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BEFORE THE MINNESOTA OFFICE OF ADMINISTRATIVE HEARINGS
600 North Robert Street
St. Paul, MN 55101

FOR THE MINNESOTA PUBLIC UTILITIES COMMISSION
121 7th Place East, Suite 350
St. Paul, MN 55101-2147

IN THE MATTER OF THE APPLICATION BY NORTHERN STATES POWER COMPANY D/B/A XCEL ENERGY FOR A CERTIFICATE OF NEED FOR ADDITIONAL DRY CASK STORAGE AT THE MONTICELLO NUCLEAR GENERATING PLANT INDEPENDENT SPENT FUEL STORAGE INSTALLATION

MPUC Docket No. E002/CN-21-668
OAH Docket No. 8-2500-38129

DIRECT TESTIMONY AND ATTACHMENTS OF DR. STEVE RAKOW

ON BEHALF OF

THE DIVISION OF ENERGY RESOURCES OF THE MINNESOTA DEPARTMENT OF COMMERCE

MARCH 1, 2023

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I. INTRODUCTION

Q. Would you state your name, occupation and business address?

A. My name is Dr. Steve Rakow. I am employed as a Public Utilities Analyst Coordinator by the Minnesota Department of Commerce, Division of Energy Resources (Department or DOC). My business address is 85 7th Place East, Suite 280, St. Paul, Minnesota 55101-2198.

Q. What is your educational and professional background?

A. A summary of these items is included as Ex. DOC-___, SR-D-1 (Rakow Direct).

Q. What is your experience on regulatory matters?

A. I have provided economic analysis of numerous integrated resource plan (IRP) and resource acquisition filings before the Minnesota Public Utilities Commission (Commission). A summary of these items is included in Ex. DOC-___, SR-D-1 (Rakow Direct). Currently, I follow issues related to IRPs and resource acquisitions at the Midcontinent Independent System Operator, Inc. (MISO). In the past I followed issues before the U.S. Nuclear Regulatory Commission. Finally, I provide analysis of a variety of other filings before the Commission.

Q. What are your responsibilities in this proceeding?

A. I am submitting testimony on behalf of the Department that:

- summarizes Northern States Power Company, doing business as Xcel Energy's (Xcel or the Company) *Application of Northern States Power Company d/b/a Xcel Energy for a Certificate of Need for Additional Dry Cask Storage at the Monticello Nuclear Generating Plant Independent Spent Fuel Storage Installation* (Petition);[1]
- presents the relevant criteria established by Minnesota Statutes and Minnesota Rules;
- introduces the other witnesses sponsored by the Department in this proceeding;
- provides my analysis of generation alternatives and related policy issues; and
- summarizes the Department witnesses' overall conclusions and recommendations at this time.

Q. Why are you providing analysis of generation alternatives in a certificate of need (CN) for additional storage of spent nuclear fuel?

A. Generation alternatives must be addressed since Minnesota Statutes § 216B.243 Subd. 3b states "Any certificate of need for additional storage of spent nuclear fuel for a facility seeking a license extension shall address the impacts of continued operations over the period for which approval is sought." One impact of continued operations at

[1] *In re Appl. of N. States Power Co. d/b/a Xcel Energy for a Certificate of Need for Additional Dry Cask Storage at the Monticello Nuclear Generating Plant Independent Spent Fuel Storage Installation*, Docket No. E002/CN-21-668, Initial Filing (Sept. 1, 2021) (eDocket Nos. 20219-177630-02, 20219-177630-03, 20219-177630-04, 20219-177630-05, 20219-177630-06, 20219-177630-07, 20219-177630-08, 20219-177630-09, 20219-177630-10).

Monticello Nuclear Generating Plant (Monticello) is avoiding acquiring other generation resources.

Q. Please introduce the other Department witnesses in this proceeding.

A. In addition to myself the Department is sponsoring two other witnesses in this proceeding:

- Ms. Danielle Winner addresses spent fuel storage alternatives and related policy issues; and
- Mr. Sachin Shah addresses forecasting issues.

II. XCEL'S PROPOSED FACILITY

Q. Please provide a summary of the Company's request in this proceeding.

A. In the Petition Xcel proposes to expand the existing independent spent-fuel storage installation (ISFSI) at the Company's Monticello nuclear generating plant by constructing a second modular concrete storage system.[2] The Petition states that the Company needs the additional storage space to extend the Monticello nuclear generating plant's operating life by ten years – from 2030 to 2040.[3] I understand that state law requires Xcel to obtain a CN from the Commission before expanding its ISFSI. Minn. Stat. §§ 216B.2421, subd. 2(8), 216B.243, subd. 2 (2022).

