- REBUILD EXISTING TRANSMISSION LINES
- SHERCO SUBSTATION
- BIG OAKS SUBSTATION
- BIG OAKS SUBSTATION AREA
- EXISTING TRANSMISSION LINE
- 69 KV
- 115 KV
- 230 KV
- 345 KV OR GREATER
- MUNICIPAL BOUNDARY
- PNM WATERCOURSE
- PNM WATERBODY



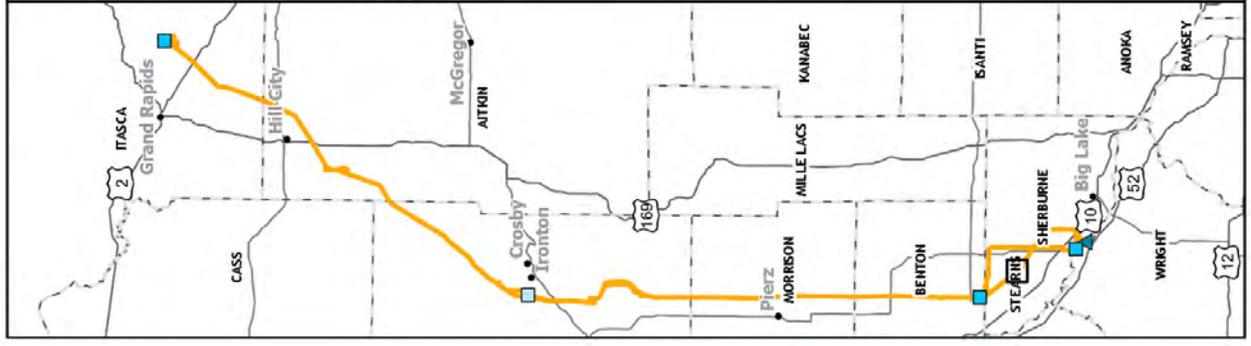
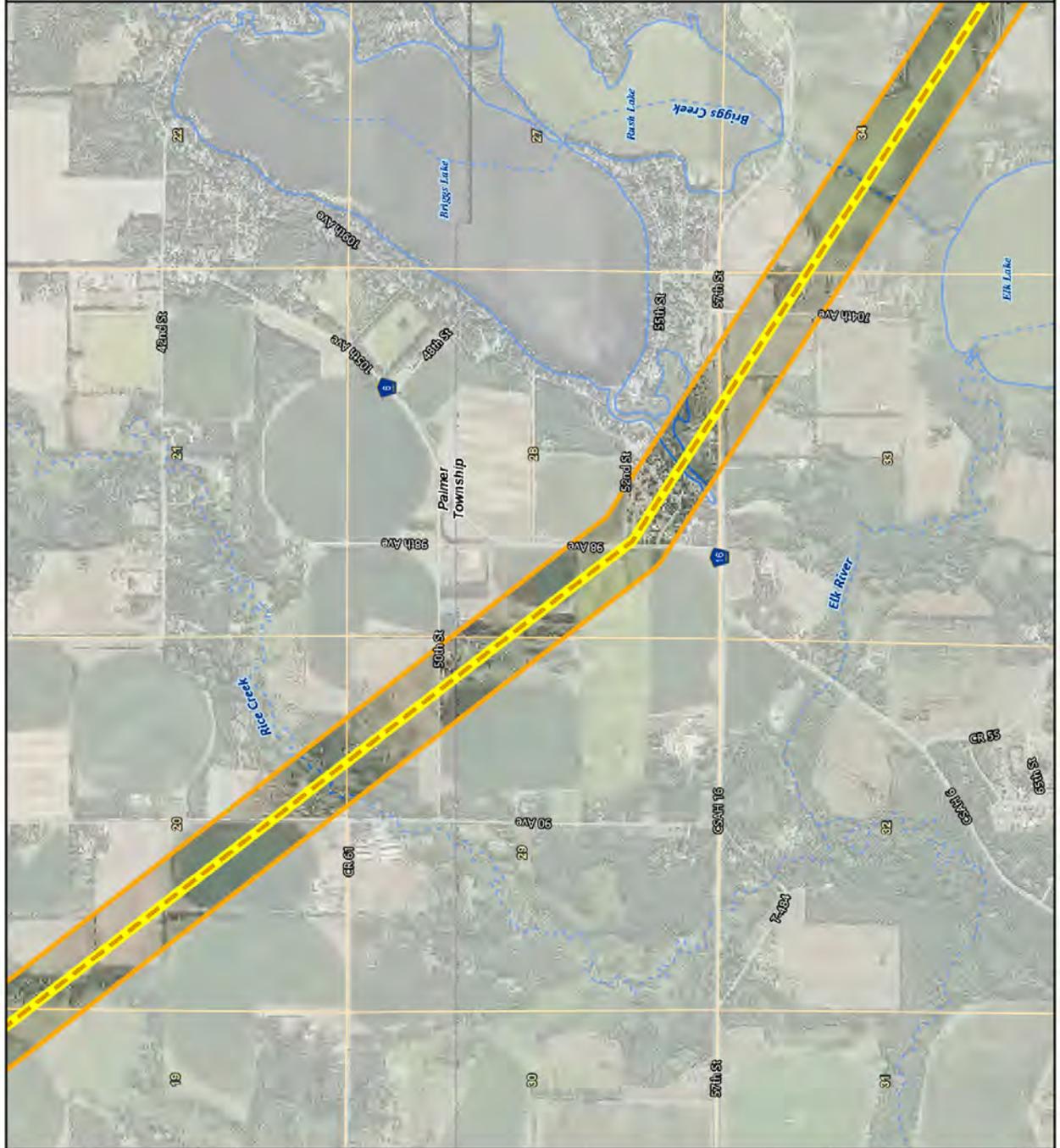
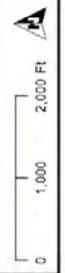
**Detailed Map  
Northland Reliability  
Project (NRP) Route  
Page 60 of 64**

- NRP ROUTE
- NRP ANTICIPATED CENTERLINE
- NRP ANTICIPATED RIGHT-OF-WAY
- REPLACE CREEKS LINE
- REPLACE NRP LINE
- REBUILD EXISTING 69KV
- DOUBLE CIRCUIT 230/115KV 69 LINE/11 LINE
- SHIFT DOUBLE CIRCUIT 230/69KV (MR LINE/ BF LINE)
- SHIFT MR INCREASED, 230KV
- SHIFT 92 LINE, 230KV
- REBUILD EXISTING TRANSMISSION LINES
- EXISTING TRANSMISSION LINE
- 69 KV
- 230 KV
- MUNICIPAL BOUNDARY
- PWA WATERCOURSE
- PWA WATERBODY



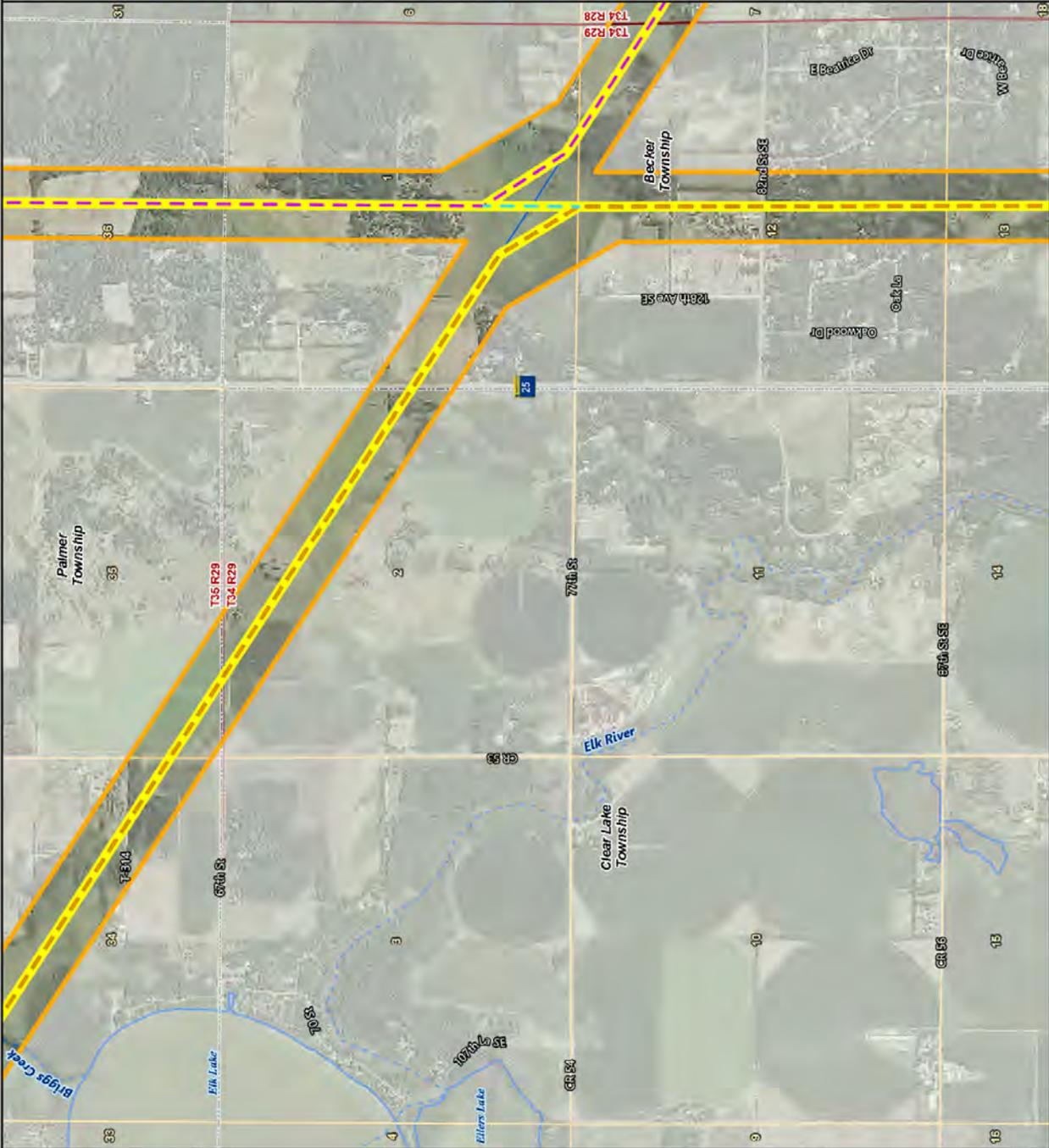
**Detailed Map  
Northland Reliability  
Project (NRP) Route  
Page 61 of 64**

-  NRP ROUTE
-  NRP ANTICIPATED CENTERLINE
-  NRP ANTICIPATED RIGHT-OF-WAY
-  REPLACE CREEKS LINE
-  REPLACE NRP LINE
-  REBUILD EXISTING 69KV LINE
-  DOUBLE CIRCUIT 230/138KV 02 LINE/11 LINE
-  SHIFT DOUBLE CIRCUIT 230/69KV (MR LINE/ BF LINE)
-  SHIFT MR INCREASED, 230KV
-  SHIFT 92 LINE, 230KV
-  REBUILD EXISTING TRANSMISSION LINES
-  EXISTING TRANSMISSION LINE
-  230 KV
-  MUNICIPAL BOUNDARY
-  PWA WATERCOURSE
-  PWA WATERBODY



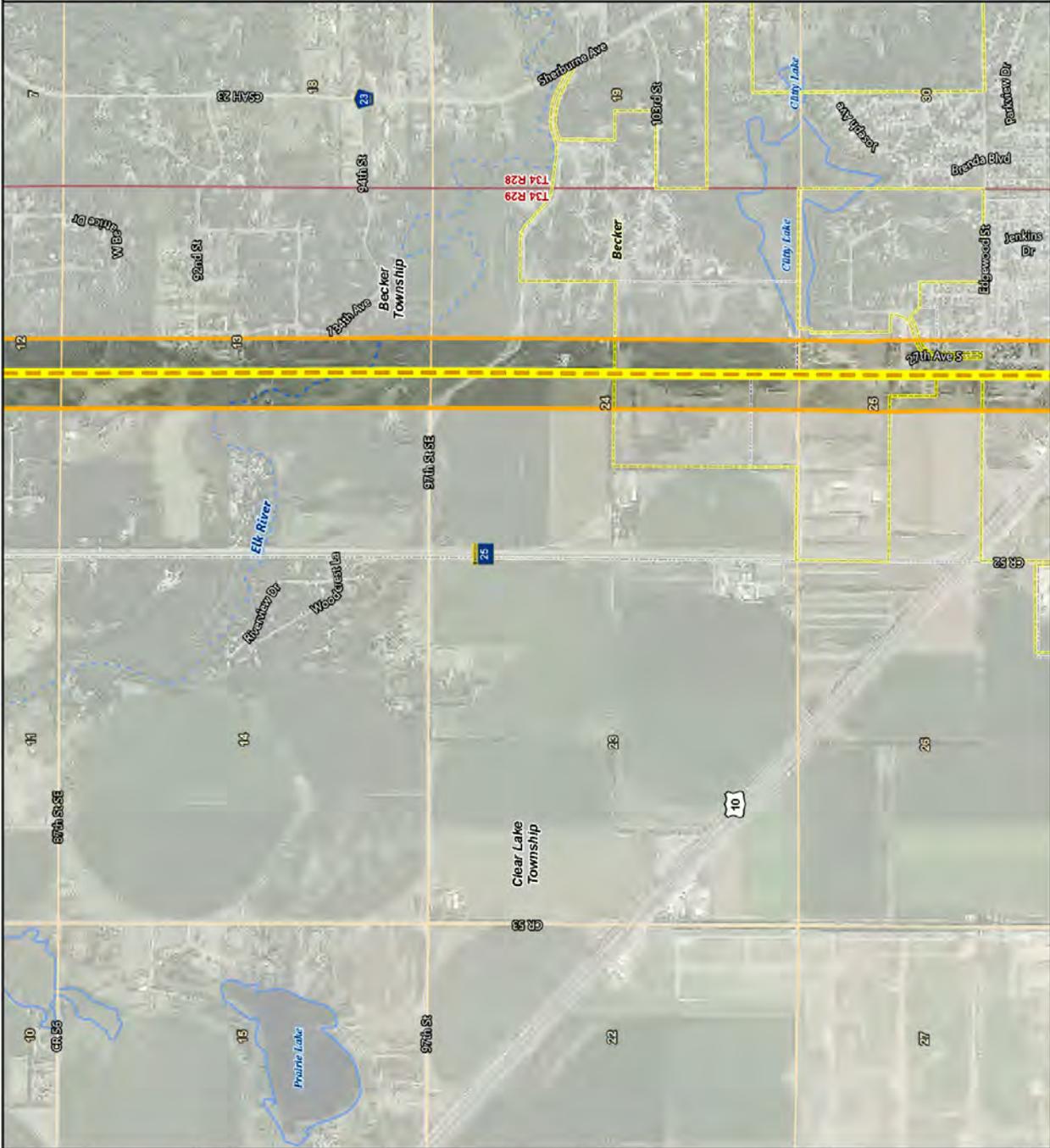
**Detailed Map  
Northland Reliability  
Project (NRP) Route  
Page 62 of 64**

- NRP ROUTE
- NRP ANTICIPATED CENTERLINE
- NRP ANTICIPATED RIGHT-OF-WAY
- REPLACE GREENS LINE
- REPLACE NRP LINE
- REBUILD EXISTING 69KV
- DOUBLE-CIRCUIT 230/138KV (2 LINE/11 LINE)
- SHIFT DOUBLE-CIRCUIT 230/69KV (MR LINE/ BF LINE)
- SHIFT MR INCREASED, 230KV
- SHIFT 92 LINE, 230KV
- REBUILD EXISTING TRANSMISSION LINES
- EXISTING TRANSMISSION LINE
- 69 KV
- 230 KV
- 345 KV OR GREATER
- MUNICIPAL BOUNDARY
- P/W WATERCOURSE
- P/W WATERBODY



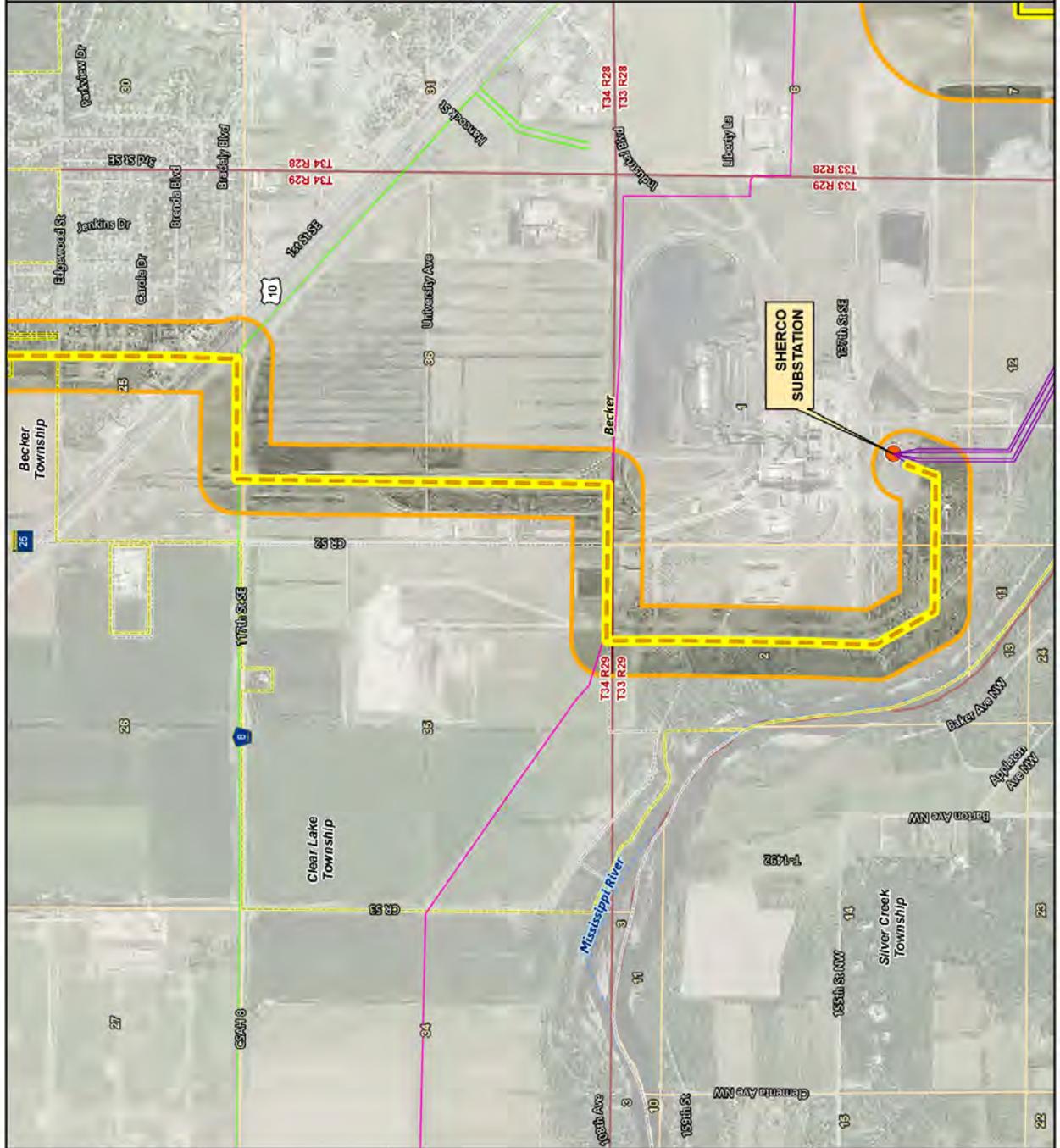
**Detailed Map  
Northland Reliability  
Project (NRP) Route  
Page 63 of 64**

