

# **Laketown 115 kV Transmission Line Project**

PUC Docket No. ET2/TL-24-132 | CAH Docket No. 21-2500-40445

## **Environmental Assessment**

Appendix C Supplement (PUBLIC)

GRE Reliability Review

October 2025

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**In the Matter of the Application for a Route  
Permit for the 115-kV Laketown  
Transmission Line and Associated  
Facilities Project in Carver County,  
Minnesota  
MPUC Docket No. ET2/TL-24-132**

**Supplemental Information Request Response (October 9, 2025)**

As required by the Order Adopting Administrative Law Judge Report as Modified, Requiring Additional Record Development, and Remanding for Further Proceedings (Order) issued by the Minnesota Public Utilities Commission (Commission) on October 2, 2025, in the above-captioned docket, Great River Energy and Minnesota Valley Electric Cooperative (MVEC) (together, Applicants) provide this supplemental information regarding the reliability of the Project if constructed on the Proposed Route as compared to the Project if constructed on Route Alternative B. This submission includes the information provided to Energy Infrastructure Permitting (EIP) staff in March 2025,<sup>1</sup> as well as any applicable supplemental information required by the Order.<sup>2</sup>

Specifically, the Order requires Applicants to provide: (i) a more detailed description of the reliability concerns regarding Route Alternative B; (ii) the steps necessary to address the reliability concerns; (iii) detail of all cost impacts of making distribution system modifications; and (iv) a breakdown of all the elements that make up the cost estimate of approximately \$8-10 million for the Project to achieve a similar reliability with Route Alternative B as compared to the Proposed Route. Each topic is addressed, in turn, below.<sup>3</sup>

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<sup>1</sup> That submission included public and nonpublic data because it included an attachment showing one-line diagrams of the existing and proposed systems, which constitutes Critical Energy Infrastructure Information (CEII) and security data under the Minnesota Government Data Practices Act. Applicants are again providing nonpublic attachments (**Attachment A**) depicting one-line diagrams for EIP staff and Commission reference because the diagrams are useful in understanding the design and layout of the current system and potential future system layouts. In accordance with Minnesota Rules, part 7829.0500, and Minnesota Statutes Chapter 13, Great River Energy has designated Attachment A as NONPUBLIC DATA–NOT FOR PUBLIC DISCLOSURE because it contains confidential security information, as defined by Minn. Stat. § 13.37(1)(a). The public disclosure of this information creates an unacceptable risk of disruption to the electrical grid. Thus, Great River Energy maintains this information as nonpublic pursuant to Minn. R. 7829.0500, subp. 3. Given the need to include nonpublic information, Great River Energy has prepared both NONPUBLIC and public versions of Attachment A.

<sup>2</sup> The following Great River Energy employees assisted in the preparation of this submittal: Nick Goater (Engineer, Transmission Planning); Michelle Lommel (Senior Field Representative); Mark Strohfus (Project Manager – Transmission Permitting); Mike Swenson (Transmission Permitting Specialist); Zach Millard (Principal Engineer, Substation Engineering); Chuck Lukkarila (Senior Transmission Project Manager); Yewulsew Atnafu (Engineer, Transmission Planning).

<sup>3</sup> During the September 4, 2025, meeting, Commissioner Ham requested that Great River Energy also provide the Midcontinent Independent System Operator, Inc. (MISO) Transmission Expansion Plan (MTEP)

In summary, the Project is needed to serve MVEC’s load. Both the Proposed Route and Route Alternative B would do so and would meet applicable North American Electric Reliability Corporation (NERC) requirements, and Great River Energy will construct the route selected by the Commission. As compared to Route Alternative B, the Proposed Route offers reliability benefits because it minimizes the impact of outages to end users. Minimizing loss of load and enhancing load separation are key components of Great River Energy’s planning analysis—in other words, when designing a new project, Great River Energy seeks to design facilities that result in fewer people losing power in the event of an outage. In identifying the Proposed Route for this Project, as part of that analysis, Great River Energy considered potential load growth in this region. As the Commission has heard from multiple stakeholders in this process, the region is growing, and will likely continue to do so. Thus, Great River Energy proposed a configuration with this Project that serves today’s users and is also well-positioned to serve future load growth. Route Alternative B serves today’s users, but future system modifications would be needed if and as load growth continues in this area.

The sections below contain detailed planning analysis and calculations. For ease of review, Table 1 below summarizes the calculations conducted by Great River Energy’s planning engineers during Project design and in response to the Order. The methodology is described in detail in Section 1(b).

**Table 1: Planning Analysis Summary**

<b>Configuration</b>	<b>Total Line Mileage</b>	<b>Transmission Circuit Load (Substation(s))</b>	<b>Megawatt (MW)-miles value</b>	<b>Planning Analysis Summary</b>
Existing System	22.64	69.12 MW (Augusta + Victoria + Lake Bavaria + West Creek)	1,546.88 MW-miles	Higher than usual
Existing System + Proposed Route (which includes bus-tie breaker at Laketown)	17.55	16.3 MW (Laketown + Augusta)	286 MW-miles	Acceptable
	13.69	52.82 MW (Victoria + Lake Bavaria + West Creek)	723 MW-miles	Acceptable
Existing System + Route Alternative B (no bus-tie breaker at Laketown)	29	69.12 MW (Laketown + Augusta + Victoria + Lake Bavaria + West Creek)	2,004.5 MW-miles	High amount of exposure
Existing System + Route Alternative B (with bus-tie breaker at Laketown) ( <i>not proposed</i> )	12.5	4.3 MW (Laketown)	53.75 MW-miles	Acceptable
	16.5	64.82 MW (Augusta + Victoria + Lake Bavaria + West Creek)	1,069.53 MW-miles	Higher than usual
	20.8	16.3 MW (Laketown + Augusta)	339.04 MW-miles	Acceptable

submittal for the Project. **Attachment B** includes the text of the online portal entry for the submittal. The submittal also included a Model on Demand project file. Because the file is only readable with power flow simulation software, it is not included here.

<b>Configuration</b>	<b>Total Line Mileage</b>	<b>Transmission Circuit Load (Substation(s))</b>	<b>Megawatt (MW)-miles value</b>	<b>Planning Analysis Summary</b>
Existing System + Route Alternative B + greenfield breaker station ( <i>not proposed</i> )	6.4	21.2 MW (West Creek)	135.68 MW-miles	Acceptable
	1.8	31.62 (Victoria + Lake Bavaria)	56.92 MW miles	Acceptable

## **1. Overview & Planning Analysis Background**

### **a. Overview**

As identified in Section 1.5 of the Application, the purpose of the Project is to provide electric energy to the new Laketown Substation. The Laketown Substation will provide service to end users within MVEC's service territory. The Project is needed to provide reliable electrical service to current and future end-use customers in the rapidly growing area near the Project. Although analysis of need, load, and forecasts are not part of a route permit proceeding, Applicants provide the explanations included in this submission to illustrate the planning analysis that was performed prior to proposing the Project, evaluating potential connection points for routes, and identifying the Proposed Route as the best alternative to meet the Project need and to minimize impacts. Applicants provide the analysis below only in the context of Minn. R. 7850.4100, subp. K.

Reliability of electrical service refers to the ability of both the transmission and distribution systems to maintain continuous and stable power delivery. Reliability includes several factors such as redundancy, exposure to environmental and operational influences, and load adaptability.

In identifying a proposed route for the Application, Great River Energy considered how a route would relate to the rest of the existing system, and ultimately proposed a route that would enhance overall local system reliability (minimizing loss of load) with a bus-tie breaker within the proposed Laketown Substation. Section 4.2 of the Application discusses why Great River Energy initially chose not to propose a route similar to Route Alternative B.

More specifically, as proposed, the Project includes the installation of a bus-tie breaker at the Laketown Substation. The purpose of the breaker is to enhance transmission reliability by sectionalizing the transmission line (i.e., minimizing the number of end users who lose service in the event of an outage). It is common practice for transmission owners to limit the number of load taps between breakers on a transmission circuit to configure the transmission system in a way that minimizes the impact of outages. A breaker may be installed within a substation (as proposed for the Laketown Substation and the Proposed Route), or can be constructed at a stand-alone breaker station (like the greenfield breaker station discussed in Section 3 below). When deciding whether to construct a breaker as part of a new substation or instead at a stand-alone site, a transmission owner considers the configuration of the surrounding system.

As discussed in prior filings, if the Project were to have similar reliability (minimizing the impact of outages) on Route Alternative B, a greenfield breaker station would be needed. However, Applicants are not proposing to install a new greenfield breaker station as part of this Project if Route Alternative B is selected. Rather, Applicants provided this information for the Commission's awareness in evaluating the comparative reliability benefits of the Proposed Route and Route Alternative B. This continues to be the case—i.e., if the

Commission selects Route Alternative B, as discussed in Section 3 below, Great River Energy is not proposing to construct a new greenfield breaker station. Rather, Great River Energy would later assess whether a breaker station would be added between Augusta and Victoria Substations. Based on current anticipated load growth, absent another project that otherwise alleviates the need, the additional breaker station would be needed within 10-15 years. That timeframe is variable, however, and could accelerate if load growth accelerates (or occur later if load growth is slower than currently anticipated).

#### **b. Planning Analysis Background**

NERC standard FAC-002<sup>4</sup> is a reliability standard that requires studies to assess the reliability impacts of new facilities on the Bulk Electric System. Its purpose is to ensure that new and modified facilities are technically feasible and will not negatively impact the overall reliability and coordinated operation of the power grid. The standard specifies who is responsible for conducting these studies and coordinating them with the Planning Coordinator. In the case of new transmission and electricity end-user facilities, the Transmission Planner, in this case Great River Energy, is required to study the reliability impact of the new interconnection and coordinate with the Planning Coordinator, MISO. Specifically, FAC-002 requires “[a]dherence to applicable NERC Reliability Standards; regional and Transmission Owner planning criteria; and Facility interconnection requirements.”

When Great River Energy’s subject matter experts in its Transmission Planning department studied the reliability impacts of the new Laketown Substation and the transmission that serves the substation, a study was conducted following both NERC standard TPL-001<sup>5</sup> and Great River Energy’s Transmission Owner Planning Procedures and Planning Criteria TDOG108<sup>6</sup> (TDOG-108), as required by NERC standard FAC-002. To meet the requirements of TPL-001, Great River Energy’s evaluation used power flow simulation software to study the transmission system before and after the addition of the Laketown Substation’s forecasted load and new transmission lines serving the load. The system was studied with required contingencies, simulating various potential faults and outages, as required by TPL-001. This analysis demonstrated no adverse thermal or voltage violations with the addition of the Project.

In addition to the TPL-001 analysis described in the paragraph above, Great River Energy considered additional potential reliability impacts of the project in accordance with TDOG-108, Great River Energy’s planning criteria. As noted above, NERC standard FAC-002

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<sup>4</sup> See NERC Standard FAC-002, *Facility Interconnection Studies*, available at <https://www.nerc.com/pa/Stand/Reliability%20Standards/FAC-002-4.pdf>.

<sup>5</sup> See NERC Standard TPL-001, *Transmission System Planning Performance Requirements*, available at <https://www.nerc.com/pa/Stand/Reliability%20Standards/TPL-001-5.pdf>.