[2] CN Application at 1-6.
[3] *Id.*

Q. What kind of technology does Xcel propose to use?

A. Xcel's Petition does not identify a specific vendor or technology to be used. Instead, Xcel proposes to select a vendor and NRC-approved technology via a competitive bidding process. In the Petition Xcel estimates that, if approved, the ISFSI would store approximately 13 additional spent fuel storage casks. The Company also states that the cost would be about $72.1 million in 2020 dollars.[4]

Q. When does Xcel propose to construct the expanded ISFSI and associated facilities?

A. In the Petition Xcel states that it would order the storage canister system in 2026. The Company would begin storing waste in the expended facility in 2028 to support Monticello nuclear generating plant's operations beyond 2030.[5]

Q. Is a CN required?

A. Yes, for the following reasons. First, Minnesota Statutes §2168.2421, Subd. 2 (8) defines a large energy facility (LEF) as "any nuclear fuel processing or nuclear waste storage or disposal facility." Since Xcel's proposed expansion of an existing facility would store additional nuclear waste it qualifies as a LEF.

Second, Minnesota Statutes §2165.243, Subd. 2 states that "[n]o large energy facility shall be sited or constructed in Minnesota without the issuance of a certificate of

[4] *Id.* at 1-6, 8-28.
[5] *Id.* at 8-28.

need by the Commission..." Therefore, a CN is required before the proposed storage facility expansion could be sited or constructed.

Q. Why does the CN exemption due to Xcel's Commission-approved competitive bidding requirement for resource acquisition not apply to the current proceeding?

A. Minnesota Statutes § 216B.2422 Subd. 5 (a) provides that a utility "may select resources to meet its projected energy demand through a bidding process approved or established by the Commission." Xcel has a Commission-approved bidding process. In turn, Minnesota Statutes § 216B.2422 Subd. 5 (b) states in part that "if an electric power generating plant, as described in section 216B.2421, subdivision 2, clause (1), is selected in a bidding process approved or established by the Commission, a certificate of need proceeding under section 216B.243 is not required." [6]

Technically, in this case the proposed project is not an electric power generating plant. Therefore, the Commission-approved bidding process and the resulting bidding exemption from the CN requirements does not apply.

III. CERTIFICATE OF NEED REQUIREMENTS

Q. Please summarize the criteria for demonstrating need for a large energy facility.

A. I understand that there are several factors to be considered by the Commission in making a determination in CN proceedings. In general, these factors are located in different sections of Minnesota Statutes. Some of the general statutory criteria are

reflected in a more specific way in Minnesota Rules, part 7855.0120, which provides that the Commission shall grant a CN if four criteria are determined to be met:

1) the probable direct or indirect result of denial would be an adverse effect upon the future adequacy reliability safety, or efficiency of energy supply to the applicant, to the applicant's customers, or to the people of Minnesota and neighboring states;
2) a more reasonable and prudent alternative to the proposed facility has not been demonstrated by a preponderance of the evidence on the record by parties or persons other than the applicant;
3) it has been demonstrated by a preponderance of the evidence on the record that the consequences of granting the certificate of need for the proposed facility, or a suitable modification thereof, are more favorable to society than the consequences of denying the certificate; and
4) that it has not been demonstrated on the record that the design, construction, operation, or retirement of the proposed facility will fail to comply with those relevant policies, rules, and regulations of other state and federal agencies and local governments.

The Department's witnesses address various parts of the statutory and rule criteria. A cross-index matching the statutory and rule criteria to the witness addressing them is provided as Ex. DOC-___, SR-D-2 (Rakow Direct).

I note that the Department relies on the Environmental Impact Statement (EIS) prepared by the Minnesota Department of Commerce, Energy Environmental Review

and Analysis unit (EERA) for an analysis of the effects of the proposed project and the alternatives upon the natural and socioeconomic environments.

Q. Please summarize the overall Commission process for evaluating new electric generation and transmission facilities.

A. Ex. DOC- ___ at SR-D-3 (Rakow Direct) presents a high-level graphical representation of the Commission's regulatory process that generally applies to new electric generation and transmission facilities.[7] This proceeding involves the second step (resource acquisition).