- NRP ROUTE
- NRP ANTICIPATED CENTERLINE
- NRP ANTICIPATED RIGHT-OF-WAY
- REPLACE GREENS LINE
- REPLACE MR LINE
- REBUILD EXISTING 69KV
- DOUBLE CIRCUIT 230/138KV (2 LINE/11 LINE)
- SHIFT DOUBLE CIRCUIT 230/69KV (MR LINE/ BF LINE)
- SHIFT MR INCREASED, 230KV
- SHIFT 92 LINE, 330KV
- REBUILD EXISTING TRANSMISSION LINES
- EXISTING TRANSMISSION LINE
- 69 KV
- 345 KV OR GREATER
- MUNICIPAL BOUNDARY
- PWA WATERCOURSE
- PWA WATERBODY



**Detailed Map  
Northland Reliability  
Project (NRP) Route  
Page 64 of 64**

-  NRP ROUTE
-  NRP ANTICIPATED CENTERLINE
-  NRP ANTICIPATED RIGHT-OF-WAY
-  REPLACE CREEK LINE
-  REPLACE NRP LINE
-  REBUILD EXISTING 69KV
-  DOUBLE CIRCUIT 230/115KV (2 LINE/11 LINE)
-  SHIFT DOUBLE CIRCUIT 230/69KV (MR LINE/ BF LINE)
-  SHIFT MR INCREASED, 230KV
-  SHIFT 92 LINE, 230KV
-  REBUILD EXISTING TRANSMISSION LINES
-  SHERCO SUBSTATION
-  EXISTING TRANSMISSION LINE
-  69 KV
-  115 KV
-  345 KV OR GREATER
-  MUNICIPAL BOUNDARY
-  PWA WATERCOURSE
-  PWA WATERBODY



## CERTIFICATE OF SERVICE

I, Anne Redmond, hereby certify that I have this day, served a true and correct copy of the following document to all persons at the addresses indicated below or on the attached list by electronic filing, electronic mail, courier, interoffice mail or by depositing the same enveloped with postage paid in the United States mail at St. Paul, Minnesota.

**Minnesota Public Utilities Commission**  
**ORDER GRANTING CERTIFICATE OF NEED AND ISSUING ROUTE**  
**PERMIT**

Docket Number **E-015, ET-2/CN-22-416; ET-2/TL-22-415**  
Dated this 28 day of February, 2025

/s/ Anne Redmond

#	First Name	Last Name	Email	Organization	Agency	Address	Delivery Method	Alternate Delivery Method	View Trade Secret	Service List Name
1	Lisa	Agrimonti	lagrimonti@fredlaw.com	Fredrikson & Byron, P.A.		60 South Sixth Street Suite 1500 Minneapolis MN, 55402-4400 United States	Electronic Service		No	22-416Official
2	Michael	Ahern	ahern.michael@dorsey.com	Dorsey & Whitney, LLP		50 S 6th St Ste 1500 Minneapolis MN, 55402-1498 United States	Electronic Service		No	22-416Official
3	Steve	Albrecht	steve.albrecht@shakopeedakota.org	Shakopee Mdewakanton Sioux Community		Shakopee Mdewakanton Sioux Community 2330 Sioux Trail NW Prior Lake MN, 55372 United States	Electronic Service		No	22-416Official
4	Jay	Anderson	jaya@cmpas.org	CMPAS		7550 Corporate Way Suite 100 Eden Prairie MN, 55344 United States	Electronic Service		No	22-416Official
5	Keith	Anderson	keith.anderson@shakopeedakota.org	Shakopee Mdewakanton Sioux Community		Shakopee Mdewakanton Sioux Community 2330 Sioux Trail NW Prior Lake MN, 55372 United States	Electronic Service		No	22-416Official
6	Kristine	Anderson	kanderson@greatermngas.com	Greater Minnesota Gas, Inc.		1900 Cardinal Lane PO Box 798 Faribault MN, 55021 United States	Electronic Service		No	22-416Official
7	Jaime	Arsenault	jaime.arsenault@whiteearth-nsn.gov	White Earth		PO BOX 418 White Earth MN, 56591 United States	Electronic Service		No	22-416Official
8	Jim	Atkinson	jbatkinson@allete.com	Minnesota Power		30 West Superior Street Duluth MN, 55802 United States	Electronic Service		No	22-416Official
9	David	Bell	david.bell@state.mn.us		Department of Health	POB 64975 St. Paul MN, 55164 United States	Electronic Service		No	22-416Official
10	Melanie	Benjamin	melanie.benjamin@millelacsband.com			43408 Oodena Drive Onamia MN, 56359 United States	Electronic Service		No	22-416Official
11	James J.	Bertrand	james.bertrand@stinson.com	STINSON LLP		50 S 6th St Ste 2600 Minneapolis MN, 55402 United States	Electronic Service		No	22-416Official
12	Seth	Bichler	sethbichler@fdlrez.com	Fond du Lac Band of Lake Superior Chippewa		1720 Big Lake Rd Cloquet MN, 55720 United States	Electronic Service		No	22-416Official
13	David	Birkholz	david.birkholz@state.mn.us	MN Department of Commerce		Suite 500 85 7th Place East St. Paul MN,	Electronic Service		No	22-416Official

#	First Name	Last Name	Email	Organization	Agency	Address	Delivery Method	Alternate Delivery Method	View Trade Secret	Service List Name
						55101-2198 United States				
14	Michelle F.	Bissonnette	michelle.bissonnette@hdrinc.com	HDR Engineering, Inc.		Golden Hills Office Center 701 Xenia Ave S Ste 600 Minneapolis MN, 55416 United States	Electronic Service		No	22-416Official
15	Hunter	Boldt	hunterboldt@redlakenation.org	Red Lake Nation		15484 Migizi Drive Red Lake MN, 56671 United States	Electronic Service		No	22-416Official
16	Sheldon	Boyd	sheldon.boyd@millelacsband.com	Mille Lacs Band of Ojibwe		43408 Oodena Drive Onamia MN, 56359 United States	Electronic Service		No	22-416Official
17	Matthew	Brodin	mbrodin@allete.com	Minnesota Power		30 West Superior Street Duluth MN, 55802 United States	Electronic Service		No	22-416Official
18	B. Andrew	Brown	brown.andrew@dorsey.com	Dorsey & Whitney LLP		Suite 1500 50 South Sixth Street Minneapolis MN, 55402-1498 United States	Electronic Service		No	22-416Official
19	Christina	Brusven	cbrusven@fredlaw.com	Fredrikson Byron		60 S 6th St Ste 1500 Minneapolis MN, 55402-4400 United States	Electronic Service		No	22-416Official
20	Scott	Buchanan	scottbuchanan@fdlrez.com	Fond du Lac Band of Lake Superior Chippewa		1720 Big Lake Road Cloquet MN, 55720 United States	Electronic Service		No	22-416Official
21	Shelley	Buck	shelley.buck@piic.org	Prairie Island Indian Community		Prairie Island Indian Community 5636 Sturgeon Lake Road Welch MN, 55089 United States	Electronic Service		No	22-416Official
22	Robert	Budreau	robert.budreau@llojibwe.net	Leech Lake Band of Ojibwe		190 Sailstar Drive NW Cass Lake MN, 56633 United States	Electronic Service		No	22-416Official
23	James	Canaday	james.canaday@ag.state.mn.us		Office of the Attorney General - Residential Utilities Division	Suite 1400 445 Minnesota St. St. Paul MN, 55101 United States	Electronic Service		No	22-416Official
24	PUC	CAO	consumer.puc@state.mn.us		Public Utilities Commission	Consumer Affairs Office 121 7th Place E Suite 350 St. Paul MN, 55101 United States	Electronic Service		No	22-416Official
25	Cathy	Chavers	cchavers@boisforte-nsn.gov	Bois Forte Band of Chippewa		Bois Forte Tribal Government 5344 Lakeshore Drive Nett Lake MN,	Electronic Service		No	22-416Official

#	First Name	Last Name	Email	Organization	Agency	Address	Delivery Method	Alternate Delivery Method	View Trade Secret	Service List Name
						55772 United States				
26	Michael	Childs, Jr.	michael.childsjr@piic.org	Prairie Island Indian Community		Prairie Island Indian Community 5636 Sturgeon Lake Road Welch MN, 55089 United States	Electronic Service		No	22-416Official
27	Cody	Chilson	cchilson@greatermngas.com	Greater Minnesota Gas, Inc. & Greater MN Transmission, LLC		1900 Cardinal Ln PO Box 798 Faribault MN, 55021 United States	Electronic Service		No	22-416Official
28	Ray	Choquette	rchoquette@agp.com	Ag Processing Inc.		12700 West Dodge Road PO Box 2047 Omaha NE, 68103-2047 United States	Electronic Service		No	22-416Official
29	John	Coffman	john@johncoffman.net	AARP		871 Tuxedo Blvd. St. Louis MO, 63119-2044 United States	Electronic Service		No	22-416Official
30	Generic	Commerce Attorneys	commerce.attorneys@ag.state.mn.us		Office of the Attorney General - Department of Commerce	445 Minnesota Street Suite 1400 St. Paul MN, 55101 United States	Electronic Service		Yes	22-416Official
31	Bill	Cook	bcook@rpu.org	Rochester Public Utilities		4000 East River Road NE Rochester MN, 55906 United States	Electronic Service		No	22-416Official
32	Water Programs	Coordinator	waterprograms.bwsr@state.mn.us		Minnesota Board of Water and Soil Resources	520 Lafayette Road N St. Paul MN, 55155 United States	Electronic Service		No	22-416Official
33	John	Crane	johncranefishing@gmail.com	Fishing		1250 Wee Gwaus DR SW Bemidji MN, 56601 United States	Electronic Service		No	22-416Official
34	Brandon	Crawford	brandonc@cubminnesota.org	Citizens Utility Board of Minnesota		332 Minnesota St Ste W1360 St. Paul MN, 55101 United States	Electronic Service		No	22-416Official
35	Hillary	Creurer	hcreurer@allete.com	Minnesota Power		30 W Superior St Duluth MN, 55802 United States	Electronic Service		No	22-416Official
36	George	Crocker	gwillc@nawo.org	North American Water Office		5093 Keats Avenue Lake Elmo MN, 55042 United States	Electronic Service		No	22-416Official
37	Rebecca	Crooks Stratton	rebecca.crooks-stratton@shakopeedakota.org	Shakopee Mdewakanton Sioux Community		Shakopee Mdewakanton Sioux Community 2330 Sioux Trail NW Prior Lake MN, 55372 United States	Electronic Service		No	22-416Official

#	First Name	Last Name	Email	Organization	Agency	Address	Delivery Method	Alternate Delivery Method	View Trade Secret	Service List Name
38	Miyah	Danielson	miyahdanielson@fdlrez.com	Fond du Lac Band of Lake Superior Chippewa		1720 Big Lake Road Cloquet MN, 55720 United States	Electronic Service		No	22-416Official
39	Thomas	Davis	atdavis1972@outlook.com	-		1161 50th Ave Sherburn MN, 56171 United States	Electronic Service		No	22-416Official
40	Jason	Decker	jason.decker@llojibwe.net	Leech Lake Band of Ojibwe		190 Sailstar Drive NW Cass Lake MN, 56633 United States	Electronic Service		No	22-416Official
41	Bobby	Deschampe	robertdeschampe@grandportage.com	Grand Portage Band of Lake Superior Chippewa		PO Box 428 Grand Portage MN, 55605 United States	Electronic Service		No	22-416Official
42	Randall	Doneen	randall.doneen@state.mn.us		Department of Natural Resources	500 Lafayette Rd, PO Box 25 Saint Paul MN, 55155 United States	Electronic Service		No	22-416Official
43	John	Drawz	jdrawz@fredlaw.com	Fredrikson & Byron, P.A.		Suite 1500 60 South Sixth Street Minneapolis MN, 55402-4400 United States	Electronic Service		No	22-416Official
44	Shane	Drift	sdrift@boisforte-nsn.gov	Bois Forte Band of Chippewa		Bois Forte Tribal Government 5344 Lakeshore Drive Nett Lake MN, 55772 United States	Electronic Service		No	22-416Official
45	Adam	Duininck	aduininck@ncsrcc.org	North Central States Regional Council of Carpenters		700 Olive Street St. Paul MN, 55130 United States	Electronic Service		No	22-416Official
46	Wally	Dupuis	wallydupuis@fdlband.org	Fond du Lac Band of Lake Superior Chippewa		1720 Big Lake Road Cloquet MN, 55720 United States	Electronic Service		No	22-416Official
47	Kevin	Dupuis, Sr.	kevindupuis@fdlrez.com			Reservation Business Committee 1720 Big Lake Rd Cloquet MN, 55720 United States	Electronic Service		No	22-416Official
48	Cory	Dutcher	cory.dutcher@ge.com	GE Power and Water		1 River Rd. Bldg. 37-413 Schenectady NY, 12345 United States	Electronic Service		No	22-416Official
49	Jamie	Edwards	jamie.edwards@millelacsband.com	Mille Lacs Band of Ojibwe		43408 Oodena Drive Onamia MN, 56358 United States	Electronic Service		No	22-416Official
50	Kristen	Eide Tollefson	healingsystems69@gmail.com	R-CURE		28477 N Lake Ave Frontenac MN, 55026-1044 United States	Electronic Service		No	22-416Official
51	Matthew	Ellis	mellis@grenergy.com	Great River Energy		null null, null	Electronic Service		No	22-416Official

#	First Name	Last Name	Email	Organization	Agency	Address	Delivery Method	Alternate Delivery Method	View Trade Secret	Service List Name
						United States				
52	Kyle	Fairbanks	kyle.fairbanks@llojibwe.net	Leech Lake Band of Ojibwe		190 Sailstar Drive NW Cass Lake MN, 56633 United States	Electronic Service		No	22-416Official
53	Michael	Fairbanks	michael.fairbanks@whiteearth-nsn.gov	White Earth Reservation Business Committee		PO Box 418 White Earth MN, 56591 United States	Electronic Service		No	22-416Official
54	Kate	Fairman	kate.fairman@state.mn.us		Department of Natural Resources	Box 32 500 Lafayette Rd St. Paul MN, 55155-4032 United States	Electronic Service		No	22-416Official
55	John	Farrell	jfarrell@ilsr.org	Institute for Local Self-Reliance		2720 E. 22nd St Institute for Local Self-Reliance Minneapolis MN, 55406 United States	Electronic Service		No	22-416Official
56	Eric	Fehlhaber	efehlhaber@dakotaelectric.com	Dakota Electric Association		4300 220th St W Farmington MN, 55024 United States	Electronic Service		No	22-416Official
57	Annie	Felix Gerth	annie.felix-gerth@state.mn.us			Board of Water & Soil Resources 520 Lafayette Rd Saint Paul MN, 55155 United States	Electronic Service		No	22-416Official
58	Sharon	Ferguson	sharon.ferguson@state.mn.us		Department of Commerce	85 7th Place E Ste 280 Saint Paul MN, 55101-2198 United States	Electronic Service		No	22-416Official
59	Kade	Ferris	kade.ferris@redlakenation.org	Red Lake Region		PO Box 274 Red Lake MN, 56671 United States	Electronic Service		No	22-416Official
60	Leonard	Fineday	leonard.fineday@llojibwe.net	Leech Lake Band of Ojibwe		190 Sailstar Drive NW Cass Lake MN, 56633 United States	Electronic Service		No	22-416Official
61	Terri	Finn	terri.goggeye@llojibwe.net			null null, null United States	Electronic Service		No	22-416Official
62	Henry	Fox	henry.fox@whiteearth-nsn.gov	White Earth Nation		PO Box 418 White Earth MN, 56569 United States	Electronic Service		No	22-416Official
63	Gary	Frazer	gfrazier@mnchippewatribe.org	Minnesota Chippewa Tribe		PO Box 217 Cass Lake MN, 56633 United States	Electronic Service		No	22-416Official
64	Docketing	Fredlaw	docketing@fredlaw.com	Fredrickson & Byron		200 S 6th St, Suite 4000 Minneapolis MN, 55402 United States	Electronic Service		No	22-416Official
65	Daryll	Fuentes	energy@usg.com	USG Corporation		550 W Adams St Chicago IL, 60661 United States	Electronic Service		No	22-416Official
66	Mary Ann	Gagnon	maryann@grandportage.com	Grand Portage Band of Ojibwe		PO Box 428 Grand Portage MN,	Electronic Service		No	22-416Official

