BEFORE THE MINNESOTA PUBLIC UTILITIES COMMISSION

Beverly Jones Heydinger	Chair
Nancy Lange	Commissioner
Dan Lipschultz	Commissioner
Matthew Schuerger	Commissioner
John A. Tuma	Commissioner

In the Matter of Xcel Energy's 2015 Biennial Distribution-Grid-Modernization Report

ISSUE DATE: June 28, 2016

DOCKET NO. E-002/M-15-962

ORDER CERTIFYING ADVANCED DISTRIBUTION-MANAGEMENT SYSTEM (ADMS) PROJECT UNDER MINN. STAT. § 216B.2425 AND REQUIRING DISTRIBUTION STUDY

PROCEDURAL HISTORY

On October 30, 2015, Xcel Energy (Xcel or the Company) filed its *2015 Biennial Distribution-Grid-Modernization Report* under Minn. Stat. § 216B.2425, subd. 2(e).

The Company proposed two distribution projects for certification as priority projects: an advanced distribution-management system (ADMS) and a demonstration project using solar panels and battery storage to help relieve overload on the Company's Belle Plaine substation (Belle Plaine project). If certified, these projects would be eligible for recovery through Xcel's Transmission Cost Recovery (TCR) Rider.

On January 4, 2016, the following parties filed comments on Xcel's report:

- Minnesota Department of Commerce (the Department)
- Minnesota Office of the Attorney General – Residential Utilities and Antitrust Division (the OAG)
- Fresh Energy and the Minnesota Center for Environmental Advocacy (MCEA)
- Energy Freedom Coalition of America (EFCA)
- Members of the Minnesota Energy Storage Collaborative
- Xcel

Parties raised various concerns and objections to certifying the ADMS project, the Belle Plaine project, or both.

On February 22, the following parties filed reply comments:

- Xcel
- The OAG
- EFCA
- Fresh Energy
- Interstate Renewable Energy Council, Inc. (IREC)

On March 18, the following parties filed supplemental comments:

- The Department
- The OAG
- EFCA
- Institute for Local Self-Reliance

On May 25, 2016, the Commission met to consider the matter.

FINDINGS AND CONCLUSIONS

I. Summary of Commission Action

In this order, the Commission takes the following actions:

- Certifies the ADMS project;
- Denies certification of the Belle Plaine battery project; and
- Requires Xcel to complete a distribution study by December 1, 2016 that
    - Includes the Company's initial analysis of the hosting capacity of each feeder on its distribution system for small-scale distributed-generation resources; and
    - Identifies potential distribution upgrades necessary to support expected distributed-generation resource additions.

II. Statutory Background

Under recent amendments to Minnesota's transmission-planning statute, Xcel is required to file a biennial report identifying projects that it considers necessary to modernize its transmission and distribution systems. The Commission may certify one or more of these grid-modernization projects as priority projects, a threshold requirement for recovering their costs through a rider, outside of a general rate case.

The recent amendments also require Xcel to conduct a distribution study identifying both interconnection points for small-scale distributed generation and necessary distribution upgrades to support the continued development of distributed generation, and to include that study in its biennial report.

These statutory requirements are set forth in greater detail below.

A. Transmission Planning

Minn. Stat. § 216B.2425 requires the Commission to maintain a list of certified high-voltage transmission-line projects.

By November 1 of each odd-numbered year, owners of electric transmission facilities in Minnesota file reports (or a joint report) discussing the state of their transmission systems and identifying projects proposed to address present and anticipated system inadequacies.[1]

Based on these reports, the Commission adopts a list of priority state transmission projects.[2] Certification of a project as a priority electric transmission project satisfies the certificate-of-need requirement of Minn. Stat. § 216B.243.[3]

B. Grid Modernization and Distribution Planning

In 2015, the Legislature amended section 216B.2425 to add an additional requirement for utilities operating under multiyear rate plans—a category that at present includes only Xcel. The statute now requires Xcel to include in its biennial transmission-projects report

> investments that it considers necessary to modernize the transmission and distribution system by enhancing reliability, improving security against cyber and physical threats, and by increasing energy conservation opportunities by facilitating communication between the utility and its customers through the use of two-way meters, control technologies, energy storage and microgrids, technologies to enable demand response, and other innovative technologies.[4]

Under the 2015 amendments, Xcel must also conduct a distribution study and include it in its biennial report:

> Each entity subject to this section that is operating under a multiyear rate plan . . . shall conduct a distribution study to identify interconnection points on its distribution system for small-scale distributed generation resources and shall identify necessary distribution upgrades to support the continued development of distributed generation resources, and shall include the study in its report . . . .[5]

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[1] Minn. Stat. § 216B.2425, subd. 2(a)–(c).

