

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

**FOR THE MINNESOTA PUBLIC UTILITIES COMMISSION
121 Seventh Place East, Suite 350
St. Paul, Minnesota 55101-2147**

**In the Matter of the 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
in Wright County**

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

**PROPOSED FINDINGS OF FACT, CONCLUSIONS OF LAW,
AND RECOMMENDATION OF
NORTHERN STATES POWER COMPANY D/B/A XCEL ENERGY**

May 15, 2023

TABLE OF CONTENTS

	Page
APPEARANCES.....	1
STATEMENT OF ISSUES.....	1
SUMMARY OF CONCLUSION.....	1
FINDINGS OF FACT	2
I. INTRODUCTION.....	2
A. Procedural Background.....	2
II. ENVIRONMENTAL REVIEW.....	6
III. SUMMARY OF PUBLIC COMMENTS	8
IV. THE MONTICELLO NUCLEAR GENERATING PLANT AND INDEPENDENT SPENT FUEL STORAGE INSTALLATION	10
A. Overview of Monticello Plant.....	10
B. Overview of Independent Spent Fuel Storage Installation	13
C. The Monticello Plant’s Role in Energy Supply to Minnesota and the Region.....	14
D. Current Licensure Status	14
E. Need to Expand Storage to Operate Beyond Current License.....	15
V. THE PROJECT AND ALTERNATIVES.....	16
A. Project Overview	16
B. Alternatives Considered	17
1. Storage Alternatives.....	18
2. Generation Alternatives	18
VI. CERTIFICATE OF NEED CRITERIA	18

VII.	APPLICATION OF CERTIFICATE OF NEED CRITERIA.....	20
A.	The Future Adequacy, Reliability, or Efficiency of Energy Supply.....	20
1.	Demand for Energy and Spent Fuel Storage.....	20
2.	Effect of Conservation Programs	22
3.	Effect of Promotional Activities	23
4.	Ability of Current and Planned Facilities not Requiring Certificates of Need to Meet State and Regional Energy Needs	24
a.	Existing Facilities.....	24
b.	Other Alternatives	24
5.	Effect of the Project in Making an Efficient Use of Resources	25
B.	Analysis of Alternatives	26
1.	Off-Site Storage Alternatives.....	26
a.	Reprocessing Spent Nuclear Fuel	27
b.	Existing Off-Site Storage Facilities	27
c.	Private Centralized Interim Storage.....	27
d.	Permanent Off-Site Storage	28
2.	On-Site Storage Alternatives	28
a.	New On-Site Location	29
b.	Non-Cask Alternatives.....	29
c.	Dry Cask Alternatives.....	31
3.	Generation Alternatives	32
a.	Size, Type, and Timing.....	34
b.	Cost	35

c.	Effects Upon the Natural and Socioeconomic Environments	36
d.	Reliability	37
C.	Consequences of Granting the CN Compared to Consequences of Denying the CN	38
1.	Overall State Energy Needs	38
2.	Effect of the Project on the Natural and Socioeconomic Environments Compared to the Effect of Not Granting the CN.....	40
3.	Induced Future Developments	40
4.	Socially Beneficial Uses of the Output of the Facility	41
D.	The Project will Comply with Relevant Policies, Rules, and Regulations of Other State and Federal Agencies and Local Governments	41
E.	CN Conditions.....	42
	CONCLUSIONS OF LAW	44
	RECOMMENDATION.....	46
	NOTICE.....	47

**STATE OF MINNESOTA
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Independent Spent Fuel Storage
Installation in Wright County

MPUC Docket No. E002/CN-21-668

OAH Docket No. 8-2500-38129

APPEARANCES

Eric F. Swanson, Elizabeth H. Schmiesing, and Christopher J. Cerny, Winthrop & Weinstine, P.A., and Ian M. Dobson, Assistant General Counsel, appeared on behalf of the Applicant, Northern States Power Company d/b/a Xcel Energy (Applicant, the Company, or Xcel Energy).

Richard E.B. Dornfeld and Gregory R. Merz, Assistant Attorneys General, appeared on behalf of the Minnesota Department of Commerce, Division of Energy Resources (DOC-DER or the Department) and the Minnesota Department of Commerce, Energy Environmental Review and Analysis Unit (DOC-EERA).

Michael J. Kaluzniak, Energy Facilities Permitting Unit, appeared on behalf of the staff of the Minnesota Public Utilities Commission (Commission) (Commission Staff).

STATEMENT OF ISSUES

Has Xcel Energy satisfied the requirements of Minn. Stat. § 116C.83 and Minn. Stat. § 216B.243, the criteria set forth in Minn. R. 7855.0120, and other applicable legal requirements for a Certificate of Need for Additional Dry Cask Storage at the Monticello Nuclear Generating Plant (MNGP or Monticello Plant) Independent Spent Fuel Storage Installation (ISFSI) in Wright County?

SUMMARY OF CONCLUSION

The Administrative Law Judge (ALJ) concludes that Xcel Energy has satisfied the criteria set forth under Minnesota law for a Certificate of Need (CN) for Additional Dry Cask Storage at the Monticello Plant ISFSI in Wright County. Therefore, the ALJ respectfully recommends the Commission grant Xcel Energy's Application for a CON.

Based on information in the CN Application submitted by Xcel Energy, the Environmental Impact Statement (EIS) prepared and found to be adequate by the Department, information presented during the public hearings, testimony and evidence admitted to the record in this proceeding, and other evidence in the record, the ALJ makes the following:

FINDINGS OF FACT

I. INTRODUCTION

A. Procedural Background

1. On September 1, 2021, Xcel Energy filed a petition for a CN for additional dry cask spent fuel storage at the Monticello Nuclear Generating Plant (MNGP, Monticello Plant or Plant) to facilitate continued operation of the Monticello Plant until 2040.¹

2. On September 14, 2021, the Commission issued a notice to potentially interested parties requesting comments on four topics: (i) does the CN Application contain the information required under Minnesota Rules; (ii) are there any contested issues of fact with respect to the representations made in the application; (iii) should the application be evaluated using the Commission's informal process or referred to the Office of Administrative Hearings (OAH) for contested case proceedings; and (iv) what are the implications, if any, on the timing and procedures to be used in processing this application in relation to the Company's pending 2020-2034 Upper Midwest Integrated Resource Plan in Docket No. 19-368.²

3. By October 5, 2021, comments were received from:

- Minnesota Department of Commerce, Division of Energy Resources (DOC-DER or the Department);³
- Minnesota Department of Commerce, Energy Environmental Review and Analysis unit (DOC-EERA);⁴ and

¹ Exhibit (Ex.) XEL-1 (Initial Filing).

² *In the Matter of the Application of Northern 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 in Wright County*, MPUC Docket No. E-002/CN-21-668, NOTICE OF COMMENT PERIOD at 1 (Sept. 14, 2021).

³ Comments of the Minnesota Department of Commerce, Division of Energy Resources (Oct. 5, 2021) (eDocket No. 202110-178532-01).

⁴ Comments of the Minnesota Department of Commerce, Energy Environmental Review and Analysis (October 5, 2021) (eDocket No. 202110-178533-01).

- Minnesota Building & Construction Trades Council, Pipefitters Local 539, and Construction & General Laborers Local 563 (collectively, Monticello Labor Coalition).⁵

4. By October 14, 2021, reply comments were received from:

- Xcel Energy;⁶ and
- DOC-DER.⁷

5. On February 15, 2022, the Commission issued an Order accepting the Company's Application as substantially complete and referred the matter to the OAH for a contested case proceeding.⁸

6. The initial parties, and ultimately the only parties, to the contested case proceeding were Xcel Energy and the Department.⁹

7. On May 19, 2022, ALJ Eric L. Lipman issued the First Prehearing Order and established the following schedule of proceedings:¹⁰

⁵ Comments of the Minnesota Building & Construction Trades Council, Pipefitters Local 539, and Construction & General Laborers Local 563 (Oct. 5, 2021) (eDocket No. 202110-178550-01).

⁶ Ex. XEL-2 (Reply Comments).

⁷ Ex. DOC-8 at 4 (Written Comments on Scope of EIS); Comments of the Minnesota Department of Commerce, Division of Energy Resources (Oct. 14, 2021) (eDocket No. 202110-178788-01).

⁸ *In the Matter of the Application of Northern 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 in Wright County*, MPUC Docket No. E-002/CN-21-668, ORDER ACCEPTING APPLICATION AS COMPLETE AND NOTICE OF AND ORDER FOR HEARING at 2 (Feb. 15, 2022).

⁹ *In the Matter of the Application of Northern 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 in Wright County*, MPUC Docket No. E-002/CN-21-668, FIRST PREHEARING ORDER at 1 (May 19, 2022).

¹⁰ *In the Matter of the Application of Northern 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 in Wright County*, MPUC Docket No. E-002/CN-21-668, FIRST PREHEARING ORDER at 2-3 (May 19, 2022).

Document of Event	Due Date
1st Short Status Report from the Department on Progress of Draft Environmental Impact Statement (EIS)	Friday, July 8, 2022
2nd Short Status Report from the Department on Progress of Draft EIS	Friday, September 9, 2022
Target Date for Issuance of Draft EIS and Public Comment Period	Wednesday, October 12, 2022
Draft EIS Public Hearings	Tuesday, November 1, 2022
Draft EIS Comment Period Closes	Monday, November 14, 2022
Target Date for Issuance of Final EIS	Friday, January 13, 2023
Deadline for Direct Testimony	Wednesday March 1, 2023
Deadline for Rebuttal Testimony	Monday, March 27, 2023
Deadline for Surrebuttal Testimony	Friday, April 14, 2023
Start of Evidentiary Hearing	Thursday, April 20, 2023
Close of Evidentiary Hearing	Friday, April 21, 2023
Initial Brief and Applicant's Proposed Findings of Facts	Monday, May 15, 2023
Reply Brief and Responding Parties' Proposed Findings of Facts	Tuesday, May 30, 2023
Administrative Law Judge Report	Friday, June 30, 2023

8. On March 1, 2023, the Company and the Department filed Direct Testimony.¹¹

¹¹ See Exs. XEL-3-9; DOC-24-25.

9. On March 16, 2023, the Commission issued a notice of public hearings for the public to provide their input on the necessity of the Project, input on the no-build alternatives, and address alternatives for the Commission to consider.¹²

10. On March 27, 2023, the Company filed Rebuttal Testimony.¹³

11. Public hearings were held in-person at the Monticello Community Center in Monticello, Minnesota on Wednesday, March 29, 2023, and virtually on Thursday, March 30, 2023.