#	First Name	Last Name	Email	Organization	Agency	Address	Delivery Method	Alternate Delivery Method	View Trade Secret	Service List Name
						55605 United States				
67	Karen A	Gebhardt	kageb1@gvtel.com			43901 253rd Ave Leonard MN, 56652-4026 United States	Electronic Service		No	22- 416Official
68	Shannon	Geshick	shannon.geshick@state.mn.us	Minnesota Indian Affairs Council (MIAC)		null null, null United States	Electronic Service		No	22- 416Official
69	Tara	Geshick		Bois Forte Band of Chippewa Tribal Government		5344 Lakeshore Drive Nett Lake MN, 55772 United States	Paper Service		No	22- 416Official
70	Todd	Green	todd.a.green@state.mn.us		Minnesota Department of Labor & Industry	443 Lafayette Rd N St. Paul MN, 55155-4341 United States	Electronic Service		No	22- 416Official
71	Todd J.	Guerrero	todd.guerrero@kutakrock.com	Kutak Rock LLP		Suite 1750 220 South Sixth Street Minneapolis MN, 55402- 1425 United States	Electronic Service		No	22- 416Official
72	Jeremy	Hamilton	jhamilton@uppersiouxcommunity- nsn.gov	Upper Sioux Community		Upper Sioux Community PO Box 147 Granite Falls MN, 56241 United States	Electronic Service		No	22- 416Official
73	Ashley	Harrison	ashley.harrison@llojibwe.net	Leech Lake Band of Ojibwe		190 Sailstar Dr NW Cass Lake MN, 56633 United States	Electronic Service		No	22- 416Official
74	Larry	Hartman	larry.hartman@state.mn.us		Department of Commerce	85 7th Place East, Suite 280 St. Paul MN, 55101 United States	Electronic Service		No	22- 416Official
75	Amy	Hastings	amyh@uppersiouxcommunity-nsn.gov	Upper Sioux Community		5722 Travers Lane PO Box 147 Granite Falls MN, 56241 United States	Electronic Service		No	22- 416Official
76	Adam	Heinen	aheinen@dakotaelectric.com	Dakota Electric Association		4300 220th St W Farmington MN, 55024 United States	Electronic Service		No	22- 416Official
77	Annete	Henkel	mui@mnuutilityinvestors.org	Minnesota Utility Investors		413 Wacouta Street #230 St.Paul MN, 55101 United States	Electronic Service		No	22- 416Official
78	Valerie	Herring	vherring@taftlaw.com	Taft Stettinius & Hollister LLP		2200 IDS Center 80 S. Eighth Street Minneapolis MN, 55402 United States	Electronic Service		No	22- 416Official
79	Corey	Hintz	chintz@dakotaelectric.com	Dakota Electric Association		4300 220th Street Farmington MN, 55024- 9583 United States	Electronic Service		No	22- 416Official

#	First Name	Last Name	Email	Organization	Agency	Address	Delivery Method	Alternate Delivery Method	View Trade Secret	Service List Name
80	Michael	Hoppe	lu23@ibew23.org	Local Union 23, I.B.E.W.		445 Etna Street Ste. 61 St. Paul MN, 55106 United States	Electronic Service		No	22-416Official
81	Kari	Howe	kari.howe@state.mn.us		DEED	332 Minnesota St, #E200 1ST National Bank Bldg St. Paul MN, 55101 United States	Electronic Service		No	22-416Official
82	Lori	Hoyum	lhoyum@mnpower.com	Minnesota Power		30 West Superior Street Duluth MN, 55802 United States	Electronic Service		No	22-416Official
83	Annie	Jackson	cheryl.jackson@whiteearth-nsn.gov	White Earth Nation		White Earth Tribal Headquarters 35500 Eagle View Road Ogemo MN, 56569 United States	Electronic Service		No	22-416Official
84	Faron	Jackson, Sr.	faron.jackson@llojibwe.net			190 Sailstar Drive NW Cass Lake MN, 56633 United States	Electronic Service		No	22-416Official
85	Travis	Jacobson	travis.jacobson@mdu.com	Great Plains Natural Gas Company		400 N 4th St Bismarck ND, 58501 United States	Electronic Service		No	22-416Official
86	Craig	Janezich	craig.janezich@state.mn.us		Public Utilities Commission	121 7th PI E #350 St. Paul MN, 55101 United States	Electronic Service		No	22-416Official
87	Alan	Jenkins	aj@jenkinsatlaw.com	Jenkins at Law		2950 Yellowtail Ave. Marathon FL, 33050 United States	Electronic Service		No	22-416Official
88	Kevin	Jensvold	kevinj@uppersiouxcommunity-nsn.gov	Upper Sioux Community		PO Box 147 Granite Falls MN, 56241-0147 United States	Electronic Service		No	22-416Official
89	Jody	Johnson	jody.johnson@piic.org	Prairie Island Indian Community		5636 Sturgeon Lake Rd Welch MN, 55089 United States	Electronic Service		No	22-416Official
90	Johnny	Johnson	johnny.johnson@piic.org	Prairie Island Indian Community		5636 Sturgeon Lake Road Welch MN, 55089 United States	Electronic Service		No	22-416Official
91	Richard	Johnson	rick.johnson@lawmoss.com	Moss & Barnett		150 S. 5th Street Suite 1200 Minneapolis MN, 55402 United States	Electronic Service		No	22-416Official
92	Scott	Johnson	scott.johnson@ci.medina.mn.us	City of Medina		2052 County Road 24 Medina MN, 55340-9790 United States	Electronic Service		No	22-416Official
93	Sarah	Johnson Phillips	sjphillips@stoel.com	Stoel Rives LLP		33 South Sixth Street	Electronic Service		No	22-416Official

#	First Name	Last Name	Email	Organization	Agency	Address	Delivery Method	Alternate Delivery Method	View Trade Secret	Service List Name
						Suite 4200 Minneapolis MN, 55402 United States				
94	Michael	Kaluzniak	mike.kaluzniak@state.mn.us		Public Utilities Commission	Suite 350 121 Seventh Place East St. Paul MN, 55101 United States	Electronic Service		No	22- 416Official
95	Nick	Kaneski	nick.kaneski@enbridge.com	Enbridge Energy Company, Inc.		11 East Superior St Ste 125 Duluth MN, 55802 United States	Electronic Service		No	22- 416Official
96	Tom	Karas	tomskaras@gmail.com			3171 309th Ave NW Cambridge MN, 55008 United States	Electronic Service		No	22- 416Official
97	Bruce	King	brenda@ranww.org	Realtors, Association of Northwestern WI		Suite 3 1903 Keith Street Eau Claire WI, 54701 United States	Electronic Service		No	22- 416Official
98	Raymond	Kirsch	raymond.kirsch@state.mn.us		Department of Commerce	85 7th Place E Ste 500 St. Paul MN, 55101 United States	Electronic Service		No	22- 416Official
99	Chad	Konickson	chad.konickson@usace.army.mil	U.S.Army Corps of Engineers		332 Minnesota St. Suite E1500 Saint Paul MN, 55101 United States	Electronic Service		No	22- 416Official
100	Stacy	Kotch Egstad	stacy.kotch@state.mn.us		MINNESOTA DEPARTMENT OF TRANSPORTATION	395 John Ireland Blvd. St. Paul MN, 55155 United States	Electronic Service		No	22- 416Official
101	Michael	Krikava	mkrikava@taftlaw.com	Taft Stettinius & Hollister LLP		2200 IDS Center 80 S 8th St Minneapolis MN, 55402 United States	Electronic Service		No	22- 416Official
102	Nicolle	Kupser	nkupser@greatermngas.com	Greater Minnesota Gas, Inc.		1900 Cardinal Ln PO Box 798 Faribault MN, 55021 United States	Electronic Service		No	22- 416Official
103	Mike	Laroque	mike.laroque@whiteearth-nsn.gov	White Earth Nation		PO Box 418 White Earth MN, 56591 United States	Electronic Service		No	22- 416Official
104	Robert L	Larsen	robert.larsen@lowersioux.com	Lower Sioux Indian Community		PO Box 308 39527 Reservation Highway 1 Morton MN, 56270 United States	Electronic Service		No	22- 416Official
105	James D.	Larson	james.larson@avantenergy.com	Avant Energy Services		220 S 6th St Ste 1300 Minneapolis MN, 55402 United States	Electronic Service		No	22- 416Official
106	Peder	Larson	plarson@larkinhoffman.com	Larkin Hoffman Daly & Lindgren, Ltd.		8300 Norman Center Drive Suite 1000 Bloomington MN, 55437 United States	Electronic Service		No	22- 416Official

#	First Name	Last Name	Email	Organization	Agency	Address	Delivery Method	Alternate Delivery Method	View Trade Secret	Service List Name
107	Dan	Leshner	dlesher@grenergy.com	Great River Energy		12300 Elm Creek Blvd Maple Grove MN, 55369 United States	Electronic Service		No	22-416Official
108	Eric	Lipman	eric.lipman@state.mn.us		Office of Administrative Hearings	PO Box 64620 St. Paul MN, 55164-0620 United States	Electronic Service		No	22-416Official
109	Jason	Loos	jason.loos@centerpointenergy.com	CenterPoint Energy Resources Corp.		505 Nicollet Mall 3rd Floor Minneapolis MN, 55402 United States	Electronic Service		No	22-416Official
110	Susan	Ludwig	sludwig@mnpower.com	Minnesota Power		30 West Superior Street Duluth MN, 55802 United States	Electronic Service		No	22-416Official
111	Vernelle	Lussier	vernelle.lussier@redlakenation.org	Red Lake Nation		15484 Migizi Drive Red Lake MN, 56671 United States	Electronic Service		No	22-416Official
112	Kavita	Maini	kmains@wi.rr.com	KM Energy Consulting, LLC		961 N Lost Woods Rd Oconomowoc WI, 53066 United States	Electronic Service		No	22-416Official
113	Dawn S	Marsh	dawn_marsh@fws.gov	U.S. Fish & Wildlife Service		Minnesota-Wisconsin Field Offices 4101 American Blvd E Bloomington MN, 55425 United States	Electronic Service		No	22-416Official
114	Shena	Matrious	shena.matrious@millelacsband.com	Mille Lacs Band of Ojibwe		43408 Oodena Drive Onamia MN, 56349 United States	Electronic Service		No	22-416Official
115	April	McCormick	aprlm@grandportage.com	Grand Portage Band of Lake Superior Chippewa		PO Box 428 Grand Portage MN, 55605 United States	Electronic Service		No	22-416Official
116	Brian	Meloy	bmeloy@grenergy.com	Great River Energy		12300 Elm Creek Blvd Maple Grove MN, 55369 United States	Electronic Service		No	22-416Official
117	Joseph	Meyer	joseph.meyer@ag.state.mn.us		Office of the Attorney General - Residential Utilities Division	Bremer Tower, Suite 1400 445 Minnesota Street St Paul MN, 55101-2131 United States	Electronic Service		No	22-416Official
118	Valentina	Mgeni	valentina.mgeni@piic.org	Prairie Island Indian Community		Prairie Island Indian Community 5636 Sturgeon Lake Road Welch MN, 55089 United States	Electronic Service		No	22-416Official
119	Kimberly	Middendorf	kimberly.middendorf@state.mn.us		Office of Administrative Hearings	PO Box 64620 600 Robert St N	Electronic Service		Yes	22-416Official

#	First Name	Last Name	Email	Organization	Agency	Address	Delivery Method	Alternate Delivery Method	View Trade Secret	Service List Name
						Saint Paul MN, 55164-0620 United States				
120	Cole W.	Miller	cole.miller@shakopeedakota.org	Shakopee Mdewakanton Sioux Community		Shakopee Mdewakanton Sioux Community 2330 Sioux Trail NW Prior Lake MN, 55372 United States	Electronic Service		No	22- 416Official
121	Stacy	Miller	stacy.miller@minneapolismn.gov	City of Minneapolis		350 S. 5th Street Room M 301 Minneapolis MN, 55415 United States	Electronic Service		No	22- 416Official
122	David	Moeller	dmoeller@allete.com	Minnesota Power			Electronic Service		No	22- 416Official
123	Andrew	Moratzka	andrew.moratzka@stoel.com	Stoel Rives LLP		33 South Sixth St Ste 4200 Minneapolis MN, 55402 United States	Electronic Service		No	22- 416Official
124	Travis	Morrison	travis.morrison@boisforte-nsn.gov	Bois Forte Band of Chippewa		Bois Forte Tribal Government 5344 Lakeshore Drive Nett Lake MN, 55772 United States	Electronic Service		No	22- 416Official
125	Robert	Moyer, Jr.	rmoyer@boisforte-nsn.gov	Bois Forte Band of Chippewa Tribal Government		5344 Lakeshore Drive Nett Lake MN, 55772 United States	Electronic Service		No	22- 416Official
126	Colleen	Mueller				22186 State Hwy 4 Paynesville MN, 56362 United States	Paper Service		No	22- 416Official
127	Sonny	Myers	smyers@1854treatyauthority.org	1854 Treaty Authority		4428 Haines Rd Duluth MN, 55811-1524 United States	Electronic Service		No	22- 416Official
128	Dan	Nelson	dan.nelson@isginc.com	I&S Group		115 E Hickory St Ste 300 Mankato MN, 56001 United States	Electronic Service		No	22- 416Official
129	David	Niles	david.niles@avantenergy.com	Minnesota Municipal Power Agency		220 South Sixth Street Suite 1300 Minneapolis MN, 55402 United States	Electronic Service		No	22- 416Official
130	Samantha	Norris	samanthanorris@alliantenergy.com	Interstate Power and Light Company		200 1st Street SE PO Box 351 Cedar Rapids IA, 52406-0351 United States	Electronic Service		No	22- 416Official
131	Joseph	OBrien	joey.obrien@lowersioux.com			39527 Highway 1 Morton MN, 56270 United States	Electronic Service		No	22- 416Official
132	Samantha	Odegard	samanthao@uppersiouxcommunity-nsn.gov			PO Box 147 Granite Falls	Electronic Service		No	22- 416Official

#	First Name	Last Name	Email	Organization	Agency	Address	Delivery Method	Alternate Delivery Method	View Trade Secret	Service List Name
						MN, 56241 United States				
133	Matthew	Olsen	molsen@otpc.com	Otter Tail Power Company		215 South Cascade Street Fergus Falls MN, 56537 United States	Electronic Service		No	22-416Official
134	Carol A.	Overland	overland@legalectric.org	Legaelectric - Overland Law Office		1110 West Avenue Red Wing MN, 55066 United States	Electronic Service		No	22-416Official
135	Greg	Palmer	gpalmer@greatermngas.com	Greater Minnesota Gas, Inc.		1900 Cardinal Ln PO Box 798 Faribault MN, 55021 United States	Electronic Service		No	22-416Official
136	Earl	Pendleton	earl.pendleton@lowersioux.com	Lower Sioux Indian Community		39527 Highway 1 Morton MN, 56270 United States	Electronic Service		No	22-416Official
137	Jennifer	Peterson	jjpeterson@mnpower.com	Minnesota Power		30 West Superior Street Duluth MN, 55802 United States	Electronic Service		No	22-416Official
138	Kevin	Peterson	kjp@ibew160.org			1109 Northway Lane NE Rochester MN, 55906 United States	Electronic Service		No	22-416Official
139	Catherine	Phillips	catherine.phillips@wecenergygroup.com	Minnesota Energy Resources		231 West Michigan St Milwaukee WI, 53203 United States	Electronic Service		No	22-416Official
140	Angela	Piner	angela.piner@hdrinc.com	HDR, Inc.		Suite 600 701 Xenia Avenue South Suite 600 Minneapolis MN, 55416 United States	Electronic Service		No	22-416Official
141	Joe	Plumer	joe.plumer@redlakenation.org	Red Lake Nation		15484 Migizi Drive Red Lake MN, 56671 United States	Electronic Service		No	22-416Official
142	Andre	Porter	misolegal@misoenergy.org	MISO		720 City Center Drive Carmel IN, 46032 United States	Electronic Service		No	22-416Official
143	Kevin	Pranis	kpranis@liunagroc.com	Laborers' District Council of MN and ND		81 E Little Canada Road St. Paul MN, 55117 United States	Electronic Service		No	22-416Official
144	Robert	Prescott	bob.prescott@lowersioux.com	Lower Sioux Indian Community		39527 Highway 1 Morton MN, 56270 United States	Electronic Service		No	22-416Official
145	Larry	Rebman	larryemls@hotmail.com	EMLS, Inc		PO Box 122 Appleton MN, 56208 United States	Electronic Service		No	22-416Official
146	Generic Notice	Residential Utilities Division	residential.utilities@ag.state.mn.us		Office of the Attorney General - Residential Utilities Division	1400 BRM Tower 445 Minnesota St St. Paul MN,	Electronic Service		Yes	22-416Official