<sup>6</sup> See Great River Energy, *Transmission Planning Procedures and Planning Criteria TDOG108*, available at <https://greatriverenergy.com/wp-content/uploads/2023/10/108-GRE-Planning-Criteria-002.pdf>.

requires adherence to NERC planning standards and Transmission Owner (here, Great River Energy) planning standards. As described in TDOG-108, “[i]n order to assess the planned reliability of the transmission system, Great River Energy performs a MW-Mile analysis to prevent a single-contingency outage of a transmission circuit from affecting a large number of customers or a large geographic area.”

Great River Energy’s criteria for Breaker MW-mile is described in the Planning Criteria as follows:

- The Breaker MW-Mile calculation is based on the product of the total real power components (load and generation) on the line(s) between the circuit breakers and the total line mileage of the same line(s) between the same circuit breakers.
- MW-mile magnitudes of less than 1,000 are typical and acceptable.
- MW-mile magnitudes between 1,000 and 2,000 are higher than usual. If records indicate poor reliability, then corrective action shall be investigated.
- MW-mile magnitudes higher than 2,000 indicate a high amount of exposure and risk to the system. Corrective action shall be investigated.

In this supplemental response, Great River Energy sets forth below the calculations for the existing system, the Proposed Route, and Route Alternative B.

## **2. Detailed Description of Route Alternative B Reliability Concerns**

### **a. Existing Conditions**

The current 115 kV transmission system serves four distribution substations: Victoria and Augusta (operated by MVEC), and Lake Bavaria and West Creek (operated by Xcel Energy). See enclosed Figure 1 (nonpublic). The current system is segmented by 115 kV breakers at the Scott County and West Waconia substations (both operated by Xcel Energy). The current breaker-breaker transmission system is shown on the accompanying map and one-line. See Figure 1a (nonpublic). To measure the MW-mile on the existing transmission system to which Laketown will interconnect, the mileage between the breakers at West Waconia and breakers at Scott County was measured.

Current 115 kV system mileage between breakers: 22.64 miles.

Existing load values were also obtained to perform the calculation. Load forecast values were obtained from MVEC.

MVEC’s projected 2026 substation loads, without the proposed Laketown Substation, are as follows:

- Augusta Substation: 15.8 MW

- Victoria Substation: 14.2 MW

The load values for the two Xcel Energy substations were based on the following MTEP 24 2026 model data:

- Lake Bavaria Substation: 17.92 MW
- West Creek Substation: 21.2 MW

Total existing transmission circuit load:  $15.8+14.2+17.92+21.2 = 69.12$  MW.

The existing MW-mile value is therefore  $22.64$  miles \*  $69.12$  MW =  $1,564.88$  MW-miles.

This value is below Great River Energy's TDOG-108 2000 MW-mile threshold, but above the 1,000 MW-mile threshold, which is considered above normal. In this situation where both load and line mileage are being proposed to be added to the system, Great River Energy will try to develop projects that drop the MW-mile value below 1,000 MW-miles.

#### **b. Proposed Route**

The proposed Laketown Substation will include two 115/12.47 kV distribution transformers (Laketown 1 and Laketown 2) separated by a 115 kV bus-tie breaker. The current transmission system and the Project's Proposed Route and the Laketown Substation are shown in Figure 2 (nonpublic).

The Proposed Route is approximately 4.3 miles of double circuit line going in-and-out of the Laketown Substation for a total line mileage of 8.6 miles.

Accordingly, the total line mileage for the Proposed Route is  $22.64 + 8.6 = 31.24$  miles.

As discussed in Section 2(a) above, Great River Energy used the same load forecasts to calculate the MW-mile for the Proposed Route. However, once the Laketown Substation is placed into service, existing load will be distributed differently to best split that load over the three substations to optimize system reliability.

2026 projected loading, incorporating Laketown Substation, is as follows:

- Laketown Substation Initial Service: 4.3 MW (3.8 MW from Augusta Substation, 0.5 MW from Victoria Substation)
- Augusta Substation: 12 MW
- Victoria Substation: 13.7 MW

The load values for the two Xcel Energy loads were based on the following MTEP 24 2026 model data:

- Lake Bavaria Substation: 17.92 MW
- West Creek Substation: 21.2 MW

Total transmission circuit load:  $4.3+12+13.7+17.92+21.2 = 69.12$  MW.

MW-mile value is therefore  $31.24$  miles \*  $69.12$  MW =  $2,159.3$  MW-miles.

This is now above the 2,000 MW-mile threshold and would be categorized as “high amount of exposure and risk to the system.”<sup>7</sup> To alleviate this, Great River Energy proposed the addition of a bus-tie breaker at the Laketown Substation as shown in Figure 2a (nonpublic). By placing the 115 kV breaker at the Laketown Substation, the local transmission system, and in turn MVEC’s distribution system, would be split between two separate circuits.

This breaker addition changes the calculation because there are now two circuits and two sets of MW-mile values.

The original 31.24-mile circuit that was highlighted in orange in **Error! Reference source not found.**2 is now two circuits as shown on Figure 2b (nonpublic): The west circuit, highlighted in blue, and the east circuit, highlighted in red.

The west circuit is measured at 17.55 miles, and the east circuit is measured at 13.69 miles.

The west circuit has the loads of the Augusta Substation and the initial Laketown Substation load:

- Laketown Substation Initial Service: 4.3 MW
- Augusta Substation: 12 MW

West circuit total load:  $4.3 + 12 = 16.3$  MW.

The east circuit has Victoria Substation load and the two Xcel Energy loads:

- Victoria Substation: 13.7 MW
- Lake Bavaria Substation: 17.92 MW
- West Creek Substation: 21.2 MW

East circuit total load =  $13.7+17.92+21.2 = 52.82$  MW.

Total MW-mile values for the two circuits are therefore:

MW-miles (near-term forecast) with Proposed Route (West):  $16.3*17.55 = 286$  MW-miles.

MW-miles (near-term forecast) with Proposed Route (East):  $52.82*13.69 = 723$  MW-miles.

The two transmission circuits now are both below the 1,000 and 2,000 MW-mile thresholds and within Great River Energy criteria. This configuration also splits MVEC’s distribution

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<sup>7</sup> See Great River Energy, *Transmission Planning Procedures and Planning Criteria TDOG108*, at 6.2, available at <https://greatriverenergy.com/wp-content/uploads/2023/10/108-GRE-Planning-Criteria-002.pdf>.

network evenly. This configuration would result in only half of MVEC's distribution substations affected by an outage on either side of the transmission system and allow for the ability to quickly backfeed the lost substations from the unaffected transmission line. Notably, MVEC also predicts the most growth to the west and that circuit has the most room for growth.

This configuration was identified in the Application as meeting the reliability needs of the Project.

**c. Route Alternative B**

The current breaker-breaker transmission system including Route Alternative B is shown in Figures 3 and 3a (nonpublic).

Route Alternative B would have approximately 3.2 miles of double circuit line going in-and-out of the Laketown Substation for a total line mileage of 6.4 miles.

The proposed total line mileage is therefore  $22.64 + 6.4 = 29$  miles.

As in the previous example, existing load values were obtained to perform the calculation. Load forecast values were obtained from MVEC.

MVEC's projected 2026-MW loads, with the proposed Laketown Substation, are as follows:

- Laketown Substation Initial Service: 4.3 MW (3.8 MW from Augusta Substation, 0.5 MW from Victoria Substation)
- Augusta Substation: 12 MW
- Victoria Substation: 13.7 MW

The load values for the two Xcel Energy loads were based on the following MTEP 24 2026 model data:

- Lake Bavaria Substation: 17.92 MW
- West Creek Substation: 21.2 MW

Total transmission circuit load:  $4.3+12+13.7+17.92+21.2 = 69.12$  MW.

MW-mile value is therefore  $29 \text{ miles} * 69.12 \text{ MW} = 2,004.5$  MW-miles.

This is above the MW-mile threshold Great River Energy considers standard.

As a comparison of Route Alternative B to the Proposed Route, the calculation is again done with a bus-tie breaker at the Laketown Substation.

In the case of Route Alternative B, the west circuit is measured at 12.5 miles, and the east circuit is measured at 16.5 miles.

The west circuit has the initial Laketown load:

- Laketown Substation Initial Service: 4.3 MW

West circuit total load: 4.3 MW.

The east circuit has Augusta, Victoria and the two Xcel Energy loads:

- Augusta Substation: 12 MW
- Victoria Substation: 13.7 MW
- Lake Bavaria Substation: 17.92 MW
- West Creek Substation: 21.2 MW

East circuit total load =  $12 + 13.7 + 17.92 + 21.2 = 64.82$  MW.

Total MW-mile values for the two circuits are therefore:

MW-miles (near-term forecast) with Route Alternative B with bus-tie breaker (East):  
 $64.82 * 16.5 = 1,069.53$  MW-miles.

MW-miles (near-term forecast) with Route Alternative B with bus-tie breaker (West):  
 $4.3 * 12.5 = 53.75$  MW-miles.

In the Route Alternative B scenario with a bus-tie breaker, both circuits are below the 2,000 MW-mile threshold, but the east circuit is above the 1,000 MW-mile threshold, indicating “higher than usual”<sup>8</sup> exposure, which, in the event of an outage, results in an uneven loss of load and less reliability. This is because only one substation is protected on the west circuit which would make back-feeding of MVEC loads more difficult. These confirmed reliability concerns regarding uneven load distribution made Route Alternative B a less favorable option when compared to the Proposed Route. Note that the existing system also has “higher than usual” exposure, but the Proposed Route solves for that issue. Accordingly, when Great River Energy considered routes based on an analysis of reliability, Route Alternative B was not considered further.

Because only marginal benefits were seen to MW-mile criteria by adding a bus-tie breaker at Laketown with Route Alternative B, a breaker to sectionalize a single substation, with its additional cost, is not proposed if Route Alternative B is selected.<sup>9</sup> There are still five substations on a single circuit with a high MW-mile value. If Route Alternative B is selected, Great River Energy would instead evaluate a greenfield breaker station in the future, as discussed in Section 3 below.

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<sup>8</sup> See Great River Energy, *Transmission Planning Procedures and Planning Criteria TDOG108*, at 6.2, available at <https://greatriverenergy.com/wp-content/uploads/2023/10/108-GRE-Planning-Criteria-002.pdf>.

<sup>9</sup> A bus-tie breaker within the Laketown Substation accounts for approximately \$1,230,000 of the Project’s estimated cost if the Proposed Route is selected. If Route Alternative B is selected, the bus-tie breaker would not be installed, so that cost would not be incurred for the Laketown Substation.

### **3. Steps Necessary to Address Reliability Concerns**

If Route Alternative B is selected, Applicants would not install a bus-tie breaker at the Laketown Substation because it would not provide reliability benefits due to the uneven distribution of loading, as discussed in Section 2(c) above.

Instead, if a similar load separation were to be achieved, a future greenfield breaker station along the local 115 kV system would need to be installed. Applicants are not proposing a future greenfield breaker station as part of this Project, but provide the information below for purposes of comparison.

The greenfield breaker station discussed below is in a hypothetical location at the intersection of the three 115 kV transmission lines near the intersection of Caver County State Aid Highway 10 and Carver County State Aid Highway 11.<sup>10</sup> Great River Energy selected this location for the analysis because it offers a preferable point to build a new greenfield breaker station. Assuming Route Alternative B is selected, it is the only location that divides the system into three separate circuits, significantly reducing exposure.