12. On April 14, 2023, the Department filed Surrebuttal Testimony.¹⁴

13. On April 18, 2023, based upon the submissions of the parties, the contents of the hearing record, and the parties' agreement regarding the Company's CN Application, the ALJ issued the Fourth Prehearing Order cancelling the evidentiary hearings and scheduling a Status and Scheduling Conference on Thursday, April 20, 2023.¹⁵

14. On May 1, 2023, the ALJ issued the Fifth Prehearing Order requesting the parties provide supplemental information regarding the leak of tritiated water at the Monticello Plant in November of 2022.¹⁶

15. On May 15, 2023, the Company filed the supplemental information requested in the ALJ's Fifth Prehearing Order.

16. On May 30, 2023, the Department filed its response to the Company's May 15, 2023 filing.

¹² *In the Matter of the Application of Northern 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 in Wright County*, MPUC Docket No. E-002/CN-21-668, NOTICE OF PUBLIC HEARINGS at 1 (Mar. 16, 2023).

¹³ See Exs. XEL-10–12.

¹⁴ See Exs. DOC-27–28.

¹⁵ *In the Matter of the Application of Northern 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 in Wright County*, MPUC Docket No. E-002/CN-21-668, FOURTH PREHEARING ORDER at 1-2 (Ap. 18, 2023).

¹⁶ *In the Matter of the Application of Northern 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 in Wright County*, MPUC Docket No. E-002/CN-21-668, FIFTH PREHEARING ORDER at 2 (May 1, 2023).

II. ENVIRONMENTAL REVIEW

17. On December 28, 2021, DOC-EERA issued a notice informing the public of the forthcoming Environmental Impact Statement (EIS) scoping meetings and the availability of the scoping Environmental Assessment Worksheet (EAW).¹⁷ DOC-EERA also made its Draft Scoping Decision Document available on that date.¹⁸

18. On January 19, 2022, the U.S. Army Corps of Engineers submitted comments stating that it had reviewed the scoping EAW and that a Department of the Army permit would not be required for the proposed activity.¹⁹

19. Public scoping meetings for the EIS were held in-person at the Monticello Community Center in Monticello, Minnesota on Tuesday, January 25, 2022 and virtually on Wednesday, January 26, 2022.²⁰

20. Two oral comments were received from the public during the EIS scoping public meetings. The first commenter asked whether the EIS would focus solely on the storage aspect and not the operations of the Plant. The second commenter asked why nuclear waste recycling was not a viable option.²¹

21. On January 28, 2022, the City of Monticello submitted comments stating that Xcel has been a strong, reliable community partner throughout the life of the Plant, that City leaders see the benefit of having additional spent fuel casks stored within the existing Independent Spent Fuel Storage Installation (ISFSI), and that the area has already been reviewed, approved, and implemented for spent fuel storage that provides sufficient existing information for the EIS without requiring an expansion of scope.²²

22. On February 4, 2022, the Minnesota Pollution Control Agency (MPCA) submitted comments stating that it reviewed the scoping EAW and did not have comments at the time.²³

23. On February 9, 2022, the Minnesota Department of Natural Resources (DNR) submitted comments stating that it had reviewed the draft scoping decision and the scoping EAW. The DNR recommended that the EIS should address the presence of eagle nests, as DNR's review of the Natural Heritage Information System noted two eagle nests

¹⁷ Ex. DOC-3 (Scoping Notice).

¹⁸ Ex. DOC-2 (Draft Scoping Decision).

¹⁹ Ex. DOC-8 2-3 (Written Comments on Scope of EIS).

²⁰ Ex. DOC-3 at 1 (Scoping Notice).

²¹ Ex. DOC-7 (Oral Comments on Scope of EIS).

²² Ex. DOC-8 at 6 (Written Comments on Scope of EIS).

²³ Ex. DOC-8 at 5 (Written Comments on Scope of EIS).

within one mile of the Project. The DNR also recommended that the Company contact the U.S. Fish and Wildlife Service for further coordination.²⁴

24. On March 2, 2022, DOC-EERA issued its EIS scoping decision and established the issues to be analyzed in the EIS.²⁵

25. On March 29, 2022, DOC-EERA issued a notice that advised the public that it had begun preparation of the draft EIS.²⁶

26. On October 4, 2022, DOC-EERA Issued the draft EIS for the project.²⁷ The agency also issued a notice of the availability of the draft EIS and information for public meetings regarding the same.²⁸

27. Public informational meetings regarding the draft EIS were held in-person at the Monticello Community Center in Monticello, Minnesota on Wednesday, October 26, 2022 and virtually on Thursday, October 27, 2022.²⁹

28. Two oral comments were received from the public during the draft EIS public informational meetings. The first commenter asked where the funding for the proposed expansion would come from and expressed concern over the lack of long-term centralized offsite storage. The second commenter asked about exposure risks to residents and employees.³⁰

29. One public written comment was received regarding the draft EIS. The commenter vocalized “complete support for Xcel’s request for additional storage” as a close neighbor of the Monticello Plant.³¹

30. On November 14, 2022, Xcel Energy submitted comments on the draft EIS.³²

²⁴ Comments of the Minnesota Department of Natural Resources (February 9, 2022) (eDocket No. 20222-182586-01).

²⁵ Ex. DOC-9 (EIS Scoping Decision).

²⁶ Exs. DOC-10 (Notice of EIS Preparation – EQB Monitor); DOC-11 (Notice of EIS Preparation – Press Release).

²⁷ Ex. DOC-12 (Draft EIS).

²⁸ Exs. DOC-13 (Draft EIS Notice – Service Lists); DOC-14 (Draft EIS Notice – EQB Monitor).

²⁹ Exs. DOC-13 at 1 (Draft EIS Notice – Service Lists); DOC-14 at 4 (Draft EIS Notice – EQB Monitor).

³⁰ Ex. DOC-16 (Oral Comments on Draft EIS).

³¹ Ex. DOC-17 at 2 (Written Comments on Draft EIS).

³² Xcel Energy Comments on Draft EIS (November 14, 2022) (eDocket No. 202211-190603-01); Ex. DOC-17 at 3-11 (Written Comments on Draft EIS).

31. On January 10, 2023, DOC-EERA issued the final EIS.³³ The agency also issued notices by e-mail and eDocket filings that advised the public of the final EIS's availability and the opportunity to comment.³⁴

32. On January 23, 2023, Xcel Energy submitted comments on the final EIS, stating its opinion that the final EIS met all requirements and supporting a determination of adequacy.³⁵

33. On February 6, 2023, pursuant to Minn. Stat. § 116C.83, subd. 6, the Commissioner of the DOC, prior to finding the EIS adequate, issued an Order determining that Xcel Energy demonstrated that the design of the MNGP ISFSI is such that it can be reasonably expected that the operation of the ISFSI will not result in groundwater contamination in excess of the standards established in Minn. Stat. § 116C.76, subd. 1, clauses (1) to (3).³⁶

34. On February 6, 2023, the Commissioner of the DOC, acting as Responsible Governmental Unit (RGU), determined that the final EIS adequately addressed the potential significant environmental issues and alternatives identified in the scoping decision, that the final EIS provided responses to the substantive comments received during the draft EIS review, and that the final EIS is adequate per Minnesota Rules 4410.2800, subp. 4.³⁷

35. No party has appealed the Commissioner's decisions regarding the adequacy of the final EIS.

III. SUMMARY OF PUBLIC COMMENTS

36. Public comments were received at various stages of these proceedings, in addition to the comments from governmental entities discussed in the Procedural History and Environmental Review.

37. Four written public comments were received in response to the Commission's request for comments on the CN Application. Three of the comments

³³ Ex. DOC-18 (Final EIS).

³⁴ Ex. DOC-19 (Notice of Final EIS Availability).

³⁵ Ex. DOC-20 at 2 (Comments on the Adequacy of the Final EIS).

³⁶ *In the Matter of the Application of Northern 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 in Wright County*, MPUC Docket No. E-002/CN-21-668, FINDINGS OF FACT, CONCLUSIONS, AND ORDER FINDING FACILITY DESIGN IS PROTECTIVE OF GROUNDWATER at 5 (Feb. 6, 2023) (eDocket No. 20232-192956-02).

³⁷ Ex. DOC-21 at 4-5 (Findings and Order Determining Final EIS to be Adequate).

pertained to the November 2022 leak of tritiated water at the Monticello Plant. These commenters stated that:

- the 10-year extension of the Monticello Plant should be postponed until the tritium leak has been remedied and a thorough plan for alerting the public be assessed; and³⁸
- the contaminated water clean-up is still unresolved, the public was not adequately informed, there is a likelihood of future dangerous situations, and Xcel Energy should not be allowed to continue any operations at the Monticello Plant.³⁹

One commenter raised concerns regarding the storage of large quantities of spent nuclear fuel above ground and in the Mississippi River Valley. The commenter is concerned about the potential that a bomb could scatter spent nuclear fuel, or that a major pandemic could result in the loss of a curator to manage the spent nuclear fuel. The commenter encourages the President of the United States to take emergency action to immediately and securely move spent nuclear fuel to underground storage.⁴⁰

38. Two public comments were received at the public hearing held on March 29, 2023, in Monticello, Minnesota.⁴¹

- One commenter stated that she supports nuclear generation and the continuation of the Plant as an environmentally friendly option that does not produce greenhouse gases. The commenter also discussed the EIS, pointing in particular to the need for monitoring and maintenance of the spent fuel in the ISFSI, and asked what the responsibilities of the Department and the Commission were while the Plant is in operation and after the Plant is decommissioned.⁴²

³⁸ Public Comment of Wendy Schoen (Apr. 13, 2023) (eDocket No. 20234-194867-01); Public Comment of Jonathan Heinrichs (Apr. 12, 2023) (eDocket No. 20234-194867-01).

³⁹ Public Comment of Melissa Larsen (Apr. 14, 2023) (eDocket No. 20234-194867-01).

⁴⁰; Public Comment of Fredrick Patch (Mar. 30, 2023) (eDocket No. 20234-194612-01).

⁴¹ *In the Matter of the Application of Northern 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 in Wright County*, MPUC Docket No. E-002/CN-21-668, Public Hearing Transcript (Mar. 29, 2023).