[2] *Id.*, subd. 3.

[3] *Id.*, subd. 4.

[4] *Id.*, subd. 2(e).

[5] *Id.*, subd. 8.

The statute requires the Commission to certify, certify as modified, or deny certification of transmission and distribution projects included in a biennial report.[6]

C. Rider Recovery of Transmission and Distribution Costs

Minn. Stat. § 216B.16, subd. 7b, allows utilities to seek approval to recover certain transmission costs between rate cases through an "automatic annual adjustment" mechanism, or rider. In Xcel's case, this rider is known as the Transmission Cost Recovery (TCR) Rider.

Transmission projects eligible for rider recovery under subdivision 7b include new transmission facilities "that are certified as a priority project or deemed to be a priority transmission project under section 216B.2425."[7]

In 2015, at the same time as it amended section 216B.2425 to add distribution-planning provisions, the Legislature amended section 216B.16, subdivision 7b, to allow for rider recovery of certain distribution costs. As amended, subdivision 7b permits rider recovery of three types of distribution costs:

- Jurisdictional costs, net of associated revenues, of new distribution facilities that are certified as a priority project under section 216B.2425;[8]
- Costs associated with distribution planning required under section 216B.2425;[9] and
- Costs associated with investments in distribution facilities to modernize the utility's grid that have been certified by the Commission under section 216B.2425.[10]

III. Xcel's Grid-Modernization Report

On October 30, 2015, Minnesota's transmission-owning entities, including Xcel, filed a joint biennial transmission-projects report.[11] On the same date, Xcel filed a separate Distribution-Grid-Modernization Report in this docket, addressing the information required under the 2015 amendments to section 216B.2425.

Xcel's report seeks certification of two distribution-grid-modernization projects: (1) an advanced distribution-management system (ADMS) project and (2) a solar-plus-battery-storage demonstration project (the Belle Plaine project). The report also addresses the statutory requirement to conduct a distribution study. The relevant sections of Xcel's report are summarized below.

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[6] *Id.*, subd. 3.

[7] Minn. Stat. § 216B.16, subd. 7b(a)(i).

[8] *Id.*

[9] *Id.*, subd. 7b(b)(4).

[10] *Id.*, subd. 7b(b)(5)

[11] *See* Docket No. E-999/M-15-439. The Commission accepted the 2015 biennial transmission-projects report on May 27, 2016.

A. ADMS Project

Xcel described ADMS as a collection of software applications designed to monitor and control the entire electric distribution network efficiently and reliably. The Company anticipates that the core ADMS software will offer three main functions: distribution network modeling, distribution supervisory control and data acquisition (SCADA), and unbalanced load flow and network topology processing.

Xcel stated that ADMS would contribute to grid modernization by allowing the Company to

- Visualize the current state of the network, providing system operators with greater network awareness;
- Obtain an improved awareness of distributed energy resources' influence on the grid;
- Respond more quickly and accurately to outages, optimize distribution voltages, and improve power quality;
- Provide access to real-time and near-real-time data to control-room operators;
- Accurately model all elements in the network for better load forecasting, fault-location prediction, energy-loss reduction, and equipment-failure prevention; and
- Support short- and long-term load forecasting for network planning and an extensive training simulator.

Xcel is already working to implement ADMS and plans to complete the project in 2018. The Company estimates that the ADMS initiative will cost $9 million per year in 2016, 2017, and 2018.

B. Belle Plaine Battery Project

The second project for which Xcel seeks certification is the Belle Plaine battery project, a demonstration project with dual goals of (1) exploring the benefits of battery storage combined with solar generation and (2) deferring capital improvements needed to address overloads at the Belle Plaine substation.

