This section of the draft environmental impact statement (EIS) provides basic information about who is proposing to build the transmission line, why they are proposing it, and an overview of what is being proposed, including the routes, right-of-way (ROW) requirements, and estimated cost.

2.1 The Applicant

Xcel Energy is a Minnesota corporation headquartered in Minneapolis, Minnesota, and is a wholly-owned subsidiary of the utility holding company Xcel Energy Inc. Xcel Energy provides electricity services to approximately 1.2 million customers and natural gas services to 425,000 residential, commercial, and industrial customers in the state. Xcel Energy has applied for a route permit from the Minnesota Public Utilities Commission (Commission) on behalf of CapX2020, a joint initiative of 11 transmission-owning utilities in Minnesota, Wisconsin, and the surrounding region.

What is CapX2020?

CapX2020 is a joint initiative of regional electric utilities to satisfy increasing demand for electricity in the region by constructing new high-voltage transmission lines (HVTLs). The initiative is made up of 11 transmission-owning utilities in Minnesota, Wisconsin, and the surrounding region: Great River Energy, Xcel Energy, Central Minnesota Municipal Power Agency, Dairyland Power Cooperative, Minnesota Power, Minnkota Power Cooperative, Missouri River Energy Services, Otter Tail Power Company, Rochester Public Utilities, Southern Minnesota Municipal Power Agency, and Wisconsin Public Power.

Contact information for Xcel Energy is provided below:

Tom Hillstrom
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Xcel Energy
414 Nicollet Mall-MP8A
Minneapolis, MN 55401
1-800-238-7968
lacrosseinfo@capx2020.com

2.2 The Project

Xcel Energy (applicant) proposes to construct and operate a new 81 to 89-mile, 345 kilovolt (kV) transmission line and a 15 to 18-mile, 161 kV transmission line in Minnesota. The 345 kV line would begin south of the Twin Cities metro area near Hampton, head southeast towards Rochester, and then turn east towards Kellogg, Minnesota, where it crosses the Mississippi River into Wisconsin (see Map 2.5-01). At that point, the line continues from Alma, Wisconsin to the project terminus near La Crosse, Wisconsin. Only the Minnesota portion of the project is the subject of review in this draft EIS. The state of Wisconsin is preparing a separate EIS for the Wisconsin portion. The 345 kV transmission line will be built using double circuit capable poles. However, only one circuit would be installed for this project. The 161 kV transmission line would begin at a proposed new substation to be located between Zumbrota and Pine Island to the existing Northern Hills substation north of Rochester.

The applicant has proposed two possible routes for the 345 kV transmission line; these are designated as the applicant's preferred route (P route) and the applicant's alternate route (A route). Similarly, the applicant has proposed two possible routes for the 161 kV transmission line; these are designated as the applicant's preferred route and alternate route for that component of the project. The combined 345 kV and 161 kV routes would cross portions of the following counties: Dakota, Goodhue, Olmsted and Wabasha. The project would also include the construction of a new North Rochester Substation and improvements to the existing Hampton and Northern Hills Substations.

The Wisconsin portion of the project will be permitted in a separate proceeding before the Public Service Commission of Wisconsin (PSCW).

2.3 Project Purpose

The purpose of the Hampton - Rochester - La Crosse transmission line project is to: (1) Improve community reliability of the transmission system in Rochester, Winona, La Crosse, and the surrounding areas; (2) Improve the regional reliability of the transmission system; and (3) Increase generation outlet capacity.

The Commission determined that the project was needed and granted a Certificate of Need (CON) for the project on May 22, 2009.

2.4 General Route Descriptions

The applicants' preferred and alternate routes, as shown in Map 2.5-01, are discussed in this draft EIS in three segments. Detailed turn-by-turn descriptions of the preferred and alternate routes, as well as route alternatives proposed by the public during the scoping process are provided in Section 8 of the draft EIS. Generally, the three segments of the project are as follows:

- **Segment 1 - Hampton to North Rochester Substation 345 kV Line**
  The 345 kV transmission line would originate at the Hampton Substation and continue to the proposed North Rochester Substation. The proposed substation would be constructed somewhere west of U.S. Highway 52, south of State Highway 60 and north of 500th Street in southern Goodhue County. The length of this segment is 36 to 47 miles, depending on the specific route selected, and passes through Dakota and Goodhue Counties.

- **Segment 2 - North Rochester Substation to Northern Hills Substation 161 kV Line**
  The 161 kV transmission line would originate at the proposed North Rochester Substation and would terminate at the existing Northern Hills Substation. The length of this segment would be 15 to 18 miles, depending on the specific route selected, and would pass through Goodhue and Olmsted Counties.