#	First Name	Last Name	Email	Organization	Agency	Address	Delivery Method	Alternate Delivery Method	View Trade Secret	Service List Name
						55101-2131 United States				
147	Kevin	Reuther	kreuther@mncenter.org	MN Center for Environmental Advocacy		26 E Exchange St, Ste 206 St. Paul MN, 55101-1667 United States	Electronic Service		No	22-416Official
148	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 United States	Electronic Service		No	22-416Official
149	Susan	Romans	sromans@allete.com	Minnesota Power		30 West Superior Street Legal Dept Duulth MN, 55802 United States	Electronic Service		No	22-416Official
150	Stephan	Roos	stephan.roos@state.mn.us		Minnesota Department of Agriculture	625 Robert St N Saint Paul MN, 55155-2538 United States	Electronic Service		No	22-416Official
151	Bill	Rudnicki	bill.rudnicki@shakopeedakota.org	Shakopee Mdewakanton Sioux Community		Shakopee Mdewakanton Sioux Community 2330 Sioux Trail NW Prior Lake MN, 55372 United States	Electronic Service		No	22-416Official
152	Nathaniel	Runke	nrunke@local49.org			611 28th St. NW Rochester MN, 55901 United States	Electronic Service		No	22-416Official
153	Miranda	Sam	miranda.sam@lowersioux.com	Lower Sioux Indian Community		39527 Reservation Highway 1 PO Box 308 Morton MN, 56270 United States	Electronic Service		No	22-416Official
154	Adam	Savariego	adams@uppersiouxcommunity-nsn.gov	Upper Sioux Community		5722 Travers Lane PO Box 147 Granite Falls MN, 56241 United States	Electronic Service		No	22-416Official
155	Elizabeth	Schmiesing	eschmiesing@winthrop.com	Winthrop & Weinstine, P.A.		225 South Sixth Street Suite 3500 Minneapolis MN, 55402 United States	Electronic Service		No	22-416Official
156	Christine	Schwartz	regulatory.records@xcelenergy.com	Xcel Energy		414 Nicollet Mall FL 7 Minneapolis MN, 55401-1993 United States	Electronic Service		No	22-416Official
157	Jessie	Seim	jessie.seim@piic.org	Prairie Island Indian Community		5636 Sturgeon Lake Rd Welch MN, 55089 United States	Electronic Service		No	22-416Official
158	Darrell	Seki, Sr.	dseki@redlakenation.org			15484 Migizi Drive	Electronic Service		No	22-416Official

#	First Name	Last Name	Email	Organization	Agency	Address	Delivery Method	Alternate Delivery Method	View Trade Secret	Service List Name
						Red Lake MN, 56671 United States				
159	Will	Seuffert	will.seuffert@state.mn.us		Public Utilities Commission	121 7th PI E Ste 350 Saint Paul MN, 55101 United States	Electronic Service		Yes	22-416Official
160	Janet	Shaddix Elling	jshaddix@janetshaddix.com	Shaddix And Associates		7400 Lyndale Ave S Ste 190 Richfield MN, 55423 United States	Electronic Service		Yes	22-416Official
161	Tom	Slukich	tom@nationalconductor.com	National Conductor Constructors		18119 Hwy 371 North Braiderd MN, 56401 United States	Electronic Service		No	22-416Official
162	Joel	Smith	jsmith@mnchippewatribe.org	Minnesota Chippewa Tribe		PO Box 217 Cass Lake MN, 56633 United States	Electronic Service		No	22-416Official
163	Ken	Smith	ken.smith@districtenergy.com	District Energy St. Paul Inc.		76 W Kellogg Blvd St. Paul MN, 55102 United States	Electronic Service		No	22-416Official
164	Nizhoni	Smith	nizhoni.smith@lowersioux.com	Lower Sioux Indian Community		PO Box 308 39527 Reservation Highway 1 Morton MN, 56270 United States	Electronic Service		No	22-416Official
165	Roger	Smith, Sr.	rogermsmithsr@fdlrez.com			1720 Big Lake Road Cloquet MN, 55720 United States	Electronic Service		No	22-416Official
166	Adam	Sokolski	adam.sokolski@edf-re.com	EDF Renewable Energy		10 Second Street NE Ste 400 Minneapolis MN, 55410 United States	Electronic Service		No	22-416Official
167	Eugene	Sommers	eugene.sommers@whiteearth-nsn.gov	White Earth Nation		PO BOX 418 White Earth MN, 56591 United States	Electronic Service		No	22-416Official
168	Peggy	Sorum	peggy.sorum@centerpointenergy.com	CenterPoint Energy		505 Nicollet Mall Minneapolis MN, 55402 United States	Electronic Service		No	22-416Official
169	Marie	Spry	mariespry@grandportage.com			PO Box 428 Grand Portage MN, 55605 United States	Electronic Service		No	22-416Official
170	Cheyenne	St. John	cheyanne.stjohn@lowersioux.com	Lower Sioux Tribal Community		39527 Reservation Hwy 1 Morton MN, 56270 United States	Electronic Service		No	22-416Official
171	LeRoy	Staples Fairbanks III	leroy.fairbanks@llojbwe.net	Leech Lake Band of Ojibwe		190 Sailstar Drive NW Cass Lake MN, 56633 United States	Electronic Service		No	22-416Official
172	Byron E.	Starns	byron.starns@stinson.com	STINSON LLP		50 S 6th St Ste 2600 Minneapolis MN, 55402 United States	Electronic Service		No	22-416Official

#	First Name	Last Name	Email	Organization	Agency	Address	Delivery Method	Alternate Delivery Method	View Trade Secret	Service List Name
173	Kristin	Stastny	kstastny@taftlaw.com	Taft Stettinius & Hollister LLP		2200 IDS Center 80 South 8th Street Minneapolis MN, 55402 United States	Electronic Service		No	22-416Official
174	Toby	Stephens	tobys@grandportage.com	Grand Portage Band of Lake Superior Chippewa		PO BOX 428 Grand Portage MN, 55605 United States	Electronic Service		No	22-416Official
175	Cary	Stephenson	cstephenson@otpc.com	Otter Tail Power Company		215 South Cascade Street Fergus Falls MN, 56537 United States	Electronic Service		No	22-416Official
176	Mark	Strohfus	mstrohfus@greenergy.com	Great River Energy		12300 Elm Creek Boulevard Maple Grove MN, 55369-4718 United States	Electronic Service		No	22-416Official
177	Carl	Strohm	cjsmg@sbcglobal.net	SBC Global		105 East Edgewood Ave Indianapolis IN, 46227 United States	Electronic Service		No	22-416Official
178	James M	Strommen	jstrommen@kennedy-graven.com	Kennedy & Graven, Chartered		150 S 5th St Ste 700 Minneapolis MN, 55402 United States	Electronic Service		No	22-416Official
179	Samuel	Strong	sam.strong@redlakenation.org	Red Lake Nation		15484 Migizi Drive Red Lake MN, 56671 United States	Electronic Service		No	22-416Official
180	Tom	Swafford	tswafford@umsi.us	Utility Mapping Services, Inc		3947 E Calvary Rd Suite 103 Duluth MN, 55803 United States	Electronic Service		No	22-416Official
181	Eric	Swanson	eswanson@winthrop.com	Winthrop & Weinstine		225 S 6th St Ste 3500 Capella Tower Minneapolis MN, 55402-4629 United States	Electronic Service		No	22-416Official
182	Todd	Tadych	ttadych@atcllc.com	American Transmission Company LLC		5303 Fen Oak Dr Madison WI, 53718 United States	Electronic Service		No	22-416Official
183	Camille	Tanhoff	kamip@uppersiouxcommunity-nsn.gov	Upper Sioux Community		5722 Travers Lane PO BOX 147 Granite Falls MN, 56241 United States	Electronic Service		No	22-416Official
184	Stuart	Tommerdahl	stommerdahl@otpc.com	Otter Tail Power Company		215 S Cascade St PO Box 496 Fergus Falls MN, 56537 United States	Electronic Service		No	22-416Official
185	Jayne	Trusty	execdir@swrdc.org	SWRDC		2401 Broadway Ave #1 Slayton MN, 56172 United States	Electronic Service		No	22-416Official

#	First Name	Last Name	Email	Organization	Agency	Address	Delivery Method	Alternate Delivery Method	View Trade Secret	Service List Name
186	Caralyn	Trutna	carrie@uppersiouxcommunity-nsn.gov	Upper Sioux Community		Upper Sioux Community P.O. Box 147 Granite Falls MN, 55372 United States	Electronic Service		No	22-416Official
187	Jen	Tyler	tyler.jennifer@epa.gov	US Environmental Protection Agency		Environmental Planning & Evaluation Unit 77 W Jackson Blvd. Mailstop B-19J Chicago IL, 60604-3590 United States	Electronic Service		No	22-416Official
188	Kodi	Verhalen	kverhalen@taftlaw.com	Taft Stettinius & Hollister LLP		80 S 8th St Ste 2200 Minneapolis MN, 55402 United States	Electronic Service		No	22-416Official
189	Leonard	Wabasha	leonard.wabasha@shakopeedakota.org	Shakopee Mdewakanton Sioux Community		2300 Tiwaha Circle Shakopee MN, 55379 United States	Electronic Service		No	22-416Official
190	Haley	Waller Pitts	hwallerpitts@fredlaw.com	Fredrikson & Byron, P.A.		60 S Sixth St Ste 1500 Minneapolis MN, 55402-4400 United States	Electronic Service		No	22-416Official
191	Caren	Warner	caren.warner@state.mn.us		Department of Commerce	85 7th Place East Suite 280 St. Paul MN, 55101-2198 United States	Electronic Service		No	22-416Official
192	Cynthia	Warzecha	cynthia.warzecha@state.mn.us	Minnesota Department of Natural Resources		500 Lafayette Road Box 25 St. Paul MN, 55155-4040 United States	Electronic Service		No	22-416Official
193	Elizabeth	Wefel	eawefel@flaherty-hood.com	Missouri River Energy Services		525 Park St Ste 470 Saint Paul MN, 55103 United States	Electronic Service		No	22-416Official
194	Heather	Westra	heather.westra@piic.org	Prairie Island Indian Community		5636 Sturgeon Lake Rd Welch MN, 55089 United States	Electronic Service		No	22-416Official
195	Alan	Whipple	sa.property@state.mn.us		Minnesota Department Of Revenue	Property Tax Division 600 N. Robert Street St. Paul MN, 55146-3340 United States	Electronic Service		No	22-416Official
196	Deanna	White	mncwa@cleanwater.org	Clean Water Action & Water Fund of MN		330 S 2nd Ave Ste 420 Minneapolis MN, 55401 United States	Electronic Service		No	22-416Official
197	Noah	White	noah.white@piic.org	Prairie Island Indian Community		5636 Sturgeon Lake Road Welch MN, 55089 United States	Electronic Service		No	22-416Official
198	Steve	White	steve.white@llojibwe.net	Leech Lake Band of Ojibwe		190 Sailstar Drive NW Cass Lake MN, 56633 United States	Electronic Service		No	22-416Official

#	First Name	Last Name	Email	Organization	Agency	Address	Delivery Method	Alternate Delivery Method	View Trade Secret	Service List Name
199	Cody	Whitebear	cody.whitebear@piic.org	Prairie Island Indian Community		5636 Sturgeon Lake Road Welch MN, 55089 United States	Electronic Service		No	22-416Official
200	Mike	Wilson	mike.wilson@millelacsband.com	Mille Lacs Band of Ojibwe		43408 Oodena Dr Onamia MN, 56359 United States	Electronic Service		No	22-416Official
201	Virgil	Wind	virgil.wind@millelacsband.com	Mille Lacs Band of Ojibwe		43408 Oodena Drive Onamia MN, 56359 United States	Electronic Service		No	22-416Official
202	Joseph	Windler	jwindler@winthrop.com	Winthrop & Weinstine		225 South Sixth Street, Suite 3500 Minneapolis MN, 55402 United States	Electronic Service		No	22-416Official
203	Jonathan	Wolfgram	jonathan.wolfgram@state.mn.us		Office of Pipeline Safety	445 Minnesota St Ste 147 Woodbury MN, 55125 United States	Electronic Service		No	22-416Official
204	Laurie	York	laurie.york@whiteearth-nsn.gov	White Earth Reservation Business Committee		PO Box 418 White Earth MN, 56591 United States	Electronic Service		No	22-416Official
205	Kurt	Zimmerman	kwz@ibew160.org	Local Union #160, IBEW		2909 Anthony Ln St Anthony Village MN, 55418-3238 United States	Electronic Service		No	22-416Official
206	Patrick	Zomer	pat.zomer@lawmoss.com	Moss & Barnett PA		150 S 5th St #1200 Minneapolis MN, 55402 United States	Electronic Service		No	22-416Official

#	First Name	Last Name	Email	Organization	Agency	Address	Delivery Method	Alternate Delivery Method	View Trade Secret	Service List Name
1	Lisa	Agrimonti	lagrimonti@fredlaw.com	Fredrikson & Byron, P.A.		60 South Sixth Street Suite 1500 Minneapolis MN, 55402-4400 United States	Electronic Service		No	22-415Official
2	Jim	Atkinson	jbatkinson@allete.com	Minnesota Power		30 West Superior Street Duluth MN, 55802 United States	Electronic Service		No	22-415Official
3	Matthew	Brodin	mbrodin@allete.com	Minnesota Power		30 West Superior Street Duluth MN, 55802 United States	Electronic Service		No	22-415Official
4	Generic	Commerce Attorneys	commerce.attorneys@ag.state.mn.us		Office of the Attorney General - Department of Commerce	445 Minnesota Street Suite 1400 St. Paul MN, 55101 United States	Electronic Service		Yes	22-415Official
5	MP Regulatory	Compliance	mpregulatorycompliance@mnpower.com	Minnesota Power		30 W Superior St. Duluth MN, 55802 United States	Electronic Service		No	22-415Official
6	Brandon	Crawford	brandonc@cubminnesota.org	Citizens Utility Board of Minnesota		332 Minnesota St Ste W1360 St. Paul MN, 55101 United States	Electronic Service		No	22-415Official
7	Richard	Dornfeld	richard.dornfeld@ag.state.mn.us		Office of the Attorney General - Department of Commerce	Minnesota Attorney General's Office 445 Minnesota Street, Suite 1800 Saint Paul MN, 55101 United States	Electronic Service		No	22-415Official
8	Adam	Duininck	aduininck@ncsccc.org	North Central States Regional Council of Carpenters		700 Olive Street St. Paul MN, 55130 United States	Electronic Service		No	22-415Official
9	Bret	Eknes	bret.eknes@state.mn.us		Public Utilities Commission	Suite 350 121 7th Place East St. Paul MN, 55101-2147 United States	Electronic Service		No	22-415Official
10	Sharon	Ferguson	sharon.ferguson@state.mn.us		Department of Commerce	85 7th Place E Ste 280 Saint Paul MN, 55101-2198 United States	Electronic Service		No	22-415Official

#	First Name	Last Name	Email	Organization	Agency	Address	Delivery Method	Alternate Delivery Method	View Trade Secret	Service List Name
11	Zachary	Golkowski	z Golkowski@mnpower.com	Minnesota Power		30 W. Superior Street Duluth MN, 55802 United States	Electronic Service		No	22-415Official
12	Abigail	Hencheck	ahencheck@mncenter.org	Minnesota Center for Environmental Advocacy		1919 University Ave W Suite 515 St. Paul MN, 55104 United States	Electronic Service		No	22-415Official
13	Valerie	Herring	vherring@taftlaw.com	Taft Stettinius & Hollister LLP		2200 IDS Center 80 S. Eighth Street Minneapolis MN, 55402 United States	Electronic Service		No	22-415Official
14	Brian	Hunker	bhunker@greenergy.com	Great River Energy		12300 Elm Creek Blvd Maple Grove MN, 55369 United States	Electronic Service		No	22-415Official
15	Craig	Janezich	craig.janezich@state.mn.us		Public Utilities Commission	121 7th Pl E #350 St. Paul MN, 55101 United States	Electronic Service		No	22-415Official
16	Raymond	Kirsch	raymond.kirsch@state.mn.us		Department of Commerce	85 7th Place E Ste 500 St. Paul MN, 55101 United States	Electronic Service		No	22-415Official
17	Stacy	Kotch Egstad	stacy.kotch@state.mn.us		MINNESOTA DEPARTMENT OF TRANSPORTATION	395 John Ireland Blvd. St. Paul MN, 55155 United States	Electronic Service		No	22-415Official
18	Jennifer	Kuklenski	jkuklenski@mnpower.com	Minnesota Power		30 West Superior Street Duluth MN, 55082 United States	Electronic Service		No	22-415Official
19	Dan	Leshner	dlesher@greenergy.com	Great River Energy		12300 Elm Creek Blvd Maple Grove MN, 55369 United States	Electronic Service		No	22-415Official
20	Discovery	Manager	discoverymanager@mnpower.com	Minnesota Power		30 W Superior St Duluth MN, 55802 United States	Electronic Service		No	22-415Official
21	John	McElfresh	john@bvgassistedliving.com			18323 County Road 22 Brainerd MN, 56401 United States	Electronic Service		No	22-415Official

#	First Name	Last Name	Email	Organization	Agency	Address	Delivery Method	Alternate Delivery Method	View Trade Secret	Service List Name
22	Brian	Meloy	bmeloy@grenergy.com	Great River Energy		12300 Elm Creek Blvd Maple Grove MN, 55369 United States	Electronic Service		No	22-415Official
23	Kimberly	Middendorf	kimberly.middendorf@state.mn.us		Office of Administrative Hearings	PO Box 64620 600 Robert St N Saint Paul MN, 55164-0620 United States	Electronic Service		No	22-415Official
24	David	Moeller	dmoeller@allete.com	Minnesota Power			Electronic Service		No	22-415Official
25	Carol A.	Overland	overland@legalelectric.org	Legalelectric - Overland Law Office		1110 West Avenue Red Wing MN, 55066 United States	Electronic Service		No	22-415Official
26	Andre	Porter	misolegal@misoenergy.org	MISO		720 City Center Drive Carmel IN, 46032 United States	Electronic Service		No	22-415Official
27	Kevin	Pranis	kpranis@liunagroc.com	Laborers' District Council of MN and ND		81 E Little Canada Road St. Paul MN, 55117 United States	Electronic Service		No	22-415Official
28	Generic Notice	Residential Utilities Division	residential.utilities@ag.state.mn.us		Office of the Attorney General - Residential Utilities Division	1400 BRM Tower 445 Minnesota St St. Paul MN, 55101-2131 United States	Electronic Service		Yes	22-415Official
29	Nathaniel	Runke	nrunke@local49.org			611 28th St. NW Rochester MN, 55901 United States	Electronic Service		No	22-415Official
30	Will	Seuffert	will.seuffert@state.mn.us		Public Utilities Commission	121 7th Pl E Ste 350 Saint Paul MN, 55101 United States	Electronic Service		Yes	22-415Official
31	Janet	Shaddix Elling	jshaddix@janetshaddix.com	Shaddix And Associates		7400 Lyndale Ave S Ste 190 Richfield MN, 55423 United States	Electronic Service		No	22-415Official
32	Kodi	Verhalen	kverhalen@taftlaw.com	Taft Stettinius & Hollister LLP		80 S 8th St Ste 2200 Minneapolis MN, 55402 United States	Electronic Service		No	22-415Official
33	Haley	Waller Pitts	hwallerpitts@fredlaw.com	Fredrikson & Byron, P.A.		60 S Sixth St Ste 1500 Minneapolis	Electronic Service		No	22-415Official