Note that this hypothetical location does not provide identical load separation as compared to the Proposed Route because it is not possible to achieve identical load separation if a different configuration is constructed. However, the analysis below represents Great River Energy's planning engineers' answer to the question: if Route Alternative B were selected, what could be done to achieve similar load separation as the Proposed Route?

#### **a. Greenfield Breaker Station - Description**

The hypothetical location for the breaker station is at a location where three existing 115 kV transmission lines meet because a breaker station at this location would divide the system into three separate circuits. For sites with three or more 115 kV transmission lines, Great River Energy PE-02 Substation Bus Arrangement standard is to design the substation as a ring bus arrangement with an ultimate build out of breaker and one half. Ring-bus arrangements are relatively reliable because each circuit is protected by a full breaker. This arrangement allows for flexible operation and reduces the need to take outages for maintenance purposes. Designing for an ultimate build out of breaker and one half provides future flexibility to upgrade the substation for greater reliability and operational flexibility. Because of these benefits, this is standard design. In other words, the configuration discussed here would be standard under these circumstances; it is not an over-design. The system configuration is depicted on Figures 4 and 4a (nonpublic).

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<sup>10</sup> Note that this is a hypothetical location for the purposes of this analysis, and Great River Energy has not evaluated whether land rights could be voluntarily acquired at this location.

This configuration will result in three transmission circuits as shown in Figure 4a; the red highlighted circuit to the west, the orange highlighted circuit to the east, and the blue highlighted circuit to the north.

The west circuit is measured at 20.8 miles, the east circuit is 6.4 miles, and the north circuit is 1.8 miles.

The west circuit has the Laketown Substation load and the Augusta Substation load:

- Laketown Substation Initial Service: 4.3 MW
- Augusta Substation: 12 MW

East circuit total load: 16.3 MW.

The east circuit has the Xcel Energy West Creek Substation load:

- West Creek Substation: 21.2 MW

West circuit total load: 21.2 MW.

The north circuit has the Victoria Substation and Lake Bavaria Substation loads:

- Victoria Substation: 13.7 MW
- Lake Bavaria Substation: 17.92 MW

North circuit total load: 31.62 MW.

Total MW-mile values for the three circuits are therefore:

MW-miles (near-term forecast) with Route Alternative B and greenfield breaker station (West):  $20.8 \times 16.3 = 339.04$  MW-miles.

MW-miles (near-term forecast) with Route Alternative B and greenfield breaker station (East):  $6.4 \times 21.2 = 135.68$  MW-miles.

MW-miles (near-term forecast) with Route Alternative B and greenfield breaker station (North):  $1.8 \times 31.62 = 56.92$  MW-miles.

This configuration results in MW-mile values all below the 1,000 MW-mile criteria.

## **b. Timeframe**

If Route Alternative B is selected, Great River Energy will evaluate whether a breaker station would be added between the Augusta and Victoria substations. Great River Energy would need to reassess the system loads and balance of loads once the final design for the Project has been decided. Great River Energy would then monitor the Project's performance and assess whether any issues or concerns with reliability were present. As future residential and industrial developments come online in the area and more load is at risk of an outage for this transmission line, then additional plans to improve transmission reliability would be

developed, which would most likely involve the addition of breakers. Assuming load growth occurs as currently anticipated, the timeframe for placing a greenfield breaker station in-service (assuming no other intervening project mitigates the need) may be 10-15 years. That timeframe could be accelerated if load growth accelerates, or delayed if load growth in this region is slower than expected.

#### 4. Detail of All Cost Impacts to Distribution System Modifications

Where the Project alignment overtakes existing distribution, MVEC will attach the distribution lines as under-build to the Project’s new structures or bury the distribution lines within the Project right-of-way. That work is separate from the Route Permit and not included as part of the Application. Based on the alignment studied in the EA, the Proposed Route’s alignment overtakes 0.98 mile of existing distribution. The costs of underbuilding or undergrounding the distribution are identified in Table 2 below.

**Table 2: Distribution System Modification Costs—Proposed Route**

Proposed Route	Miles	Cost	Cost -Distribution	Cost – Transmission <sup>11</sup> space (more poles, taller, etc.)	Cost – Distribution & Transmission
		<b>Underground</b>	<b>Underbuild</b>		
Hampshire 3-phase	0.38	\$161,500	\$60,800	\$76,000	\$136,800
Augusta Road north side	0.5	\$56,000	\$32,500	\$100,000	\$132,500
Hwy 10 - 3 phase south side	0.1	\$42,500	\$16,000	\$20,000	\$36,000
<b>Total</b>	<b>0.98</b>	<b>\$260,000</b>	<b>\$109,300</b>	<b>\$196,000</b>	<b>\$305,300</b>

Based on the alignment studied in the EA, except including an alignment on the north (not south) side of Augusta Road, Route Alternative B would overtake 2.1 miles of existing distribution. The costs of underbuilding or undergrounding the distribution are identified in Table 3 below.

**Table 3: Distribution System Modification Costs—Route Alternative B**

<sup>11</sup> Additional transmission costs for underbuild are due to additional structures and taller structures.

Route Alternative B	Miles	Cost –	Cost – Distribution	Cost – Transmission	Cost – Distribution & Transmission
		<b>Underground</b>	<b>Underbuild</b>		
Kelly Avenue 1-phase	1.0	\$112,000	\$65,000	\$200,000	\$265,000
Augusta Road north side 1-phase	1.0	\$112,000	\$65,000	\$200,000	\$265,000
Hwy 10 - 3-phase south side	0.1	\$42,500	\$16,000	\$20,000	\$36,000
<b>Total</b>	<b>2.1</b>	<b>\$266,500</b>	<b>\$146,000</b>	<b>\$420,000</b>	<b>\$566,000</b>

**5. Breakdown of Elements of Breaker Station Cost Estimate**

In comments on the Environmental Assessment (EA), Applicants estimated that an additional breaker station may cost approximately \$8-\$10 million, noting that final costs are dependent on factors such as location, land acquisition, permit requirements, material procurement, and supply chain considerations.<sup>12</sup> Applicants provided the estimate for purposes of comparison (i.e., to allow the Commission to understand what would be required to enhance Route Alternative B’s reliability to be comparable to that of the Proposed Route). As stated in those comments, however, Applicants are not proposing a greenfield breaker station as part of this Project. Accordingly, Applicants did not previously provide a detailed cost breakdown.

For this supplemental response, Applicants revisited the prior high-level estimate based on the hypothetical location discussed above, and the breakdown of the estimate is provided in the table below:

Category	Amount
Planning	\$85,000
Land procurement & permitting	\$2,198,000
Design	\$543,000
Material	\$2,911,000
Construction	\$3,692,000
Closeout	\$46,000
<b>Total</b>	<b>\$9,475,000</b>

<sup>12</sup> Applicants’ Comments Regarding EA at 11 (May 13, 2025) (eDocket No. [20255-218880-02](#)).

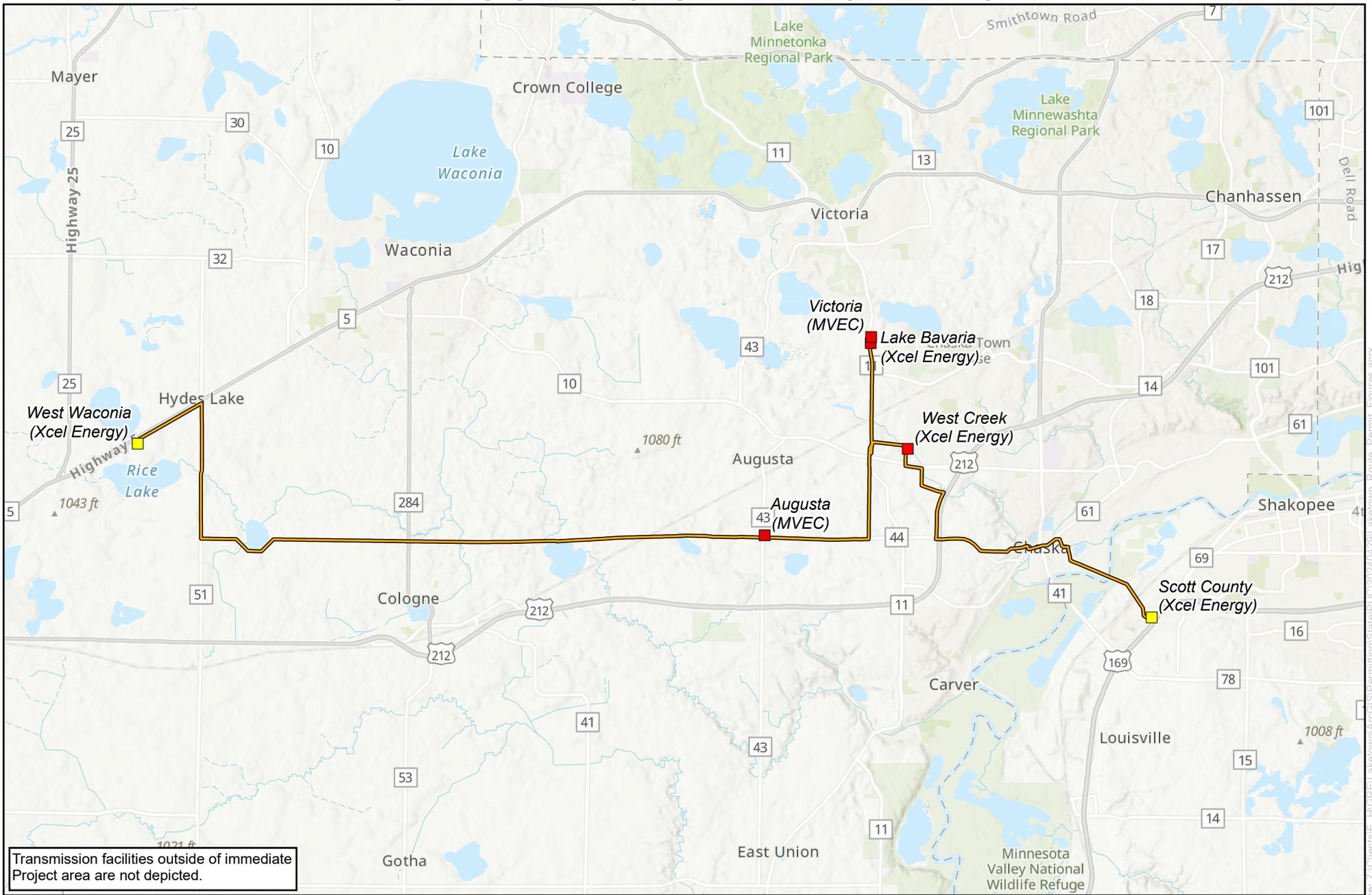
The estimate assumes the following:

- The breaker station would be constructed at a greenfield site near the intersection of County Road 10 and County Road 11 (Victoria Drive).
- Great River Energy would acquire a 20-acre site. Although the breaker station could be built on 10 acres, because of experience on other recent projects, it is assumed that additional acreage would be required for stormwater facilities, any required setbacks/screening/noise requirements, and in light of ongoing development in the area (i.e., to ensure adequate site control so that development does not occur immediately adjacent to the facilities). For these reasons, the acquisition of 20 acres is Great River Energy's standard for similar facilities. Great River Energy anticipates the cost for 20 acres to be close to \$2,000,000 due to subdividing a smaller parcel relative to surrounding parcels, proximity to future development, and the potential for an unwilling seller(s).
- The cost to re-terminate the transmission lines to the greenfield breaker station isn't included in the cost estimate.