- **Segment 3 - North Rochester Substation to Mississippi River 345 kV Line**
  The 345 kV transmission line would continue from the proposed North Rochester Substation, cross the Zumbro River and terminate at a substation near La Crosse, Wisconsin. The transmission line would cross the Mississippi River at a location near Kellogg, Minnesota and Alma, Wisconsin. The length of this segment is 42 to 45 miles, depending on the specific route selected, and passes though Goodhue, Olmsted and Wabasha Counties.

2.5 Associated Facilities

The proposed project includes expansion or construction of three substations.

- **Hampton Substation (Under Construction)**
  Construction of the Hampton Substation was approved by the Commission on September 14, 2010, as part of the Brookings County-Hampton project, Docket No. ET/TL-08-1474. The substation will be located on the west side of Highway 52 near 215th Street, and on the north side of 215th Street. The substation fenced and graded area will be approximately five to eight acres, with approximately 32 to 35 additional acres to provide an adequate buffer and to accommodate transmission line connections to the substation. The substation will be constructed with one 345 kV breaker and

What is a substation?

A substation connects two or more transmission lines and may increase or decrease the voltage, by use of a transformer, as required. It may also interconnect with lower-voltage distribution lines, which deliver power to the customer. Between the generating plant and the end-user, power may go through several substations.

a half-yard with nine breaker positions and five breakers. The substation will require line switches, a control house, relay panels, foundations, and steel structures. The substation yard will require graded access roads.

- **North Rochester Substation (Proposed)**
  The project would include construction of a new North Rochester Substation located in the area between Zumbrota and Pine Island, Minnesota. Approximately 8 acres of fenced area would be required for the substation construction; however, a total of approximately 40 acres would be required to provide adequate buffer and to allow for transmission lines to connect to the substation. The new substation would include six 345 kV circuit breakers, a 345 kV/161 kV transformer, three 161 kV circuit breakers, a control house and associated line termination structures, switches, buswork, controls, and associated equipment. The substation siting area for the proposed North Rochester Substation would accommodate the applicant's preferred or alternate routes. The substation would be designed to connect with the existing Prairie Island – Byron 345 kV transmission line. Detailed plans for the proposed North Rochester Substation depend on the final route selection and final substation site location, as permitted by the Commission.

- **Northern Hills Substation (Existing – Proposed Expansion)**
  The project would require an approximate 0.5 acre expansion of the existing Northern Hills Substation to accommodate the new 161 kV transmission line and related equipment. No additional property would be required to construct the expansion. Improvements would include an expansion of the existing graded area by approximately 30 feet and the addition of 161 kV equipment, including one circuit breaker and associated line termination switches and controls. Construction would include the associated line switches, foundations, steel structures, and control panels.

What is a route?

The term "route" refers to the pathway that a HVTL follows between end points. Under the Minnesota Power Plant Siting Act (PPSA), a route granted to a utility may have a variable width of up to 1.25 miles. For this project, the requested route is typically 500 feet on either side of the proposed transmission centerline (1,000 feet total). Requesting a larger route width during the permitting phase provides the utility with the flexibility to work closely with landowners to develop detailed pole placements that minimize human and environmental impacts.

2.6 Labeling Convention for Route Alternatives

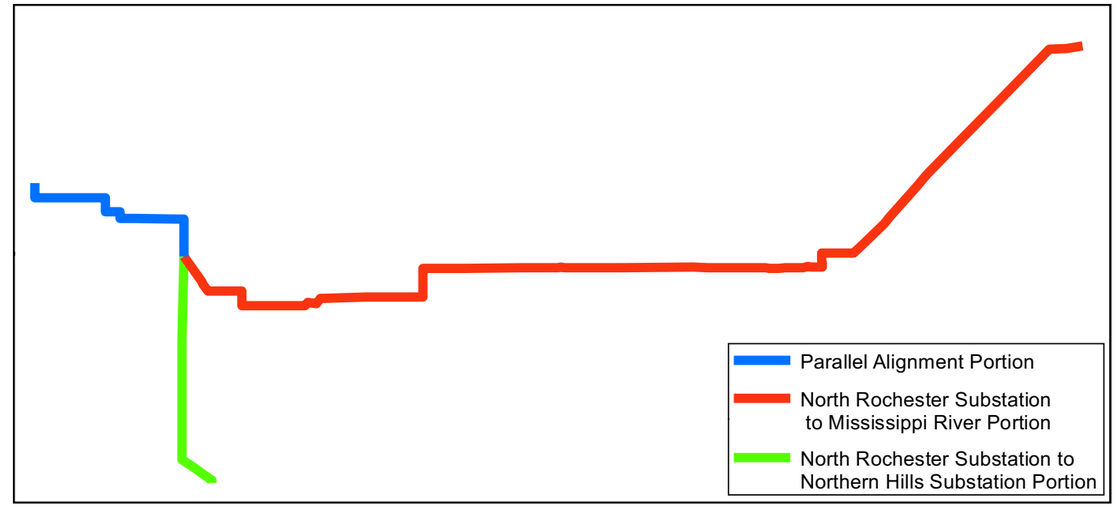
A total of 62 route alternatives are considered in this draft EIS. The route alternatives were evaluated within the three segments described above in Section 2.4. The applicant's preferred routes in Segments 1 through 3 are labeled 1P, 2P and 3P, respectively. The applicant's alternate routes in Segments 1 through 3 are labeled 1A, 2A and 3A, respectively. Naming of the remaining route alternatives is based on three factors. These include:

- Whether the proposed route alternative is based on the applicant's preferred route, the applicant's alternate route, or a combination of the two;
- The segment, as listed above, in which the route alternative is located.
- Whether a route alternative involves parallel alignments of portions of Segments 2 and 3.

The following are examples of route alternative names based on the naming convention described above:

- 1P-002 – This refers to a route alternative in Segment 1 (Hampton to North Rochester Substation) which is a variation on the applicant's preferred route. It is the second such variation proposed during scoping.

Figure 2.6-1 "C routes" showing parallel alignment portion



- 3A-004 – This is a route alternative in Segment 3 (North Rochester Substation to Mississippi River) based on the applicant's alternate route. It is the fourth route alternative in Segment 3.
- 2B-001 – This is a route alternative in Segment 2 (North Rochester Substation to Northern Hills Substation) that initially follows the applicant's preferred route before switching to the applicant's alternate route.

Within the Hampton Substation to North Rochester Substation Segment, there are a total of 17 route alternatives. See Map 2.6-01 for an overview of the Hampton Substation to North Rochester Substation Segment route alternatives.

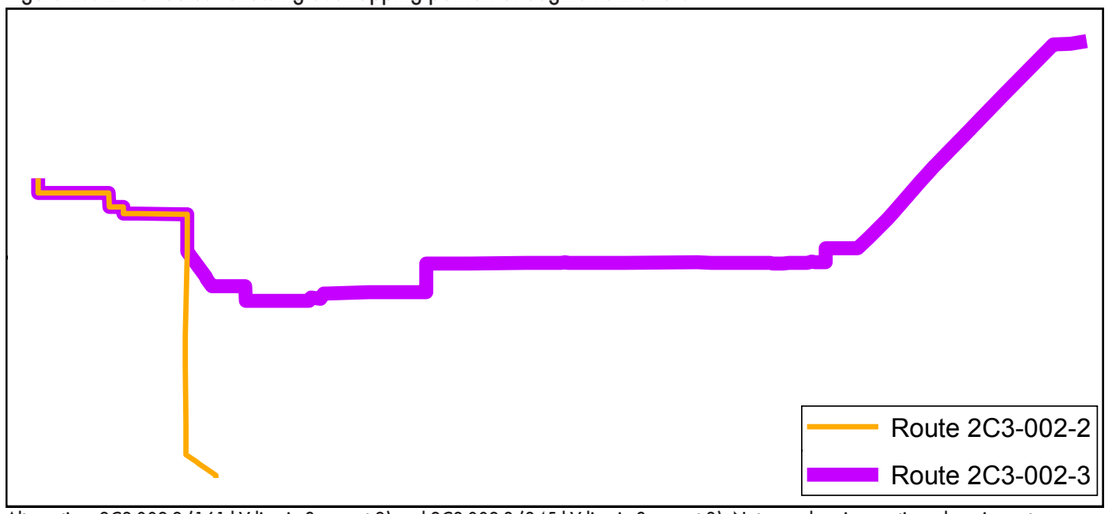
Within the North Rochester Substation to Northern Hills Substation Segment, there are a total of 14 route alternatives. See Map 2.6-02 for an overview of the North Rochester Substation to Northern Hills Substation Segment route alternatives.

Within the North Rochester Substation to Mississippi River Segment, there are a total of 31 route alternatives. See Map 2.6-03 for an overview of the North Rochester Substation to Mississippi River Segment route alternatives.

There were also eight route alternatives proposed during the scoping process that included sharing ROW and creating a parallel alignment between portions of the North Rochester Substation to Northern Hills Substation Segment and the North Rochester to Mississippi River Segment. These are referred to as "C routes." In these cases the route alternatives' names have the form "2C3-00x-x". These proposed route alternatives actually comprise two route alternatives, one for the North Rochester Substation to Mississippi River Segment and one for the North Rochester Substation to Northern Hills Substation Segment. A part of each of these route alternatives overlap in the parallel alignment portion. See Figures 2.6-1 and 2.6-2 for an example. Each of the two portions is given a unique name; in this case, 2C3-002-2 for the North Rochester Substation to Northern Hills Substation portion and 2C3-002-3 for the North Rochester Substation to Mississippi River portion.