#	First Name	Last Name	Email	Organization	Agency	Address	Delivery Method	Alternate Delivery Method	View Trade Secret	Service List Name
						MN, 55402-4400 United States				
34	Cynthia	Warzecha	cynthia.warzecha@state.mn.us	Minnesota Department of Natural Resources		500 Lafayette Road Box 25 St. Paul MN, 55155-4040 United States	Electronic Service		No	22-415Official

## APPENDIX E: Certificate of Need 60-Day Cost Compliance Filing



30 West Superior Street, Duluth, MN 55802  
218.772.2641, [www.mnpower.com](http://www.mnpower.com)

12300 Elm Creek Boulevard, Maple Grove, MN 55369  
763.445.5000, [www.greatriverenergy.com](http://www.greatriverenergy.com)

April 29, 2025

VIA E-FILING

Will Seuffert  
Executive Secretary  
Minnesota Public Utilities Commission  
121 7th Place East, Suite 350  
St. Paul, MN 55101-2147

**Re:** *In the Matter of the Application of Minnesota Power and Great River Energy for a Certificate of Need and Route Permit for the Northland Reliability Project 345 kV Transmission Line*  
MPUC Docket Nos. E015,ET2/CN-22-416; E015,ET2/TL-22-415  
**60-Day Cost Compliance Filing**

Dear Mr. Seuffert:

Minnesota Power and Great River Energy ("Permittees"), submit this cost compliance filing in accordance with Order Point 9 of the Minnesota Public Utilities Commission's ("Commission") February 28, 2025 Order granting a Certificate of Need and Route Permit ("Order") for the Northland Reliability Project ("Project") and Section 6.12 of the Route Permit. Order Point 9 of the Order and Section 6.12 of the Route Permit require Permittees to file revised Project cost estimates in 2022 dollars within 60 days of the date of the Commission's written Order.

In its Order, the Commission approved the Permittees' Co-Location Maximization Route with modifications. The Commission approved modifications to Permittees' Co-Location Maximization Route are:

- **Hill City to Little Pine Region** – "The Commission agrees with the ALJ and will adopt Applicants' route in the Hill City to Little Pine region. The Commission is not persuaded, however, that it should adopt the modification to AA1 because the increased cost to ratepayers may not be warranted. Instead, for the property identified in AA1, the Commission will require Applicants to continue the proposed route to the south and east of the 92 line without the proposed realignment, and Permittees must work with the affected landowners to provide mitigation or relocation."<sup>1</sup>

---

<sup>1</sup> Order at 6.

Mr. Seuffert  
April 29, 2025  
Page 2

- **Cole Lake to Riverton Region** – “To reduce the number of structures at the Mississippi Crossing in the Cole Lake to Riverton region, the Commission will require Applicants to extend the co-location at the Mississippi River in Perry Lake Township as proposed by Applicants in Attachment 1 of their January 10, 2025 filing.”<sup>2</sup>
- **Long Lake Region** – “The Commission considers H4 and H7 preferable to H1 for the reasons Applicants identified . . . . The Commission appreciates Erickson’s and Loehr’s efforts in working with Applicants to find an acceptable route placement. The Commission agrees with the placement and will therefore direct Applicants’ to route the Project to and through Applicants’ modified H4 and H7, but when it reaches the northern boundary of Erickson’s property, to locate the line on the eastern boundary of the 3,000-foot route width leading to and through Applicants’ modified H4 and H7. The Commission will also direct Applicants to expand the route width at the already expanded area at the intersection of Minnesota Highway 18, CSAH 23 and County Road 159 in Crow Wing County by an additional 1,000 feet to the north to allow Applicants to work with the landowners in this portion of the route to identify acceptable routes from west to east in this area.”<sup>3</sup>

The Commission’s modifications to the Permittees’ Co-Location Maximization Route resulted in changes to the costs for the Project from what was provided by the Permittees in September 2024.<sup>4</sup> A table of the revised cost estimates of the approved Co-Location Maximization Route as modified by the Commission is provided below as **Table 1**.

**Table 1. Co-Location Maximization Route with Commission Revisions**

	Low-Range Cost (2022\$)(millions)	Mid-Range Cost (2022\$)(millions)	High-Range Cost (2022\$)(millions)
Co-Location Maximization Route <sup>5</sup>	\$1,122.5	\$1,367.9	\$1,565.8
Modified AA1 <sup>6</sup>	\$(5.8)	\$(7.1)	\$(8.1)
AA3 Mississippi River Extension <sup>7</sup>	\$4.8	\$5.9	\$6.7
Long Lake <sup>8</sup>	\$2.1	\$2.5	\$2.9
<b>TOTAL</b>	<b>\$1,123.6</b>	<b>\$1,369.2</b>	<b>\$1,567.3</b>

<sup>2</sup> Order at 7.

<sup>3</sup> Order at 8.

<sup>4</sup> Applicants’ September 19, 2024 Response to Public Hearing Comments at Attachment C at 5 (Sept. 19, 2024) (eDocket No. [20249-210359-06](#)).

<sup>5</sup> ALJ Report at Finding 191.

<sup>6</sup> Applicants’ September 19, 2024 Response to Public Hearing Comments at Attachment C (Sept. 19, 2024) (eDocket No. [20249-210359-06](#)).

<sup>7</sup> Applicants’ Response to Commission Questions (Jan. 10, 2025) (eDocket No. [20251-213840-01](#)).

<sup>8</sup> Applicants’ September 19, 2024 Response to Public Hearing Comments at Attachment C (Sept. 19, 2024) (eDocket No. [20249-210359-06](#)).

Mr. Seuffert  
April 29, 2025  
Page 3

The Mid-Range cost estimate in Table 1 is unchanged from what was provided to the Commission by the Permittees during discussions at the Commission's January 23, 2025 hearing. The Permittees note that the Mid-Range and High-Range cost estimates for the approved Co-Location Maximization Route, as modified by the Commission, are above the \$1.21 billion cost included in the Commission's Order Point 3 and Route Permit Section 6.9.

If you have any questions or need additional information, please contact Christian Winter at [CWinter@mnpower.com](mailto:CWinter@mnpower.com) or Matthew Ellis at [MEllis@GREnergy.com](mailto:MEllis@GREnergy.com).

Sincerely,

*/s/ Christian Winter*  
Christian Winter  
Minnesota Power  
Manager – Regional Transmission  
Planning

*/s/ Matthew Ellis*  
Matthew Ellis  
Great River Energy  
Manager – Transmission Strategy &  
Development

cc: Service Lists

IN THE MATTER OF THE APPLICATION OF  
MINNESOTA POWER AND GREAT RIVER  
ENERGY FOR A CERTIFICATE OF NEED AND  
ROUTE PERMIT FOR THE NORTHLAND  
RELIABILITY PROJECT 345 kV  
TRANSMISSION LINE

MPUC DOCKET Nos. E015,ET2/CN-22-415  
AND E015,ET2/TL-22-416  
OAH DOCKET NO. 21-2500-39822

### **CERTIFICATE OF SERVICE**

Carly Krause certifies that on the 29<sup>th</sup> day of April, 2025, on behalf of Minnesota Power and Great River Energy, she efiled a true and correct copy of the **60-Day Cost Compliance Filing** via [eDockets](#). Said document was also served via U.S. Mail or email as designated on the attached Service Lists on file with the Minnesota Public Utilities Commission in the above-referenced dockets.

*/s/ Carly Krause*  
\_\_\_\_\_  
Carly Krause

#	First Name	Last Name	Email	Organization	Agency	Address	Delivery Method	Alternate Delivery Method	View Trade Secret	Service List Name
1	Lisa	Agrimonti	lagrimonti@fredlaw.com	Fredrikson & Byron, P.A.		60 South Sixth Street Suite 1500 Minneapolis MN, 55402-4400 United States	Electronic Service		No	22-415Official
2	Jim	Atkinson	jbatkinson@allete.com	Minnesota Power		30 West Superior Street Duluth MN, 55802 United States	Electronic Service		No	22-415Official
3	Matthew	Brodin	mbrodin@allete.com	Minnesota Power		30 West Superior Street Duluth MN, 55802 United States	Electronic Service		No	22-415Official
4	Generic	Commerce Attorneys	commerce.attorneys@ag.state.mn.us		Office of the Attorney General - Department of Commerce	445 Minnesota Street Suite 1400 St. Paul MN, 55101 United States	Electronic Service		Yes	22-415Official
5	MP Regulatory	Compliance	mpregulatorycompliance@mnpower.com	Minnesota Power		30 W Superior St. Duluth MN, 55802 United States	Electronic Service		No	22-415Official
6	Brandon	Crawford	brandonc@cubminnesota.org	Citizens Utility Board of Minnesota		332 Minnesota St Ste W1360 St. Paul MN, 55101 United States	Electronic Service		No	22-415Official
7	Richard	Dornfeld	richard.dornfeld@ag.state.mn.us		Office of the Attorney General - Department of Commerce	Minnesota Attorney General's Office 445 Minnesota Street, Suite 1800 Saint Paul MN, 55101 United States	Electronic Service		No	22-415Official
8	Adam	Duininck	aduininck@ncsrcc.org	North Central States Regional Council of Carpenters		700 Olive Street St. Paul MN, 55130 United States	Electronic Service		No	22-415Official
9	Bret	Eknes	bret.eknes@state.mn.us		Public Utilities Commission	Suite 350 121 7th Place East St. Paul MN, 55101-2147 United States	Electronic Service		No	22-415Official
10	Sharon	Ferguson	sharon.ferguson@state.mn.us		Department of Commerce	85 7th Place E Ste 280 Saint Paul MN, 55101-2198 United States	Electronic Service		No	22-415Official

#	First Name	Last Name	Email	Organization	Agency	Address	Delivery Method	Alternate Delivery Method	View Trade Secret	Service List Name
11	Zachary	Golkowski	z Golkowski@mnpower.com	Minnesota Power		30 W. Superior Street Duluth MN, 55802 United States	Electronic Service		No	22-415Official
12	Abigail	Hencheck	ahencheck@mncenter.org	Minnesota Center for Environmental Advocacy		1919 University Ave W Suite 515 St. Paul MN, 55104 United States	Electronic Service		No	22-415Official
13	Valerie	Herring	vherring@taftlaw.com	Taft Stettinius & Hollister LLP		2200 IDS Center 80 S. Eighth Street Minneapolis MN, 55402 United States	Electronic Service		No	22-415Official
14	Brian	Hunker	bhunker@greenergy.com	Great River Energy		12300 Elm Creek Blvd Maple Grove MN, 55369 United States	Electronic Service		No	22-415Official
15	Craig	Janezich	craig.janezich@state.mn.us		Public Utilities Commission	121 7th Pl E #350 St. Paul MN, 55101 United States	Electronic Service		No	22-415Official
16	Raymond	Kirsch	raymond.kirsch@state.mn.us		Department of Commerce	85 7th Place E Ste 500 St. Paul MN, 55101 United States	Electronic Service		No	22-415Official
17	Stacy	Kotch Egstad	stacy.kotch@state.mn.us		MINNESOTA DEPARTMENT OF TRANSPORTATION	395 John Ireland Blvd. St. Paul MN, 55155 United States	Electronic Service		No	22-415Official
18	Jennifer	Kuklenski	jkuklenski@mnpower.com	Minnesota Power		30 West Superior Street Duluth MN, 55082 United States	Electronic Service		No	22-415Official
19	Dan	Leshner	dlesher@greenergy.com	Great River Energy		12300 Elm Creek Blvd Maple Grove MN, 55369 United States	Electronic Service		No	22-415Official
20	Discovery	Manager	discoverymanager@mnpower.com	Minnesota Power		30 W Superior St Duluth MN, 55802 United States	Electronic Service		No	22-415Official
21	John	McElfresh	john@bvgassistedliving.com			18323 County Road 22 Brainerd MN, 56401 United States	Electronic Service		No	22-415Official

<b>#</b>	<b>First Name</b>	<b>Last Name</b>	<b>Email</b>	<b>Organization</b>	<b>Agency</b>	<b>Address</b>	<b>Delivery Method</b>	<b>Alternate Delivery Method</b>	<b>View Trade Secret</b>	<b>Service List Name</b>
22	Brian	Meloy	bmeloy@grenergy.com	Great River Energy		12300 Elm Creek Blvd Maple Grove MN, 55369 United States	Electronic Service		No	22-415Official
23	Kimberly	Middendorf	kimberly.middendorf@state.mn.us		Office of Administrative Hearings	PO Box 64620 600 Robert St N Saint Paul MN, 55164-0620 United States	Electronic Service		No	22-415Official
24	David	Moeller	dmoeller@allete.com	Minnesota Power			Electronic Service		No	22-415Official
25	Carol A.	Overland	overland@legalectric.org	Legalelectric - Overland Law Office		1110 West Avenue Red Wing MN, 55066 United States	Electronic Service		No	22-415Official
26	Andre	Porter	misolegal@misoenergy.org	MISO		720 City Center Drive Carmel IN, 46032 United States	Electronic Service		No	22-415Official
27	Kevin	Pranis	kpranis@liunagro.com	Laborers' District Council of MN and ND		81 E Little Canada Road St. Paul MN, 55117 United States	Electronic Service		No	22-415Official
28	Generic Notice	Residential Utilities Division	residential.utilities@ag.state.mn.us		Office of the Attorney General - Residential Utilities Division	1400 BRM Tower 445 Minnesota St St. Paul MN, 55101-2131 United States	Electronic Service		Yes	22-415Official
29	Nathaniel	Runke	nrunke@local49.org			611 28th St. NW Rochester MN, 55901 United States	Electronic Service		No	22-415Official
30	Will	Seuffert	will.seuffert@state.mn.us		Public Utilities Commission	121 7th Pl E Ste 350 Saint Paul MN, 55101 United States	Electronic Service		Yes	22-415Official
31	Janet	Shaddix Elling	jshaddix@janetshaddix.com	Shaddix And Associates		7400 Lyndale Ave S Ste 190 Richfield MN, 55423 United States	Electronic Service		No	22-415Official
32	Kodi	Verhalen	kverhalen@taftlaw.com	Taft Stettinius & Hollister LLP		80 S 8th St Ste 2200 Minneapolis MN, 55402 United States	Electronic Service		No	22-415Official
33	Haley	Waller Pitts	hwallerpitts@fredlaw.com	Fredrikson & Byron, P.A.		60 S Sixth St Ste 1500 Minneapolis	Electronic Service		No	22-415Official

#	First Name	Last Name	Email	Organization	Agency	Address	Delivery Method	Alternate Delivery Method	View Trade Secret	Service List Name
						MN, 55402-4400 United States				
34	Cynthia	Warzecha	cynthia.warzecha@state.mn.us	Minnesota Department of Natural Resources		500 Lafayette Road Box 25 St. Paul MN, 55155-4040 United States	Electronic Service		No	22-415Official

#	First Name	Last Name	Email	Organization	Agency	Address	Delivery Method	Alternate Delivery Method	View Trade Secret	Service List Name
1	Lisa	Agrimonti	lagrimonti@fredlaw.com	Fredrikson & Byron, P.A.		60 South Sixth Street Suite 1500 Minneapolis MN, 55402-4400 United States	Electronic Service		No	22-416Official
2	Michael	Ahern	ahern.michael@dorsey.com	Dorsey & Whitney, LLP		50 S 6th St Ste 1500 Minneapolis MN, 55402-1498 United States	Electronic Service		No	22-416Official
3	Steve	Albrecht	steve.albrecht@shakopeedakota.org	Shakopee Mdewakanton Sioux Community		Shakopee Mdewakanton Sioux Community 2330 Sioux Trail NW Prior Lake MN, 55372 United States	Electronic Service		No	22-416Official
4	Jay	Anderson	jaya@cmpas.org	CMPAS		7550 Corporate Way Suite 100 Eden Prairie MN, 55344 United States	Electronic Service		No	22-416Official
5	Keith	Anderson	keith.anderson@shakopeedakota.org	Shakopee Mdewakanton Sioux Community		Shakopee Mdewakanton Sioux Community 2330 Sioux Trail NW Prior Lake MN, 55372 United States	Electronic Service		No	22-416Official
6	Kristine	Anderson	kanderson@greatermngas.com	Greater Minnesota Gas, Inc.		1900 Cardinal Lane PO Box 798 Faribault MN, 55021 United States	Electronic Service		No	22-416Official
7	Jaime	Arsenault	jaime.arsenault@whiteearth-nsn.gov	White Earth		PO BOX 418 White Earth MN, 56591 United States	Electronic Service		No	22-416Official
8	Jim	Atkinson	jbatkinson@allete.com	Minnesota Power		30 West Superior Street Duluth MN, 55802 United States	Electronic Service		No	22-416Official
9	David	Bell	david.bell@state.mn.us		Department of Health	POB 64975 St. Paul MN, 55164 United States	Electronic Service		No	22-416Official
10	Melanie	Benjamin	melanie.benjamin@millelacsband.com			43408 Oodena Drive Onamia MN, 56359 United States	Electronic Service		No	22-416Official
11	James J.	Bertrand	james.bertrand@stinson.com	STINSON LLP		50 S 6th St Ste 2600 Minneapolis MN, 55402 United States	Electronic Service		No	22-416Official
12	David	Birkholz	david.birkholz@state.mn.us	MN Department of Commerce		Suite 500 85 7th Place East St. Paul MN, 55101-2198 United States	Electronic Service		No	22-416Official
13	Michelle F.	Bissonnette	michelle.bissonnette@hdrinc.com	HDR Engineering, Inc.		Golden Hills Office Center 701 Xenia Ave S Ste 600	Electronic Service		No	22-416Official