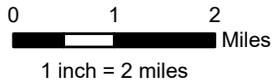
The greenfield breaker station discussed here is anticipated to cost more than the cost of adding a bus-tie breaker at Laketown Substation in the Proposed Route configuration. This is because the greenfield breaker station will require additional equipment and a stand-alone location, whereas the bus-tie breaker that would be installed within the proposed Laketown Substation and require only one breaker, rather than three.

Attachment A (PUBLIC)

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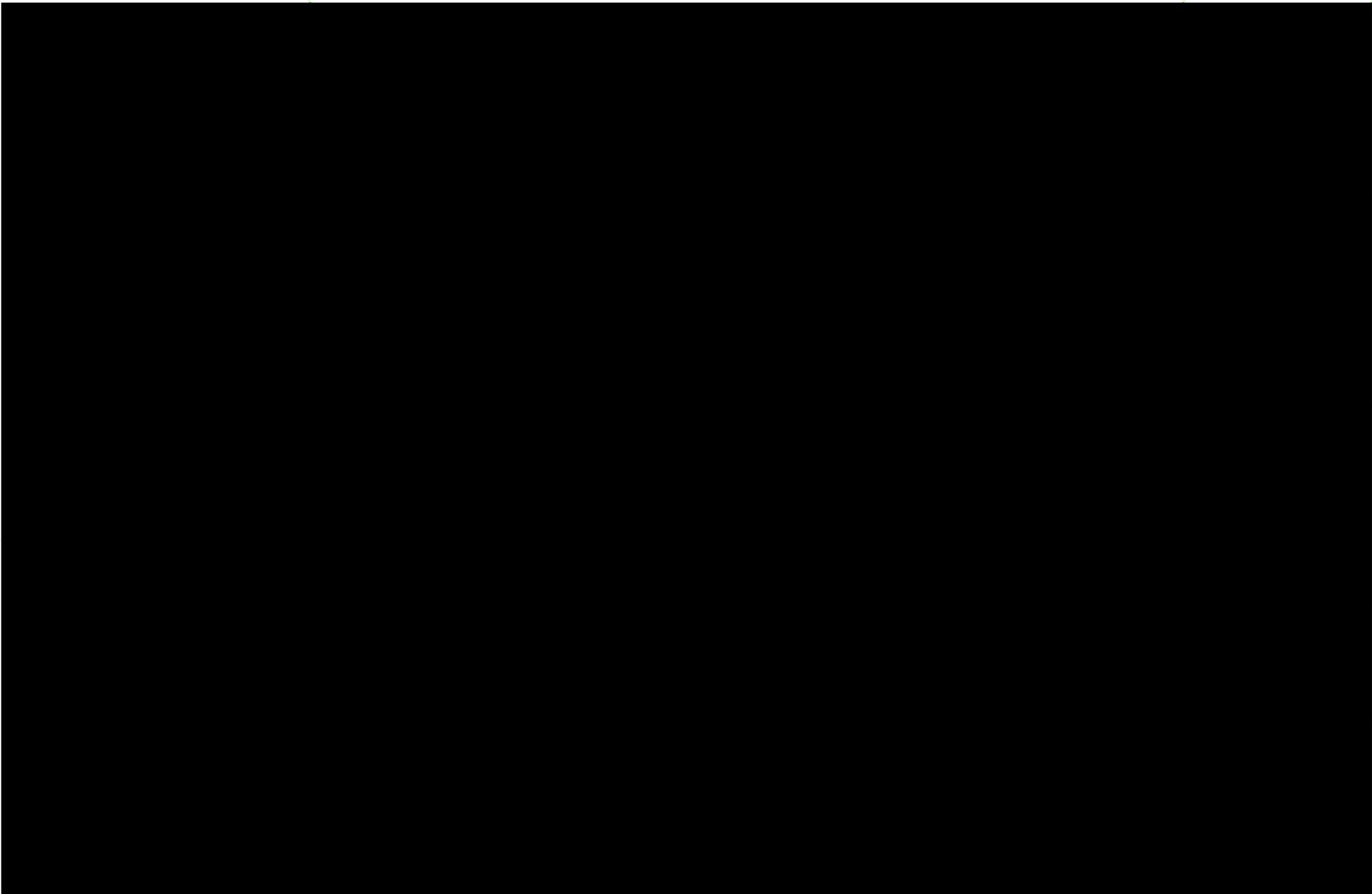
Transmission facilities outside of immediate Project area are not depicted.



**Public Figure 1**  
**Map of Existing Transmission System**

- Existing Distribution Substation
- Existing Transmission Substation
- Existing 115-kV Transmission Line





0 1 2  
Miles  
1 inch = 2 miles



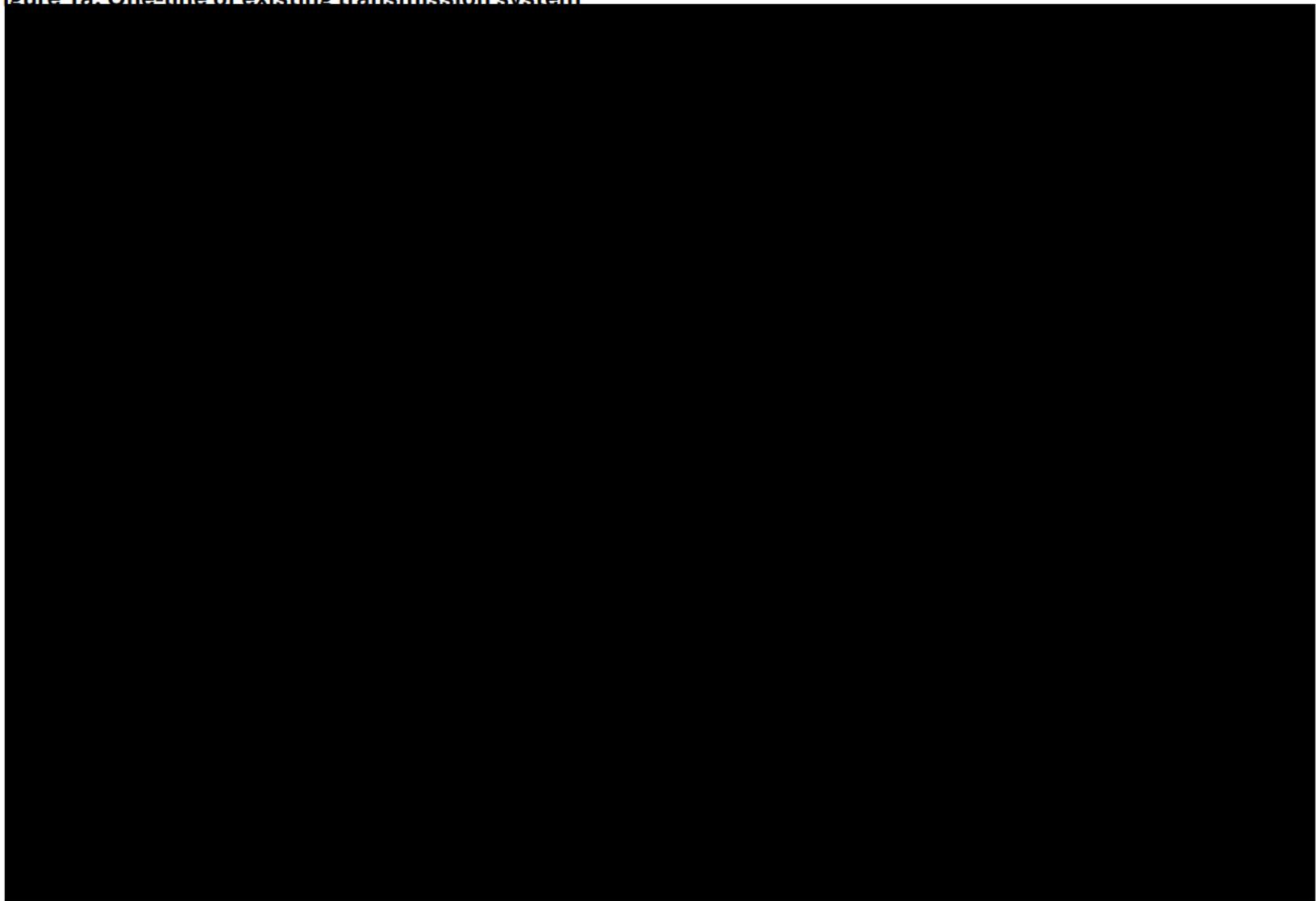
For Environmental Review Purposes Only

### Nonpublic Figure 1 Map of Existing Transmission System

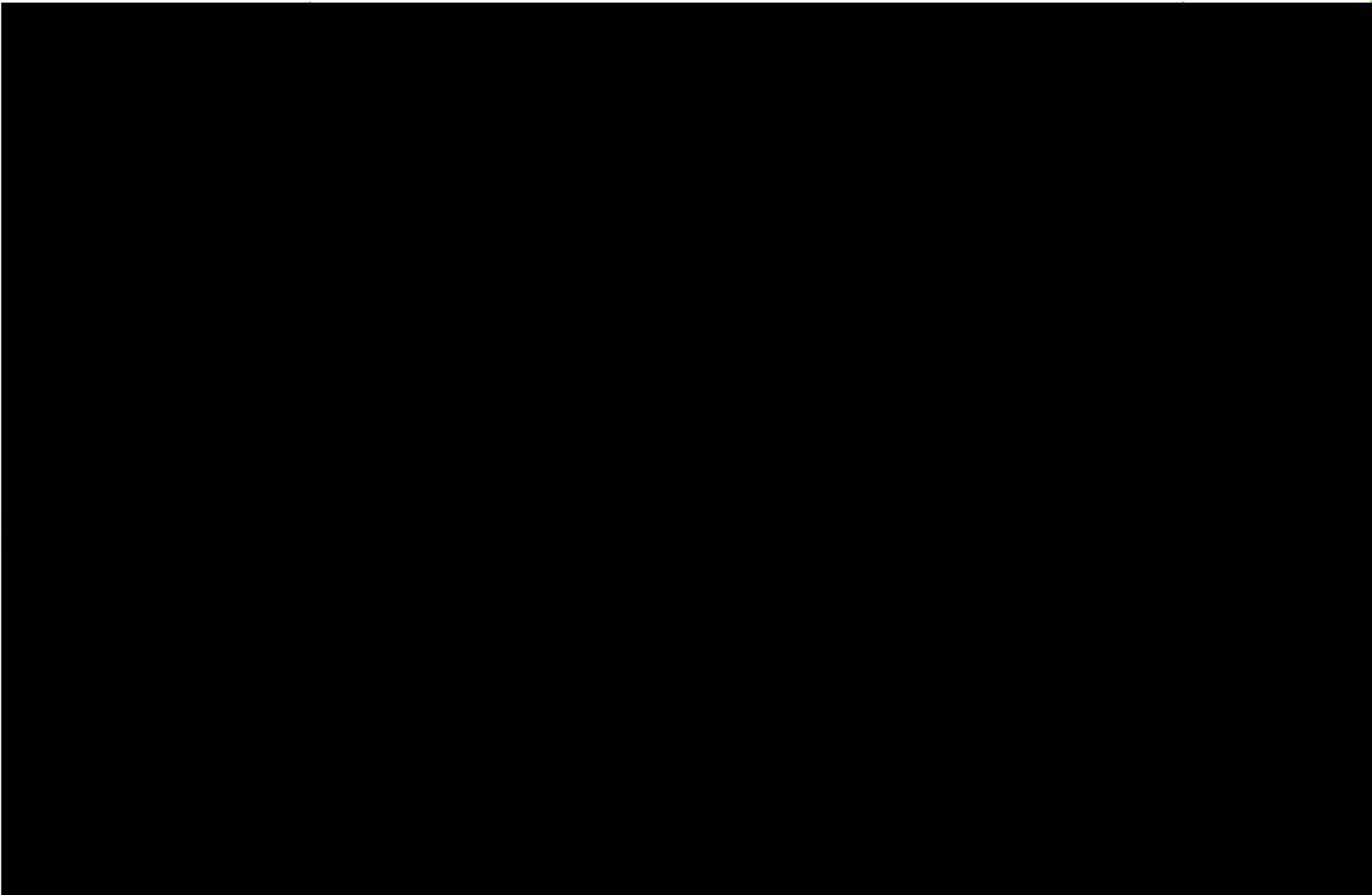
- Existing Distribution Substation
- Existing Transmission Substation
- Existing 115-kV Transmission Line
- Existing Transmission Line
- 69-kV Transmission Line
- 115-kV Transmission Line
- 230-kV Transmission Line
- 345-kV Transmission Line