In these route alternatives, the 161 kV line and the 345 kV line would be double-circuited at the east end of the route alternatives to the North Rochester Substation. The 161 kV line would continue south to the Northern Hills Substation, and the 345 kV line would continue east to the Mississippi River. Because of the overlap, impacts in the double-circuited/parallel alignment portion

Figure 2.6-2 "C routes" showing overlapping portion of Segments 2 and 3



Alternatives 2C3-002-2 (161 kV line in Segment 2) and 2C3-002-3 (345 kV line in Segment 3). Note overlapping portion where impacts are counted for each segment.

(in blue) are double counted, once in Section 8.2 (for the 161 kV line) and once in Section 8.3 (for the 345 kV line). For an accurate comparison of these route alternatives, the impacts for the overlapping section would have to be subtracted from the total impact of that combination of Segment 2 and Segment 3. The calculated impacts for the overlapping portions are provided in Appendices I and J.

Impacts associated with all route alternatives have been evaluated using the same criteria. Existing resources and potential impacts for all route alternatives are described in detail in Section 8, and are depicted on maps located in Appendix A. Detailed turn-by-turn descriptions of all route alternatives are also provided in Section 8.

2.7 Route Width

Minnesota's Power Plant Siting Act (PPSA) directs the Commission to locate transmission lines in a manner that "minimize[s] adverse human and environmental impact while ensuring continuing electric power system reliability and integrity and ensuring that electric energy needs are met and fulfilled in an orderly and timely fashion." Minn. Stat. § 216E.02, subd. 1. The PPSA further authorizes the Commission to meet its routing responsibility by designating a "route" for a new transmission line when it issues a route permit. The route may have "a variable width of up to 1.25 miles," within which the ROW for the facilities can be located.

The purpose of the route permitting process is not to establish an exact centerline for a transmission line but rather to establish a general alignment that best balances competing land uses and minimizes human and environmental impacts. Once a route is established by the Commission, the utility then does more detailed engineering and contacts landowners to gather additional detailed information about the circumstances of their property. Only after considering all inputs does the utility establish an exact centerline and pole placement. A route designation by the Commission should be wide enough to provide flexibility for the utility to work with landowners to adjust final design. Once the utility establishes a centerline and structure placement, construction drawings are provided to the Commission so the Commission can confirm the utility's plans are consistent with the route permit. At the same time, a route designation cannot be so wide that it is unclear what the intended general alignment of the transmission line is meant to be.

What is the difference between a route and the right-of-way?

The permitted route described in this section is the area in which the utility is allowed to complete final design. The right-of-way (ROW), on the other hand, is the specific area that is actually required for the final easement for the transmission line. In this case the applicants have asked for a 1,000-foot route in most areas. However, the ROW actually needed for the transmission line facilities is only 150 feet wide, and even less (about 60 feet) when the transmission line can share ROW with other infrastructure such as roads or highways. Requesting a route width wider than the actual ROW needed gives the utility flexibility to make alignment adjustments to work with land-owners and avoid sensitive natural areas.

For this project, the applicant proposes a route width of 1,000 feet for the majority of the project.

The applicant has requested a route width of up to 1.25 miles in the following areas to address site specific concerns:

Applicant's Preferred Route

- Along U.S. Highway 52 where the Minnesota Department of Transportation (DOT) is considering building new highway infrastructure such as interchanges or railroad overpasses.
- Along U.S. Highway 52 north of Cannon Falls and east of the highway for approximately 1 mile where Farmland Natural Areas Program (FNAP) easements exist adjacent to the preferred side of the highway.
- At the proposed North Rochester Substation siting area, which is between Zumbrota and Pine Island, Minnesota. A total of approximately 40 acres would be required for the substation, adequate buffer area, and to allow for transmission lines to connect to the substation.

Applicant's Alternate Route

- In the vicinity of the proposed North Rochester Substation siting area, the applicant has requested a routing area approximately 3,600 feet wide east to west and approximately 3.75 miles long north to south. The western boundary is 500 feet west of the existing Prairie Island to Byron 345 kV line and the eastern boundary is 500 feet east of the centerline of US-52.
- At the proposed North Rochester Substation (see above).