Q. Is this proceeding impacted by prior Commission decisions?

A. Yes. The Commission previously authorized Xcel to pursue a ten-year operating extension for the Monticello nuclear generating plant during the Company's most recent IRP proceeding.[8]

Q. Is there a difference in the resources considered in IRP proceedings and those considered in resource acquisition proceedings?

A. Yes. IRP proceedings generally evaluate generic resources that reasonably reflect expected costs and other attributes (e.g. expected life, maintenance outages, etc.). An IRP compares generic resources that have different size, type, and timing. In contrast,

[8] *In re 2020-2034 Upper Midwest Integrated Resource Plan of N. States Power Co.*, Docket No. E002/RP-19-368, ORDER APPROVING PLAN WITH MODIFICATIONS AND ESTABLISHING REQUIREMENTS FOR FUTURE FILINGS at 14 (Apr. 15, 2022) (eDocket no. 20224-184828-01).

resource acquisition proceedings compare actual resources that would be available to meet the needs identified in the planning process. The resource acquisition proceeding takes as a given the IRP's size, type, and timing determination and attempts to acquire a specific project that best meets the general needs identified in the IRP.

Q. Describe Xcel's most recent IRP.

A. The Commission's April 15, 2022 *Order Approving Plan with Modifications and Establishing Requirements for Future Filings* (IRP Order) in Docket No. E002/RP-19-368 described Xcel's position on the nuclear units as "Xcel also proposed to seek to extend Monticello's operating life by ten years—to 2040—and to continue operating its Prairie Island Generating Plant (Prairie Island), Units 1 and 2, at least through the end of their current licenses—to 2033 and 2034, respectively."[9]

Ultimately, the IRP Order determined the following regarding Monticello:

> Second, the Commission will specifically approve the following elements of Xcel's Alternate Plan as filed on June 25, 2021:
> …
> 11) Xcel may continue pursuing a ten-year extension for Monticello. Xcel will have the opportunity—and obligation—to explore plans for Prairie Island in a future proceeding, as discussed further below.[10]

The future proceeding referred to is Xcel's next IRP, due February 1, 2024.

[9] IRP Order at 7.
[10] *Id.* at 13-14.

Q. What are the consequences of the IRP Order?

A. Minnesota Rules 7843.0600 Subp. 2 states:

> The findings of fact and conclusions from the commission's decision in a resource plan proceeding may be officially noticed or introduced into evidence in related commission proceedings, including, for example, rate reviews, conservation improvement program appeals, depreciation certifications, security issuances, property transfer requests, cogeneration and small power production filings, and certificate of need cases. In those proceedings, the commission's resource plan decision constitutes prima facie evidence of the facts stated in the decision. This subpart does not prevent an interested person from submitting substantial evidence to rebut the findings and conclusions in another proceeding.

IV. ANALYSIS RELATED TO NEED

Q. What determination is required by Minnesota Rules 7855.0120 A?

A. Minnesota Rules 7855.0120 A requires the Commission to determine that "the probable direct or indirect result of denial would be an adverse effect upon the future adequacy, reliability, safety, or efficiency of energy supply to the applicant, to the applicant's customers, or to the people of Minnesota and neighboring states[.]" The rule then proceeds to provide five specific criteria for the Commission to consider.

A. MINNESOTA RULES 7855.0120 A (2)

Q. What is the second consideration under Minnesota Rules 7855.0120 A?

A. Minnesota Rules 7849.0120 A (2) requires the Commission to consider "the effects of existing or expected conservation programs of the applicant, the state government, or the federal government[.]"

Q. Please provide your analysis related to the effects of existing or expected conservation programs.

A. First, Xcel's existing and expected conservation programs were included in the EnCompass model during the IRP process and in the Petition.[11] Second, EnCompass had the option to select additional conservation. Thus, the effects of existing or expected conservation programs were considered and additional conservation could be selected if cost effective.[12] The result of this analysis is that pursuit of any other level of energy efficiency would increase system costs.

B. MINNESOTA RULES 7855.0120 A (4)

Q. What is the fourth consideration under Minnesota Rules 7855.0120 A?

A. Minnesota Rules 7849.0120 A (4) requires the Commission to consider "the ability of current facilities and planned facilities not requiring certificates of need to meet the future demand[.]"