⁴² *In the Matter of the Application of Northern 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 in Wright County*, MPUC Docket No. E-002/CN-21-668, Public Hearing Transcript at 22-25 (Mar. 29, 2023).

- A second commenter asked whether information about the leak was available at the time the EIS was prepared, asked that “another pass” be made at the EIS to address any new information related to the leak of tritiated water, asked about agency oversight, asked whether there are any plans to move spent nuclear fuel from the site, and asked about off-site well testing.⁴³

39. One public comment was received at the public hearing held virtually on March 30, 2023. The commenter encouraged approval of the additional dry cask storage for the Monticello Plant, stating Xcel Energy has been a staple of the area and the Company’s work has sustained generations of families, that nuclear energy is safe, consistent, and carbon-neutral, and that the Plant provides great jobs, benefits for the employees and the community, and tax benefits.⁴⁴

IV. THE MONTICELLO NUCLEAR GENERATING PLANT AND INDEPENDENT SPENT FUEL STORAGE INSTALLATION

A. Overview of Monticello Plant

40. The Monticello Plant is a single-unit, 671-megawatt (MW), nuclear powered boiling water reactor, electric generating station in Monticello, Minnesota. As a boiling water reactor, the Monticello Plant uses a nuclear reaction in its reactor core to generate heat, which then boils water to produce steam inside the reactor vessel, which in turn is directed to turbine generators to produce electrical power. After the steam has gone through the turbine generators, it is cooled in a condenser and returned to the reactor vessel to be boiled again.⁴⁵

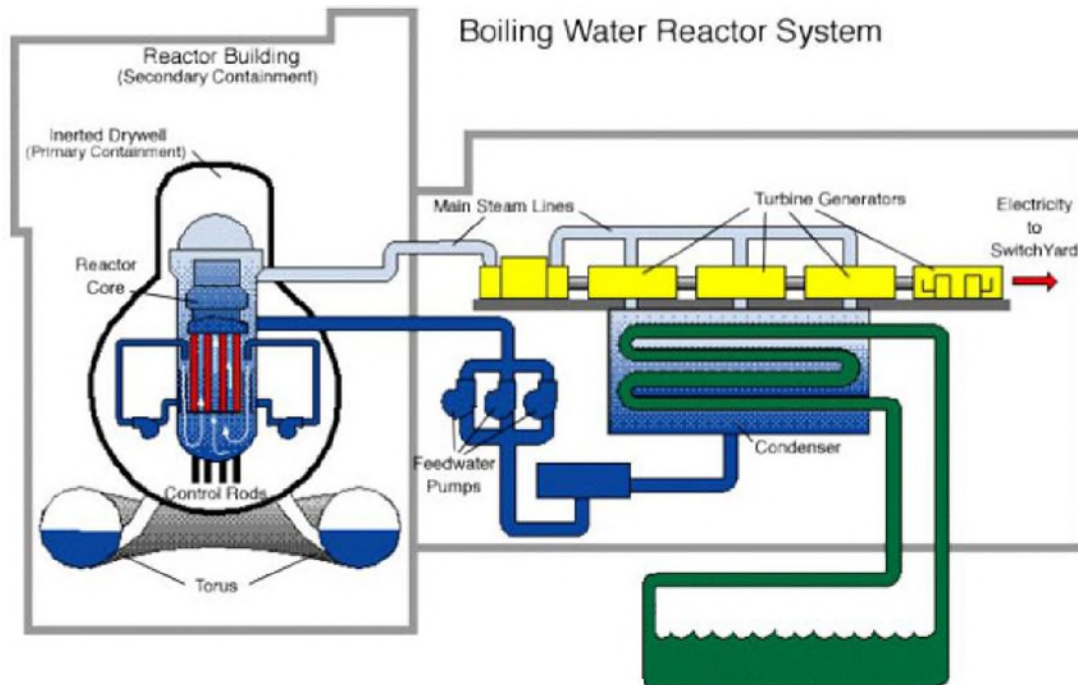
41. The Company provided the following figure illustrating the process:⁴⁶

⁴³ *In the Matter of the Application of Northern 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 in Wright County*, MPUC Docket No. E-002/CN-21-668, Public Hearing Transcript at 28-35 (Mar. 29, 2023).

⁴⁴ *In the Matter of the Application of Northern 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 in Wright County*, MPUC Docket No. E-002/CN-21-668, Public Hearing Transcript at 26-28 (Mar. 30, 2023).

⁴⁵ Ex. XEL-5 at 4-5 (Prochaska Direct).

⁴⁶ Ex. XEL-5 at 6 (Prochaska Direct).

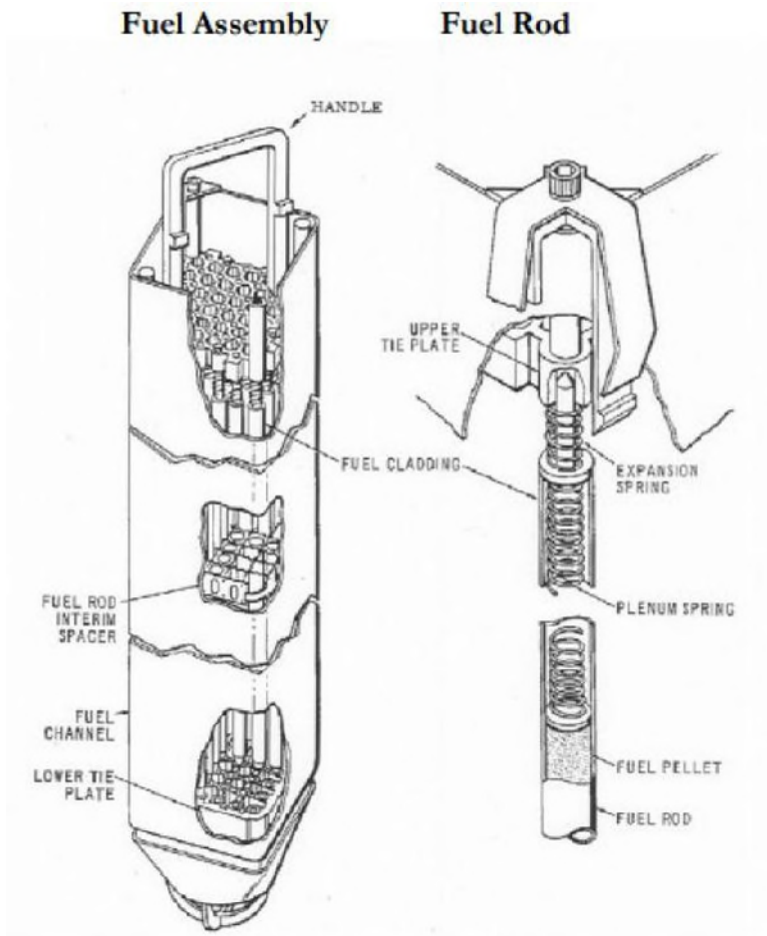


42. The reactor core is made up of 484 fuel assemblies, arranged in 121 cells, each containing four fuel assemblies and a control blade. Each fuel assembly contains fuel rods, part-length fuel rods, and water rods. Fuel rods contain high-density ceramic uranium dioxide fuel pellets stacked in a tube made of Zircaloy, a special alloy. Similarly, part-length fuel rods are fuel rods that extend to an intermediate point in the assembly.⁴⁷

43. The Company provided the following figure illustrating a fuel assembly and a fuel rod:⁴⁸

⁴⁷ Ex. XEL-5 at 6 (Prochaska Direct).

⁴⁸ Ex. XEL-5 at 7 (Prochaska Direct).



44. The fuel assemblies produce heat via a fission chain reaction whereby a neutron collides with a Uranium-235 atom in a fuel pellet, which creates unstable Uranium-235 isotopes that split almost instantly, which in turn produces heat and additional neutrons, thus continuing the chain reaction in a highly controlled and monitored environment.⁴⁹

45. Each fuel assembly produces heat for about six years before its output drops to the point that it is no longer effective. Approximately every two years, Xcel Energy shuts down the Monticello Plant to refuel the reactor, and roughly one-third of the fuel assemblies in the reactor core are replaced. Spent fuel is first placed in the Spent Fuel Pool, and then later is transferred to dry cask storage containers that are stored in the ISFSI.⁵⁰

46. The Spent Fuel Pool is a 37 foot, nine inch deep water-filled repository on the refueling floor in the Monticello Plant's reactor building that is equipped with redundant cooling systems to remove the heat generated by the spent fuel assemblies. The water in the Spent Fuel Pool further acts as radiation shielding during this initial cooling

⁴⁹ Ex. XEL-5 at 7-8 (Prochaska Direct).

⁵⁰ Ex. XEL-5 at 8 (Prochaska Direct).

process. The Spent Fuel Pool can store 2,217 spent fuel assemblies, but its current capacity is limited to 2,209 storage spaces due to eight of the storage spaces failure to meet quality control specifications after manufacturing.⁵¹

47. However, the Spent Fuel Pool is neither designed for, nor does it have the space to, store spent fuel assemblies indefinitely. The Company eventually transfers spent fuel assemblies to the ISFSI for storage in dry, concrete storage modules.⁵²

B. Overview of Independent Spent Fuel Storage Installation

48. On October 23, 2006, the Commission granted a CN to the Company to construct the ISFSI and store spent fuel in canisters at the ISFSI, sufficient to allow operation of the Plant until 2030.⁵³

49. The ISFSI is an approximately 460-foot long, 200-foot wide, three-and-a-half-acre area of the Plant adjacent to the reactor and turbine building where the Company stores spent fuel in canisters within modular concrete vaults on a reinforced concrete pad. The ISFSI is surrounded by two fences with a monitored “clear zone” between them. The ISFSI and the storage vaults within are monitored with cameras, other security devices, and temperature sensors.⁵⁴

50. Spent fuel assemblies are transferred to the ISFSI in a multi-stage process that takes approximately five days. First, a steel canister within a steel transfer cask is placed into the spent fuel pool. Next, the spent fuel assemblies are placed into the canister and the transfer cask containing the canister with the spent fuel assemblies within is removed from the pool. The canister is then dried, air is removed and replaced with helium, and the canister is welded shut. Finally, the transfer cask is transported to the ISFSI where the canister is removed and placed inside the storage module.⁵⁵

51. As of January 9, 2023, 3,940 spent fuel assemblies have been discharged from the Plant’s reactor, with 1,052 of those assemblies currently stored in the Spent Fuel Pool and the remaining 1,830 assemblies stored in the ISFSI for a total of 2,882 stored at the Monticello Plant. 1,058 spent fuel assemblies were shipped to a General Electric

⁵¹ Ex. XEL-5 at 18-19 (Prochaska Direct).