2.8 Rights-of-Way

The majority of the new 345 kV and 161 kV transmission line facilities would be built with single pole structures. A 150-foot-wide ROW is typically required for 345 kV transmission lines, and an 80-foot-wide ROW is typically required for 161 kV transmission lines. In some limited instances, where specialty structures are required for long spans or in environmentally sensitive areas, up to 180 feet of ROW may be needed for the transmission line. Along some route alternatives, the 345 kV line and the 161 kV line would run parallel to each other but on separate structures. In this configuration, the two lines can share 30 feet of ROW, for a total ROW width of 200 feet.

When the transmission line is placed across private land, a ROW agreement is required, typically an easement (see Appendix C). When the transmission line parallels other existing infrastructure (e.g., roads, railroads, other utilities), an easement of lesser width may be required from a landowner, as part of the ROW of the existing infrastructure can often be shared with the ROW needed for the transmission line. When paralleling existing ROW, utlities' typical routing practice is to place the poles on adjacent private property, a few feet off the existing ROW.

With this pole placement, the transmission line shares the existing ROW, thereby reducing the size of the easement required from the private landowner. For example, if the required ROW is 150 feet and the pole is placed five feet off of an existing road ROW, only an 80-foot easement would be required from the landowner and the additional 70 feet of the needed ROW would be shared with the road ROW.

The arms on the transmission line pole (davit arms) would be approximately 85 feet above the ground depending on span length, and extend approximately 18 feet from the center of the pole.

In each instance of ROW sharing, the applicant must acquire necessary approvals from the ROW owner (e.g., railroad) or the agency overseeing use of a particular ROW (e.g., DOT).

Throughout the route development process, the applicant has sought to identify areas to share ROW with existing infrastructure, including transmission lines, highways, and railroads. The PPSA, the Commission's routing rules, and prior judicial decisions recognize this preference and call upon the Commission to consider the utilization of existing linear corridors, particularly existing transmission line corridors and highway ROW.

Among the potential ROW sharing opportunities identified for the 345 kV line is along U.S. Highway 52. This route parallels U.S. Highway 52 for approximately 27 miles between the Hampton Substation and a point northwest of Zumbrota. DOT requires that a utility obtain a utility permit to construct transmission facilities across or in State trunk highways (interstate and non-interstate). Minn. Rule 8810.3300, Subp. 1.

Table 2.9-1 Estimated transmission line construction costs, 345 kV applicant's preferred route and alternate route

345 kV Route Section	Total Cost – Applicant's Preferred Route (millions)[1]	Total Cost – Applicant's Alternate Route (millions)[1]
Hampton – North Rochester Substation	$88	$101
North Rochester Substation- Mississippi River	$106	$101
End-to-end total	**$194**	**$202**

[1]Transmission costs include materials, engineering, survey, ROW, and project management in 2009 dollars.

Table 2.9-2 Estimated transmission line construction costs, 161 kV applicant's preferred route and alternate route

161 kv Route Section	Total Cost – Applicant's Preferred Route (millions)[1]	Total Cost – Applicant's Alternate Route (millions)[1]
161 kV Route Section	$16	$17

[1]Transmission costs include materials, engineering, survey, ROW, and project management in 2009 dollars.

Table 2.9-3 Substation modifications and construction cost estimate

Substation	Status	Total Cost[1]
Hampton	Being permitted and constructed under Brookings-Hampton project	$0
North Rochester Substation	New	$22
Northern Hills Substation	Modified Existing	$2
Total		**$24**

[1]Transmission costs include materials, engineering, survey, ROW, and project management in 2009 dollars.

2.9 Estimated Project Cost

Project construction costs include the survey, engineering, materials, construction, ROW, and project management associated with the transmission line and substation construction. Project costs (estimated in 2009 dollars) are summarized in Tables 2.9-1, 2.9-2, and 2.9-3. The total cost of the Project is between $234 million and $243 million.

2.9.1 Operation and Maintenance

Once constructed, the primary operating and maintenance cost for the transmission lines is the cost of inspections, usually done monthly by air and by ground once a year. Annual operating and maintenance costs for transmission lines in Minnesota and the surrounding states vary depending upon the setting, the amount of vegetation management necessary, storm damage occurrences, structure types, materials used, and the transmission line's age. For 161 kV and 345 kV transmission lines, past experience has shown that costs are approximately $300 to $500 per mile.

Substations require a certain amount of maintenance to keep them functioning in accordance with accepted operating parameters and the National Electric Safety Code (NESC). Transformers, circuit breakers, batteries, protective relays and other equipment need to be serviced periodically in accordance with the manufacturer's recommendation. The site itself must be kept free of vegetation and drainage must be maintained.