Xcel stated that the City of Belle Plaine is scheduled to receive a new substation within the next five years because the existing substation is nearing capacity. The Company is exploring adding a large battery to reduce the load on the Belle Plaine feeder and transformer, combined with a one-megawatt (MW) solar array. In addition to deferring the need for capital improvements, Xcel anticipates that the project will allow it to explore the benefits and complexities of storage working in conjunction with a variable generation resource, aiding its ability to integrate energy storage onto the grid.

Xcel is currently evaluating potential sites for suitability. Once the project has been certified, the Company expects construction to take approximately a year and a half. Xcel currently estimates that it would spend $12.5 million in 2016 and put the demonstration project into service in 2017.

C. Distribution Study

Xcel stated that it had not yet had time complete a distribution study to identify interconnection points for distributed generation and upgrades necessary to accommodate it. The Company stated that it was working to secure software that would provide the capability to more readily identify portions of the system where hosting capacity exists. It stated that it expects to have this capability within 18–24 months.

Xcel detailed its annual distribution-planning process, and asserted that this process provides assurance that the Company is planning for future distributed-generation installations. Xcel stated that it would continue its efforts to identify interconnection points on its distribution system for small-scale distributed generation and would provide a more comprehensive discussion in its next report.[12]

IV. Certification of ADMS

A. Positions of the Parties

1. Department

The Department recommended that the Commission not certify the ADMS project. It asserted that section 216B.2425 is silent on what the criteria are for certifying distribution projects and recommended that the Commission begin a rulemaking process to create new rules to address distribution-project certification.

In the absence of specific criteria for distribution projects, the Department recommended applying criteria similar to those used for certifying transmission projects. According to the Department, these would include (1) whether a project is necessary to maintain or enhance reliability of electric service; (2) whether a project is "needed," applying the certificate-of-need criteria in Minn. Stat. § 216B.243, subd. 3; and (3) whether a project is in the public interest.[13]

The Department maintained that Xcel had failed to address the project's expected impact on key reliability metrics or to demonstrate that the project was needed by explaining the alternatives it considered or providing a clear link between the goals of the project and specific state energy policy goals. The Department also argued that Xcel's estimate of project costs was too preliminary to be used as a basis for approving the project.

[12] Xcel also requested a variance from Minn. R. 7848.1900, which requires a utility to file, in June of the year it files its biennial report, a proposed plan for providing notice to all persons reasonably likely to be affected by any transmission line proposed for certification. However, because Xcel has not proposed any transmission lines for certification, the requirement does not apply.

[13] *See* Minn. R. 7848.2000, subp. 13 (setting forth criteria for certifying transmission projects).

2. OAG

The OAG recommended that the Commission not certify any distribution projects until the Commission's grid-modernization investigation progresses further.[14] It argued that, until that investigation is complete, it will be difficult for the Commission and other interested parties to determine whether a particular grid-modernization project is a prudent investment.

The OAG argued that, even if the Commission allowed certification of distribution projects at this time, Xcel had not made the required showing. The OAG argued that certifying a distribution project requires a determination that the project is prudent, that the estimated costs are reasonable, and that the projects are priority projects appropriate for rider recovery. According to the OAG, a certification applicant must therefore provide the Commission with the information needed to make this determination. The OAG argued that Xcel had failed to do so.

Finally, the OAG agreed with the Department that the Commission should make rules for certifying distribution projects at some point but questioned whether now is the appropriate time. It reasoned that Commission would need to make a decision on Xcel's current request much sooner than a rulemaking could be completed and recommended that the Commission delay rulemaking until foundational principles are developed in the grid-modernization docket.

3. Fresh Energy and MCEA

Fresh Energy and the Minnesota Center for Environmental Advocacy maintained that the potential for a project to promote efficient uses of the grid should be the focus of any certification decision. They argued that certified projects should provide ratepayer benefits over the long term by enabling more distributed generation and making the grid more transparent for a utility and its customers. And they argued that the Commission should prioritize projects that achieve the greatest benefit.

Fresh Energy and MCEA recommended that the Commission certify ADMS but require the Company to include additional functions to allow for more efficient grid operation and greater penetration of distributed energy resources, as well as to provide a detailed business case and road map for ADMS.