Q. Please provide your analysis related to current facilities and planned facilities.

A. During the IRP proceeding and this CN proceeding, EnCompass included all current and planned facilities as part of the existing resource mix or as a known addition.[13] The Department's IRP analysis found that extending Xcel's Prairie Island Nuclear Generating

[11] EnCompass is an economic model referred to as a capacity expansion model. Capacity expansion models simulate a generation system and attempt to determine the best generating units to add or retire, given assumptions about future electricity demand, fuel prices, technology cost and performance, and policy.
[12] *In re 2020-2034 Upper Midwest Integrated Resource Plan of N. States Power Co.*, Docket No. E002/RP-19-368, Xcel Energy Reply Comments, Appendix A at 10 (June 25, 2021) (eDocket no. 20216-175386-01).
[13] Xcel Energy Reply Comments, Appendix A at 17-20.

Plant tended to be least cost of way of meeting future demand.[14] Like Monticello, extended operations of Prairie Island also would require a CN for additional spent fuel storage. But the Commission's rule only requires consideration of facilities not requiring CNs. As a result, I understand that Prairie Island is not relevant to the Commission's consideration of Minn. R. 7855.0120(A)(4) as part of this proceeding.

V. ANALYSIS RELATED TO GENERATION ALTERNATIVES

Q. What determination is required by Minnesota Rules 7855.0120 B?

A. Minnesota Rules 7855.0120 B requires the Commission to determine that "a more reasonable and prudent alternative to the proposed facility has not been demonstrated by a preponderance of the evidence on the record by parties or persons other than the applicant[.]" The rule then proceeds to provide four specific criteria for the Commission to consider.

Recall that I address generation alternatives and Ms. Winner addresses spent fuel storage alternatives.

Q. What alternatives should the Commission consider in making its determination?

A. Minnesota Rules 7855.0110 states, "The [C]ommission shall consider only those alternatives proposed before the close of the public hearing and for which there exists substantial evidence on the record with respect to each of the criteria listed in part 7855.0120."

[14] *In re 2020-2034 Upper Midwest Integrated Resource Plan of N. States Power Co.*, Docket No. E002/RP-19-368, Department Supplemental Comments at 33-40 (October 15, 2021) (eDocket no. 202110-178845-01).

A. MINNESOTA RULES 7855.0120 B (1)

Q. What is the first consideration under Minnesota Rules 7855.0120 B?

A. Minnesota Rules 7849.0120 B (1) requires the Commission to consider "the appropriateness of the size, the type, and the timing of the proposed facility compared to those of reasonable alternatives[.]"

Q. Please provide your analysis related to appropriateness of the size, the type, and the timing of the proposed facility compared to those of reasonable alternatives.

A. In terms of size, Monticello is a 671 MW facility. In terms of type, Monticello is a baseload unit, meaning it generates electricity 24 hours a day for weeks at a time. In terms of timing, the CN would allow Monticello to continue generating electricity for an additional decade beyond the current retirement date of September 8, 2030. There are no reasonable alternatives, on their own, that could replace Monticello in terms of size, type, and timing. The only baseload alternatives that could be made available in a several hundred MW size are a new nuclear or coal plant. However, I understand that state law prohibits the construction of new nuclear generating units.[15] In addition, experience in attempting to build new nuclear units in Georgia (Alvin W. Vogtle units 3 and 4) and South Carolina (Virgil C. Summer units 2 and 3) demonstrated new, large scale nuclear units to be prohibitively expensive and a high-risk endeavor.[16] Coal-fired

[15] Minn. Stat. § 216B.243, subd. 3b.

[16] *See, e.g.*, Abbie Bennett & Alex Blackburne, *Climate, Conflicts Prompt New Look At Old Nuclear*, S&P Global (Nov. 8, 2022) ("South Carolina utilities stopped construction on the V.C. Summer plant after sinking $9 billion into the project, and Southern Co.'s Alvin W. Vogtle Nuclear Plant in Georgia has been mired in cost overruns and delays."), https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/climate-conflicts-prompt-new-look-at-old-nuclear-72851723.

generation also has fallen into disfavor. A new coal plant has not been considered in Minnesota since the Big Stone 2 unit proceeding was initiated in 2005.[17] Finally, there are no new nuclear units and a single, 20 MW coal unit in the MISO generation interconnection queue, indicating that neither technology is being considered anywhere in MISO.[18] In summary, combinations of resources would be required to be considered as an alternative to Monticello.

Q. Has Xcel provided analysis of different resource combinations?

A. Yes. In Xcel's EnCompass modeling for this proceeding, the Company allowed generic energy storage, wind, solar, natural gas-fueled combustion turbines, demand response, and energy efficiency to be selected.[19] The only generic resource that is missing is natural gas-fueled combined cycle unit. While it would be preferrable for such an alternative to be made available, Xcel has substantial combined cycle capacity already on the Company's system in the 2030s and that capacity could be used more intensively.