Date: (10/8/2025) Source:

Figure 1a: One-line of existing transmission system







0 1 2 Miles

1 inch = 2 miles



For Environmental Review Purposes Only

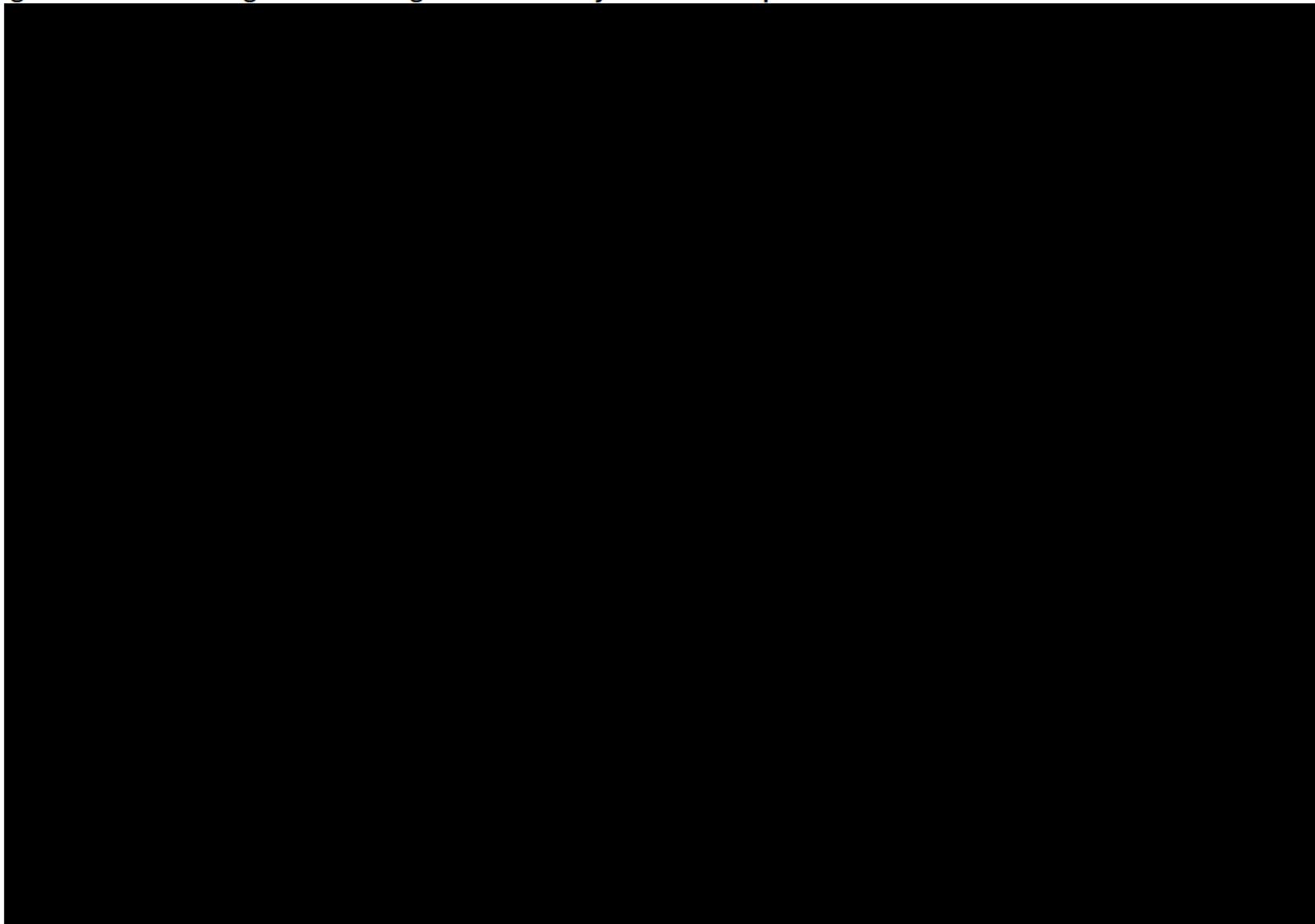


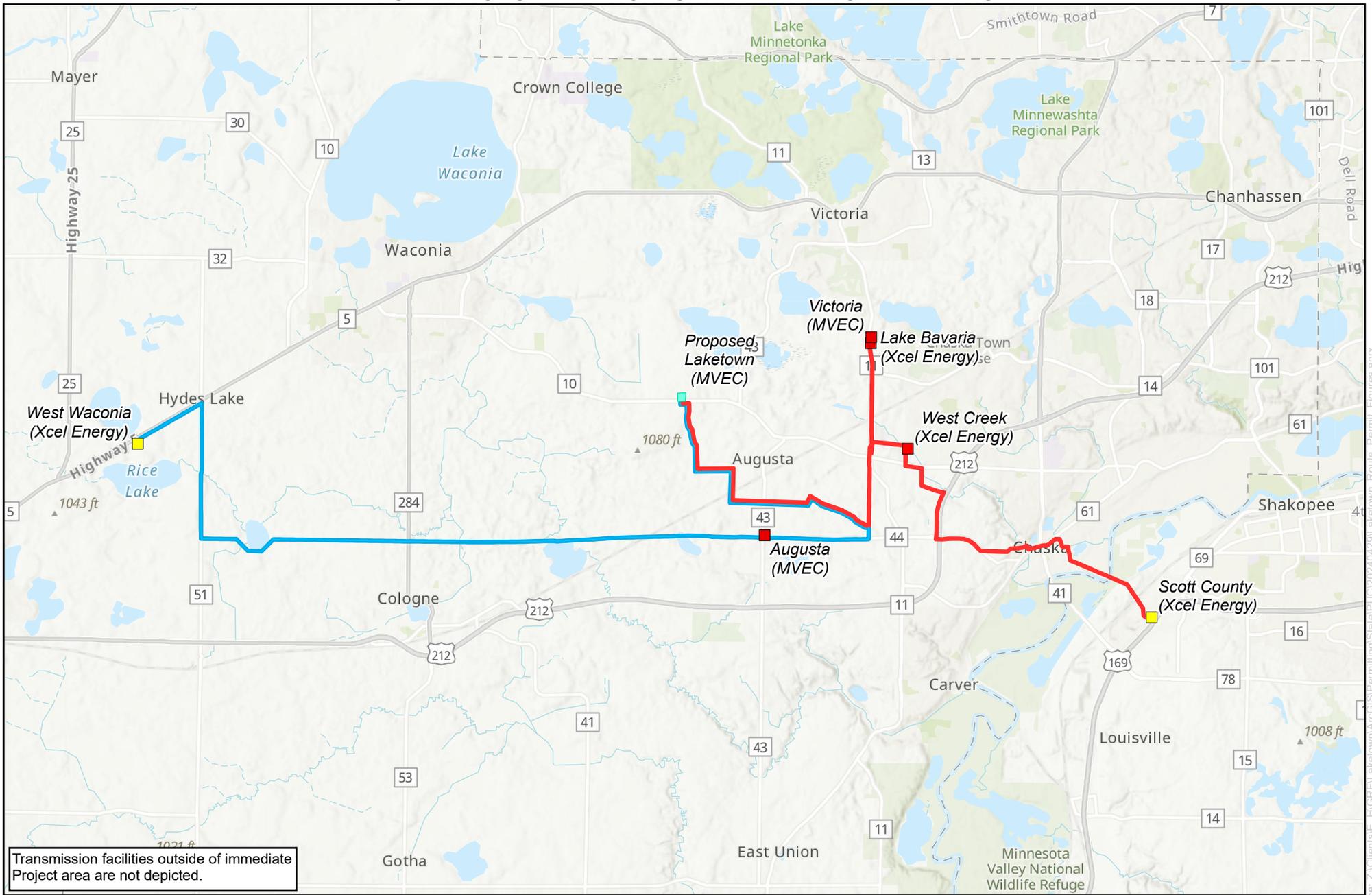
### Nonpublic Figure 2 Map of Existing Transmission System and Proposed Route

- |                                   |                            |
|-----------------------------------|----------------------------|
| Existing Distribution Substation  | Existing Transmission Line |
| Existing Transmission Substation  | 69-kV Transmission Line    |
| Proposed Substation               | 115-kV Transmission Line   |
| Proposed Route                    | 230-kV Transmission Line   |
| Existing 115-kV Transmission Line | 345-kV Transmission Line   |

Date: (10/8/2025) Sour

Figure 2a: One-line diagram of existing transmission system with Proposed Route





Transmission facilities outside of immediate Project area are not depicted.