⁵² Ex. XEL-5 at 19 (Prochaska Direct).

⁵³ *In the Matter of the Application of Northern States Power Co. d/b/a Xcel Energy for a Certificate of Need to Establish an Independent Spent Fuel Storage Installation at the Monticello Generating Station*, MPUC Docket No. E-002/CN-05-123, ORDER GRANTING CERTIFICATE OF NEED FOR INTERIM INDEPENDENT SPENT FUEL STORAGE INSTALLATION (Oct. 23, 2006).

⁵⁴ Ex. XEL-5 at 19 (Prochaska Direct).

⁵⁵ Ex. XEL-5 at 20 (Prochaska Direct).

storage pool in Morris, Illinois in the 1980s, but as discussed in further detail below, the facility is no longer receiving additional storage.⁵⁶

C. The Monticello Plant's Role in Energy Supply to Minnesota and the Region

52. The Monticello Plant began operating in 1971 and has since generated over 200 million megawatt-hours (MWh) of electricity. The Plant provides baseload service, meaning it operates for extended periods of time to meet steady demand for electric power. In the case of the Monticello Plant, it is capable of operating 24 hours a day, seven days a week and provides 671 MW of capacity year-round. No other non-nuclear powered baseload generation source in the Company's system can operate at nearly full capacity year-round due to higher marginal costs. The Company's Monticello Plant and Prairie Island Nuclear Generating plant are the only generation in Xcel Energy's system that provides this level of consistent, reliable, carbon-free energy and capacity. Company witness Mr. Allen Krug explained that only these nuclear reactors can provide the constant baseload output that is an important and necessary part of the Company's generation portfolio.⁵⁷

53. The Monticello Plant continues to provide financial benefits to customers. Company witness Mr. Krug explained that the Plant's marginal cost per MWh is at its lowest point in over a decade while Xcel Energy has simultaneously achieved all-time high capacity factors at the Plant. Further, the Plant's fuel source provides a hedge against changes in other generation resource availability and fossil fuel prices.⁵⁸

54. Mr. Krug further explained that the Monticello Plant plays a central role in the Company's carbon reduction initiatives and will be critical to achieve the 100 percent carbon-free electricity mandate established in 2023 Minn. L. Ch. 7.⁵⁹

D. Current Licensure Status

55. The Nuclear Regulatory Commission (NRC) regulates the operation of nuclear power plants, and granted the Monticello Plant its initial 40-year license in 1970, allowing the Plant to operate until September 8, 2010. The NRC approved a further 20-year license extension in 2006, allowing the Plant to operate until September 8, 2030.⁶⁰

56. Xcel Energy filed an application with the NRC on January 9, 2023, to renew the operating license again, this would permit the Plant to operate until September 8, 2050.

⁵⁶ Ex. XEL-5 at 21 (Prochaska Direct).

⁵⁷ Ex. XEL-4 at 3-5 (Krug Direct).

⁵⁸ Ex. XEL-4 at 6 (Krug Direct).

⁵⁹ Ex. XEL-4 at 6-7, 9 (Krug Direct).

⁶⁰ Ex. XEL-5 at 8-9 (Prochaska Direct).

This Subsequent License Renewal (SLR) process typically occurs over an 18-to-24-month period, and Xcel Energy anticipates receiving an approved SLR application by the end of 2024.⁶¹

57. As part of the SLR process, the NRC will impose additional regulatory requirements to further extend the life of the Plant, which include all the requirements imposed in the initial 40-year license along with additional equipment evaluations and replacement frequencies to mitigate the effects of aging. Company witness Ms. Pamela Prochaska explained that the Company has made investments over the last decade that will significantly mitigate the scope of future investments that Xcel Energy will need to make to relicense the plant, however the Monticello Plant may nevertheless require additional modifications to meet future best practices and other needs.⁶²

58. One such component of the additional evaluations and replacements is the implementation of Aging Management Programs (AMPs). Company witness Ms. Prochaska explained that Xcel Energy already implements a number of AMPs as a result of the initial license renewal process in 2010, in addition to other existing programs that will be credited as AMPs for this SLR. These AMPs manage the aging effects for certain mechanical, electrical, and structural components to maintain those intended functions that operators rely upon during and following design-basis events and specific safety analysis. The Company expects that most of the existing AMPs will need only minor changes to achieve full compliance with NRC guidance.⁶³

E. Need to Expand Storage to Operate Beyond Current License

59. The Company analyzed the potential life extension of the Monticello Plant as part of its analysis of various resource portfolios in the Company's 2019 Integrated Resource Plan (IRP) Docket, Docket No. E-002/RP-19-368. Company witness Mr. Krug explained that the Company's resource planning analyses in that docket determined that extending the life of the Monticello Plant is cost effective from a Present Value of Revenue Requirements perspective, generates considerable savings from a Present Value of Societal Cost perspective when environmental externalities are considered, is necessary to achieve the Company's carbon reduction goals, ensures sufficient firm and dispatchable generation relative to peak load across seasons, and results in expected savings for Company customers.⁶⁴

⁶¹ Ex. XEL-5 at 9, 29-31 (Prochaska Direct).

⁶² Ex. XEL-5 at 30 (Prochaska Direct).

⁶³ Ex. XEL-5 at 30-31 (Prochaska Direct).

⁶⁴ Ex. XEL-4 at 9-10 (Krug Direct).

60. The Commission’s Order in the Company’s IRP docket permitted Xcel to pursue extending the operating life of the Monticello Plant by ten years.⁶⁵

61. Department witness Dr. Steven Rakow noted that Minn. R. 7843.0600, subp. 2, states the “findings of fact and conclusions from the commission’s decision in a resource plan proceeding to be officially noticed or introduced into evidence in related commission proceedings, including ... certificate of need cases. In this proceeding, the commission’s resource plan decision constitutes prima facie evidence of the facts stated in that decision.”⁶⁶

62. Company witness Ms. Prochaska explained that if the Monticello Plant continues to operate past 2030, there would be insufficient space in the existing ISFSI for spent fuel assemblies.⁶⁷

63. The only significant capital project identified as necessary to allow the Plant to continue operating past 2030 is the addition of spent fuel storage capacity at the ISFSI that is under consideration in this proceeding.⁶⁸

V. THE PROJECT AND ALTERNATIVES

A. Project Overview

64. The ISFSI Expansion Project involves construction of a second concrete pad and a modular concrete storage system within the existing enclosed, secure boundaries of the ISFSI to support additional cask storage to allow the Monticello Plant to operate past 2030. The Company estimates that the approximately 800 additional spent fuel assemblies will be discharged from the Plant’s reactor by continuing operation through 2040, as compared to ceasing operation in 2030. The Project provides the necessary storage capacity for those additional spent fuel assemblies.⁶⁹

65. The Company previously sized the ISFSI footprint to allow for additional storage capacity without the need to change the outer dimensions of the ISFSI. In addition, the soil under where the additional storage would be added was previously removed and replaced with engineered soil to support the weight of an additional pad and storage

⁶⁵ *In the Matter of the 2020-2034 Upper Midwest Integrated Resource Plan of Northern States Power Company d/b/a Xcel Energy*, MPUC Docket No. E002/RP-19-368, ORDER APPROVING PLAN WITH MODIFICATIONS AND ESTABLISHING REQUIREMENTS FOR FUTURE FILING at 32 (Apr. 15, 2022).

⁶⁵ Ex. XEL-6 at 7 (Mandich Direct).

⁶⁶ Ex. DOC-24 at 9 (Rakow Direct).

⁶⁷ Ex. XEL-5 at 21 (Prochaska Direct).

⁶⁸ Ex. XEL-5 at 30 (Prochaska Direct).

⁶⁹ Ex. XEL-5 at 22 (Prochaska Direct).

modules. As such, the Project will involve the construction of the new concrete pad and the installation of cask storage modules. Future maintenance is not required on either the canisters or the storage modules.⁷⁰

66. Additional casks will need to be purchased to store the spent fuel rods. The Company has not yet selected the cask technology that it will employ for the Project, but Company witness Ms. Prochaska explained that regardless of the vendor ultimately chosen, the technology will necessarily be licensed by the NRC and will consist of welded, sealed canisters stored in an overpack that is typically of concrete construction. The number of casks needed will be determined by the specific amount of nuclear fuel required to run the Plant for the remainder of its useful life, how much fuel is loaded each cycle, and the capacity of casks that the Company selects. At this stage in the planning process, the Company estimates that it will need approximately 14 additional casks, although the proposed storage facility and second support pad will be sized to accommodate 36 vaults of the existing design without needing to change alter the security perimeter.⁷¹

67. The Company estimates that the Project, including acquisition of new canisters and cask storage modules, will be \$72.1 million, in 2020 dollars, as illustrated in the following table:⁷²

Category	Estimated Cost (2020 Dollars)
Regulatory Processes	\$2.5M
Engineering, Design, and Construction	\$9.6M
Canisters/Storage Modules/Loading	\$60.0M
Total	\$72.1M

68. If the CN is approved, the Company stated that it would begin construction in 2026 and would begin storing spent fuel in the expanded ISFSI in 2028 to support operation of the Monticello Plant beyond 2030.⁷³

B. Alternatives Considered

69. The Company provided an alternative analysis of both alternative storage locations, so as to not require on-site storage expansion, and generation alternatives, so as to not require an extension to the operating life of the Monticello Plant.

⁷⁰ Ex. XEL-5 at 22 (Prochaska Direct).

⁷¹ Ex. XEL-5 at 22-23 (Prochaska Direct).

⁷² Ex. XEL-5 at 23-24 (Prochaska Direct).

⁷³ Ex. XEL-1 at Ch.8, p.28 (Initial Filing).

1. Storage Alternatives

70. As discussed in greater detail below, there are currently no viable off-site or on-site storage alternatives to expansion of the ISFSI.

2. Generation Alternatives

71. The Company provided an evaluation of two replacement cases that examined the costs and feasibility of replacing the Monticello Plant's generation with other resources. These replacement cases essentially function as no-action alternatives.

