Xcel Energy (the applicant) – on behalf of CapX2020 co-owners Dairyland Power, Rochester Public Utilities, WPPI Energy and Southern Minnesota Municipal Power Agency – proposes to construct and operate a 345 kilovolt (kV) and a 161 kV transmission line between Hampton, Minnesota; Rochester, Minnesota; and La Crosse, Wisconsin. To construct and operate the proposed project, CapX2020 must obtain a route permit from the Minnesota Public Utilities Commission (Commission). As part of the route permitting process, the Minnesota Department of Commerce's Office of Energy Security (OES) prepares an environmental impact statement (EIS). Because this project spans the Minnesota-Wisconsin border, it is important to note that this draft EIS evaluates only the portion of the project within the state of Minnesota to satisfy the state's environmental review requirements.

The portion of the 345 kV transmission line within the state of Minnesota is 81 to 89 miles in length, and would traverse parts of Dakota, Goodhue, Olmsted and Wabasha counties. One route alternative under consideration is aligned along the Rice County-Goodhue County border. The project also includes an approximately 15- to 18-mile 161 kV transmission line in Goodhue and Olmsted counties connecting a proposed new substation located between Zumbrota and Pine Island, Minnesota, with the existing Northern Hills Substation north of Rochester, Minnesota.

The stated need of the project is to improve regional reliability of the transmission system, to improve community reliability of the transmission system in specified communities, and to increase generation outlet. The Commission found that this project was needed in order to address these goals in a Commission Order dated May 22, 2009 (as modified August 10, 2009).

The proposed 345 kV transmission line would be constructed primarily with single-pole, self-weathering, rust-colored steel structures, ranging in height from 130 to 175 feet, with an average span of 1,000 feet between poles. The structures would be "double circuit capable," meaning that a second 345 kV circuit could be placed on the structures in the future if warranted. The typical right-of-way (ROW) for the 345 kV transmission line would be 150 feet (generally, 75 feet on each side of the centerline).

The proposed 161 kV transmission line would be constructed primarily with steel, single-pole structures, ranging in height from 70 to 105 feet, with an average span of 400 to 700 feet between poles. The typical ROW for the 161 kV transmission line would be 80 feet.

The proposed project includes construction of a new substation, in an area between Zumbrota and Pine Island, Minnesota, and modifications at two existing substations. The new "North Rochester Substation" would require the acquisition and development of 40 acres for substation infrastructure. Modifications at the existing Hampton (permitted as part of another project) and Northern Hills Substations would occur within the existing substation footprints, and would not require the acquisition of additional land for development.