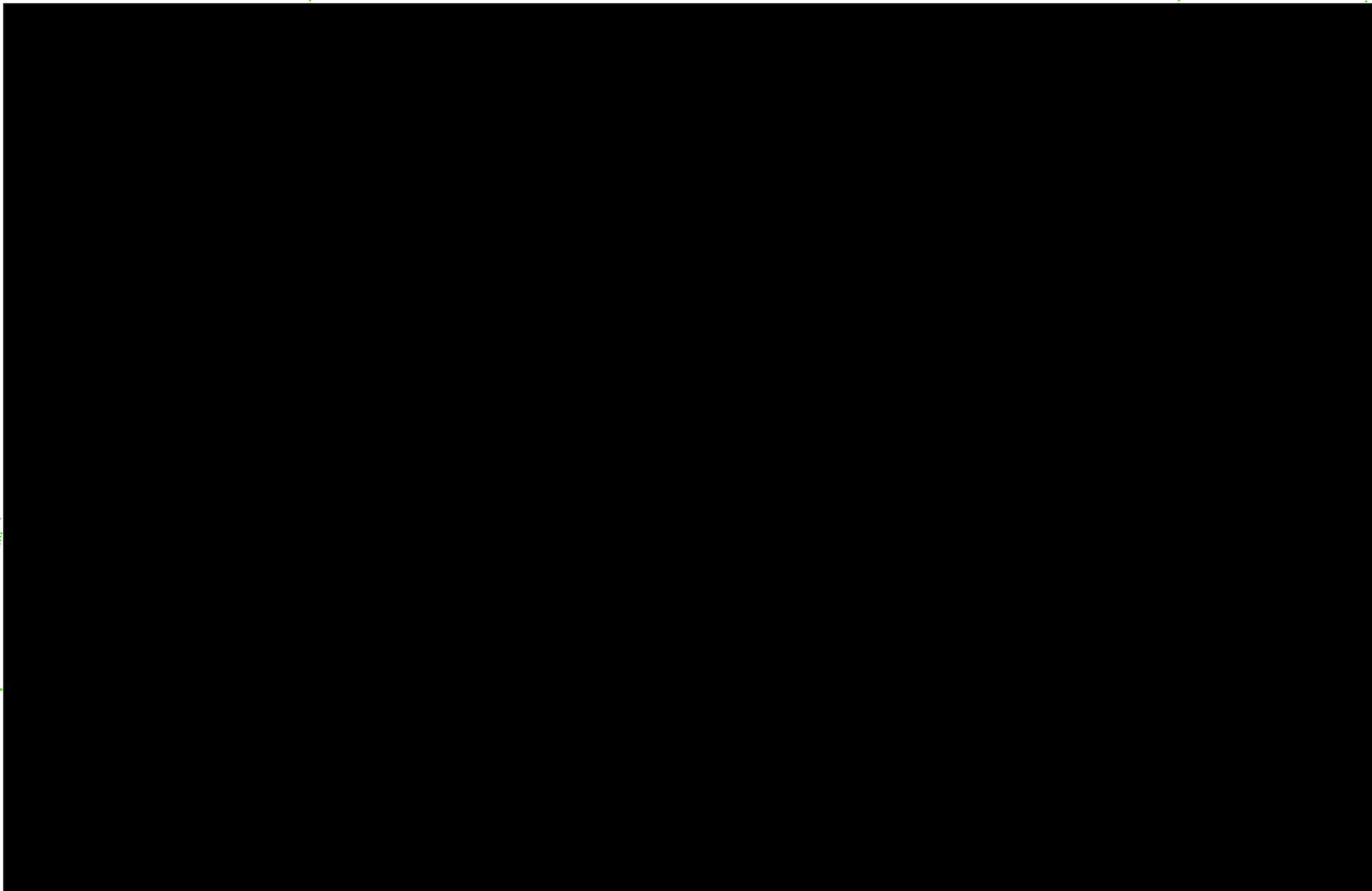
0 1 2 Miles  
1 inch = 2 miles

**GREAT RIVER ENERGY**

For Environmental Review Purposes Only

**Public Figure 2b**  
**Map of Existing Transmission System and Proposed Route with Two Circuits Highlighted**

- Existing Distribution Substation
- Existing Transmission Substation
- Proposed Substation
- East Circuit
- West Circuit



0 1 2 Miles

1 inch = 2 miles

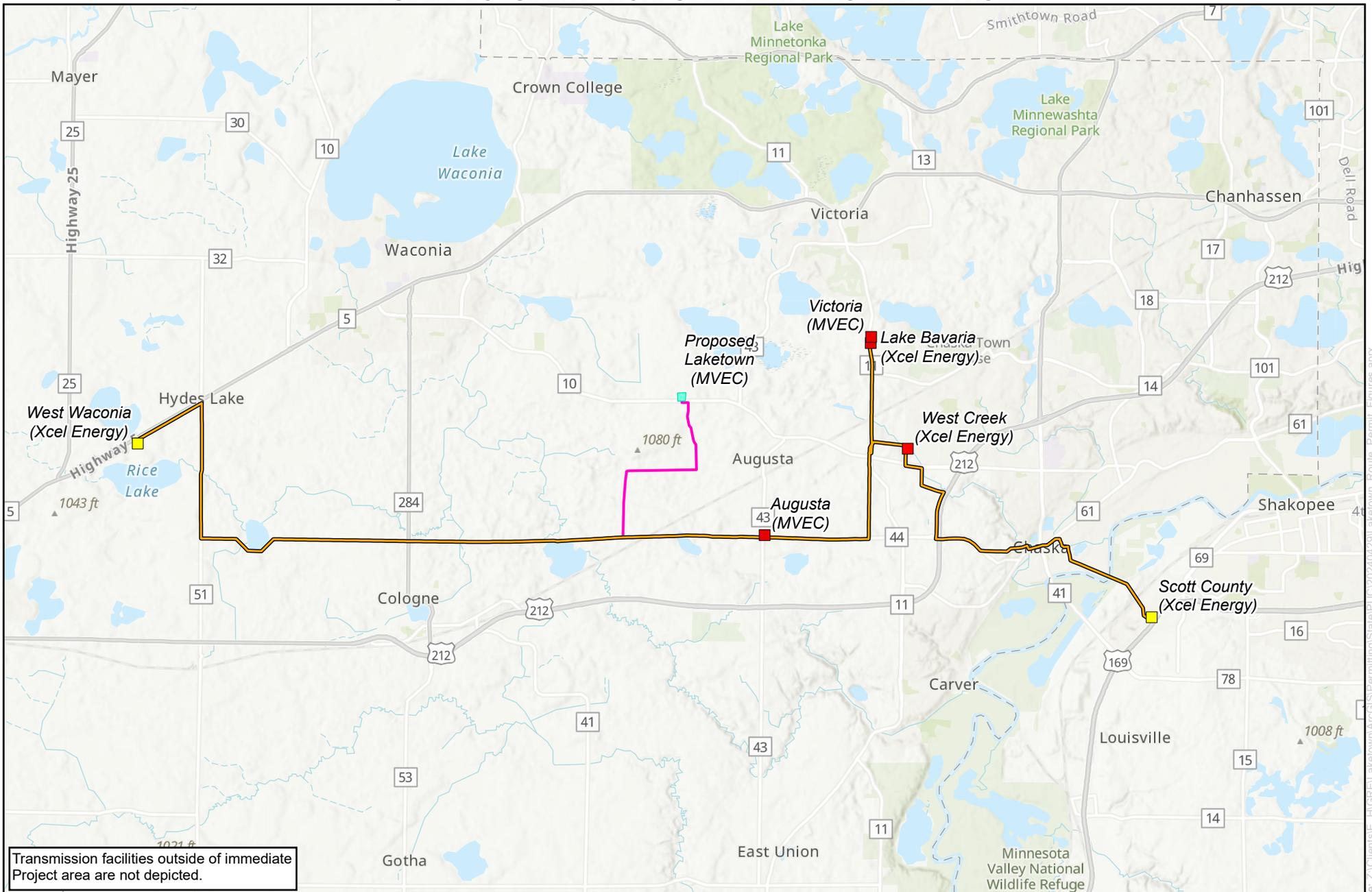


GREAT RIVER ENERGY

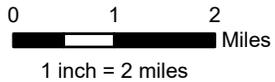


**Nonpublic Figure 2b  
Map of Existing Transmission System and  
Proposed Route with Two Circuits Highlighted**

- Existing Distribution Substation
- Existing Transmission Substation
- Proposed Substation
- East Circuit
- West Circuit
- Existing Transmission Line
- 69-kV Transmission Line
- 115-kV Transmission Line
- 230-kV Transmission Line
- 345-kV Transmission Line

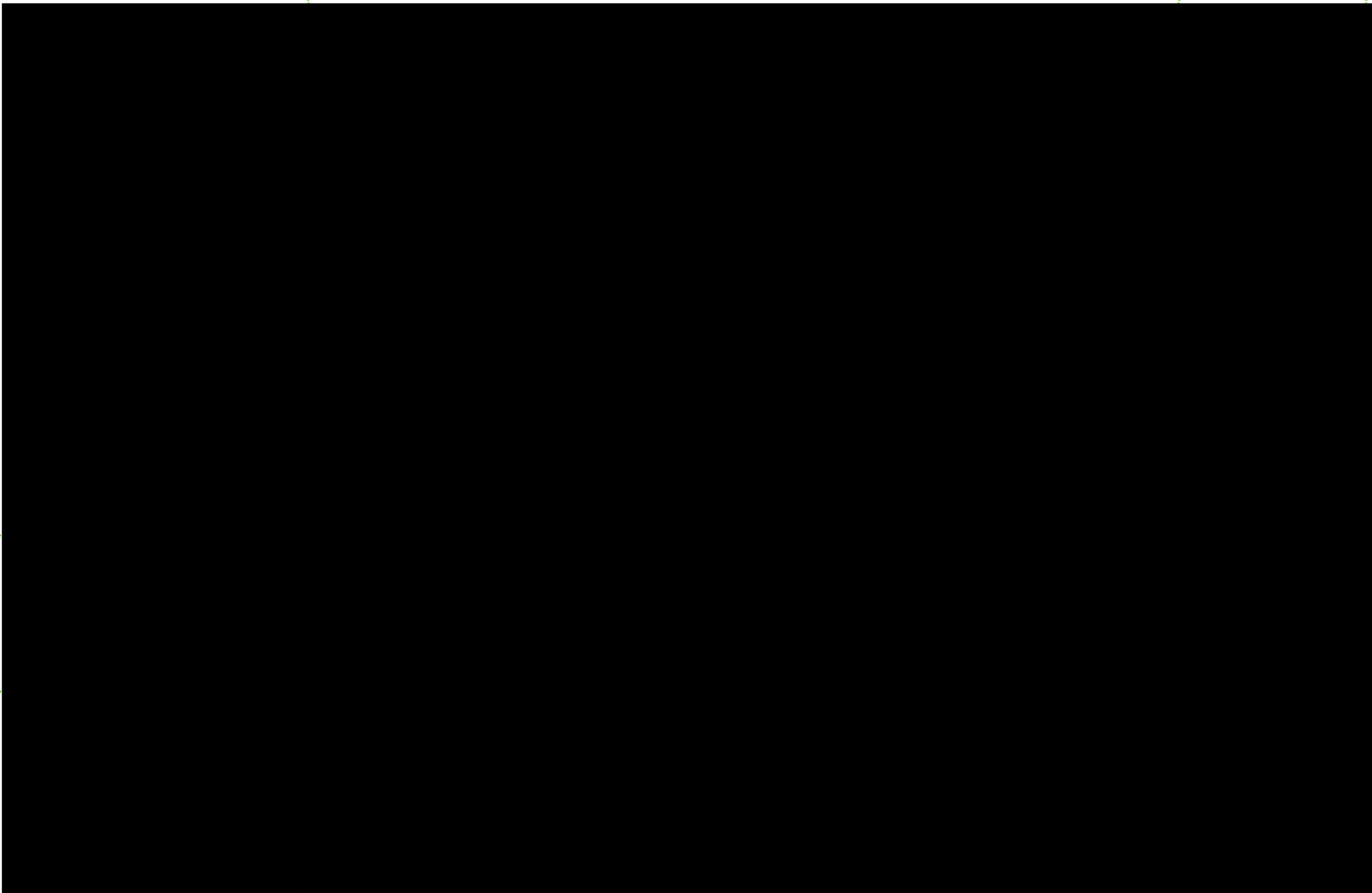


Transmission facilities outside of immediate Project area are not depicted.