4. Energy Freedom Coalition

The Energy Freedom Coalition initially supported certifying ADMS with modifications, but it was ultimately persuaded by the Department and the OAG that the Commission should first finalize its high-level policy objectives for grid modernization and open a rulemaking to set parameters for the certification process.

[14] In May 2015, the Commission began a proceeding to consider developing grid-modernization policies, with a focus on distribution-system planning. *See* Docket No. E-999/CI-15-556. After holding stakeholder meetings, the Commission issued a report in March 2016 defining grid modernization, identifying principles to guide its implementation in Minnesota, and proposing next steps for continued policy development.

The EFCA argued that certifying ADMS prematurely would risk approving a project that is not properly scoped to meet changing needs or that locks Xcel and its customers into proprietary protocols or technologies. For this reason, it recommended that the ADMS project be certified only if Xcel clarifies its design features to ensure that they are not proprietary.

5. Xcel Reply

Xcel maintained that it would be unnecessary and unwise to delay a decision to make rules on distribution-project certification criteria. The Company argued that immediate rulemaking was unnecessary because the Commission could interpret the statute without resorting to formal rulemaking. And it argued that rulemaking would exacerbate resource constraints facing the Commission and the Department, could delay implementation of ADMS, and could result in rules that are ill-suited to a rapidly changing technological landscape.

Xcel recommended that the Commission follow a certification process similar to that used for transmission projects: First, the Commission would review a proposed grid-modernization project and make a determination as to whether project fits the statutory requirements for inclusion in the TCR Rider. If so, the project would be considered eligible for cost recovery, and Xcel would be allowed to seek to include it in the rider.

Xcel generally agreed with the certification criteria the OAG identified and argued that the ADMS project meets these criteria. Specifically, it argued that the project (1) is consistent with the types of grid-modernization projects described in the amendments to section 216B.2425; (2) is prudent, considering that the alternatives are to do nothing or to purchase a less advanced system; and (3) is a priority project in that it lays the foundation for further grid modernization.

Finally, Xcel argued that the preliminary nature of its cost estimates should not prevent the project from being certified since the Commission would retain continuing oversight of project costs through the annual TCR Rider approval process.

B. Commission Action

Having carefully reviewed the record and having considered the arguments of the parties, the Commission agrees with Xcel that the ADMS project is consistent with Minn. Stat. § 216B.2425 and should be certified.

Section 216B.2425 requires Xcel to identify "investments that it considers necessary to modernize the . . . distribution system by enhancing reliability . . . and by increasing energy conservation opportunities by facilitating communication between the utility and its customers through the use of two-way meters, control technologies, energy storage and microgrids, technologies to enable demand response, and other innovative technologies."[15]

[15] Minn. Stat. § 216B.2425, subd. 2(e).

The project falls squarely within this definition. ADMS is a suite of software that will enable expanded distributed generation while creating a grid that is more transparent, reliable, and efficient. It is an investment necessary to "modernize the . . . distribution system" that will "enhanc[e] reliability" and "increas[e] energy conservation opportunities" using "control technologies . . . and other innovative technologies."

The Energy Freedom Coalition expressed concern that the ADMS project be properly scoped to meet changing needs. In reply comments and at hearing, Xcel confirmed that the system it was developing would provide flexibility to adapt to new standards and changing needs. The Commission is satisfied at this time with Xcel's assurances that its ADMS project can be planned and implemented to not foreclose adding new and different features in the future.

Several parties argued that the Commission should delay certifying ADMS until an exhaustive set of certification criteria can be fleshed out through rulemaking. However, the Commission is not persuaded that it is necessary to adopt a comprehensive set of certification criteria at this time, or to delay certification to conduct rulemaking.

Because of ADMS's foundational role in grid modernization, Xcel should be provided with reasonable incentive to move forward with the project expeditiously. One way to encourage rapid development of ADMS is to certify the project now so that Xcel can seek rider recovery. Deferring certification while an exhaustive set of certification criteria is developed would remove much of this incentive.

Moreover, the Commission agrees with Xcel that it can interpret the statute on a case-by-case basis until such time as a comprehensive list of criteria is established. Rather than initiate rulemaking immediately, the Commission is convinced that it is more prudent to develop these criteria over time as the Commission gains experience with grid modernization. The experience gained through biennial grid-modernization reports and the grid-modernization investigation in Docket No. E-999/CI-15-556 will prove valuable should the Commission decide to initiate rulemaking on this subject.