VI. CERTIFICATE OF NEED CRITERIA

72. Authorization of any additional dry cask storage or expansion of an ISFSI at a nuclear generation facility in Minnesota is subject to approval of a CN by the Commission.⁷⁴

73. The Commission rules incorporate statutory requirements for a CN and specify the criteria the Commission is to apply in determining whether to grant a CN for additional dry cask storage or expansion of an ISFSI. Those rules provide:

A. 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, considering:

(1) the accuracy of the applicant's forecast of demand for the energy or service that would be supplied by the proposed facility;

(2) the effects of existing or expected conservation programs of the applicant, the state government, or the federal government;

(3) the effects of promotional practices in creating a need for the proposed facility, particularly promotional practices that have occurred since 1974;

(4) the ability of current facilities and planned facilities not requiring certificates of need to meet the future demand; and

⁷⁴ Minn. Stat. § 116C.83.

(5) the effect of the proposed facility, or a suitable modification thereof, in making efficient use of resources;

B. 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, considering:

(1) the appropriateness of the size, the type, and the timing of the proposed facility compared to those of reasonable alternatives;

(2) 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;

(3) the effects of the proposed facility upon the natural and socioeconomic environments compared to the effects of reasonable alternatives; and

(4) the expected reliability of the proposed facility compared to the expected reliability of reasonable alternatives;

C. 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, considering:

(1) the relationship of the proposed facility, or a suitable modification thereof, to overall state energy needs;

(2) the effects of the proposed facility, or a suitable modification thereof, upon the natural and socioeconomic environments compared to the effects of not building the facility;

(3) the effects of the proposed facility, or a suitable modification thereof, in inducing future development; and

(4) the socially beneficial uses of the output of the proposed facility, or a suitable modification thereof, including its uses to protect or enhance environmental quality; and

D. 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.⁷⁵

74. As the Applicant, Xcel Energy bears the burden of demonstrating the need for the Project by the preponderance of the evidence.⁷⁶

VII. APPLICATION OF CERTIFICATE OF NEED CRITERIA

A. The Future Adequacy, Reliability, or Efficiency of Energy Supply

75. The first of the four criteria established by the Commission for the granting of a CN calls for an examination of whether:

the probable result of denial would adversely affect the future adequacy, reliability, or efficiency of energy supply to the applicant, to the applicant's customers, or to the people of Minnesota and neighboring states.⁷⁷

76. Minn. R. 7855.0120 does not assign greater or lesser importance to the factors of adequacy, reliability, or efficiency of energy supply, and the plain language of the rule provides that a probable adverse impact on any one of these factors is a consideration in granting a CON.⁷⁸

77. Under this criterion, the Commission considers: (1) an applicant's forecast of demand for the type of energy that would be supplied by the proposed facility; (2) its conservation programs and State and federal conservation programs; (3) its promotional practices; (4) the ability of current or planned facilities to meet the future demand; and (5) the facility's ability to make an efficient use of resources.⁷⁹

1. Demand for Energy and Spent Fuel Storage

78. The Commission must consider "the accuracy of the applicant's forecast of demand for the energy or service that would be supplied by the proposed facility."⁸⁰

⁷⁵ Minn. R. 7855.0120; *see also* Minn. Stat. § 216B.243, subd. 3.

⁷⁶ Minn. Stat. § 216B.243, subd. 3; Minn. R. 1400.7300, subd. 5.

⁷⁷ Minn. R. 7855.0120(A).

⁷⁸ Minn. R. 7855.0120(A).

⁷⁹ Minn. R. 7855.0120(A).

⁸⁰ Minn. R. 7855.0120(A)(1).

79. Xcel Energy witness Ms. Farah Mandich explained that the Company's forecasts of energy and capacity needs, and the role of extending the life of the Monticello Plant until 2040 to meet those needs, were discussed extensively in the Company's Integrated Resource Plan (IRP) Docket, Docket No. E-002/RP-19-368.⁸¹

80. In that docket, the Company proposed three resource plans: the July 1, 2019 Initial Plan, the June 30, 2020 Supplement Plan, and the June 25, 2021 Alternate Plan. The Commission approved the Company's preferred IRP Alternate Plan for planning purposes, including the Company's request to retire its coal-powered generators by 2030 and to pursue extending the life of the Monticello Plant until 2040.⁸²

81. Although not perfectly aligned with the standards for a CON, the standards that govern the Commission's consideration of an IRP also take into account the adequacy and reliability of energy supply, cost, and socioeconomic and environmental effects,⁸³ directing the Commission to evaluate resource options and resource plans on their ability to:

- A. maintain or improve the adequacy and reliability of utility service;
- B. keep the customers' bills and the utility's rates as low as practicable, given regulatory and other constraints;
- C. minimize adverse socioeconomic effects and adverse effects upon the environment;
- D. enhance the utility's ability to respond to changes in the financial, social, and technological factors affecting its operations; and
- E. limit the risk of adverse effects on the utility and its customers from financial, social, and technological factors that the utility cannot control.⁸⁴

82. The Company's IRP analysis determined that extending the life of the Monticello Plant is a cost-effective means of supporting the Company's achievement of its

⁸¹ Ex. XEL-6 at 5 (Mandich Direct).

⁸² *In the Matter of the 2020-2034 Upper Midwest Integrated Resource Plan of Northern States Power Company d/b/a Xcel Energy*, MPUC Docket No. E002/RP-19-368, ORDER APPROVING PLAN WITH MODIFICATIONS AND ESTABLISHING REQUIREMENTS FOR FUTURE FILING at 7, 31-32 (Apr. 15, 2022).

⁸³ Ex. XEL-6 at 7 (Mandich Direct). \

⁸⁴ Minn. R. 7843.0500, subp. 3.

carbon reduction goals of 80 percent by 2030 as compared to 2005 levels and 100 percent carbon-free electricity by 2050,⁸⁵ and for the Company to maintain a robust share of firm or dispatchable generation relative to peak load across all seasons. The Commission's approval of the Company's IRP Alternate Plan, while not an approval of the expansion of the ISFSI or the extension of the Monticello Plant's operating life, does indicate that such an expansion and extension is a necessary piece of the IRP and satisfactory of the IRP criteria.⁸⁶

83. The Department argued that its analysis determined the Company's forecasts in this proceeding and in the IRP proceeding were systemically biased and optimistic or overstated. However, the Department adjusted its capacity expansion modeling in both this proceeding and the 2019 IRP proceeding to account for this bias, explaining that the Commission also had the benefit of this information when it concluded that Xcel Energy could pursue extending the operating life of the Monticello Plant by ten years.⁸⁷

84. Regarding forecasted need for spent fuel storage services, Xcel stated that it lacks space for the estimated 13 additional spent fuel storage casks required to extend the Monticello Plant's operating life.⁸⁸ The Department did not dispute Xcel's claim or the implication of the Commission's IRP order that there is inadequate storage presently available at Monticello for extended power generation operations.⁸⁹

85. The ALJ finds that the record in the Company's IRP docket shows that the Commission has had the opportunity to evaluate the Company's forecasts of energy, capacity and storage needs. The ALJ agrees with the Company that although the IRP standards and the CN standards are not completely aligned, they both take into account reliability, cost, and socioeconomic and environmental factors that make the IRP analysis and Commission decisions relevant and compelling in this proceeding. The ALJ further finds that the record in the IRP docket demonstrates, at a minimum, that the Commission considered the need to extend the Monticello Plant's operating life, which requires additional spent fuel storage, when it accepted the Company's IRP Alternate Plan.

2. Effect of Conservation Programs

86. The Commission must consider "the effects of existing or expected conservation programs of the applicant, the state government, or the federal government."⁹⁰

⁸⁵ The Company's IRP analysis was conducted prior to the enactment of 2023 Minn. L. Ch. 7 mandating 100 percent carbon free electricity by 2040.

⁸⁶ Ex. XEL-6 at 4, 6 (Mandich Direct).

⁸⁷ Ex. DOC-26 at 7 (Shah Direct).

⁸⁸ Ex. XEL-1 at Ch.8, p.28, Ch.9, p.5 (Initial Filing).

⁸⁹ Ex. DOC-25 at 4-5 (Winner Direct).

⁹⁰ Minn. R. 7855.0120(A)(2).

87. Company witness Ms. Jessica Peterson stated that the Company offers more than 40 business, residential, income qualified, and pilot energy efficiency and demand response programs in Minnesota. Based on 2021 data, these conservation programs have saved nearly 11,735 GWh of energy and 4,113 MW of demand since 1990. These savings avoided the need to build 16 medium-sized (250 MW) power plants.⁹¹

88. The Company's current IRP proposes a goal of an additional 11,795 GWh and 2,156 MW of cumulative savings for the 2020-2034 planning period, including growing its Demand Response portfolio to over 1,500 MW by 2034, resulting in 780 GWh of annual savings. However, the Company's IRP projects an increase in customer load over time and the Company's conservation programs are unable to both offset the need for new generation to meet this projected increase in demand and to replace generation from the Monticello Plant if it is retired in 2030.⁹²

89. Department witness Dr. Rakow further explained that the Company's conservation programs were included in the IRP modeling process, and that the model had the option to select additional conservation. The effects of existing or expected conservation programs were considered during the IRP process, and the result of that analysis determined that pursuit of any additional level of energy efficiency would increase system costs.⁹³

90. The ALJ finds that there is no evidence in the record that conservation programs could replace the generation from the Monticello Plant if it retired in 2030.

3. Effect of Promotional Activities

91. The Commission must consider "the effects of promotional practices in creating a need for the proposed facility."⁹⁴

92. Company witness Ms. Peterson explained that the Monticello Plant is an essential part of the Company's electrical supply system and has been for 50 years. The need for additional storage is a simple necessity caused by extending the life of the Plant beyond 2030.⁹⁵

93. Department witness Ms. Danielle Winner stated there is no evidence to suggest that Xcel employed promotional practices that created a need for the ISFSI. Instead, she posited that a more likely explanation is that the need for the ISFSI and related

⁹¹ Ex. XEL-9 at 3-4 (Peterson Direct).

⁹² Ex. XEL-9 at 3-44 (Peterson Direct).

⁹³ Ex. DOC-24 at 10 (Rakow Direct).

⁹⁴ Minn. R. 7855.0120(A)(3).

⁹⁵ Ex. XEL-9 at 5 (Peterson Direct).

need for the continued operation of Monticello arose from Xcel's expedited retirement of coal plants in its Minnesota jurisdiction.⁹⁶

94. The ALJ finds that there is no evidence in the record that promotional activities undertaken by Xcel Energy have created a need for the ISFSI expansion.