**Public Figure 3**  
**Map of Existing Transmission System**  
**and Route Alternative B**

- Existing Distribution Substation
- Existing Transmission Substation
- Proposed Substation
- Route Alternative B
- Existing 115-kV Transmission Line



0 1 2  
Miles  
1 inch = 2 miles



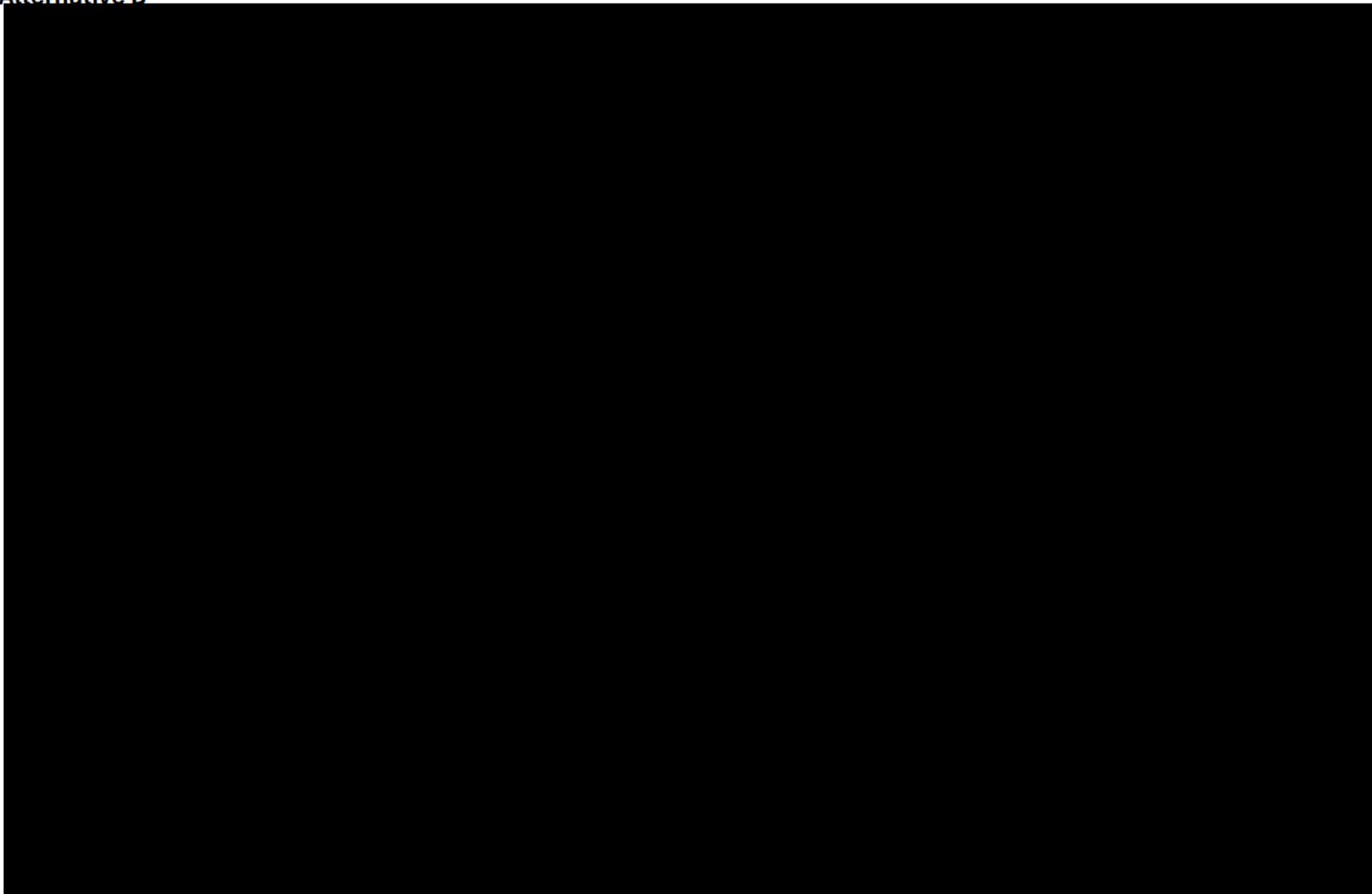
For Environmental Review Purposes Only

### Nonpublic Figure 3 Map of Existing Transmission System and Route Alternative B

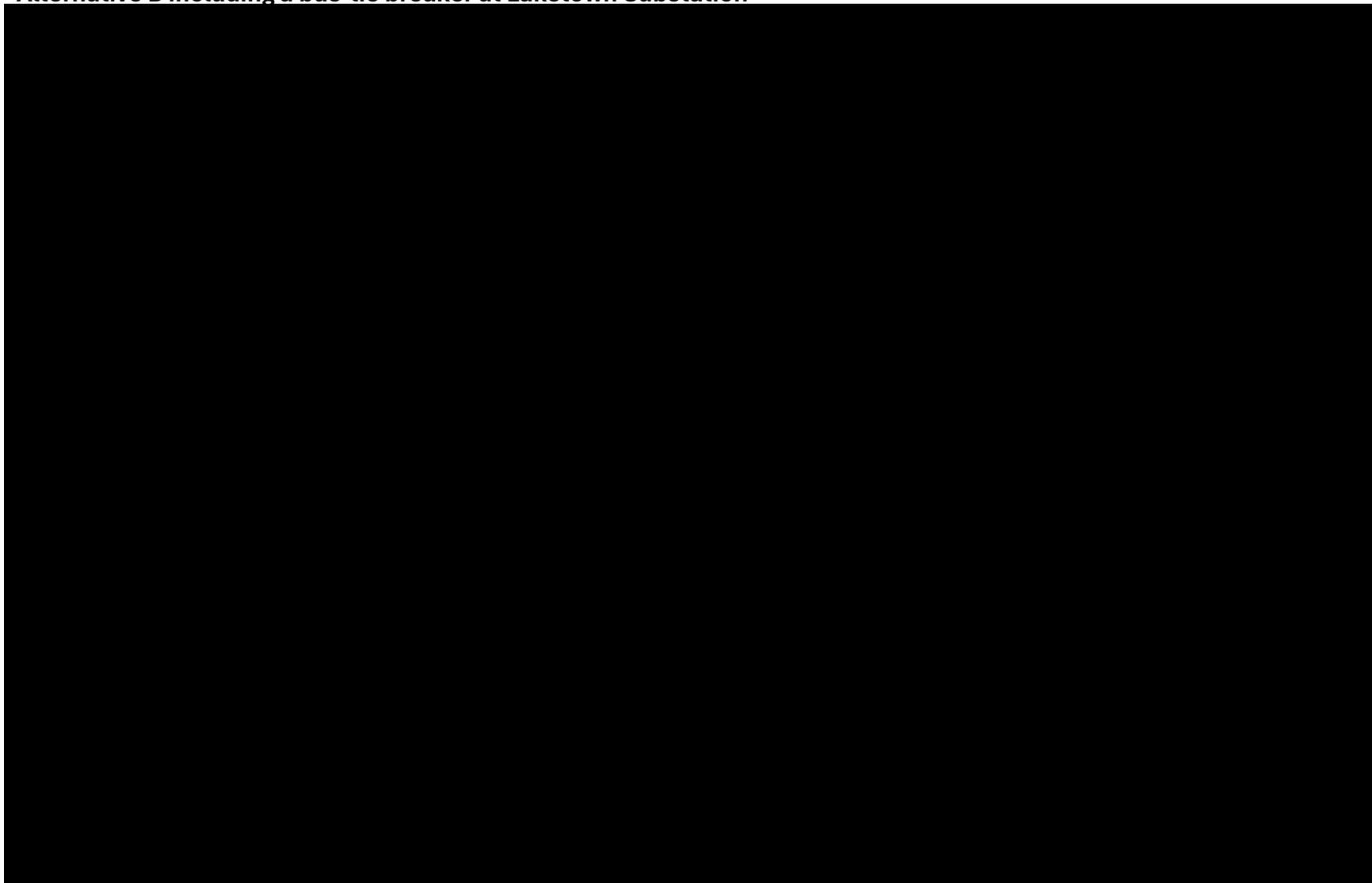
- Existing Distribution Substation
- Existing Transmission Substation
- Proposed Substation
- Route Alternative B
- Existing 115-kV Transmission Line
- Existing Transmission Line
- ⋯ 69-kV Transmission Line
- - - 115-kV Transmission Line
- 230-kV Transmission Line
- 345-kV Transmission Line

Date: (10/8/2025) Source

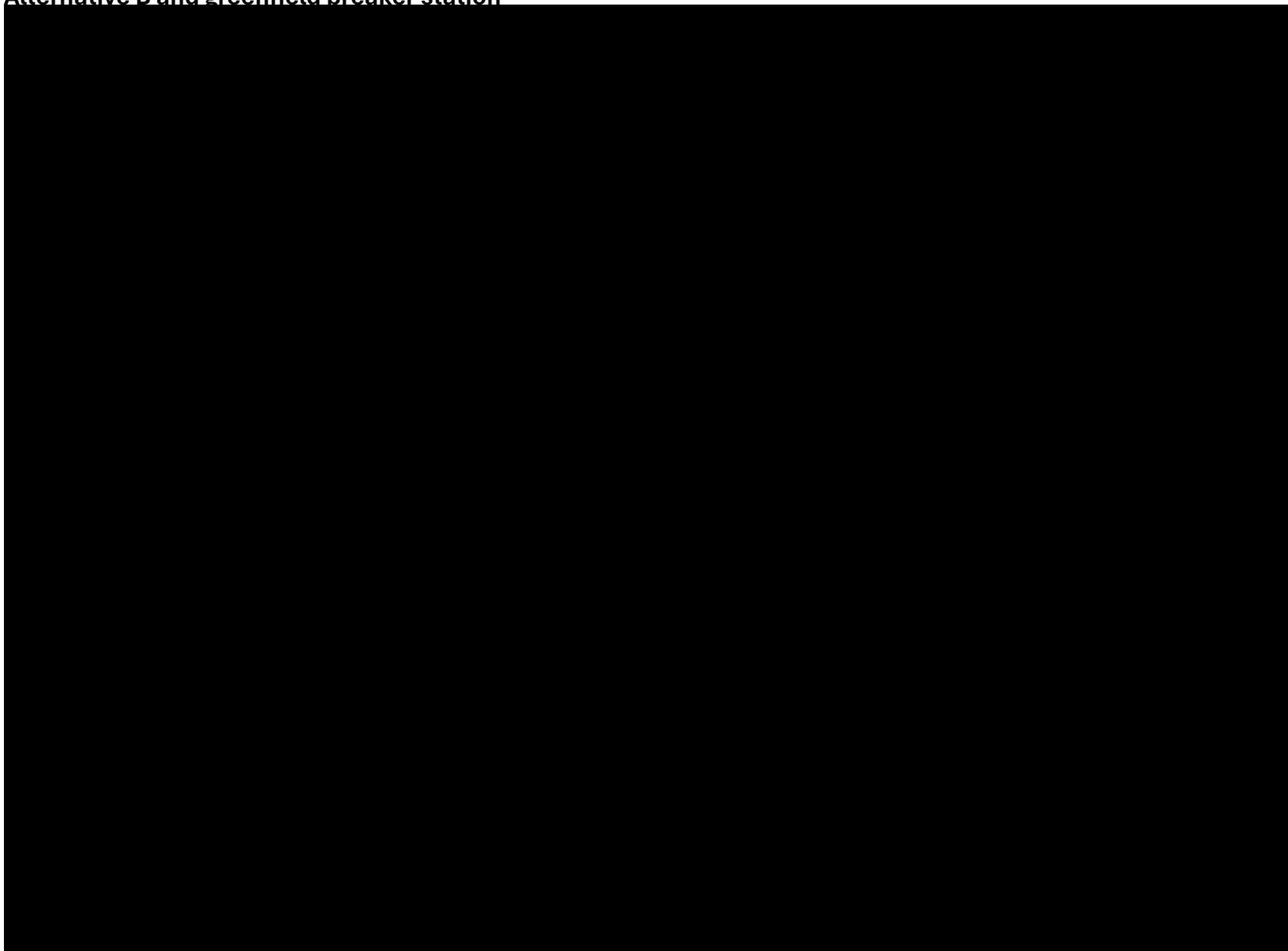
Figure 3a: One-line diagram of existing transmission system with the addition of the Laketown Substation from Route Alternative B