Finally, several parties expressed concern over the preliminary nature of Xcel's cost estimate. The Commission clarifies that its decision to certify the ADMS project does not imply any decision regarding recovery of the project's costs.

The Commission's decision represents only a finding that the project is consistent with the requirements of section 216B.2425. Any rider recovery of costs associated with the project will be determined in response to a petition for rider recovery of those costs under Minn. Stat. § 216B.16, subd. 7b. At that time, Xcel will have the burden of establishing the prudence of the costs it requests to recover through the TCR Rider.

V. The Belle Plaine Project

A. Positions of the Parties

1. Department

The Department recommended that the Commission not certify the Belle Plaine project. It argued that Xcel had failed to address the Belle Plaine project's impact on key reliability metrics and that, although the Company had addressed alternatives to the project, it had not provided a sufficiently firm cost estimate to determine the project's cost-effectiveness.

2. OAG

The OAG argued that Xcel had not justified the Belle Plaine project either as a solution to capacity constraints at the Belle Plaine substation or as a means of experimenting with new methods for integrating storage and solar energy. It noted that Xcel's report acknowledges that building a new substation to handle the overload would cost only $6 million and argued that the Company had not produced enough information about the project's benefits to justify paying twice as much as for a traditional solution.

According to the OAG, the primary benefit Xcel appears to anticipate is a better understanding of how batteries could be deployed in Minnesota. The OAG argued that Xcel had not explained in detail what specific information it hopes to obtain through the demonstration project, or whether there are other, cheaper alternatives for investigating storage and solar technology, such as a solar-plus-storage project it is already operating in Colorado.

Finally, the OAG argued that Xcel had failed to provide a justification for treating the Belle Plaine project as a priority project relative to other distribution investments or any support for its $12.5 million cost estimate.

3. Fresh Energy and MCEA

Fresh Energy and MCEA recommended that the Commission certify the Belle Plaine project, with modifications. They recommended that the project include a method for determining the benefit/cost ratio of the project to inform future decisions for strategically locating distributed generation. They also recommended that Xcel employ load-control measures to further reduce the peak demand on the Belle Plaine substation and evaluate smart-inverter functionality with the solar/battery combination to inform future use of smart inverters.

4. Energy Freedom Coalition

EFCA recommended that the Commission deny certification for the Belle Plaine project unless it is modified to incorporate a competitive bidding process. However, EFCA stated that if competitive vendors are unable to put forward cost-effective alternatives, it would be reasonable to proceed with the Belle Plaine project as a utility-owned facility.

5. Members of Minnesota Energy Storage Collaborative

Several members of the Minnesota Energy Storage Collaborative wrote to support certification of the Belle Plaine project. They noted that the project is intended to address a distribution capacity need and to defer the need for a large distribution capital infrastructure upgrade. And they maintained that the project would be useful to gain experience with the benefits of integrating battery storage into the grid.

6. Xcel Reply

Xcel argued that that the Belle Plaine project meets the criteria for certification. Specifically, the Company argued that the project (1) is consistent with the types of grid-modernization projects described in the amendments to section 216B.2425; (2) is prudent in that it would give the Company Minnesota-specific storage-plus-solar experience; and (3) is a priority project in that it would give the Company operational experience with emerging technology.

B. Commission Action

Having considered the record and the arguments for and against certifying the Belle Plaine project, the Commission will deny certification without prejudice. Unlike the ADMS project, Xcel simply has not provided enough information to establish that the Belle Plaine project is consistent with the requirements of Minn. Stat. § 216B.2425, subd. 2(e).

Xcel describes the project as having two goals: (1) to defer upgrades needed to address overloads at the Belle Plaine substation and (2) to explore the benefits of battery storage combined with solar generation.

With respect to its first goal, Xcel has not shown how deferring substation upgrades is consistent with modernizing the transmission or distribution system, or how deferring the upgrades would satisfy any of the other criteria listed in section 216B.2425, subd. 2(e).