4. Ability of Current and Planned Facilities not Requiring Certificates of Need to Meet State and Regional Energy Needs

95. The Commission must consider "the ability of current facilities and planned facilities not requiring certificates of need to meet the future demand."⁹⁷

a. Existing Facilities

96. The Company explained that there are not sufficient current facilities that do not require a CN that could replace the Monticello Plant's generation if it were to cease operations in 2030.⁹⁸

97. Department witness Dr. Rakow explained that the Department's analysis in the Company's IRP Docket found that the existing Xcel Prairie Island Nuclear Generating Plant was the least cost way of meeting future demand. However, extended operations of Prairie Island would also require a CN for additional spent fuel storage, and the Commission's rules only require consideration of facilities not requiring CNs. As such, consideration of Prairie Island is not relevant to this proceeding.⁹⁹

98. The ALJ finds that there is no evidence in the record that existing facilities that do not require a CN could meet future demand in the absence of the Monticello Plant.

b. Other Alternatives

99. The Company explained that, absent an exemption via a resource planning process pursuant to Minn. Stat. § 216B.2422, subd. 5, there are no alternative facilities that can either provide the needed additional storage capacity or replace the Monticello Plant's generation capacity. As discussed below in the alternatives analysis, and due to the requirement under Minn. Stat. § 116C.83, subd. 4 that any waste generated by a nuclear generation facility be stored on-site until it can be shipped out-of-state as soon as it is feasible, the lack of permanent or interim out-of-state facilities accepting spent nuclear fuel means there are no viable storage alternatives.¹⁰⁰

⁹⁶ Ex. DOC-25 at 37 (Winner Direct).

⁹⁷ Minn. R. 7855.0120(A)(4).

⁹⁸ Ex. XEL-1 at Ch.4, p.7 (Initial Filing).

⁹⁹ Ex. DOC-24 at 10-11 (Rakow Direct).

¹⁰⁰ Ex. XEL-1 at Ch.4, p.6 (Initial Filing); Ex. XEL-5 at 24-27 (Prochaska Direct).

100. The Company also explained that if the Monticello Plant were to cease operations in 2030, new generation resources would be required to replace the baseload electricity generated by the Plant.¹⁰¹

101. Department witness Dr. Rakow agreed that there are no reasonable alternatives, on their own, that could replace the Monticello Plant. Although baseload alternatives, such as new nuclear- or coal-powered generation could replace the Monticello Plant's capacity, these are unreasonable alternatives. Minn. Stat. § 216B.243, subd. 3b prohibits the construction of new nuclear generating units. A new coal plant has not been considered in Minnesota since 2005, and a review of the Midcontinent Independent System Operator (MISO) generation interconnection queue includes only a single 20 MW coal unit, indicating that coal is not being considered anywhere in MISO.¹⁰²

102. The ALJ finds that there is no evidence in the record that there are alternative generation resources that can replace the energy and capacity from the Monticello Plant if it were to cease operations in 2030.

5. Effect of the Project in Making an Efficient Use of Resources

103. The Commission must consider “the facility’s ability to make an efficient use of resources.”¹⁰³

104. Company witnesses Ms. Prochaska and Ms. Farah Mandich provided information regarding the Monticello Plant’s operating efficiency. Both Company witnesses explained that the Plant is one of Xcel Energy’s most dependable resources, with a capacity factor of approximately 98 percent in 2020 and 2022, and having reached a record-setting capacity factor of 99.3% in 2018. Both witnesses also pointed out that the Plant recently completed a run of 704 days of continuous operation.¹⁰⁴

105. Company witness Ms. Prochaska further explained that the Company has achieved these efficiency results while reducing Operations and Maintenance (O&M) costs by nearly 30% between 2015 and 2021. Further, the Plant’s efficiency and availability provide customer benefits, as nuclear fuel is relatively fixed as compared to the more volatile costs of other fuels, in particular during times of high inflation.¹⁰⁵

106. Finally, Company witness Ms. Prochaska explained that although nuclear generation plants have traditionally been considered “must-run” baseload power, the Company is developing a more flexible power operations strategy that would allow the

¹⁰¹ Ex. XEL-1 at Ch.4, p.9 (Initial Filing).

¹⁰² Ex. DOC-24 at 12-13 (Rakow Direct).

¹⁰³ Minn. R. 7855.0120(A)(5).

¹⁰⁴ Ex. XEL-5 at 10 (Prochaska Direct); Ex. XEL-6 at 15 (Mandich Direct).

¹⁰⁵ Ex. XEL-5 at 11 (Prochaska Direct).

Plant to reduce power output during periods when other resources are providing large amounts of low-cost energy relative to customer demand. This flexibility would provide a more efficient energy portfolio.¹⁰⁶

107. The ALJ finds that the Monticello Plant makes efficient use of resources. The Plant's efficiency record demonstrates a steady level of highly efficient output. The Company's flexible power option further demonstrates the ability to rely on alternative resources when appropriate.

108. The ALJ finds that the record demonstrates that the denial of a CN and therefore the Company's inability to extend the life of the Monticello Plant would adversely affect the future adequacy, reliability, or efficiency of energy supply to the applicant, to the applicant's customers, and to the people of Minnesota and neighboring states. The ALJ concludes that the Company has adequately met the first criteria for a CON.

B. Analysis of Alternatives

109. The second criteria established for the granting of a CN requires the Commission to evaluate reasonable alternatives to the proposed facility.¹⁰⁷

110. The Commission will only consider alternatives proposed before the close of the public hearing and which are supported by substantial evidence on the record with respect to each criterion.¹⁰⁸

111. When evaluating whether there exists a more reasonable or prudent alternative to the proposed facility, the Commission will compare the proposed facility to reasonable alternatives, considering: (1) the appropriateness of the size, type, and timing; (2) the cost of the proposed facility and alternatives, and the costs of energy they will supply; (3) the effects on the natural and socioeconomic environments; and (4) the expected reliability of the proposed facility and alternatives.¹⁰⁹

1. Off-Site Storage Alternatives

112. Minnesota law requires that spent nuclear fuel in a Spent Fuel Pool or in dry casks at a nuclear generating plant must be managed to facilitate the shipment of waste out of state to a permanent or interim storage facility as soon as feasible. However, Minnesota law further requires that until shipment out of state can be facilitated, spent nuclear fuel

¹⁰⁶ Ex. XEL-5 at 13 (Prochaska Direct).

¹⁰⁷ Minn. R. 7855.0120(B).

¹⁰⁸ Minn. R. 7855.0110.

¹⁰⁹ Minn. R. 7855.0120(B).

generated by a Minnesota nuclear generation facility must be stored on the site of that facility.¹¹⁰

113. The Company examined four off-site storage alternatives for spent nuclear fuel that would not require an expansion of the ISFSI. The Company addressed each alternative and provided sufficient explanation for the impracticability or impossibility of each alternative.¹¹¹ Due to the impracticability and impossibilities involved, it is unnecessary to engage in the four comparison factors.

a. Reprocessing Spent Nuclear Fuel

114. Reprocessing involves recovering unused uranium and plutonium from used nuclear fuel and recycling it for use in new reactor fuel. The process does not eliminate all nuclear wastes, but reduces the volume of high-level waste that must be stored. Company witness Ms. Pamela Prochaska explained that President Jimmy Carter banned commercial reprocessing of spent nuclear fuel, and despite a reversal of the ban, no private companies have invested in constructing or operating reprocessing facilities.¹¹²

115. As such, the ALJ finds that reprocessing is not an available or viable alternative to expansion of the ISFSI.

b. Existing Off-Site Storage Facilities

116. The only facility storing spent fuel on a contractual basis from commercial nuclear power reactors is the General Electric Morris Facility in Morris, Illinois, but that the facility is no longer accepting additional spent fuel from commercial nuclear power plants.¹¹³

117. As such, the ALJ finds that utilizing off-site contractual storage facilities is not an available or viable alternative to expansion of the ISFSI.

c. Private Centralized Interim Storage

118. Two companies, Interim Storage Partners and Holtec International, have proposed interim storage facilities in Texas and New Mexico. However, neither facility has commenced construction and significant work remains before either facility could become operational. Company witness Ms. Prochaska explained that due to the extended

¹¹⁰ Minn. Stat. § 116C.83, subd. 4.

¹¹¹ Ex. XEL-5 at 24-27 (Prochaska Direct).

¹¹² Ex. XEL-5 at 25 (Prochaska Direct); Ex. DOC-25 at 8-9 (Winner Direct).

¹¹³ Ex. XEL-5 at 25-26 (Prochaska Direct); Ex. DOC-25 at 9-10 (Winner Direct).

timelines for construction and, in the case of Holtec International, for permitting, these two interim storage projects are not viable options at this time.¹¹⁴

119. Department witness Ms. Winner agreed that it does not appear that either of these facilities will be available for use by 2028, when the Company plans to begin storing spent nuclear fuel assemblies.¹¹⁵

120. The ALJ agrees with the Company that private centralized interim storage is not yet a proven concept, that private centralized interim storage facilities have not yet begun construction, much less are ready to receive spent nuclear fuel, and that interim storage is not a viable alternative to expansion of the ISFSI.

d. Permanent Off-Site Storage

121. Yucca Mountain is a site in Nevada identified in federal statute as the permanent deep geological storage repository for commercial spent nuclear fuel. The application to license the Yucca Mountain permanent nuclear fuel repository is pending before the United States NRC, but the adjudicatory hearings on the application before the NRC Atomic Safety and Licensing Board remain suspended.¹¹⁶

122. Department witness Ms. Winner further explained that even if the site were available in the 2028 timeframe, Xcel Energy may not be allotted sufficient storage space for all of its spent fuel.¹¹⁷

123. The ALJ recognizes that the lack of progress in licensing for Yucca Mountain renders permanent off-site storage an unavailable and unviable alternative to expansion of the ISFSI.

124. The ALJ finds that there are no viable off-site storage alternatives available to receive spent nuclear fuel from the Monticello Plant. Further, the ALJ concludes that Minnesota law requires that spent nuclear fuel must be stored on the Monticello Plant site in the absence of available out of state permanent or interim storage facilities. Finally, the ALJ concludes that the Company has demonstrated that the expansion of the current ISFSI is the most viable on-site option, and the alternative on-site locations would result in greater environmental impacts.