The Company ran two replacement scenarios, one allowing all alternatives and one allowing only renewable and storage alternatives. Therefore, I conclude that the Company made a reasonable spectrum of alternatives available to EnCompass.

[17] *In re Appl. of Otter Tail Power Co. and Others for Certification of Transmission Facilities in W. Minn.*, Docket No. E017 et al/CN-05-619, ORDER EXTINGUISHING CERTIFICATE OF NEED, SUSPENDING ROUTE PERMIT, PROVIDING FOR PERMIT REVOCATION, AND REQUIRING FILINGS (Feb. 25, 2010) (eDocket No. 20102-47472-02).

[18] See the data available at: https://www.misoenergy.org/planning/generator-interconnection/GI_Queue/gi-interactive-queue/

[19] CN Application at 9-28.

The results of Xcel's analysis were presented in various tables in the Petition; the energy changes caused by retiring Monticello and allowing all alternatives to be selected was shown in the Petition's Table 9-5 which in replicated below.

Table 9-5: 2030-2040 Difference in Energy Mix Between IRP Alternate Plan and Replacement Case 1, by Fuel Type (Gigawatt Hours)[20]

Fuel Type	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
Combined Cycle	108	837	1,352	538	114	202	198	145	196	267	118
Combustion Turbine	295	520	572	386	250	414	335	375	314	216	374
Nuclear	(1,682)	(4,918)	(5,388)	(4,918)	(5,373)	(4,918)	(5,388)	(4,918)	(5,373)	(4,918)	(3,706)
Solar PV	(37)	62	189	590	435	396	512	455	513	499	486
Wind	618	1,404	367	951	3,267	2,420	2,869	2,820	2,859	2,835	981
Total[3] generation difference	**(698)**	**(2,094)**	**(2,907)**	**(2,454)**	**(1,308)**	**(1,486)**	**(1,474)**	**(1,123)**	**(1,491)**	**(1,100)**	**(1,746)**
Market purchases	*286*	*640*	*811*	*939*	*622*	*733*	*730*	*594*	*720*	*673*	*687*
Market sales	*(411)*	*(1,428)*	*(2,059)*	*(1,496)*	*(684)*	*(752)*	*(741)*	*(530)*	*(768)*	*(464)*	*(960)*

Note: this table shows total generation from Replacement Case 1, minus the Alternate Plan, to show the differences between the two cases. Negative numbers means that there is less of a type of generation or market interaction in Replacement Case 1 than in the Alternate Plan.

B. MINNESOTA RULES 7855.0120 B (2)

Q. What is the second consideration under Minnesota Rules 7855.0120 B?

A. Minnesota Rules 7849.0120 B (2) requires the Commission to consider "the cost of the proposed facility and the cost of energy to be supplied by the proposed facility compared to the costs of reasonable alternatives and the cost of energy that would be supplied by reasonable alternatives[.]"

[20] CN Application at 9-29.

Q. Please provide your analysis related to the cost of energy to be supplied by the proposed facility compared to the costs of reasonable alternatives.

A. The total cost of energy from Monticello can be obtained from data filed by Xcel in Docket No. E999/CI-19-704. In the Company's March 1, 2022 filing Xcel provided the following data on the net cost of energy from Monticello for calendar year 2021:

Table 1: Monticello Net Cost of Energy[21]

ITEM	AMOUNT	SOURCE
Annual Fixed O&M Costs	$ 112,535,098	Attachment C
Annual Capital Rev. Req.	$ 85,371,156	Attachment C

[NOT PUBLIC DATA BEGINS . . .

[redacted]

. . . NOT PUBLIC DATA ENDS]

Thus, from this perspective, Monticello created a net loss for Xcel's ratepayers in 2021 because **[NOT PUBLIC DATA BEGINS . . .** [redacted] **. . . NOT PUBLIC DATA ENDS].** However, care must be taken in interpreting this data. The data does not provide the information required for an overall determination of whether a unit should be shut down or continue operating in a rate regulated environment. The missing data includes, for example, cost of transmission fixes required if a unit shuts down, a review of the socioeconomic impacts of a shutdown on the local areas, a

[21] *In re Comm'n Investigation Into Self-Commitment and Self-Scheduling of Large Baseload Generation Facilities*, Docket No. E999/CI-19-704, Xcel Energy Attachments B & C (Mar. 1, 2022) (eDocket nos. 20223-183342-10, 20223-183342-14).

capacity expansion analysis of how a unit might be replaced, and so forth.[22] All of this data is available in an IRP.