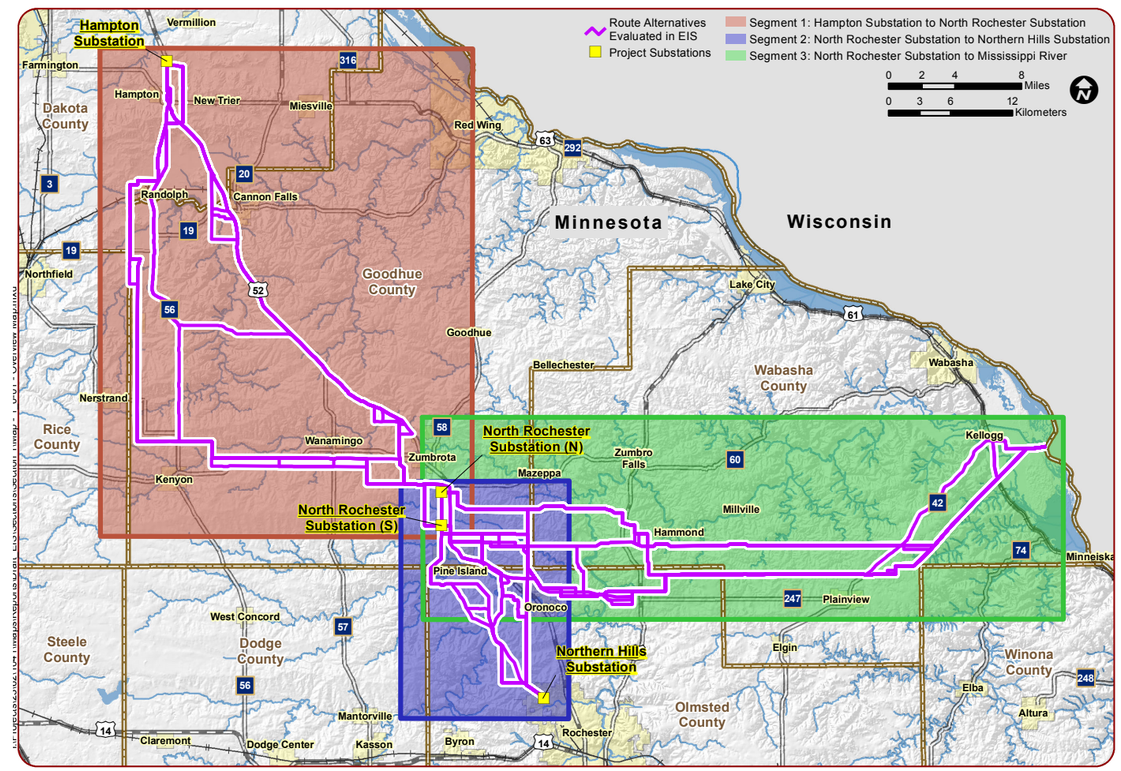
In a route permit application submitted to the Commission on January 19, 2010, the applicant identified two potential routes for both the 345 kV transmission line and the 161 kV transmission line. Minnesota Rules require the applicant to state which of these routes the applicant prefers at the time the route permit application is submitted. It is important to note, however, that while the applicant has a preference for a particular route, the State of Minnesota has no preference for any one route. All route alternatives are evaluated using the same criteria and level of detail. The route permit application also included two additional route options. One, an option for crossing the Zumbro River; the other, an option for avoiding a crossing of the McCarthy Lake Wildlife Management Area, south of Kellogg, Minnesota, in Wabasha County.

For each of the proposed routes and options, the applicant requested a 1,000-foot route width. The route width would represent the permitted area within which a transmission line ROW could be located. In both the route permit application and this draft EIS, however, OES has asked the applicant to identify the intended alignment of the transmission lines and their associated ROWs. The maps in Appendix A of this draft EIS depict the intended alignment, the ROW required and the route width requested.

1.1 State of Minnesota Review Process

Following the applicant's submittal of a route permit application, and prior to beginning work on this document, OES sought comments from the public on the issues and route alternatives that should be evaluated in the EIS and, ultimately, considered by the Commission in their route permitting decision. OES sought comments through two approaches: a public scoping comment period and two advisory task forces. The public scoping comment period was open from April 19, 2010, through May 20, 2010, giving citizens, local governments, state and federal agencies, and other groups the opportunity to suggest issues and route alternatives for Commission consideration. OES also held a series of public information and scoping meetings in locations along the proposed project routes in May 2010. The two advisory task forces consisted of local government officials and members of non-governmental organizations. The two task forces, each representing approximately one-half of the project area, met three times between April and June of 2010, and issued reports to OES in June 2010.

Based on the comments received during the public scoping comment period and at the public meetings, as well as the information provided in the advisory task force reports, the Director of OES finalized the scope of this draft EIS in a scoping decision dated August 6, 2010. Included in the scoping decision were 62 route alternatives to be evaluated in this document in addition to the routes and options proposed by the applicant. Each of these route alternatives is evaluated in this document using the same criteria and level of detail, and is available for Commission permitting consideration.