2.10 Applicant's Schedule

The applicant's expected permitting and construction schedule for the project is outlined below:

Minnesota Certificate of Need
Completed May 22, 2009

Minnesota Route Permit
Fall 2011

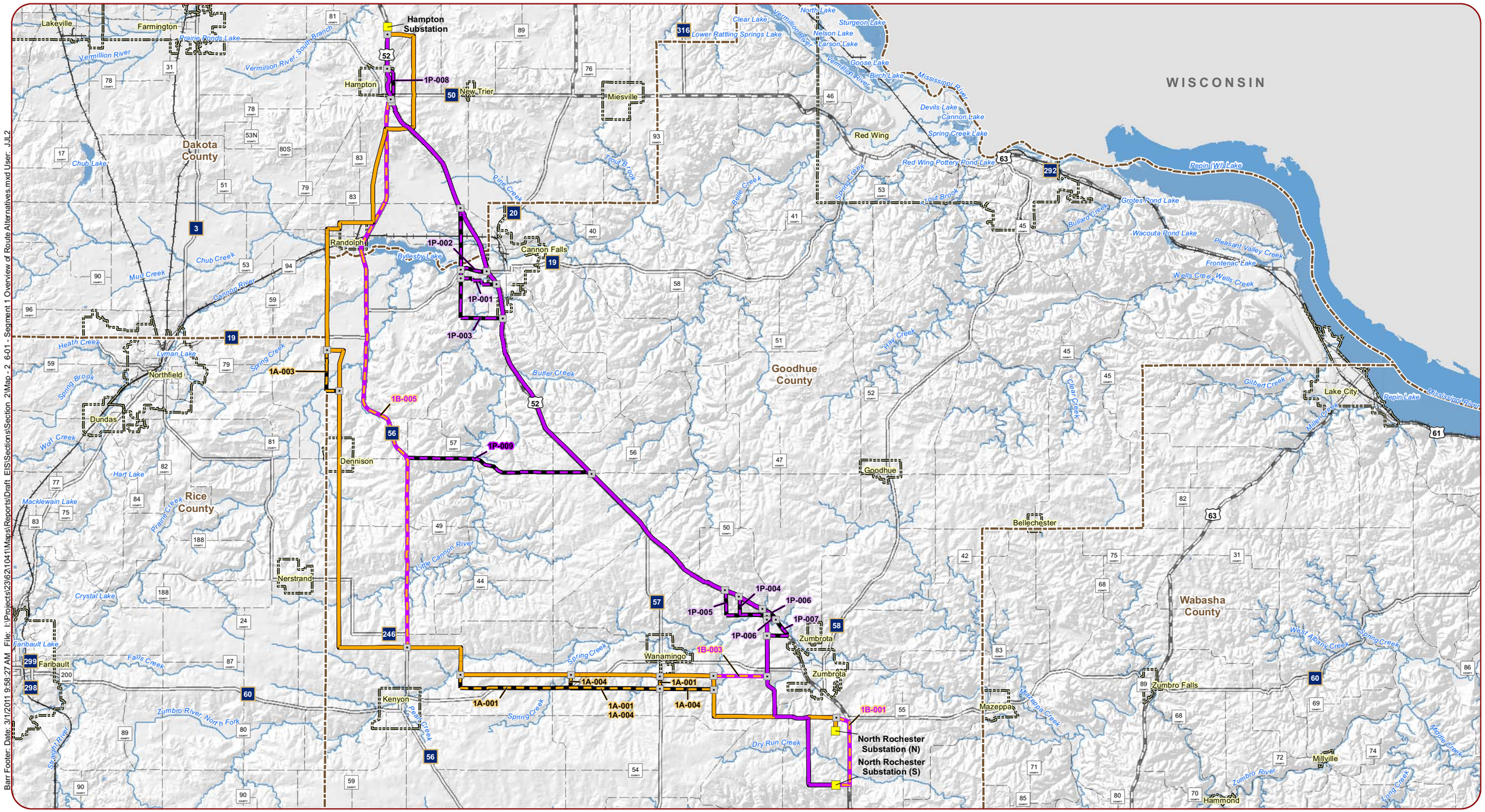
Wisconsin Certificate of Public Convenience and Necessity
First Quarter 2012