As discussed above, a combination of alternatives is necessary to replace Monticello and combinations of alternatives were analyzed in detail using the EnCompass capacity expansion model in the Company's most recent IRP. The Commission's April 15, 2022 *Order Approving Plan with Modifications and Establishing Requirements for Future Filings* in Docket No. E002/RP-19-368 stated the following regarding Monticello:

> the Commission will specifically approve the following elements of Xcel's Alternate Plan as filed on June 25, 2021:
> …
> 11) Xcel may continue pursuing a ten-year extension for Monticello. Xcel will have the opportunity—and obligation—to explore plans for Prairie Island in a future proceeding, as discussed further below.

I did not have updated data to perform new analysis of Monticello in EnCompass. In addition, MISO fundamentally changed the resource adequacy construct from an annual construct to a seasonal construct last year. As part of that change MISO altered how generating units receive credit for reliability purposes.[23] Some information necessary for modeling that is related to this change was not produced by MISO until December, 2022. This new resource adequacy construct requires an updated version of EnCompass along with new data regarding seasonal required reserve ratios, seasonal generating

[22] *In re Comm'n Investigation Into Self-Commitment and Self-Scheduling of Large Baseload Generation Facilities*, Docket No. E999/CI-19-704, Department Comments at 36–37 (June 8, 2020) (eDocket no. 20206-163795-02).
[23] See the Federal Energy Regulatory Commission's (FERC) August 31, 2022 *Order Accepting Proposed Tariff Revisions Subject to Condition*, FERC Docket Nos. ER22-495-000 and ER22-495-001 available at: https://elibrary.ferc.gov/eLibrary/filelist?accession_number=20220831-3093&optimized=false

unit accreditation, and so forth. In summary, given the Commission's recent IRP decision, FERC's decision on the seasonal construct, and the date MISO made data available I did not pursue updated modeling for this proceeding.

C. MINNESOTA RULES 7855.0120 B (3)

Q. What is the third consideration under Minnesota Rules 7855.0120 B?

A. Minnesota Rules 7849.0120 B (3) requires the Commission to consider "the effects of the proposed facility upon the natural and socioeconomic environments compared to the effects of reasonable alternatives[.]"

Q. Please provide your analysis related to the effects of the proposed facility upon the natural and socioeconomic environments.

A. The continued operation of the Monticello nuclear generating plant through 2040 is expected to create minimal impacts. Non-radiological impacts are related primarily to the use of river water for cooling. These impacts are anticipated to be minimal.[24] The plant also generates minimal greenhouse gases emissions.[25] In addition, the Xcel EnCompass modeling discussed above included the Commission-approved externality values nuclear plants generate minimal emissions.[26] Therefore, using the Commission-approved externality values would not impact the overall cost analysis against the proposed project. The expanded ISFSI also is expected to create minimal impacts.

[24] Final Environmental Impact Statement at 53-54 (Jan. 10, 2023) (eDocket no. 20231-192014-01).
[25] *Id.* at 55.
[26] CN Application at 9-30 discussing externality costs and revenue requirements versus societal costs.

Xcel's proposed additional spent fuel storage project will occur within the existing industrial site.[27] According to the Company, the ISFSI expansion will create typical construction wastes that will require appropriate disposal as well as fugitive dust generated by earthmoving equipment. Xcel also states that spent fuel storage itself will not generate any gaseous or particulate emissions.[28]

In comparison, the alternatives identified by the EnCompass modeling would likely generate more significant impacts through additional greenhouse gas emissions, and flora and fauna impacts.[29]

VI. ANALYSIS RELATED TO MINNESOTA STATUTES

A. MINNESOTA STATUTES §§ 216B.243 SUBD. 3 AND SUBD. 3 (8)

Q. What determination is required by Minnesota Statutes § 216B.243 Subd. 3?

A. Minnesota Statutes §§ 216B.243 Subd. 3 and Subd. 3 (8) require that "[n]o proposed large energy facility shall be certified for construction unless the applicant can show that demand for electricity cannot be met more cost effectively through energy conservation and load-management measures[.]"[30] In making this determination, the Commission must evaluate "any feasible combination of energy conservation improvements, required under section 216B.241, that can (i) replace part or all of the energy to be provided by the proposed facility, and (ii) compete with it economically[.]"[31]

[27] Final Environmental Impact Statement. at 33-34.
[28] CN Application at 12-6 to 12-7.
[29] Final Environmental Impact Statement at 79-82.
[30] Minn. Stat. § 216B.243, subd. 3.
[31] Minn. Stat. § 216B.243, subd. 3(8)

Q. Please provide your analysis relating to whether demand for electricity from Monticello cannot be met more cost effectively through conservation and load management.