The draft EIS was prepared by OES to address the issues and route alternatives identified in the scoping decision. Preparation of this document includes desktop and field review of the project area to verify, correct, update and augment the information in the applicant's route permit application, including house locations, numbers of houses within various distances from the routes, airport locations and potential conflicts, as well as natural resource data such as that on public lands, rare species, and wetlands. Potential impacts and mitigation measures along the route segments are described in the document in Sections 7 and 8. Data tables comparing route alternatives in each of the three segments (defined below) are attached to this document in Appendices H, I and J.

OES will seek public comment on the draft EIS during an open public comment period and at a series of public meetings held along the proposed routes following the publication of this document. After the close of the comment period, OES will prepare a final EIS. The final EIS will respond to all timely, substantive comments made on the draft EIS.

Due to the length and capacity of the proposed project, the State review process includes a contested case hearing. Contested case hearings are presided over by an Administrative Law Judge from the Minnesota Office of Administrative Hearings. The final EIS, once published, will be entered into the hearing record. Hearings will be held in locations along the proposed routes, and in St. Paul, Minnesota. Interested persons will have an opportunity at the hearings to ask questions about the proposed project, provide comments, submit evidence, and advocate for the routes and route segments that they believe are most appropriate for the project.

An EIS does not advocate or state a preference for a specific route or route segment. An EIS characterizes, analyzes, and compares routes and route segments such that citizens, governmental units, agencies, and the Commission can work from a common set of facts and, where the facts are in dispute, uncertainties.

1.2 Overview of Draft EIS Contents

The analysis of route alternatives in this draft EIS is divided into three segments, corresponding to the geographic regions between the project's substations:

- Segment 1 - Hampton to North Rochester Substation 345 kV Section
- Segment 2 - North Rochester Substation to Northern Hills Substation 161 kV Section
- Segment 3 - North Rochester Substation to Mississippi River 345 kV Section

The naming convention for route alternatives identifies the segment in which they are located, and whether they are based on the applicant's preferred or alternate routes or a combination of the two. Route alternatives based on the applicant's preferred route are referred to collectively as the "P route alternatives." Route alternatives associated with the applicant's alternate route are referred to as the "A route alternatives." Some route alternatives were proposed that combine elements of both the applicant's preferred and alternate routes. These route alternatives are referred to as "B route alternatives." Certain route alternatives were proposed that involve sharing ROW and creating a parallel alignment between portions of Segments 2 and 3. These are referred to as "C route alternatives." Naming conventions used for the route alternatives are discussed in detail in Section 2.6.

The potential impacts of the various route alternatives in each segment are characterized, analyzed, and compared for each of the three segments using text, maps, figures, and tables. All route alternatives have been evaluated equally, using the same criteria for assessing potential impacts. The discussion of the route alternatives, resources present, and potential project impacts is organized in the draft EIS in the following sections:

- **Section 1** provides a broad summary of the project, the state review process, the contents of the draft EIS, and the issues and impacts associated with the project.
- **Section 2** details the proposed project, including location, route descriptions, and ROW requirements.
- **Section 3** provides information about the regulatory framework for the project, including permitting procedures, public scoping and review processes, hearings before the Administrative Law Judge, and the Commission permitting decision.
- **Section 4** describes the engineering and operation design for the proposed transmission line and associated facilities.
- **Section 5** provides information on proposed construction and maintenance procedures.
- **Section 6** reviews the factors supporting a Kellogg, Minnesota, to Alma, Wisconsin, crossing of the Mississippi River, and provides information on resources in the vicinity of the river crossing.
- **Section 7** provides an overview of the resources in the affected environment common to most route alternatives, as well as a general discussion of potential impacts and impact mitigation along the entire route.
- **Section 8** provides additional detail on the affected environment and potential impacts and mitigation measures specific to each of the route alternatives and substation locations.
- **Section 9** outlines the required permits and approvals for the proposed project.
- **Section 10** provides the document's references.