2. On-Site Storage Alternatives

125. The Company examined three on-site storage alternatives for spent nuclear fuel that would not require an expansion of the ISFSI. The Company addressed each

¹¹⁴ Ex. XEL-5 at 26-27 (Prochaska Direct).

¹¹⁵ Ex. DOC-25 at 14 (Winner Direct).

¹¹⁶ Ex. XEL-5 at 27 (Prochaska Direct); Ex. DOC-25 at 15 (Winner Direct).

¹¹⁷ Ex. DOC-25 at 15 (Winner Direct).

alternative and provided sufficient explanation for the impracticability, impossibility, or premature nature of each alternative.¹¹⁸ Due to the impracticability and impossibilities involved, it is unnecessary to engage in the four comparison factors.

a. New On-Site Location

126. Company witness Mr. Dan Flo explained that the Company did not consider an alternative location for a second ISFSI within the Monticello Plant, as the Company previously undertook a study as part of the original ISFSI CN application process to identify alternative on-site locations. This study identified five preliminary locations that the Company narrowed down to the two that were the most suitable. The current location was chosen due to proximity to the reactor building, as the alternative site would have required additional support infrastructure due to distance from the main buildings of the Plant.¹¹⁹

127. Further, Mr. Flo explained that there is sufficient room within the footprint of the existing ISFSI to support the needed storage, that it was previously disturbed during the initial construction effort, and that greater environmental impacts would result from construction in any viable on-site alternative location.¹²⁰

128. The Department agreed with the Company that it is not necessary to evaluate alternative ISFSI locations with the Monticello Plant site. Department witness Ms. Winner explained that the Department's EERA staff noted in the final EIS that whether using the expanded ISFSI site or an alternative site within the Monticello Plant site, the construction process would be similar and the impacts would likely be minimal.¹²¹

129. The ALJ finds that the record demonstrates that the chosen on-site storage location is the most viable and reasonable option, as it results in the least environmental impact and additional disturbance.

b. Non-Cask Alternatives

130. Xcel Energy considered three non-cask alternatives for on-site storage: (i) fuel rod consolidation, (ii) re-racking the existing Spent Fuel Pool, and (iii) constructing a new Spent Fuel Pool.¹²²

131. The Company explained that fuel rod consolidation is not widely used within the domestic nuclear industry. Further, the Company explained that when it conducted a

¹¹⁸ Ex. XEL-1 at Ch.9 (Initial Filing).

¹¹⁹ Ex. XEL-7 at 7 (Flo Direct).

¹²⁰ Ex. XEL-7 at 7-8 (Flo Direct).

¹²¹ Ex. DOC-25 at 23-24 (Winner Direct).

¹²² Ex. XEL-1 at Ch.9, p.6-9 (Initial Filing).

fuel rod consolidation demonstration project at Prairie Island in 1987, it resulted in numerous difficulties, lower-than-predicted volume reductions, and higher-than-predicted radiation exposure for workers.¹²³

132. The Department agreed that fuel rod consolidation is not a feasible strategy for creating additional space in a Spent Fuel Pool, and that it is an unviable alternative.¹²⁴

133. The ALJ agrees with the parties that fuel rod consolidation is not a viable alternative to expansion of the ISFSI.

134. The Company explained that it could gain 442 spent fuel storage spaces by rearranging the storage racks in the Spent Fuel Pool by moving from low-density to high-density racks. However, 442 spaces would only create enough additional storage for six additional years of plant operations.¹²⁵

135. The Department agreed that if the objective is to operate the Monticello Plant until 2040, re-racking would not produce adequate spent fuel storage capacity.¹²⁶

136. The ALJ agrees with the parties that re-racking the existing Spent Fuel Pool is not a viable alternative to expansion of the ISFSI.

137. The Company explained that to design, obtain approvals, and construct a new on-site Spent Fuel Pool would take approximately five years, would be prohibitively expensive, and would triple the number of times the spent fuel assemblies are handled.¹²⁷

138. The Department conducted an independent evaluation of the cost of building a new Spent Fuel Pool based on cost estimates for the construction of a Spent Fuel Pool for Prairie Island from 1991. Department witness Ms. Winner compared these costs, adjusted for inflation, to the cost of the proposed ISFSI Expansion Project. Ms. Winner determined that the proposed ISFSI is a cheaper alternative to building a new pool, even prior to considering costs such as pool maintenance, future off-site transport, or changed technology and regulatory requirements.¹²⁸

139. The ALJ agrees with the parties that costs concerns alone render construction of a new Spent Fuel Pool an unviable alternative to expansion of the ISFSI.

¹²³ Ex. XEL-1 at Ch.9, p.6-7 (Initial Filing).

¹²⁴ Ex. DOC-25 at 17 (Winner Direct).

¹²⁵ Ex. XEL-1 at Ch.9, p.8; Ex. DOC-25 at 17-18 (Winner Direct).

¹²⁶ Ex. DOC-25 at 18 (Winner Direct).

¹²⁷ Ex. XEL-1 at Ch.9, p.9 (Initial Filing)

¹²⁸ Ex. DOC-25 at 19 (Winner Direct).

c. Dry Cask Alternatives

140. The Company considered three dry-cask alternatives for on-site storage: (i) horizontal canister storage system, (ii) vertical canister storage system, and (iii) non-canister (Bolted Cask) storage system.¹²⁹

141. The Company currently utilizes horizontal canister storage at the Monticello Plant, and each existing canister holds 61 spent fuel assemblies. In its Initial Filing, the Company identified the advantages and disadvantages of horizontal canister storage.¹³⁰

142. The Company also provided an analysis of vertical canister storage, which functions similarly to horizontal canister storage and has many of the same advantages. However, due to the orientation of the cask in a vertical position, the Company identified additional disadvantages that may increase radiation dosage to workers and may require additional structures, such as a crane.¹³¹

143. The Company also provided an analysis of the one available non-canister storage system. Unlike horizontal or vertical canister storage, the non-canister system utilizes a cask as the primary containment boundary. Casks are made of steel, or a steel and lead combination and stores spent fuel in an internal basket or cells dispersed throughout the cask. The casks are bolted, not welded, shut and are stored on a concrete pad without being housed in a concrete overpack. The Company identified additional disadvantages from implementing this new technology, explaining that the system would require extensive modifications to move the spent fuel storage pool racks and would exceed the lifting capability of the Plant reactor building crane by a considerable margin.¹³²

144. The Company recommended either horizontal or vertical storage, as the site has experience loading and maintaining canister-based systems, proposed private interim storage facilities are designed to store canister-based systems, and canister-based systems have lower overall costs. However, the Company has not proposed a specific canister-based system at this time. Instead, the Company explained that it will choose a specific vendor and technology closer to the date of installation using a competitive bidding process to assess all available NRC-licensed designs.¹³³

145. The Department agreed with the Company's evaluations of the advantages and disadvantages of the three systems. The Department further explained that because Xcel Energy proposed to use a competitive bidding process to determine technology and

¹²⁹ Ex. XEL-1 at Ch.9, p.9 (Initial Filing).

¹³⁰ Ex. XEL-1 at Ch.9, p.10-12 (Initial Filing).

¹³¹ Ex. XEL-1 at Ch.9, p.12-15 (Initial Filing).

¹³² Ex. XEL-1 at Ch.9, p.15-17 (Initial Filing).

¹³³ Ex. XEL-1 at Ch.9, p.17 (Initial Filing).

vendor at a later time, the Department did not believe further cost analysis of cask technology is necessary at this time.¹³⁴

146. The ALJ agrees with the parties' assessment of the advantages and disadvantages of the three dry cask alternatives available to store spent nuclear fuel. The ALJ agrees that the competitive bidding process is an appropriate method for selection and that further cost analysis is not required at this time.

3. Generation Alternatives

147. The Monticello Plant is a 671 MW baseload unit, meaning that it generates electricity 24 hours a day for weeks at a time. The CN would allow the Monticello Plant to continue generating electricity until September 8, 2040. Department witness Dr. Rakow explained that there are no reasonable alternatives, on their own, that could replace Monticello in terms of size, type, and timing.¹³⁵

148. For purposes of analyzing the Monticello Plant extension individually, the Company compared the Commission-approved IRP Alternate Plan, which included extending the Monticello Plant to 2040, with two replacement cases. Recognizing the unavailability of a single generation source that can replace the Monticello Plant, the replacement cases utilize a model to evaluate replacing the Monticello Plant's energy and capacity with a mix of resources.¹³⁶

149. The Company provided the following table illustrating the metrics of the Company's preferred IRP Alternate Plan as compared to Replacement Cases 1 and 2:¹³⁷

¹³⁴ Ex. DOC-25 at 20-23 (Winner Direct).

¹³⁵ Ex. DOC-24 at 12 (Rakow Direct).

¹³⁶ Ex. XEL-6 at 8 (Mandich Direct). Xcel Energy permitted the model to choose generic energy storage, wind, solar, natural gas-fueled combustion turbines, demand response, and energy efficiency resources. Ex. XEL-1 at Ch.9, p.28 (Initial Filing).

¹³⁷ Ex. XEL-6 at 10-11 (Mandich Direct).