A. As part of the Petition, Xcel details new EnCompass modeling results. To perform the EnCompass modeling, Xcel locked in the Commission-approved energy efficiency and demand response expansion plan but allowed additional amounts to be selected. Thus, EnCompass could select more energy efficiency and demand response than approved by the Commission in the IRP but could not select less. The outputs from Xcel's modeling show the same amount of energy efficiency and demand response selected in all scenarios.[32] These results demonstrate that additional conservation and load management are not cost-effective substitutes for the Monticello nuclear generating plant.

Based upon this analysis I conclude that the statutory requirement has been met.

B. MINNESOTA STATUTES §§ 216B.243 SUBD. 3a AND 216B.2422, SUBD. 4

Q. What determination is required by Minnesota Statutes § 216B.243 Subd. 3a?

A. Minnesota Statutes § 216B.243 Subd. 3a requires that the applicant for a CN demonstrate:

> to the commission's satisfaction that it has explored the possibility of generating power by means of renewable energy sources and has demonstrated that the alternative selected is less expensive (including environmental costs)

[32] CN Application at Tables 9-2, 9-4, and 9-6.

than power generated by a renewable energy source. For purposes of this subdivision, "renewable energy source" includes hydro, wind, solar, and geothermal energy and the use of trees or other vegetation as fuel.

Q. What determination is required by Minnesota Statutes § 216B.2422 Subd. 4?

A. Minnesota Statutes § 216B.2422 Subd. 4 requires that the Commission:

> The commission shall not approve a new or refurbished nonrenewable energy facility in an integrated resource plan or a certificate of need, pursuant to section 216B.243, nor shall the commission allow rate recovery pursuant to section 216B.16 for such a nonrenewable energy facility, unless the utility has demonstrated that a renewable energy facility is not in the public interest. When making the public interest determination, the commission must consider:
>
> (1) whether the resource plan helps the utility achieve the greenhouse gas reduction goals under section 216H.02, the renewable energy standard under section 216B.1691, or the solar energy standard under section 216B.1691, subdivision 2f;
>
> (2) impacts on local and regional grid reliability;
>
> (3) utility and ratepayer impacts resulting from the intermittent nature of renewable energy facilities, including but not limited to the costs of purchasing wholesale electricity in the market and the costs of providing ancillary services; and
>
> (4) utility and ratepayer impacts resulting from reduced exposure to fuel price volatility, changes in transmission costs, portfolio diversification, and environmental compliance costs.

Q. Please provide your analysis related to renewable energy alternatives.

A. Xcel demonstrated that Monticello is less expensive (including environmental costs) than power generated by a renewable energy source. The Petition at page 9-24 states that the additional costs are likely to range from approximately $60 to 80 million on a present value of societal cost (PVSC) basis.[33]

Xcel's proposed plan in the most recent IRP met Minnesota's greenhouse gas reduction goals, the renewable energy standard, and the solar energy standard.[34] Second, impacts on the grid were considered in the IRP analysis by adding costs to address expected transmission issues that would arise with the retirement of Monticello.[35] Third, impacts resulting from the intermittent nature of renewable energy facilities, were considered via inputs to the IRP model.[36] Fourth, impacts from reduced exposure to fuel price volatility (running contingencies varying fuel prices) and changes in transmission costs (contingencies varying cost of adding new generating units) were considered directly through varying model inputs in separate model runs.[37] The impacts of portfolio diversification and environmental compliance costs would have to be considered qualitatively.

Based upon this analysis I conclude that the statutory requirement has been met.

[33] CN Application at 9-24 (note that all PVSC figures include environmental costs).
[34] *See generally In re 2020-2034 Upper Midwest Integrated Resource Plan of N. States Power Co.*, Docket No. E002/RP-19-368, ORDER APPROVING PLAN WITH MODIFICATIONS AND ESTABLISHING REQUIREMENTS FOR FUTURE FILINGS (Apr. 15, 2022) (eDocket no. 20224-184828-01).
[35] *In re 2020-2034 Upper Midwest Integrated Resource Plan of N. States Power Co.*, Docket No. E002/RP-19-368, Xcel Energy Reply Comments, Appendix A at 14 (June 25, 2021) (eDocket no. 20216-175386-01).
[36] *Id*. at16-17.
[37] *Id*. at 12-13.