1.3 Summary of Project Impacts and Route Alternatives

This summary provides a general description of potential impacts of the project and compares, in a broad sense, the relative merits of the route alternatives proposed. Detailed discussion and analysis of potential impacts and route alternatives are found in Sections 7 and 8 of the draft EIS.

Potential Impacts

The proposed transmission line project is of a magnitude such that there will be impacts from its construction and operation. Many, but not all, of these impacts can be mitigated. The impacts can be grouped into two broad categories: (1) impacts to human settlements and economies and (2) impacts to natural resources.

Impacts to human settlements and economies include, but are not limited to, potential impacts to public health and safety, property values, land-based economies (e.g., agriculture), and industry and development. Concerns related to health and safety include electric and magnetic fields (EMF), induction, stray voltage, and potential impacts to implantable medical devices. In general, impacts to public health and safety from the project are not anticipated. Potential impacts to property values are uncertain – property values could decrease, increase, or remain the same. The large number of factors that influence a property's value makes a determination of project impact difficult.

Agricultural activities account for over 70 percent of the land use along route alternatives in the project area. However, agricultural production would be minimally impacted by the project as a very small amount of land would be removed from agricultural production. Farming and grazing activities could continue around and under the proposed transmission lines. Some route alternatives pass through or very near substantial human settlements, e.g., the cities of Cannon Falls, Zumbrota, and Pine Island. These alternatives may impact economic development in these cities.

Impacts to natural resources include, but are not limited to, potential impacts to flora and fauna (potentially including impacts to rare and unique species) and to water and air resources. In general, impacts to flora and fauna will occur, but these impacts can be mitigated and are not anticipated to be significant from a population standpoint. In some instances, impacts can be mitigated by choosing route alternatives which utilize or parallel existing infrastructure. For

these alternatives, the impacts of the project are incremental impacts, which are substantially less than those of a new transmission line corridor. All water resources in the project area can be spanned; thus, direct impacts to water resources are not anticipated. Additionally, impacts can be mitigated by crossing water resources at locations where infrastructure already exists, e.g., road, dam, transmission line.

Segment 1 – Hampton to North Rochester Substation 345 kV Section

Route alternatives in this segment can be placed into two groups: (1) those alternatives that generally follow U.S. Highway 52 (P route alternatives) and (2) those that proceed more directly south from Hampton, Minn., along roads and field lines and then eastward to the proposed North Rochester Substation site (A route alternatives). The P route alternatives follow a major highway and take a relatively direct path from Hampton to the proposed substation site. These alternatives have the potential to impact development along Highway 52, and in the cities of Cannon Falls and Pine Island. Additionally, homes, businesses, and schools have located near Highway 52 and in these cities, thus increasing the potential for impacts due to the close proximity of a transmission line. Several route alternatives were proposed for mitigating impacts along Highway 52, e.g., routing around cities and planned development. These alternatives are discussed in Sections 7 and 8.

The A route alternatives avoid potential impacts to the cities along Highway 52. These alternatives proceed along smaller roads and field lines. The A route alternatives have relatively fewer homes within the proposed routes. These alternatives are relatively longer (and thus more expensive) and they do not follow the largest existing infrastructure corridor in the area, Highway 52.

All P and A route alternatives cross the Cannon River. All of the alternatives will impact agricultural production, but these impacts are estimated to be about equal between the alternatives.

Segment 2 – North Rochester Substation to Northern Hills Substation 161 kV Section

Route alternatives in this segment represent a variety of options for connecting the proposed North Rochester Substation to the existing Northern Hills Substation. All of the alternatives use existing infrastructure corridors (e.g., transmission line, state trail), though the alternatives vary in the type and extent of corridor utilized.

The Douglas State Trail is a multiple use trail and existing corridor that runs, generally, from Pine Island to Rochester. All of the route alternatives in this segment propose to parallel some portion of this trail; the amount paralleled varies with the route alternative. These alternatives may impact some users enjoyment of the trail.