#	First Name	Last Name	Email	Organization	Agency	Address	Delivery Method	Alternate Delivery Method	View Trade Secret	Service List Name
						Minneapolis MN, 55416 United States				
14	Hunter	Boldt	hunterboldt@redlakenation.org	Red Lake Nation		15484 Migizi Drive Red Lake MN, 56671 United States	Electronic Service		No	22-416Official
15	Sheldon	Boyd	sheldon.boyd@millelacsband.com	Mille Lacs Band of Ojibwe		43408 Oodena Drive Onamia MN, 56359 United States	Electronic Service		No	22-416Official
16	Matthew	Brodin	mbrodin@allete.com	Minnesota Power		30 West Superior Street Duluth MN, 55802 United States	Electronic Service		No	22-416Official
17	B, Andrew	Brown	brown_andrew@dorsey.com	Dorsey & Whitney LLP		Suite 1500 50 South Sixth Street Minneapolis MN, 55402-1498 United States	Electronic Service		No	22-416Official
18	Christina	Brusven	cbrusven@fredlaw.com	Fredrikson Byron		60 S 6th St Ste 1500 Minneapolis MN, 55402-4400 United States	Electronic Service		No	22-416Official
19	Scott	Buchanan	scottbuchanan@fdlrez.com	Fond du Lac Band of Lake Superior Chippewa		1720 Big Lake Road Cloquet MN, 55720 United States	Electronic Service		No	22-416Official
20	Shelley	Buck	shelley.buck@piic.org	Prairie Island Indian Community		Prairie Island Indian Community 5636 Sturgeon Lake Road Welch MN, 55089 United States	Electronic Service		No	22-416Official
21	Robert	Budreau	robert.budreau@llojibwe.net	Leech Lake Band of Ojibwe		190 SailStar Drive NW Cass Lake MN, 56633 United States	Electronic Service		No	22-416Official
22	James	Canaday	james.canaday@ag.state.mn.us		Office of the Attorney General - Residential Utilities Division	Suite 1400 445 Minnesota St. St. Paul MN, 55101 United States	Electronic Service		No	22-416Official
23	PUC	CAO	consumer.puc@state.mn.us		Public Utilities Commission	Consumer Affairs Office 121 7th Place E Suite 350 St. Paul MN, 55101 United States	Electronic Service		No	22-416Official
24	Cathy	Chavers	cchavers@boisforte-nsn.gov	Bois Forte Band of Chippewa		Bois Forte Tribal Government 5344 Lakeshore Drive Nett Lake MN, 55772 United States	Electronic Service		No	22-416Official
25	Michael	Childs, Jr.	michael.childsjr@piic.org	Prairie Island Indian Community		Prairie Island Indian Community 5636 Sturgeon	Electronic Service		No	22-416Official

#	First Name	Last Name	Email	Organization	Agency	Address	Delivery Method	Alternate Delivery Method	View Trade Secret	Service List Name
						Lake Road Welch MN, 55089 United States				
26	Cody	Chilson	cchilson@greatermngas.com	Greater Minnesota Gas, Inc. & Greater MN Transmission, LLC		1900 Cardinal Ln PO Box 798 Faribault MN, 55021 United States	Electronic Service		No	22-416Official
27	Ray	Choquette	rchoquette@agp.com	Ag Processing Inc.		12700 West Dodge Road PO Box 2047 Omaha NE, 68103-2047 United States	Electronic Service		No	22-416Official
28	John	Coffman	john@johncoffman.net	AARP		871 Tuxedo Blvd. St. Louis MO, 63119-2044 United States	Electronic Service		No	22-416Official
29	Generic	Commerce Attorneys	commerce.attorneys@ag.state.mn.us		Office of the Attorney General - Department of Commerce	445 Minnesota Street Suite 1400 St. Paul MN, 55101 United States	Electronic Service		Yes	22-416Official
30	Bill	Cook	bcook@rpu.org	Rochester Public Utilities		4000 East River Road NE Rochester MN, 55906 United States	Electronic Service		No	22-416Official
31	Water Programs	Coordinator	waterprograms.bwsr@state.mn.us		Minnesota Board of Water and Soil Resources	520 Lafayette Road N St. Paul MN, 55155 United States	Electronic Service		No	22-416Official
32	John	Crane	johncranefishing@gmail.com	Fishing		1250 Wee Gwaus DR SW Bemidji MN, 56601 United States	Electronic Service		No	22-416Official
33	Brandon	Crawford	brandonc@cubminnesota.org	Citizens Utility Board of Minnesota		332 Minnesota St Ste W1360 St. Paul MN, 55101 United States	Electronic Service		No	22-416Official
34	Hillary	Creurer	hcreurer@allete.com	Minnesota Power		30 W Superior St Duluth MN, 55802 United States	Electronic Service		No	22-416Official
35	George	Crocker	gwillc@nawo.org	North American Water Office		5093 Keats Avenue Lake Elmo MN, 55042 United States	Electronic Service		No	22-416Official
36	Rebecca	Crooks Stratton	rebecca.crooks-stratton@shakopeedakota.org	Shakopee Mdewakanton Sioux Community		Shakopee Mdewakanton Sioux Community 2330 Sioux Trail NW Prior Lake MN, 55372 United States	Electronic Service		No	22-416Official
37	Miyah	Danielson	miyahdanielson@fdlrez.com	Fond du Lac Band of Lake Superior Chippewa		1720 Big Lake Road Cloquet MN, 55720 United States	Electronic Service		No	22-416Official
38	Thomas	Davis	atdavis1972@outlook.com	-		1161 50th Ave Sherburn MN, 55077 United States	Electronic Service		No	22-416Official

#	First Name	Last Name	Email	Organization	Agency	Address	Delivery Method	Alternate Delivery Method	View Trade Secret	Service List Name
						56171 United States				
39	Jason	Decker	jason.decker@llojibwe.net	Leech Lake Band of Ojibwe		190 Sailstar Drive NW Cass Lake MN, 56633 United States	Electronic Service		No	22-416Official
40	Bobby	Deschampe	robertdeschampe@grandportage.com	Grand Portage Band of Lake Superior Chippewa		PO Box 428 Grand Portage MN, 55605 United States	Electronic Service		No	22-416Official
41	Randall	Doneen	randall.doneen@state.mn.us		Department of Natural Resources	500 Lafayette Rd, PO Box 25 Saint Paul MN, 55155 United States	Electronic Service		No	22-416Official
42	John	Drawz	jdrawz@fredlaw.com	Fredrikson & Byron, P.A.		Suite 1500 60 South Sixth Street Minneapolis MN, 55402-4400 United States	Electronic Service		No	22-416Official
43	Shane	Drift	sdrift@boisforte-nsn.gov	Bois Forte Band of Chippewa		Bois Forte Tribal Government 5344 Lakeshore Drive Nett Lake MN, 55772 United States	Electronic Service		No	22-416Official
44	Adam	Duininck	aduininck@ncsrcc.org	North Central States Regional Council of Carpenters		700 Olive Street St. Paul MN, 55130 United States	Electronic Service		No	22-416Official
45	Wally	Dupuis	wallydupuis@fdlband.org	Fond du Lac Band of Lake Superior Chippewa		1720 Big Lake Road Cloquet MN, 55720 United States	Electronic Service		No	22-416Official
46	Kevin	Dupuis, Sr.	kevindupuis@fdlrez.com			Reservation Business Committee 1720 Big Lake Rd Cloquet MN, 55720 United States	Electronic Service		No	22-416Official
47	Cory	Dutcher	cory.dutcher@ge.com	GE Power and Water		1 River Rd. Bldg. 37-413 Schenectady NY, 12345 United States	Electronic Service		No	22-416Official
48	Jamie	Edwards	jamie.edwards@millelacsband.com	Mille Lacs Band of Ojibwe		43408 Oodena Drive Onamia MN, 56358 United States	Electronic Service		No	22-416Official
49	Kristen	Eide Tollefson	healingsystems69@gmail.com	R-CURE		28477 N Lake Ave Frontenac MN, 55026-1044 United States	Electronic Service		No	22-416Official
50	Matthew	Ellis	mellis@greenergy.com	Great River Energy		null null, null United States	Electronic Service		No	22-416Official
51	Kyle	Fairbanks	kyle.fairbanks@llojibwe.net	Leech Lake Band of Ojibwe		190 Sailstar Drive NW Cass Lake MN, 56633 United States	Electronic Service		No	22-416Official

#	First Name	Last Name	Email	Organization	Agency	Address	Delivery Method	Alternate Delivery Method	View Trade Secret	Service List Name
52	Michael	Fairbanks	michael.fairbanks@whiteearth-nsn.gov	White Earth Reservation Business Committee		PO Box 418 White Earth MN, 56591 United States	Electronic Service		No	22-416Official
53	Kate	Fairman	kate.fairman@state.mn.us		Department of Natural Resources	Box 32 500 Lafayette Rd St. Paul MN, 55155-4032 United States	Electronic Service		No	22-416Official
54	John	Farrell	jfarrell@ilsr.org	Institute for Local Self-Reliance		2720 E. 22nd St Institute for Local Self-Reliance Minneapolis MN, 55406 United States	Electronic Service		No	22-416Official
55	Eric	Fehlhaber	efehlhaber@dakotaelectric.com	Dakota Electric Association		4300 220th St W Farmington MN, 55024 United States	Electronic Service		No	22-416Official
56	Annie	Felix Gerth	annie.felix-gerth@state.mn.us			Board of Water & Soil Resources 520 Lafayette Rd Saint Paul MN, 55155 United States	Electronic Service		No	22-416Official
57	Sharon	Ferguson	sharon.ferguson@state.mn.us		Department of Commerce	85 7th Place E Ste 280 Saint Paul MN, 55101-2198 United States	Electronic Service		No	22-416Official
58	Kade	Ferris	kade.ferris@redlakenation.org	Red Lake Region		PO Box 274 Red Lake MN, 56671 United States	Electronic Service		No	22-416Official
59	Leonard	Fineday	leonard.fineday@llojibwe.net	Leech Lake Bank of Ojibwe		190 Sailstar Drive NW Cass Lake MN, 56633 United States	Electronic Service		No	22-416Official
60	Terri	Finn	terri.goggeleye@llojibwe.net			null null, null United States	Electronic Service		No	22-416Official
61	Henry	Fox	henry.fox@whiteearth-nsn.gov	White Earth Nation		PO Box 418 White Earth MN, 56569 United States	Electronic Service		No	22-416Official
62	Gary	Frazer	gfrazier@mnchippewatribe.org	Minnesota Chippewa Tribe		PO Box 217 Cass Lake MN, 56633 United States	Electronic Service		No	22-416Official
63	Docketing	Fredlaw	docketing@fredlaw.com	Fredrickson & Byron		200 S 6th St, Suite 4000 Minneapolis MN, 55402 United States	Electronic Service		No	22-416Official
64	Daryll	Fuentes	energy@usg.com	USG Corporation		550 W Adams St Chicago IL, 60661 United States	Electronic Service		No	22-416Official
65	Mary Ann	Gagnon	maryann@grandportage.com	Grand Portage Band of Ojibwe		PO Box 428 Grand Portage MN, 55605 United States	Electronic Service		No	22-416Official

#	First Name	Last Name	Email	Organization	Agency	Address	Delivery Method	Alternate Delivery Method	View Trade Secret	Service List Name
66	Karen A	Gebhardt	kageb1@gvtel.com			43901 253rd Ave Leonard MN, 56652-4026 United States	Electronic Service		No	22-416Official
67	Shannon	Geshick	shannon.geshick@state.mn.us	Minnesota Indian Affairs Council (MIAC)		null null, null United States	Electronic Service		No	22-416Official
68	Tara	Geshick		Bois Forte Band of Chippewa Tribal Government		5344 Lakeshore Drive Nett Lake MN, 55772 United States	Paper Service		No	22-416Official
69	Todd	Green	todd.a.green@state.mn.us		Minnesota Department of Labor & Industry	443 Lafayette Rd N St. Paul MN, 55155-4341 United States	Electronic Service		No	22-416Official
70	Todd J.	Guerrero	todd.guerrero@kutakrock.com	Kutak Rock LLP		Suite 1750 220 South Sixth Street Minneapolis MN, 55402-1425 United States	Electronic Service		No	22-416Official
71	Jeremy	Hamilton	jhamilton@uppersiouxcommunity-nsn.gov	Upper Sioux Community		Upper Sioux Community PO Box 147 Granite Falls MN, 56241 United States	Electronic Service		No	22-416Official
72	Ashley	Harrison	ashley.harrison@llojibwe.net	Leech Lake Band of Ojibwe		190 Sailstar Dr NW Cass Lake MN, 56633 United States	Electronic Service		No	22-416Official
73	Larry	Hartman	larry.hartman@state.mn.us		Department of Commerce	85 7th Place East, Suite 280 St. Paul MN, 55101 United States	Electronic Service		No	22-416Official
74	Amy	Hastings	amyh@uppersiouxcommunity-nsn.gov	Upper Sioux Community		5722 Travers Lane PO Box 147 Granite Falls MN, 56241 United States	Electronic Service		No	22-416Official
75	Adam	Heinen	aheinen@dakotaelectric.com	Dakota Electric Association		4300 220th St W Farmington MN, 55024 United States	Electronic Service		No	22-416Official
76	Annete	Henkel	mui@mnuutilityinvestors.org	Minnesota Utility Investors		413 Wacouta Street #230 St.Paul MN, 55101 United States	Electronic Service		No	22-416Official
77	Valerie	Herring	vherring@taftlaw.com	Taft Stettinius & Hollister LLP		2200 IDS Center 80 S. Eighth Street Minneapolis MN, 55402 United States	Electronic Service		No	22-416Official
78	Corey	Hintz	chintz@dakotaelectric.com	Dakota Electric Association		4300 220th Street Farmington MN, 55024-9583 United States	Electronic Service		No	22-416Official
79	Michael	Hoppe	lu23@ibew23.org	Local Union 23, I.B.E.W.		445 Etna Street Ste. 61	Electronic Service		No	22-416Official

#	First Name	Last Name	Email	Organization	Agency	Address	Delivery Method	Alternate Delivery Method	View Trade Secret	Service List Name
						St. Paul MN, 55106 United States				
80	Kari	Howe	kari.howe@state.mn.us		DEED	332 Minnesota St, #E200 1ST National Bank Bldg St. Paul MN, 55101 United States	Electronic Service		No	22- 416Official
81	Lori	Hoyum	lhoyum@mnpower.com	Minnesota Power		30 West Superior Street Duluth MN, 55802 United States	Electronic Service		No	22- 416Official
82	Annie	Jackson	cheryl.jackson@whiteearth-nsn.gov	White Earth Nation		White Earth Tribal Headquarters 35500 Eagle View Road Ogemo MN, 56569 United States	Electronic Service		No	22- 416Official
83	Faron	Jackson, Sr.	faron.jackson@llojibwe.net			190 Sailstar Drive NW Cass Lake MN, 56633 United States	Electronic Service		No	22- 416Official
84	Travis	Jacobson	travis.jacobson@mdu.com	Great Plains Natural Gas Company		400 N 4th St Bismarck ND, 58501 United States	Electronic Service		No	22- 416Official
85	Craig	Janezich	craig.janezich@state.mn.us		Public Utilities Commission	121 7th PI E #350 St. Paul MN, 55101 United States	Electronic Service		No	22- 416Official
86	Alan	Jenkins	aj@jenkinsatlaw.com	Jenkins at Law		2950 Yellowtail Ave. Marathon FL, 33050 United States	Electronic Service		No	22- 416Official
87	Kevin	Jensvold	kevinj@uppersiouxcommunity-nsn.gov	Upper Sioux Community		PO Box 147 Granite Falls MN, 56241- 0147 United States	Electronic Service		No	22- 416Official
88	Jody	Johnson	jody.johnson@piic.org	Prairie Island Indian Community		5636 Sturgeon Lake Rd Welch MN, 55089 United States	Electronic Service		No	22- 416Official
89	Johnny	Johnson	johnny.johnson@piic.org	Prairie Island Indian Community		5636 Sturgeon Lake Road Welch MN, 55089 United States	Electronic Service		No	22- 416Official
90	Richard	Johnson	rick.johnson@lawmoss.com	Moss & Barnett		150 S. 5th Street Suite 1200 Minneapolis MN, 55402 United States	Electronic Service		No	22- 416Official
91	Scott	Johnson	scott.johnson@ci.medina.mn.us	City of Medina		2052 County Road 24 Medina MN, 55340-9790 United States	Electronic Service		No	22- 416Official