C. MINNESOTA STATUTES § 216B.2426

Q. What determination is required by Minnesota Statutes § 216B.2426?

A. Minnesota Statutes § 216B.2426 requires that the Commission "ensure that opportunities for the installation of distributed generation, as that term is defined in section 216B.169, subdivision 1, paragraph (c), are considered in any proceeding under section … 216B.243." In turn, Minnesota Statutes § 216B.169 Subd. 1 (c) states that "High-efficiency, low-emissions, distributed generation means a distributed generation facility of no more than ten megawatts of interconnected capacity that is certified by the commissioner under subdivision 3 as a high-efficiency, low-emissions facility." Finally, Minnesota Statutes § 216B.169 Subd. 3 states:

> (a) The commissioner shall certify a power supply or supplies as eligible to satisfy customer requirements under this section upon finding:
>
> (1) the power supply is renewable energy or energy generated by high-efficiency, low-emissions, distributed generation; and
>
> (2) the sales arrangements of energy from the supplies are such that the power supply is only sold once to retail consumers.

Q. Please provide your analysis related to high-efficiency, low-emissions, distributed generation.

A. Any Commissioner-certified distributed generation provider could have intervened in this proceeding and offered an alternative. At this time no such alternatives have been offered. Given that there were opportunities for participation and the fact that no

distributed generation proposals were provided, I conclude this requirement has been met.

VII. CERTIFICATE OF NEED COST ESTIMATES AND COST CAPS

Q. Is it important for the Commission to hold utilities accountable for their CN cost estimates?

A. Yes, ratepayers' interests must be protected. Companies' cost estimates are used extensively in CN and other regulatory proceedings and provide a strong basis for the Commission to hold utilities accountable to the costs they represent for facilities, particularly since as CNs consider alternatives to proposed projects. In its role to ensure that rates are reasonable, the Commission has generally not allowed approval of projects in such proceedings to constitute a "blank check" for cost recovery when actual costs are greater than the estimated costs the utilities represented in regulatory approval proceedings. For example, the Commission typically requires utilities to demonstrate that it is reasonable to allow recovery of any such cost increases prior to charging the costs to ratepayers.[38]

The Department fully supports the Commission's use of such mechanisms. Absent cost recovery caps tied to the evidentiary record in which the project was proposed and approved, utilities have little incentive to expend the effort needed to

[38] *In re Comm'n Investigation Into Xcel Energy's Monticello Life-Cycle Management/Extended Power Uprate and Request for Recovery of Cost Overruns,* Docket No. E002/CI-13-754, ORDER FINDING IMPRUDENCE, DENYING RETURN ON COST OVERRUNS, AND ESTABLISHING LCM/EPU ALLOCATION FOR RATEMAKING PURPOSES (May 8, 2015) (eDocket no. 20155-110255-01).

accurately report project costs in regulatory proceedings, nor to ensure that the actual costs are contained and are as reasonable as possible.

Q. How will the costs of continued operations of Monticello and the proposed ISFSI expansion likely be charged to ratepayers in Minnesota?

A. The most likely way is through the fuel clause adjustment for fuel costs and through a general rate case for all other costs such as capital costs and operations and maintenance costs.

Q. Please provide a recent example of how the Commission has protected Xcel's Minnesota ratepayers.

A. Sure. Attached to my testimony is a Commission order from a recent wind resource acquisition proceeding.[39] Point 3 of the Commission's order specifies the ratepayer protections ordered by the Commission.

Q. Do you recommend the Commission apply the same conditions to Monticello and the ISFSI?

A. I recommend that points 3a to 3d and 3f be applied. Points 3e (curtailment) and 3g (quarterly reporting) are particular to Xcel's wind projects.

[39] Ex. DOC-___, SR-D-4 (Rakow Direct)

VIII. RECOMMENDATION

Q. Please summarize your overall conclusions and recommendations at this time.

A. Considering the direct testimony of Mr. Shah, Ms. Winner, and myself, along with the Final EIS, the I recommend that the Commission approve Xcel's CN application subject to the conditions specified in points 3a to 3d and 3f from Ex. DOC-___, SR-D-4 to Monticello and the ISFSI.

Q. Does this conclude your Direct Testimony?

A. Yes.