Federal Environmental Impact Statement
Spring 2011

Pre-Construction Activities
Second Quarter 2012 to Third Quarter 2012

Construction
Third Quarter 2012 to Fourth Quarter 2015

Project Completion
Fourth Quarter 2015



0 1.5 3 6 Miles

0 2.5 5 10 Kilometers

Original Alignments

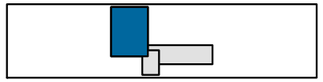
- P Route
- A Route

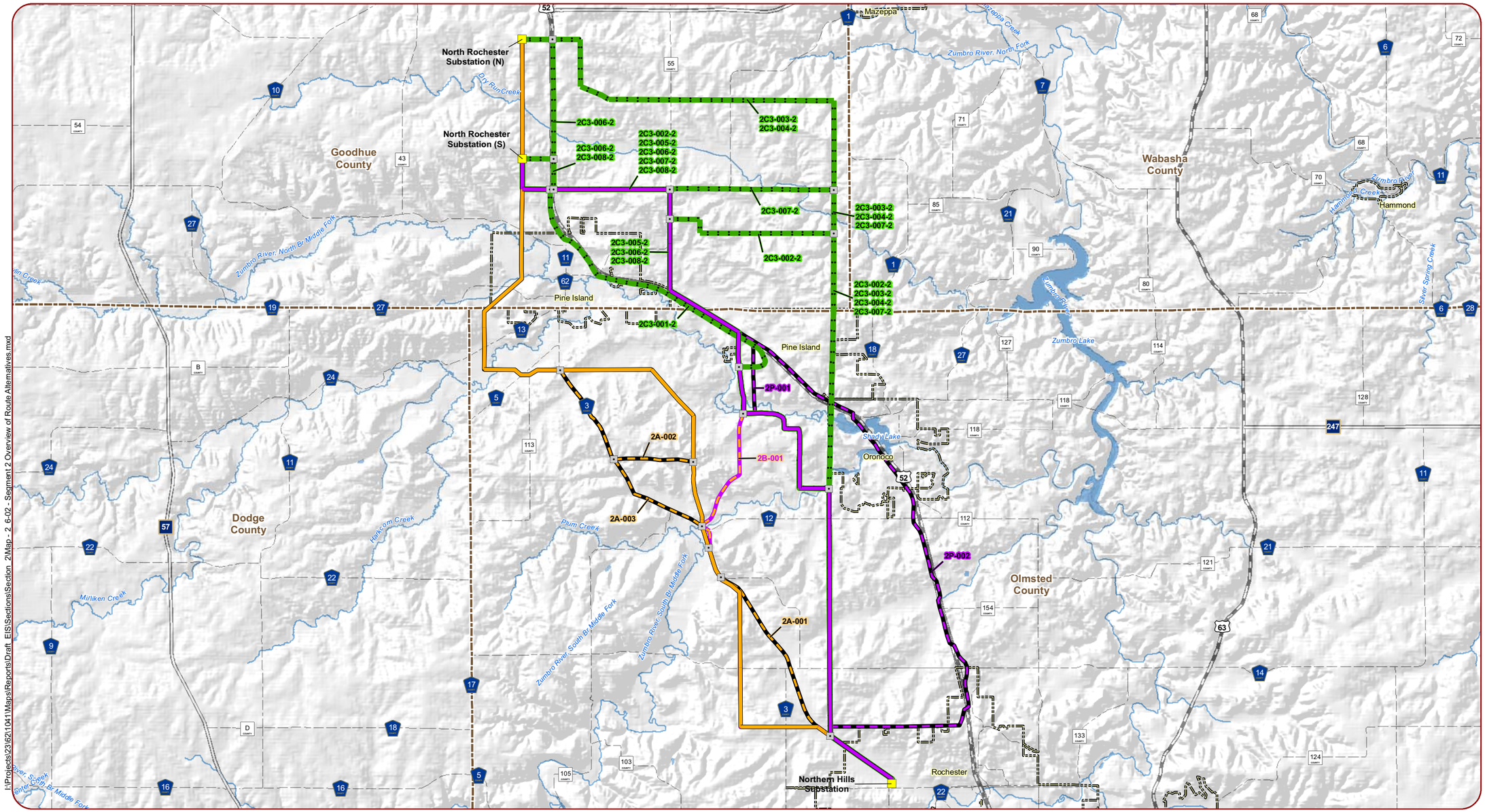
Additional Alternative Routes

- Variation on P Route
- Variation on A Route
- Variation on Both

- Project Substations
- County Boundaries

Map 2.6-01
Overview of Route Alternatives
Hampton to North Rochester Substation
345 kV Section