#	First Name	Last Name	Email	Organization	Agency	Address	Delivery Method	Alternate Delivery Method	View Trade Secret	Service List Name
92	Sarah	Johnson Phillips	sjphillips@stoel.com	Stoel Rives LLP		33 South Sixth Street Suite 4200 Minneapolis MN, 55402 United States	Electronic Service		No	22-416Official
93	Michael	Kaluzniak	mike.kaluzniak@state.mn.us		Public Utilities Commission	Suite 350 121 Seventh Place East St. Paul MN, 55101 United States	Electronic Service		No	22-416Official
94	Nick	Kaneski	nick.kaneski@enbridge.com	Enbridge Energy Company, Inc.		11 East Superior St Ste 125 Duluth MN, 55802 United States	Electronic Service		No	22-416Official
95	Tom	Karas	tomskaras@gmail.com			3171 309th Ave NW Cambridge MN, 55008 United States	Electronic Service		No	22-416Official
96	Bruce	King	brenda@ranww.org	Realtors, Association of Northwestern WI		Suite 3 1903 Keith Street Eau Claire WI, 54701 United States	Electronic Service		No	22-416Official
97	Raymond	Kirsch	raymond.kirsch@state.mn.us		Department of Commerce	85 7th Place E Ste 500 St. Paul MN, 55101 United States	Electronic Service		No	22-416Official
98	Chad	Konickson	chad.konickson@usace.army.mil	U.S.Army Corps of Engineers		332 Minnesota St. Suite E1500 Saint Paul MN, 55101 United States	Electronic Service		No	22-416Official
99	Stacy	Kotch Egstad	stacy.kotch@state.mn.us		MINNESOTA DEPARTMENT OF TRANSPORTATION	395 John Ireland Blvd. St. Paul MN, 55155 United States	Electronic Service		No	22-416Official
100	Michael	Krikava	mkrikava@taftlaw.com	Taft Stettinius & Hollister LLP		2200 IDS Center 80 S 8th St Minneapolis MN, 55402 United States	Electronic Service		No	22-416Official
101	Nicolle	Kupser	nkupser@greatermngas.com	Greater Minnesota Gas, Inc.		1900 Cardinal Ln PO Box 798 Faribault MN, 55021 United States	Electronic Service		No	22-416Official
102	Mike	Laroque	mike.laroque@whiteearth-nsn.gov	White Earth Nation		PO Box 418 White Earth MN, 56591 United States	Electronic Service		No	22-416Official
103	Robert L	Larsen	robert.larsen@lowersioux.com	Lower Sioux Indian Community		PO Box 308 39527 Reservation Highway 1 Morton MN, 56270 United States	Electronic Service		No	22-416Official
104	James D.	Larson	james.larson@avantenergy.com	Avant Energy Services		220 S 6th St Ste 1300 Minneapolis MN, 55402 United States	Electronic Service		No	22-416Official
105	Peder	Larson	plarson@larkinhoffman.com	Larkin Hoffman Daly & Lindgren, Ltd.		8300 Norman Center Drive Suite 1000 Bloomington	Electronic Service		No	22-416Official

#	First Name	Last Name	Email	Organization	Agency	Address	Delivery Method	Alternate Delivery Method	View Trade Secret	Service List Name
						MN, 55437 United States				
106	Dan	Leshner	dlesher@greenergy.com	Great River Energy		12300 Elm Creek Blvd Maple Grove MN, 55369 United States	Electronic Service		No	22-416Official
107	Eric	Lipman	eric.lipman@state.mn.us		Office of Administrative Hearings	PO Box 64620 St. Paul MN, 55164-0620 United States	Electronic Service		No	22-416Official
108	Jason	Loos	jason.loos@centerpointenergy.com	CenterPoint Energy Resources Corp.		505 Nicollet Mall 3rd Floor Minneapolis MN, 55402 United States	Electronic Service		No	22-416Official
109	Susan	Ludwig	sludwig@mnpower.com	Minnesota Power		30 West Superior Street Duluth MN, 55802 United States	Electronic Service		No	22-416Official
110	Vernelle	Lussier	vernelle.lussier@redlakenation.org	Red Lake Nation		15484 Migizi Drive Red Lake MN, 56671 United States	Electronic Service		No	22-416Official
111	Kavita	Maini	kmaini@wi.rr.com	KM Energy Consulting, LLC		961 N Lost Woods Rd Oconomowoc WI, 53066 United States	Electronic Service		No	22-416Official
112	Dawn S	Marsh	dawn_marsh@fws.gov	U.S. Fish & Wildlife Service		Minnesota-Wisconsin Field Offices 4101 American Blvd E Bloomington MN, 55425 United States	Electronic Service		No	22-416Official
113	Shena	Matrious	shena.matrious@millelacsband.com	Mille Lacs Band of Ojibwe		43408 Oodena Drive Onamia MN, 56349 United States	Electronic Service		No	22-416Official
114	April	McCormick	aprilm@grandportage.com	Grand Portage Band of Lake Superior Chippewa		PO Box 428 Grand Portage MN, 55605 United States	Electronic Service		No	22-416Official
115	Brian	Meloy	bmeloy@greenergy.com	Great River Energy		12300 Elm Creek Blvd Maple Grove MN, 55369 United States	Electronic Service		No	22-416Official
116	Joseph	Meyer	joseph.meyer@ag.state.mn.us		Office of the Attorney General - Residential Utilities Division	Bremer Tower, Suite 1400 445 Minnesota Street St Paul MN, 55101-2131 United States	Electronic Service		No	22-416Official
117	Valentina	Mgeni	valentina.mgeni@piic.org	Prairie Island Indian Community		Prairie Island Indian Community 5636 Sturgeon Lake Road Welch MN, 55089 United States	Electronic Service		No	22-416Official

#	First Name	Last Name	Email	Organization	Agency	Address	Delivery Method	Alternate Delivery Method	View Trade Secret	Service List Name
118	Kimberly	Middendorf	kimberly.middendorf@state.mn.us		Office of Administrative Hearings	PO Box 64620 600 Robert St N Saint Paul MN, 55164-0620 United States	Electronic Service		Yes	22-416Official
119	Cole W.	Miller	cole.miller@shakopeedakota.org	Shakopee Mdewakanton Sioux Community		Shakopee Mdewakanton Sioux Community 2330 Sioux Trail NW Prior Lake MN, 55372 United States	Electronic Service		No	22-416Official
120	Stacy	Miller	stacy.miller@minneapolismn.gov	City of Minneapolis		350 S. 5th Street Room M 301 Minneapolis MN, 55415 United States	Electronic Service		No	22-416Official
121	David	Moeller	dmoeller@allete.com	Minnesota Power			Electronic Service		No	22-416Official
122	Andrew	Moratzka	andrew.moratzka@stoel.com	Stoel Rives LLP		33 South Sixth St Ste 4200 Minneapolis MN, 55402 United States	Electronic Service		No	22-416Official
123	Travis	Morrison	travis.morrison@boisforte-nsn.gov	Bois Forte Band of Chippewa		Bois Forte Tribal Government 5344 Lakeshore Drive Nett Lake MN, 55772 United States	Electronic Service		No	22-416Official
124	Robert	Moyer, Jr.	rmoyer@boisforte-nsn.gov	Bois Forte Band of Chippewa Tribal Government		5344 Lakeshore Drive Nett Lake MN, 55772 United States	Electronic Service		No	22-416Official
125	Colleen	Mueller				22186 State Hwy 4 Paynesville MN, 56362 United States	Paper Service		No	22-416Official
126	Sonny	Myers	smyers@1854treatyauthority.org	1854 Treaty Authority		4428 Haines Rd Duluth MN, 55811-1524 United States	Electronic Service		No	22-416Official
127	Dan	Nelson	dan.nelson@isginc.com	I&S Group		115 E Hickory St Ste 300 Mankato MN, 56001 United States	Electronic Service		No	22-416Official
128	David	Niles	david.niles@avantenergy.com	Minnesota Municipal Power Agency		220 South Sixth Street Suite 1300 Minneapolis MN, 55402 United States	Electronic Service		No	22-416Official
129	Samantha	Norris	samanthanorris@alliantenergy.com	Interstate Power and Light Company		200 1st Street SE PO Box 351 Cedar Rapids IA, 52406-0351 United States	Electronic Service		No	22-416Official
130	Joseph	OBrien	joey.obrien@lowersioux.com			39527 Highway 1 Morton MN,	Electronic Service		No	22-416Official

#	First Name	Last Name	Email	Organization	Agency	Address	Delivery Method	Alternate Delivery Method	View Trade Secret	Service List Name
						56270 United States				
131	Samantha	Odegard	samanthao@uppersiouxcommunity-nsn.gov			PO Box 147 Granite Falls MN, 56241 United States	Electronic Service		No	22-416Official
132	Matthew	Olsen	molsen@otpc.com	Otter Tail Power Company		215 South Cascade Street Fergus Falls MN, 56537 United States	Electronic Service		No	22-416Official
133	Carol A.	Overland	overland@legalectric.org	Legalelectric - Overland Law Office		1110 West Avenue Red Wing MN, 55066 United States	Electronic Service		No	22-416Official
134	Greg	Palmer	gpalmer@greatermngas.com	Greater Minnesota Gas, Inc.		1900 Cardinal Ln PO Box 798 Faribault MN, 55021 United States	Electronic Service		No	22-416Official
135	Earl	Pendleton	earl.pendleton@lowersioux.com	Lower Sioux Indian Community		39527 Highway 1 Morton MN, 56270 United States	Electronic Service		No	22-416Official
136	Jennifer	Peterson	jjpeterson@mnpower.com	Minnesota Power		30 West Superior Street Duluth MN, 55802 United States	Electronic Service		No	22-416Official
137	Kevin	Peterson	kjp@ibew160.org			1109 Northway Lane NE Rochester MN, 55906 United States	Electronic Service		No	22-416Official
138	Catherine	Phillips	catherine.phillips@wecenergygroup.com	Minnesota Energy Resources		231 West Michigan St Milwaukee WI, 53203 United States	Electronic Service		No	22-416Official
139	Angela	Piner	angela.piner@hdrinc.com	HDR, Inc.		Suite 600 701 Xenia Avenue South Suite 600 Minneapolis MN, 55416 United States	Electronic Service		No	22-416Official
140	Joe	Plumer	joe.plumer@redlakenation.org	Red Lake Nation		15484 Migizi Drive Red Lake MN, 56671 United States	Electronic Service		No	22-416Official
141	Andre	Porter	misolegal@misoenergy.org	MISO		720 City Center Drive Carmel IN, 46032 United States	Electronic Service		No	22-416Official
142	Kevin	Pranis	kpranis@liunagroc.com	Laborers' District Council of MN and ND		81 E Little Canada Road St. Paul MN, 55117 United States	Electronic Service		No	22-416Official
143	Robert	Prescott	bob.prescott@lowersioux.com	Lower Sioux Indian Community		39527 Highway 1 Morton MN, 56270 United States	Electronic Service		No	22-416Official
144	Larry	Rebman	larryemls@hotmail.com	EMLS, Inc		PO Box 122 Appleton MN, 56208 United States	Electronic Service		No	22-416Official

#	First Name	Last Name	Email	Organization	Agency	Address	Delivery Method	Alternate Delivery Method	View Trade Secret	Service List Name
145	Generic Notice	Residential Utilities Division	residential.utilities@ag.state.mn.us		Office of the Attorney General - Residential Utilities Division	1400 BRM Tower 445 Minnesota St St. Paul MN, 55101-2131 United States	Electronic Service		Yes	22-416Official
146	Kevin	Reuther	kreuther@mncenter.org	MN Center for Environmental Advocacy		26 E Exchange St, Ste 206 St. Paul MN, 55101-1667 United States	Electronic Service		No	22-416Official
147	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 United States	Electronic Service		No	22-416Official
148	Susan	Romans	sromans@allete.com	Minnesota Power		30 West Superior Street Legal Dept Duulth MN, 55802 United States	Electronic Service		No	22-416Official
149	Stephan	Roos	stephan.roos@state.mn.us		Minnesota Department of Agriculture	625 Robert St N Saint Paul MN, 55155-2538 United States	Electronic Service		No	22-416Official
150	Bill	Rudnicki	bill.rudnicki@shakopeedakota.org	Shakopee Mdewakanton Sioux Community		Shakopee Mdewakanton Sioux Community 2330 Sioux Trail NW Prior Lake MN, 55372 United States	Electronic Service		No	22-416Official
151	Nathaniel	Runke	nrunke@local49.org			611 28th St. NW Rochester MN, 55901 United States	Electronic Service		No	22-416Official
152	Miranda	Sam	miranda.sam@lowersioux.com	Lower Sioux Indian Community		39527 Reservation Highway 1 PO Box 308 Morton MN, 56270 United States	Electronic Service		No	22-416Official
153	Adam	Savariego	adams@uppersiouxcommunity-nsn.gov	Upper Sioux Community		5722 Travers Lane PO Box 147 Granite Falls MN, 56241 United States	Electronic Service		No	22-416Official
154	Elizabeth	Schmiesing	eschmiesing@winthrop.com	Winthrop & Weinstine, P.A.		225 South Sixth Street Suite 3500 Minneapolis MN, 55402 United States	Electronic Service		No	22-416Official
155	Christine	Schwartz	regulatory.records@xcelenergy.com	Xcel Energy		414 Nicollet Mall FL 7 Minneapolis MN, 55401-1993 United States	Electronic Service		No	22-416Official
156	Jessie	Seim	jessie.seim@piic.org	Prairie Island Indian Community		5636 Sturgeon Lake Rd Welch MN,	Electronic Service		No	22-416Official

#	First Name	Last Name	Email	Organization	Agency	Address	Delivery Method	Alternate Delivery Method	View Trade Secret	Service List Name
						55089 United States				
157	Darrell	Seki, Sr.	dseki@redlakenation.org			15484 Migizi Drive Red Lake MN, 56671 United States	Electronic Service		No	22-416Official
158	Will	Seuffert	will.seuffert@state.mn.us		Public Utilities Commission	121 7th PI E Ste 350 Saint Paul MN, 55101 United States	Electronic Service		Yes	22-416Official
159	Janet	Shaddix Elling	jshaddix@janetshaddix.com	Shaddix And Associates		7400 Lyndale Ave S Ste 190 Richfield MN, 55423 United States	Electronic Service		Yes	22-416Official
160	Tom	Slukich	tom@nationalconductor.com	National Conductor Constructors		18119 Hwy 371 North Braiderd MN, 56401 United States	Electronic Service		No	22-416Official
161	Joel	Smith	jsmith@mnchippewatribe.org	Minnesota Chippewa Tribe		PO Box 217 Cass Lake MN, 56633 United States	Electronic Service		No	22-416Official
162	Ken	Smith	ken.smith@districtenergy.com	District Energy St. Paul Inc.		76 W Kellogg Blvd St. Paul MN, 55102 United States	Electronic Service		No	22-416Official
163	Nizhoni	Smith	nizhoni.smith@lowersioux.com	Lower Sioux Indian Community		PO Box 308 39527 Reservation Highway 1 Morton MN, 56270 United States	Electronic Service		No	22-416Official
164	Roger	Smith, Sr.	rogermsmithsr@fdlrez.com			1720 Big Lake Road Cloquet MN, 55720 United States	Electronic Service		No	22-416Official
165	Adam	Sokolski	adam.sokolski@edf-re.com	EDF Renewable Energy		10 Second Street NE Ste 400 Minneapolis MN, 55410 United States	Electronic Service		No	22-416Official
166	Eugene	Sommers	eugene.sommers@whiteearth-nsn.gov	White Earth Nation		PO BOX 418 White Earth MN, 56591 United States	Electronic Service		No	22-416Official
167	Peggy	Sorum	peggy.sorum@centerpointenergy.com	CenterPoint Energy		505 Nicollet Mall Minneapolis MN, 55402 United States	Electronic Service		No	22-416Official
168	Marie	Spry	mariespry@grandportage.com			PO Box 428 Grand Portage MN, 55605 United States	Electronic Service		No	22-416Official
169	Cheyenne	St. John	cheyanne.stjohn@lowersioux.com	Lower Sioux Tribal Community		39527 Reservation Hwy 1 Morton MN, 56270 United States	Electronic Service		No	22-416Official
170	LeRoy	Staples Fairbanks III	leroy.fairbanks@llojibwe.net	Leech Lake Band of Ojibwe		190 Sailstar Drive NW Cass Lake MN, 56633 United States	Electronic Service		No	22-416Official
171	Byron E.	Starns	byron.starns@stinson.com	STINSON LLP		50 S 6th St Ste 2600	Electronic Service		No	22-416Official

#	First Name	Last Name	Email	Organization	Agency	Address	Delivery Method	Alternate Delivery Method	View Trade Secret	Service List Name
						Minneapolis MN, 55402 United States				
172	Kristin	Stastny	kstastny@taftlaw.com	Taft Stettinius & Hollister LLP		2200 IDS Center 80 South 8th Street Minneapolis MN, 55402 United States	Electronic Service		No	22-416Official
173	Toby	Stephens	tobys@grandportage.com	Grand Portage Band of Lake Superior Chippewa		PO BOX 428 Grand Portage MN, 55605 United States	Electronic Service		No	22-416Official
174	Cary	Stephenson	cstephenson@otpc.com	Otter Tail Power Company		215 South Cascade Street Fergus Falls MN, 56537 United States	Electronic Service		No	22-416Official
175	Mark	Strohfus	mstrohfus@grenergy.com	Great River Energy		12300 Elm Creek Boulevard Maple Grove MN, 55369-4718 United States	Electronic Service		No	22-416Official
176	Carl	Strohm	cjsmg@sbcglobal.net	SBC Global		105 East Edgewood Ave Indianapolis IN, 46227 United States	Electronic Service		No	22-416Official
177	James M	Strommen	jstrommen@kennedy-graven.com	Kennedy & Graven, Chartered		150 S 5th St Ste 700 Minneapolis MN, 55402 United States	Electronic Service		No	22-416Official
178	Samuel	Strong	sam.strong@redlakenation.org	Red Lake Nation		15484 Migizi Drive Red Lake MN, 56671 United States	Electronic Service		No	22-416Official
179	Tom	Swafford	tswafford@umsi.us	Utility Mapping Services, Inc		3947 E Calvary Rd Suite 103 Duluth MN, 55803 United States	Electronic Service		No	22-416Official
180	Eric	Swanson	eswanson@winthrop.com	Winthrop & Weinstine		225 S 6th St Ste 3500 Capella Tower Minneapolis MN, 55402-4629 United States	Electronic Service		No	22-416Official
181	Todd	Tadych	ttadych@atcllc.com	American Transmission Company LLC		5303 Fen Oak Dr Madison WI, 53718 United States	Electronic Service		No	22-416Official
182	Camille	Tanhoff	kamip@uppersiouxcommunity-nsn.gov	Upper Sioux Community		5722 Travers Lane PO BOX 147 Granite Falls MN, 56241 United States	Electronic Service		No	22-416Official
183	Stuart	Tommerdahl	stommerdahl@otpc.com	Otter Tail Power Company		215 S Cascade St PO Box 496 Fergus Falls MN, 56537 United States	Electronic Service		No	22-416Official
184	Jayne	Trusty	execdir@swrdc.org	SWRDC		2401 Broadway Ave #1 Slayton MN,	Electronic Service		No	22-416Official