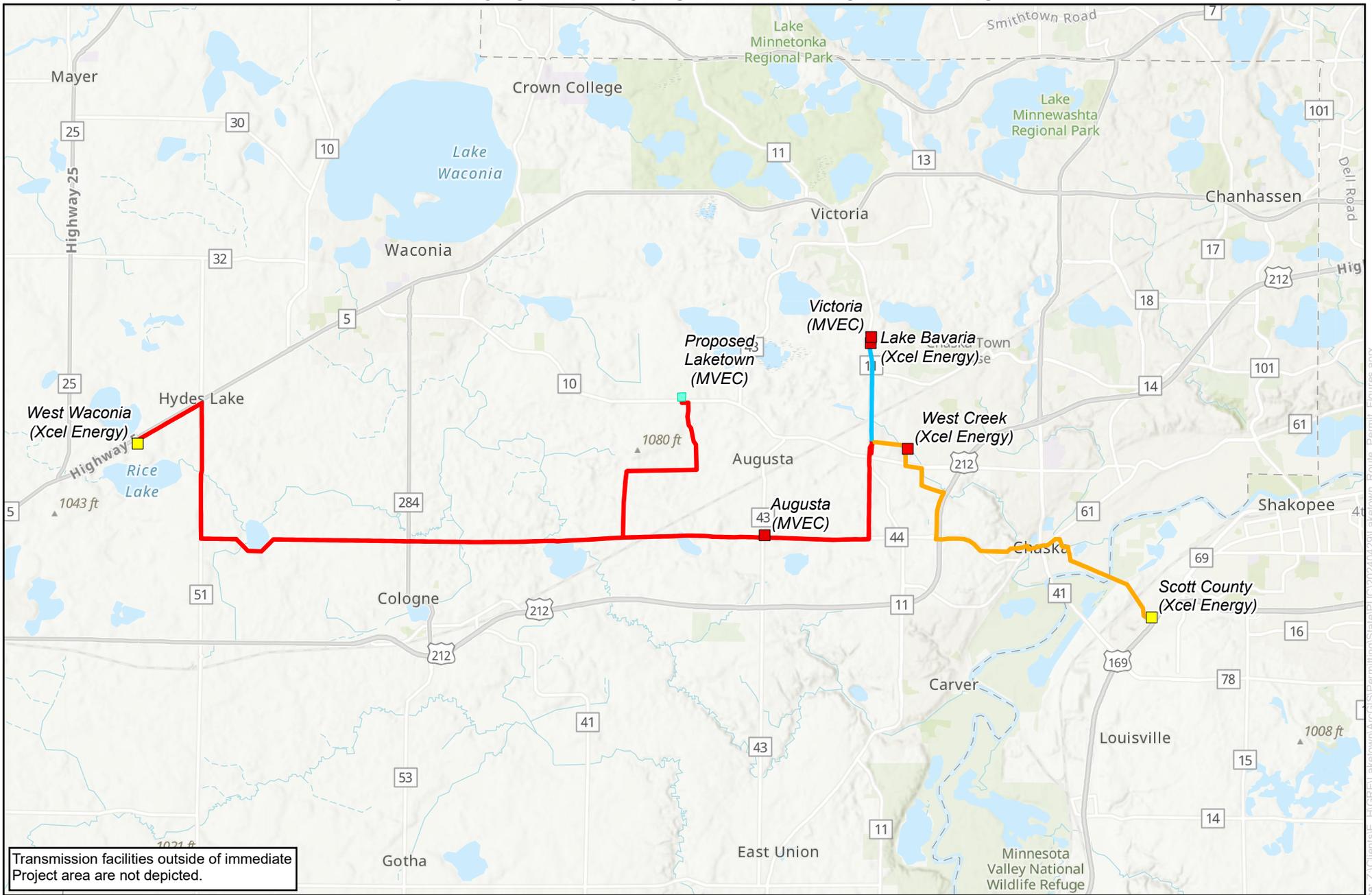


**Figure 3b: One-line diagram of existing transmission system with the addition of Laketown Substation from Route Alternative B including a bus-tie breaker at Laketown Substation**



**Figure 4: One-line diagram of existing transmission system with addition of Laketown Substation from Route Alternative B and greenfield breaker station**





0 1 2 Miles  
1 inch = 2 miles

**GREAT RIVER ENERGY**

For Environmental Review Purposes Only

**Public Figure 4a**  
**Map of Existing Transmission System with Laketown Substation from Route Alternative B and a Greenfield Breaker Station**

	Existing Distribution Substation		East Circuit
	Existing Transmission Substation		North Circuit
	Proposed Substation		West Circuit



## Attachment B

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**Attachment B**

<b>Project Name</b>	Laketown Substation Tap (/mtep-projects/project-edit/?id=dbdc2c5c-6064-ee11-be6e-001dd80bf6f4)
<b>Submitting TO</b>	GREAT RIVER ENERGY
<b>Planning Region</b>	West
<b>State(s)</b>	MN
<b>MTEP Project ID</b>	23763
<b>TO Project ID</b>	209529
<b>Target MTEP Cycle</b>	MTEP23
<b>Target Appendix</b>	A
<b>Current Appendix</b>	A
<b>Board Approved Date</b>	12/7/2023
<b>Project Description</b>	Construct about 3 to 5 miles 115 kV transmission line from GRE's 115 kV line near Victoria Tap. The interconnecting lines will be constructed as an in-and-out design to accommodate a future double-ended sub.
<b>System Need</b>	MVEC is requiring the new Laketown substation because of the additional load planned in Laketown Township. The existing substations in this area will be at capacity and will not be able to serve the additional load in the future.
<b>Project Type</b>	Other
<b>Other Type</b>	Load Growth
<b>Planning Status</b>	M2 - Appendix A Approved
<b>Expected ISD</b>	9/26/2028
<b>Current Cost</b>	\$13,904,910.00
<b>Max kV</b>	115
<b>Min kV</b>	
<b>MOD Project</b>	No
<b>MOD Project ID</b>	
<b>Cost Share Status</b>	Not Shared
<b>Created On</b>	10/6/2023 10:52 AM



[Home \(/\)](#) > [MTEP Projects \(/mtep-projects/\)](#) > [Project - Update](#)

# Project - Update

## Project Details

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### Project Overview

**Project Name \***

Laketown Substation Tap

**Submitting TO \***

GREAT RIVER ENERGY

**MTEP Project ID \***

23763

**Transmission Owner(s)**

GREAT RIVER ENERGY

**Project Description \***

Construct about 3 to 5 miles 115 kV transmission line from GRE's 115 kV line near Victoria Tap. The interconnecting lines will be constructed as an in-and-out design to accommodate a future double-ended sub.

**System Need \***

MVEC is requiring the new Laketown substation because of the additional load planned in Laketown Township. The existing substations in this area will be at capacity and will not be able to serve the additional load in the future.

**Project Type \***

Other

**Other Type \***

Load Growth

**State(s)**

MN

**Asset Management Project**

Asset management projects are designed to maintain capital assets for their expected useful life. These projects have a wide scope by nature & are intended to sustain system performance and reliability.

No  Yes

**Alternative**

Select if the project is submitted as an alternative project.

No  Yes

**Expedited Project Review (EPR)**

**Planning Region \***

West

**Spot Load \***

No

**MOD Project**

No  Yes

**TO Project ID**

209529

**Project Last Modified On**

4/23/2024

**NTA Eligibility \***

No

**NTA Eligibility Reason \***

New load

**Lifecycle Status**

**Need Date**

1/31/2028

**Planning Status**

M2 - Appendix A Approved

**ISD at MTEP Approval**

9/26/2028

**Expected ISD**

9/26/2028

**ISD Variance (months)**

0

**Withdrawal Date**

—

**General**

**Max kV**

115

**Project Latitude**

—

**Min kV**

—

**Project Longitude**

—

# MTEP Cycle

**Target MTEP Cycle \***

MTEP23

**Target Appendix \***

A

**Current Appendix**

A

**Board Approved Date**

12/7/2023

# Cost

**Current Cost**

Sum of all estimated facility costs at completion.

\$13,904,910.00

**Cost Variance (\$)**

7,596,368.00

**Cost at MTEP Approval**

\$6,308,542.00

**Cost Variance (%)**

120.41

# Facility Details

## Facility Details

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<b>Name</b>	27548-Laketown-Laketown Tap ( <a href="https://help.misoenergy.org/mtep-projects/project-edit/facilitydetailsedit/?id=73091573-6864-ee11-be6e-001dd806513c&amp;refentity=miso_project&amp;refid=dbdc2c5c-6064-ee11-be6e-001dd80bf6f4&amp;refrel=miso_project_miso_projectfacilitydetail_projectid">https://help.misoenergy.org/mtep-projects/project-edit/facilitydetailsedit/?id=73091573-6864-ee11-be6e-001dd806513c&amp;refentity=miso_project&amp;refid=dbdc2c5c-6064-ee11-be6e-001dd80bf6f4&amp;refrel=miso_project_miso_projectfacilitydetail_projectid</a> )
<b>Facility ID</b>	27548
<b>Current Cost</b>	\$13,904,910
<b>Expected ISD</b>	9/26/2028
<b>Planning Status</b>	M2 - Appendix A Approved
<b>Created On</b>	10/6/2023 11:50 AM

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[Edit Details \(/mtep-projects/project-edit/facilitydetailsedit/?id=73091573-6864-ee11-be6e-001dd806513c&refentity=miso\\_project&refid=dbdc2c5c-6064-ee11-be6e-001dd80bf6f4&refrel=miso\\_project\\_miso\\_projectfacilitydetail\\_projectid\)](/mtep-projects/project-edit/facilitydetailsedit/?id=73091573-6864-ee11-be6e-001dd806513c&refentity=miso_project&refid=dbdc2c5c-6064-ee11-be6e-001dd80bf6f4&refrel=miso_project_miso_projectfacilitydetail_projectid)

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