With respect to its second goal, while battery storage could be part of a modernized grid, the Company has not established that the Belle Plaine project (1) is necessary to modernize the grid and (2) will bring one or more of the benefits listed in the statute. This is particularly true since the Company is already operating a solar-plus-storage project in its Colorado service territory. The Company has not satisfactorily explained what Minnesota-specific information it hopes to gain from the Belle Plaine project that it cannot obtain from the Colorado project.

Although the Commission cannot certify the Belle Plaine project based on the record before it, the project holds some promise of providing information that can be used in modernizing Minnesota's grid. Accordingly, the Commission will allow Xcel to file a separate report and certification request for the project prior to filing its next biennial report under Minn. Stat. § 216B.2425, subd. 2. If Xcel chooses to refile its certification request, it should clearly explain the expected benefits of the project and how those benefits relate to the statutory requirements of Minn. Stat. § 216B.2425, subd. 2(e).

VI. Distribution Study

A. The Issue

Section 216B.2425, subd. 8, requires Xcel to conduct a distribution study to identify both "interconnection points on its distribution system for small-scale distributed generation resources" and "necessary distribution upgrades to support the continued development of distributed generation resources" and to include the study in its biennial report.

Xcel's 2015 report does not include a distribution study; the Company stated that it was unable to complete the required analysis in time to include it in the report. Xcel reads the statute as requiring it to calculate "hosting capacity"—the amount of new generation that can be accommodated at a given point on the distribution system—and stated that calculating the hosting capacity of each of its 1,300 feeders would take substantial time. The Company proposed to provide a more comprehensive discussion of distribution hosting capacity in its next biennial report.

The Energy Freedom Coalition, IREC, Fresh Energy, MCEA, and the Institute for Local Self-Reliance agreed that the statute required a hosting-capacity analysis and provided various recommendations for when Xcel should be required to provide this information.

B. Commission Action

The Commission finds that Xcel's 2015 Biennial Distribution-Grid-Modernization Report is incomplete because it does not include a distribution-system study as required under Minn. Stat. § 216B.2425, subd. 8.

The Commission appreciates that the timing of the statutory amendment requiring a distribution study left Xcel with only five months to comply before the November 2015 deadline to file its biennial report. The Commission also recognizes that there is still additional work to be done to complete a hosting-capacity analysis for each of the Company's 1,300 feeders.

Nevertheless, given the evident legislative policy goal to increase distributed generation, it is reasonable to expect that Xcel supply some analysis consistent with the statute before it files its 2017 report. Accordingly, the Commission will direct the Company to complete and to file by December 1, 2016, for inclusion in the 2015 report, a distribution system study that

a. includes the initial analysis of the hosting capacity of each feeder on the Xcel distribution system for small-scale distributed-generation resources, defined as resources that are 1 MW or less; and

a. identifies potential distribution upgrades necessary to support expected distributed-generation resource additions including, in aggregate, distributed-generation resources that are in the Company's integrated-resource-plan filings and those that are active in the Company's community-solar-garden process.

Completion of this distribution study will help ensure that Xcel is proceeding expeditiously and on the right track.

ORDER

1. The Commission hereby certifies the ADMS project. Certification of this project does not imply any decision regarding recovery of the project's costs. Any rider recovery of costs associated with a certified project will be determined in response to a utility petition for rider recovery of those costs under Minn. Stat. § 216B.16, subd. 7b.

2. The Commission denies certification of the Belle Plaine project without prejudice. Xcel may file a separate report and certification request for the project prior to filing its next biennial report under Minn. Stat. § 216B.2425, subd. 2.

3. Xcel shall complete and file by December 1, 2016, for inclusion in the 2015 Biennial Distribution-Grid-Modernization Report, a distribution-system study that

    a. includes the initial analysis of the hosting capacity of each feeder on the Xcel distribution system for small-scale distributed-generation resources, defined as resources that are 1 MW or less; and

    b. identifies potential distribution upgrades necessary to support expected distributed-generation resource additions including, in aggregate, distributed-generation resources that are in the Company's integrated-resource-plan filings and those that are active in the Company's community-solar-garden process.

4. This order shall become effective immediately.

BY ORDER OF THE COMMISSION

Daniel P. Wolf
Executive Secretary

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