#	First Name	Last Name	Email	Organization	Agency	Address	Delivery Method	Alternate Delivery Method	View Trade Secret	Service List Name
						56172 United States				
185	Caralyn	Trutna	carrie@uppersiouxcommunity-nsn.gov	Upper Sioux Community		Upper Sioux Community P.O. Box 147 Granite Falls MN, 55372 United States	Electronic Service		No	22-416Official
186	Jen	Tyler	tyler.jennifer@epa.gov	US Environmental Protection Agency		Environmental Planning & Evaluation Unit 77 W Jackson Blvd. Mailstop B-19J Chicago IL, 60604-3590 United States	Electronic Service		No	22-416Official
187	Kodi	Verhalen	kverhalen@taftlaw.com	Taft Stettinius & Hollister LLP		80 S 8th St Ste 2200 Minneapolis MN, 55402 United States	Electronic Service		No	22-416Official
188	Leonard	Wabasha	leonard.wabasha@shakopeedakota.org	Shakopee Mdwakanton Sioux Community		2300 Tiwahe Circle Shakopee MN, 55379 United States	Electronic Service		No	22-416Official
189	Haley	Waller Pitts	hwallerpitts@fredlaw.com	Fredrikson & Byron, P.A.		60 S Sixth St Ste 1500 Minneapolis MN, 55402-4400 United States	Electronic Service		No	22-416Official
190	Caren	Warner	caren.warner@state.mn.us		Department of Commerce	85 7th Place East Suite 280 St. Paul MN, 55101-2198 United States	Electronic Service		No	22-416Official
191	Cynthia	Warzecha	cynthia.warzecha@state.mn.us	Minnesota Department of Natural Resources		500 Lafayette Road Box 25 St. Paul MN, 55155-4040 United States	Electronic Service		No	22-416Official
192	Elizabeth	Wefel	eawefel@flaherty-hood.com	Missouri River Energy Services		525 Park St Ste 470 Saint Paul MN, 55103 United States	Electronic Service		No	22-416Official
193	Heather	Westra	heather.westra@piic.org	Prairie Island Indian Community		5636 Sturgeon Lake Rd Welch MN, 55089 United States	Electronic Service		No	22-416Official
194	Alan	Whipple	sa.property@state.mn.us		Minnesota Department Of Revenue	Property Tax Division 600 N. Robert Street St. Paul MN, 55146-3340 United States	Electronic Service		No	22-416Official
195	Deanna	White	mncwa@cleanwater.org	Clean Water Action & Water Fund of MN		330 S 2nd Ave Ste 420 Minneapolis MN, 55401 United States	Electronic Service		No	22-416Official
196	Noah	White	noah.white@piic.org	Prairie Island Indian Community		5636 Sturgeon Lake Road Welch MN, 55089 United States	Electronic Service		No	22-416Official

<b>#</b>	<b>First Name</b>	<b>Last Name</b>	<b>Email</b>	<b>Organization</b>	<b>Agency</b>	<b>Address</b>	<b>Delivery Method</b>	<b>Alternate Delivery Method</b>	<b>View Trade Secret</b>	<b>Service List Name</b>
197	Steve	White	steve.white@llojibwe.net	Leech Lake Band of Ojibwe		190 Sailstar Drive NW Cass Lake MN, 56633 United States	Electronic Service		No	22-416Official
198	Cody	Whitebear	cody.whitebear@piic.org	Prairie Island Indian Community		5636 Sturgeon Lake Road Welch MN, 55089 United States	Electronic Service		No	22-416Official
199	Mike	Wilson	mike.wilson@millelacsband.com	Mille Lacs Band of Ojibwe		43408 Oodena Dr Onamia MN, 56359 United States	Electronic Service		No	22-416Official
200	Virgil	Wind	virgil.wind@millelacsband.com	Mille Lacs Band of Ojibwe		43408 Oodena Drive Onamia MN, 56359 United States	Electronic Service		No	22-416Official
201	Joseph	Windler	jwindler@winthrop.com	Winthrop & Weinstine		225 South Sixth Street, Suite 3500 Minneapolis MN, 55402 United States	Electronic Service		No	22-416Official
202	Jonathan	Wolfgram	jonathan.wolfgram@state.mn.us		Office of Pipeline Safety	445 Minnesota St Ste 147 Woodbury MN, 55125 United States	Electronic Service		No	22-416Official
203	Laurie	York	laurie.york@whiteearth-nsn.gov	White Earth Reservation Business Committee		PO Box 418 White Earth MN, 56591 United States	Electronic Service		No	22-416Official
204	Kurt	Zimmerman	kwz@ibew160.org	Local Union #160, IBEW		2909 Anthony Ln St Anthony Village MN, 55418-3238 United States	Electronic Service		No	22-416Official
205	Patrick	Zomer	pat.zomer@lawmoss.com	Moss & Barnett PA		150 S 5th St #1200 Minneapolis MN, 55402 United States	Electronic Service		No	22-416Official

## APPENDIX F: Modified & Co-Location Route Cost Analysis

The tables below provide a comparison of the route and alignment alternatives included in the Modified Proposed Route and the Applicants’ Co-Location Maximization Route. Estimated costs are broken down to show the direct cost of the proposed Project double-circuit 345 kV transmission line and the additional cost associated with the realignment of existing transmission lines or other “infrastructure stacking” to make room for the proposed Project. The mid-range estimated cost of each route or alignment alternative (in millions) is compared with the equivalent segment of the Applicants’ Original Proposed Route, and an incremental cost is given on the bottom row of each table. Full route estimated costs are discussed further below.

**Table 1: Modified Alignment Alternative AA1 Estimated Cost (\$ Millions)**

Modified Alignment Alternative AA1	Applicants’ Original Proposed Route	Modified Proposed Route	Co-Location Maximization Route
<b>Project</b>	\$7.7	\$7.7	\$7.7
<b>Realignment of Existing Lines</b>	N/A	\$7.1	\$7.1
<b>TOTAL</b>	<b>\$7.7</b>	<b>\$14.8</b>	<b>\$14.8</b>
<i>Incremental Cost</i>	<i>N/A</i>	<i>\$7.1</i>	<i>\$7.1</i>

**Table 2: Swatara Route Width Expansion Alignment Estimated Cost (\$ Millions)**

Swatara Route Width Expansion Alignment	Applicants’ Original Proposed Route	Modified Proposed Route	Co-Location Maximization Route
<b>Project</b>	\$3.7	\$6.5	\$6.5
<b>Realignment of Existing Lines</b>	N/A	\$2.5	\$2.5
<b>TOTAL</b>	<b>\$3.7</b>	<b>\$9.0</b>	<b>\$9.0</b>
<i>Incremental Cost</i>	<i>N/A</i>	<i>\$5.3</i>	<i>\$5.3</i>

**Table 3: Moose River Alignment Alternative Estimated Cost (\$ Millions)**

Moose River Alignment Alternative	Applicants’ Original Proposed Route	Modified Proposed Route	Co-Location Maximization Route
<b>Project</b>	\$3.1	\$4.2	\$4.2
<b>Realignment of Existing Lines</b>	N/A	N/A	N/A
<b>TOTAL</b>	<b>\$3.1</b>	<b>\$4.2</b>	<b>\$4.2</b>
<i>Incremental Cost</i>	<i>N/A</i>	<i>\$1.1</i>	<i>\$1.1</i>

**Table 4: Alignment Alternative AA16 Estimated Cost (\$ Millions)**

Alignment Alternative AA16	Applicants' Original Proposed Route	Modified Proposed Route	Co-Location Maximization Route
<b>Project</b>	\$61.0	\$61.0	\$61.0
<b>Realignment of Existing Lines</b>	\$3.9	\$3.9	\$45.8
<b>TOTAL</b>	<b>\$64.9</b>	<b>\$64.9</b>	<b>\$106.8</b>
<i>Incremental Cost</i>	<i>N/A</i>	<i>\$0.0</i>	<i>\$41.9</i>

**Table 5: Alignment Alternative AA9 Estimated Cost (\$ Millions)**

Alignment Alternative AA9	Applicants' Original Proposed Route	Modified Proposed Route	Co-Location Maximization Route <sup>1</sup>
<b>Project</b>	\$9.1	\$9.2	N/A
<b>Realignment of Existing Lines</b>	N/A	N/A	N/A
<b>TOTAL</b>	<b>\$9.1</b>	<b>\$9.2</b>	<b>N/A</b>
<i>Incremental Cost</i>	<i>N/A</i>	<i>\$0.1</i>	<i>N/A</i>

**Table 6: Alignment Alternative AA10 Estimated Cost (\$ Millions)**

Alignment Alternative AA10	Applicants' Original Proposed Route	Modified Proposed Route	Co-Location Maximization Route <sup>1</sup>
<b>Project</b>	\$4.8	\$4.8	N/A
<b>Realignment of Existing Lines</b>	N/A	N/A	N/A
<b>TOTAL</b>	<b>\$4.8</b>	<b>\$4.8</b>	<b>N/A</b>
<i>Incremental Cost</i>	<i>N/A</i>	<i>\$0.0</i>	<i>N/A</i>

<sup>1</sup> The Applicants' Co-Location Maximization Route does not include an estimated cost for alignment alternatives AA9 and AA10 in Table 5 and Table 6 because these alignment alternatives are located along the Applicants' Original Proposed Route, which is replaced in the Co-Location Maximization Route by the inclusion of route alternative E1 (the Applicants' Riverton Alternative). As a result, these alignment alternatives are not valid for the Co-Location Maximization Route.

**Table 7: Alignment Alternative AA3 Estimated Cost (\$ Millions)**

Alignment Alternative AA3 (Cole Lake Way)	Applicants' Original Proposed Route	Modified Proposed Route	Co-Location Maximization Route <sup>2</sup>
<b>Project</b>	\$28.5	\$28.5	\$27.2
<b>Infrastructure Stacking</b>	N/A	N/A	\$30.5
<b>TOTAL</b>	<b>\$28.5</b>	<b>\$28.5</b>	<b>\$57.7</b>
<i>Incremental Cost</i>	<i>N/A</i>	<i>\$0.0</i>	<i>\$29.2</i>

**Table 8: Route Alternative E1 Estimated Cost (\$ Millions)**

Route Alternative E1 (Riverton)	Applicants' Original Proposed Route	Modified Proposed Route <sup>3</sup>	Co-Location Maximization Route <sup>4</sup>
<b>Project</b>	\$43.2	\$43.2	\$39.8
<b>Infrastructure Stacking</b>	N/A	N/A	\$84.5
<b>TOTAL</b>	<b>\$43.2</b>	<b>\$43.2</b>	<b>\$124.3</b>
<i>Incremental Cost</i>	<i>N/A</i>	<i>\$0.0</i>	<i>\$81.1</i>

**Table 9: Route Alternative H4 and H7 Estimated Cost (\$ Millions)**

Route Alternative H4 and H7	Applicants' Original Proposed Route	Modified Proposed Route	Co-Location Maximization Route
<b>Project</b>	\$18.7	\$16.7	\$16.7
<b>Realignment of Existing Lines</b>	N/A	N/A	N/A
<b>TOTAL</b>	<b>\$18.7</b>	<b>\$16.7</b>	<b>\$16.7</b>
<i>Incremental Cost</i>	<i>N/A</i>	<i>-\$2.0</i>	<i>-\$2.0</i>

<sup>2</sup> The incremental cost for AA3 (Cole Lake Way) shown in Table 7 represents the mid-range incremental cost of the alternative (\$29.2M). The incremental cost for the Cole Lake Way Alignment Alternative provided in Ex. APP-36 at 14:12-13 (Winter Direct) represents the high-range incremental cost of the alternative including contingency (\$36.4M). For overall project cost estimate range impacts, see Table 14.

<sup>3</sup> Estimated cost for Applicants' Proposed Route with Modifications shown in Table 8 does not include the incremental cost of Alignment Alternatives AA9 and AA10, which are located within the same area of the Original Proposed Route as Route Alternative E1

<sup>4</sup> The incremental cost for Route Alternative E1 (Riverton) shown in Table 8 represents the mid-range incremental cost of the alternative (\$81.1M). The incremental cost for the Riverton Area Alternative Corridor provided in Ex. APP-36 at 11:3-4 (Winter Direct) represents the high-range incremental cost of the alternative including contingency (\$99.5M). For overall project cost estimate range impacts, see Table 14. In the course of preparing this filing, Applicants discovered an error in data provided to EERA with respect to EERA's cost estimates in its September 5, 2024 filing. Applicants estimates here have corrected that error

**Table 10: AA17-Modified Alignment Alternative Estimated Cost (\$ Millions)**

Modified Alignment Alternative AA17	Applicants' Original Proposed Route	Modified Proposed Route	Co-Location Maximization Route
<b>Project</b>	\$2.4	\$2.4	\$2.4
<b>Realignment of Existing Lines</b>	N/A	\$1.2	\$1.2
<b>TOTAL</b>	<b>\$2.4</b>	<b>\$3.6</b>	<b>\$3.6</b>
<i>Incremental Cost</i>	<i>N/A</i>	<i>\$1.2</i>	<i>\$1.2</i>

**Table 11: Elk River Alignment Alternative Estimated Cost (\$ Millions)**

Elk River Alignment Alternative	Applicants' Original Proposed Route	Modified Proposed Route	Co-Location Maximization Route
<b>Project</b>	\$24.6	\$24.6	\$24.6
<b>Realignment &amp; Infrastructure Stacking</b>	\$2.6	\$2.6	\$24.2
<b>TOTAL</b>	<b>\$27.2</b>	<b>\$27.2</b>	<b>\$48.8</b>
<i>Incremental Cost</i>	<i>N/A</i>	<i>\$0.0</i>	<i>\$21.6</i>

**Table 12: Sherco Solar Alignment Alternative Estimated Cost (\$ Millions)**

Sherco Solar Alignment Alternative	Applicants' Original Proposed Route	Modified Proposed Route	Co-Location Maximization Route
<b>Project</b>	\$8.4	\$7.8	\$7.8
<b>Realignment of Existing Lines</b>	\$0.0	\$0.0	\$0.0
<b>TOTAL</b>	<b>\$8.4</b>	<b>\$7.8</b>	<b>\$7.8</b>
<i>Incremental Cost</i>	<i>N/A</i>	<i>-\$0.6</i>	<i>-\$0.6</i>

Full route incremental and total costs for the Applicants' Proposed Route with Modifications and the Applicants' Co-Location Maximization Route are provided in the tables below. Table 13 provides a breakdown by region of the incremental cost of route and alignment alternatives included in each of the updated routes. The total incremental cost of route and alignment alternatives is then added to the Applicants' original total mid-range cost estimate of \$1,182 million (in 2022 dollars) to obtain a total mid-range cost (in 2022 dollars) for each of the updated routes.

**Table 13: Updated Full Route Cost Estimates**

Region	Modified Proposed Route <sup>5</sup>		Co-Location Maximization Route	
	Alternatives	Incremental Cost (\$M)	Alternatives	Incremental Cost (\$M)
<b>Iron Range Area</b>	N/A	\$0	N/A	\$0
<b>Hill City – Little Pine</b>	AA1, Swatara, Moose River	+\$13.5	AA1, Swatara, Moose River, AA16	+55.4
<b>Cole Lake – Riverton</b>	AA9, AA10	+\$0.1	AA3, Applicants’ E1	+\$110.3
<b>Long Lake</b>	H4-H7, AA17	-\$0.8	H4-H7, AA17	-\$0.8
<b>Benton Co. Elk River</b>	Sherco Solar	-\$0.6	Sherco Solar, Elk River	+\$21.0
<b>Subtotal</b>	Total Incremental	+\$12.2	Total Incremental	+\$185.9
<b>Applicants Original Cost Estimate</b>	Original Proposed Route	\$1,182.0	Original Proposed Route	\$1,182.0
<b>Total Full Route Mid-Range Cost</b>	<b>Modified Proposed Route</b>	<b>\$1,194.2</b>	<b>Co-Location Maximization Route</b>	<b>\$1,367.9</b>

**Error! Not a valid bookmark self-reference.** provides an update to Table 2-3 of the Certificate of Need Application including the equivalent low, mid, and high-range costs for the updated routes compared to the Applicants’ original cost estimate for the Project on the Original Proposed Route. The low-range and high-range costs for the updated routes are based on the same +/- percentages relative to the Applicants’ original mid-range cost estimate. It is necessary to maintain an equivalent cost range for the updated routes to account for remaining risks and uncertainties associated with permitting, engineering, procurement, land and right-of-way, and construction costs.

**Table 14: Updated Project Cost Estimate Ranges**

Full Route Option	Low (\$Millions) (2022\$)	Mid (\$Millions) (2022\$)	High (\$Millions) (2022\$)
<b>Applicants’ Original Proposed Route</b>	\$970.0	\$1,182.0	\$1,353.0
<b>Modified Proposed Route</b>	\$980.0	\$1,194.2	\$1,366.9
<b>Co-Location Maximization Route</b>	\$1,122.5	\$1,367.9	\$1,565.8

<sup>5</sup> While some of these route and alignment alternatives are modified from those included in the EA, this table uses the shorthand labeling for space purposes.