0 1.5 3 Miles

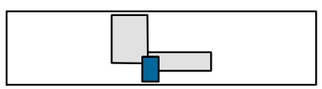
0 2.5 5 Kilometers

Original Alignments
- P Route
- A Route

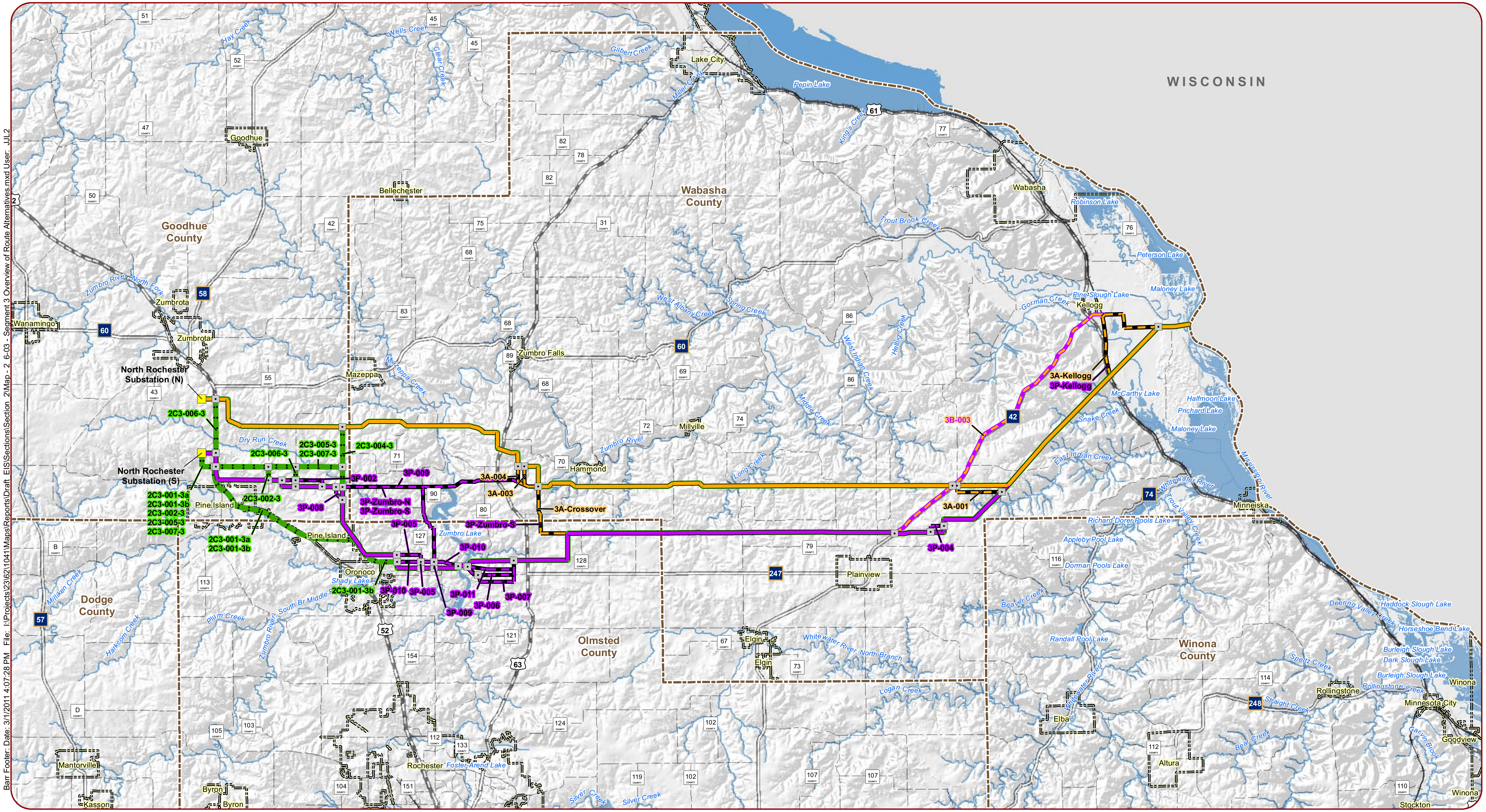
Additional Alternative Routes
- Variation on P Route
- Variation on A Route
- Variation on Both

- Project Substations
- County Boundaries

Map 2.6-02
Overview of Route Alternatives
North Rochester Substation to Northern Hills Substation
161 kV Section



Barr Footer: Date: 3/1/2011 4:07:28 PM File: I:\Projects\23\62\1041\Maps\Reports\Draft EIS\Sections\Section 2\Map - 2 6-03 - Segment 3 Overview of Route Alternatives.mxd User: JJL2



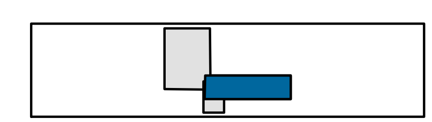
- A Route
- P Route

Additional Alternative Routes

- Variation on P Route
- Variation on A Route
- Variation on Both
- Parallel Alignment

- Project Substations
- County Boundaries

0 1.5 3 6 Miles

0 2.5 5 10 Kilometers

Map 2.6-03
Overview of Route Alternatives
North Rochester Substation to Mississippi River
345 kV Section