As the proposed North Rochester Substation will connect to a 345 kV and a 161kV transmission line, several route alternatives were proposed that place these lines next to each other for some distance, in an attempt to share transmission line ROW and to reduce the proliferation of lines (these routes are noted as "C route alternatives," to indicate their combined nature, see Section 2.6 for a discussion of naming conventions). These alternatives have the potential to reduce the proliferation of transmission lines in the North Rochester Substation area, i.e., in and around the cities of Zumbrota and Pine Island. The combined ROW for the parallel lines would allow sharing of 30 feet of ROW between the two lines, reducing the combined ROW to 200 feet.

Segment 3 - North Rochester Substation to Mississippi River 345 kV Section

Route alternatives in this segment include three options for crossing the Zumbro River before proceeding eastward to a crossing of the Mississippi River at Kellogg, Minnesota. The northern alternative for crossing the Zumbro does not utilize an existing infrastructure corridor. The central alternative utilizes the Zumbro Dam (Zumbro Dam crossing); the southern alternative utilizes a bridge over the Zumbro River (White Bridge Road crossing). A number of route alternatives were proposed to connect the North Rochester Substation site to one (or more) of these three river crossing segments. As in Segment 2, some alternatives propose to co-locate the 345 kV line of Segment 3 (before it proceeds eastward) and the 161 kV line of Segment 2 for some distance. All of the route alternatives, as they proceed to the Mississippi River, will impact agricultural production, but these impacts are estimated to be about equal between the alternatives.

As the route alternatives approach the blufflands of the Mississippi, there are two alternatives for proceeding: (1) following (and replacing) an existing 161 kV transmission line corridor and (2) following State Highway 42. Both of these alternatives proceed eastward to the Mississippi River crossing. Near the river crossing, they encounter three features which could be affected by the transmission line – (1) U.S. Highway 61, which is the Great River Road National Scenic Byway, (2) McCarthy Lake Wildlife Management Area (WMA), and (3) the city of Kellogg, Minnesota.

There is an existing 161 kV transmission line (and a route alternative) through the McCarthy Lake WMA. This route alternative would place the existing 161 kV transmission line on new structures with the 345 kV line. These new structures would require an expansion of the existing ROW through the WMA. Thus, this route alterative would have an incremental impact on natural resources in the WMA. Use of this alternative would minimize impacts to the Great River Road, as the crossing of the Great River Road would be perpendicular and utilize an existing transmission line corridor.

A route alternative was proposed which avoids the McCarthy Lake WMA by going around its northern edge. This alternative minimizes impacts to the WMA but runs parallel to the Great River Road. This alternative would have relatively greater impacts on the Great River Road. Another route alternative follows State Highway 42 to a point just south of Kellogg, Minnesota. This route alternative avoids a crossing of the WMA, and would create a new, perpendicular crossing of the Great River Road.

The route alternative following State Highway 42 would involve impacts to the city of Kellogg and to residents along the highway.

All of the route alternatives in Segment 3 cross the Mississippi River east of Kellogg, Minnesota, across the USFWS-managed Upper Mississippi River National Wildlife and Fish Refuge, to a location in Alma, Wisconsin. This stretch of the Mississippi River is one of the four primary bird migration routes in North America. There is an existing 161 kV transmission line which crosses the river at this location. If the river is crossed aerially, the new 345 kV and the existing 161 kV line would share transmission line towers. The new 345 kV line has the potential for an incremental impact to flora and fauna, particularly avian species. These impacts can be mitigated to some extent by design, e.g., placing the conductors in a minimum number of vertical planes. An underground crossing of the river would mitigate this incremental impact. If the 345 kV line was undergrounded, the structures and lines of the existing 161 kV line would remain at the crossing. An underground crossing, due to the nature of the structures required, would likely create more land-based flora and fauna impacts than an aerial crossing. Such a crossing would also be more expensive than an aerial crossing.

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