

- E. Assuming the forecasted growth rates contained in the Application, describe each alternative that Applicants compared to the proposed Twin Cities - LaCrosse 345 kV power line to determine that the 345 kV line was cost-effective to provide community service reliability: including upgrading of existing generation and transmission facilities; new generation of various sizes and technologies at various locations closer to load; transmission lines of different sizes, types, lengths and locations and any reasonable combinations of these alternatives. If the alternatives were considered separately for each community service reliability area (Rochester Area, Winona/LaCrosse Area), please describe each alternative for each community service reliability area separately.
- F. For each alternative described in Part E, provide a spreadsheet describing the costs of the alternative, including 1) costs of transmission system upgrades; 2) electrical line losses; 3) costs of upgrading, constructing, repowering or retiring of generation resources; 4) costs of purchasing energy from remote or local generation; and 5) costs of greenhouse gas emissions and other environmental externalities related to energy generation, whether the generation is generated at a local or remote location. Please also provide in spreadsheet or narrative form a description of the community service reliability or other benefits of each alternative.

Response:

A. The Twin Cities – La Crosse 345 kV Project is needed for community service reliability, regional reliability and to support generation outlet in southeastern portion of the State. All three of these needs are described in the Application.

B. The primary communities at risk are the Rochester and Winona/La Crosse areas. Local electrical system reliability will also be improved in surrounding areas as shown on Figure 5-4 in the Application.

C. The Twin Cities – La Crosse 345 kV Project (including additional 161 kV transmission into the City of Rochester) is projected to meet local load serving needs in the Rochester area until approximately 2053 and the Winona/La Crosse area until approximately 2025.

D. See response (C) above. Note also that Xcel Energy is currently undertaking a Regional Incremental Generator Outlet (“RIGO”) project primarily to increase generator outlet in the wind-rich areas of Southeastern Minnesota. The RIGO project may have additional beneficial load serving impacts to the Rochester area. A final

report for the RIGO has not been completed, but engineering analyses to date indicate that these transmission lines would alleviate certain limitations on the transmission system in the area to allow for additional wind generation development. The written study is expected in the next few weeks. A copy of Xcel Energy's Open Access Same-Time Information System ("OASIS") posting regarding these projects is attached. (CapX2020 0000117) The RIGO transmission lines would not diminish the need for the proposed 161 kV facilities to serve peak load, but would affect the timing of the need. Should these RIGO facilities be approved and constructed, they would, in addition to providing generation outlet capability, provide load serving support to the Rochester area such that the North Rochester – Northern Hills 161 kV transmission line does not need to be constructed on an expedited schedule (as requested in the Application) to meet load serving requirements.

E. Chapter 5 of the Application provides a description of the alternatives that were considered. As described in Chapter 5, three primary engineering studies were undertaken that resulted in the proposal. The first two studies, the local Rochester study and the local La Crosse/Winona study, focused on localized solutions. The third study, the Southern Minnesota, Southwestern Wisconsin Reliability Enhancement Study of March 13, 2006 ("Rochester/La Crosse Study"), evaluated more regional system alternatives to address the load serving issues in both Rochester and La Crosse.

The local Rochester area load serving study considered four 161 kV options and three 345 kV options to serve the growing demand in the Rochester area. In that study, the 161 kV alternatives were estimated to last until approximately 2033. The 345 kV options provided more long-term solutions. The best performing and least cost option was a 345 kV transmission line from Byron to Pleasant Valley and eastward around Rochester. Planning engineers determined that, based on current load growth, this solution would reliably serve the load until approximately the middle of the century.

In the local La Crosse/Winona study, planning engineers screened 23 possible 161 kV alternatives to meet identified load serving needs and further evaluated the top five alternatives. Planning engineers concluded that even the best performing 161 kV option was inadequate to meet identified needs for several reasons. First, the phase shifting transformer application in the La Crosse area prevented transmission overloads post-contingency in the short-term but did not eliminate the need for additional transmission lines as the La Crosse/Winona area load increased. Second, the 161 kV alternative would require more 161 kV transmission facilities to meet need beyond the year 2033 and, in the long-run, a 345 kV transmission line likely would be

required to serve the load. Thus, a 345 kV solution would meet load serving needs for several decades longer with fewer transmission lines.

Information about these alternatives is contained in Appendix A-2. Further discussion about generation alternatives and different voltages is contained in Chapter 7 of the Application.

Based on the local Rochester study's conclusion that the 345 kV solution was optimal for the Rochester area and the La Crosse study's finding that 161 kV alternatives could not meet load serving needs in the La Crosse/Winona area, planning engineers undertook the Rochester/La Crosse study to identify a 345 kV regional solution. Five 345 kV options that were explored in the study include: (1) Prairie Island – Rochester – North La Crosse – Columbia; (2) Prairie Island – Rochester – North La Crosse – West Middleton; (3) Prairie Island – Rochester – Salem; (4) Prairie Island – North La Crosse – Columbia; and (5) Prairie Island – North La Crosse – West Middleton.

These options were studied, refined and modified as described in the study. Ultimately Option 1 was selected and modified to have the 345 kV segment terminate at Hampton Corner Substation (rather than at Prairie Island). The reason for this modification is described in response to Department of Commerce, Office of Energy Security (“OES”) Information Request No. 38.

F. Applicants do not have the requested information. See Appendix A-2, Chapter 5 and Chapter 7. Applicants note that with respect to part 5 of this question, transmission lines do not create or emit greenhouse gas emissions. The transmission lines proposed in this Application are not intended for any specific generation project in which greenhouse gas emissions could be measured.

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