Category	Measure	Alternate Plan (as presented in IRP)	Monticello Replacement 1 (fully optimized replacement)	Monticello Replacement 2 (replace with only renewables and storage)
Resource Assumptions and Selection	Baseload retirements assumed before 2034	<ul style="list-style-type: none"> • King (2028) • Sherco 3 (2030) • Prairie Island (2033-2034) 	<ul style="list-style-type: none"> • King (2028) • Sherco 3 (2030) • Monticello (2030) • Prairie Island (2033-2034) 	<ul style="list-style-type: none"> • King (2028) • Sherco 3 (2030) • Monticello (2030) • Prairie Island (2033-2034)
	Resources optimized	All available	All available	<ul style="list-style-type: none"> • Wind, solar, battery energy storage • Must replace all energy and capacity from Monticello by 2031
	Incremental resources (MW) selected to replace Monticello capacity and energy relative to the Alternate Plan, through 2034	n/a	<ul style="list-style-type: none"> • CT: 750 • Wind: 750 • Solar: 200 <i>Plus fewer market sales and additional market purchases</i>	<ul style="list-style-type: none"> • Storage: 300 • Solar: 700 • Wind: 950 <i>Plus additional market purchases</i>
Cost²	2020-2045 PVSC (\$ million), delta from Alternate Plan	n/a	63	89
	2020-2045 PVRR (\$ million), delta from Alternate Plan	n/a	(38)	88

Category	Measure	Alternate Plan (as presented in IRP)	Monticello Replacement 1 (fully optimized replacement)	Monticello Replacement 2 (replace with only renewables and storage)
Environmental Performance	Carbon reduction from 2005 levels, 2031 (percent)	86	83	86
	Total carbon serving customers, 2031 (million tons)	3.815	4.721	3.840
	Total carbon- free generation, 2031 (percent)	82	78	82
Risk and Reliability	Firm capacity-to-annual (summer) peak demand ratio, 2034	0.58	0.58	0.51
	Firm capacity-to-winter peak demand ratio, 2034	0.75	0.75	0.66

a. Size, Type, and Timing

150. Replacement Case 1 considered retiring Monticello at its currently scheduled date and utilized the resource planning model to optimize the most cost-effective replacements needed to fill the energy and capacity needs created by the 2030 retirement with no constraints on resource type. Under these parameters, the resource planning model would choose to add approximately 750 MW of gas-fired combustion, 750 MW of wind resources, and 200 MW of solar resources through the planning period (2020-2045) as compared to the IRP Alternate Plan.¹³⁸

151. Replacement Case 2 also considered retiring Monticello at its currently scheduled date and restricted the resource planning model from selecting any incremental gas-fired combustion to those that were included in the IRP Alternate Plan. Under these

¹³⁸ Ex. XEL-6 at 8 (Mandich Direct).

parameters, the resource planning model would choose to add an incremental 300 MW of battery storage resources, an incremental 600 MW of solar, and an incremental 950 MW of wind.¹³⁹

152. The Department agreed that the two replacement cases provided a reasonable spectrum of alternatives for the alternatives analysis.¹⁴⁰

153. The ALJ finds that the Company's two replacement cases are reasonable test cases by which to compare the impact of extending the life of the Monticello Plant.

b. Cost

154. The Company's analysis shows that Replacement Case 1 results in higher costs from a Present Value of Societal Cost (PVSC) perspective of approximately \$63 million over the analysis period. Although Replacement Case 1 reduces the cost of running the Monticello Plant for an additional 10 years, these reductions are largely offset by the incremental gas-combustion, wind, and solar resources selected by the resource planning model. Further, Replacement Case 1 results in higher market purchase costs and less revenue from market sales. Replacement Case 1 also includes higher levels of generation from emitting resources and market purchases, both of which increase emissions associated with this plan and the associated cost of carbon.¹⁴¹

155. The Company's analysis shows that Replacement Case 1 results in lower costs from a Present Value of Revenue Requirements (PVRR) perspective of approximately \$38 million over the analysis period. However, PVRR excludes the costs of externalities and regulatory costs of carbon, which Minnesota planning standards require to be considered. Further, Replacement Case 1 does not consider the 100 percent carbon-free electricity by 2040 mandate adopted in 2023 Minn. L. Ch. 7, and therefore does not consider any additional costs associated with compliance with that law over the analysis period.¹⁴²

156. The Company's analysis shows that Replacement Case 2 results in higher costs from both a PVSC and PVRR perspective of approximately \$90 million over the analysis period. As in Replacement Case 1, the cost reductions of running the Monticello Plant for an additional 10 years are offset by the storage, wind, and solar resources being adopted in earlier years. Additionally, Replacement Case 2 results in increased integration costs-or the costs of market uncertainty related to renewable energy production

¹³⁹ Ex. XEL-6 at 9 (Mandich Direct).

¹⁴⁰ Ex. DOC-24 at 13 (Rakow Direct).

¹⁴¹ Ex. XEL-6 at 12 (Mandich Direct).

¹⁴² Ex. XEL-6 at 12-13 (Mandich Direct); Minn. Stat. § 216B.2422, subd. 3.

forecasts-associated with increased levels of wind and solar, and relies more heavily on market purchases than the IRP Alternate Plan.¹⁴³

157. As a final consideration, the Inflation Reduction Act includes Production Tax Credits for nuclear energy generation that are expected to improve the economics of operating the Monticello Plant past 2030 as compared to previously anticipated in the IRP planning process.¹⁴⁴

158. The ALJ finds that the Company's two replacement cases are reasonable test cases by which to compare the cost of extending the life of the Monticello Plant. The ALJ also finds that the cost considerations weigh in the favor of extending the Monticello Plant and granting the CON, as compared to the Company's two replacement cases. As Company witness Ms. Mandich explained, although Replacement Case 1 ostensibly results in lower costs from a PVRP perspective, the test case's lack of consideration of externalities, the regulatory costs of carbon, and the 100 percent carbon-free electricity by 2040 mandate result in an under-inclusion of relevant costs. This weighs heavily against selecting Replacement Case 1 as a viable alternative.

c. Effects Upon the Natural and Socioeconomic Environments

159. The Company's analysis shows that Replacement Case 1 initially achieves lower levels of carbon reduction from a 2005 baseline after 2030, but then regresses from its 2030 low after the Monticello Plant retires. This regression is due to an increase in gas combustion generation and market purchases required to meet customer needs. Replacement Case 1 results in nearly one million tons of additional carbon emissions to meet customer needs in just 2031, the first year after the Monticello Plant would cease operations.¹⁴⁵

160. The Company's analysis shows that Replacement Case 2 performs similarly to the IRP Alternate Plan, and better than Replacement Case 1, because the resource planning model was required to choose zero emission resources. However, Replacement Case 2 requires additional market purchases to meet customer needs and thus still results in slightly higher carbon emissions.¹⁴⁶

161. Relying on the final EIS and capacity expansion modeling, Department witness Dr. Rakow stated that continued operation of the Monticello Plant through 2040 is expected to create minimal impacts to the natural and socioeconomic environment. On the other hand, the alternatives in both Replacement Case 1 and Replacement Case 2 would

¹⁴³ Ex. XEL-6 at 13 (Mandich Direct).

¹⁴⁴ Ex. XEL-6 at 13-14 (Mandich Direct).

¹⁴⁵ Ex. XEL-6 at 14 (Mandich Direct).

¹⁴⁶ Ex. XEL-6 at 14-15 (Mandich Direct).

likely generate significant impacts through additional greenhouse gas emissions, and flora and fauna impacts.¹⁴⁷

162. The Company explained that it discovered a leak of tritiated water in November 2022 and promptly reported the leak to the Minnesota State Duty Officer and the NRC. The Company stated that the leak has not impacted groundwater outside the boundaries of the Plant, the Mississippi River, or any drinking water wells. The Company stated it has located the leak and repaired it. The Company also states that it continues to pump contaminated groundwater and will continue to take action to appropriately manage the cleanup of the tritiated water plume.

163. The ALJ finds that the Company's two replacement cases are reasonable test cases by which to compare the environmental impacts of extending the life of the Monticello Plant. The ALJ also finds that environmental considerations weigh in favor of extending the Monticello Plant and granting the CON, as compared to the Company's two replacement cases. The ALJ further finds that the circumstances around the leak of tritiated water at the Plant and the Company's response to that leak does not change the ALJ's finding on this point.

d. Reliability

164. Company witness Ms. Mandich explained that the Monticello Plant is a significant baseload resource on the Northern States Power system that has generated over 200 million MWh of energy and avoided 210 million tons of carbon emissions in the last 50 years. The Plant operates at full capacity 24 hours a day, seven days a week to meet base demand for electrical power. The plant has achieved an average capacity factor of 95 percent over the past three years, including 99.3 percent in 2018 and over 98 percent in 2020 and 2022. The Plant reached a record of 704 days of continuous operation during the spring of 2021. Combined with the Prairie Island Nuclear Generating Plant, the Monticello Plant represents almost 27 percent of the total electric energy and 45 percent of the carbon-free energy that Xcel Energy customers consumed in 2021.¹⁴⁸

165. The Company's analysis shows that the carbon-free baseload energy generated by the Monticello Plant is only partially replaced with a mix of renewables and gas generation in Replacement Case 1. Under this plan, there is both greater gas generation from existing resources and the need to add new gas generation. Further, Replacement Case 1 includes substantially less overall generation than the IRP Alternate Plan and thus does not fully replace generation from the Monticello Plant, resulting in reduced sales and

¹⁴⁷ Ex. DOC-24 at 17-18 (Rakow Direct).

¹⁴⁸ Ex. XEL-6 at 15 (Mandich Direct).

increased market purchases. Customers would be exposed to additional electricity market price volatility without the baseload support of the Plant.¹⁴⁹

166. The Company's analysis shows that Replacement Case 2 does not maintain the same level of firm and dispatchable capacity as either the IRP Alternate Plan or Replacement Case 1, due to increased reliance on variable renewables and duration limited energy storage. This variability similarly exposes customers to increased market purchases and market price volatility.¹⁵⁰

167. The ALJ finds that the Company's two replacement cases are reasonable test cases by which to compare the reliability impacts of extending the life of the Monticello Plant. The ALJ also finds that reliability considerations weigh in favor of extending the Monticello Plant and granting the CON. Neither replacement case can replace the capacity and energy generated by the Monticello Plant with the same level of baseload supply.

168. The ALJ concludes 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.

C. Consequences of Granting the CN Compared to Consequences of Denying the CN

169. The third criteria established for a granting of a CN requires an examination of whether the consequences of granting the certificate are more favorable to society than the consequences of denying the certificate.¹⁵¹

170. The Commission will consider: (1) the relationship of the proposed facility to overall State energy needs; (2) the effects upon the natural and socioeconomic environments as compared to not building the facility; (3) the effects in inducing future development; and (4) the socially beneficial uses of the output of the proposed facility, including its uses to protect or enhance environmental quality.¹⁵²

1. Overall State Energy Needs

171. The Department reviewed the most recent IRP dockets from three investor-owned utilities in Minnesota and concluded that all three utilities showed the likelihood of increased capacity and energy needs during the 2023-2028 timeframe. These three utilities' IRP, along with Great River Energy's IRP filed in 2017, led Department

¹⁴⁹ Ex. XEL-6 at 15-16 (Mandich Direct).

¹⁵⁰ Ex. XEL-6 at 16 (Mandich Direct).

¹⁵¹ Minn. R. 7855.0120(C).

¹⁵² Minn. R. 7855.0120(C).

witness Mr. Sachin Shah to further conclude that the State needs more capacity and energy during the 2023-2028 timeframe.¹⁵³

172. The Department also pointed to the Company's IRP Docket to explain planned decreases in the Company's capacity and energy generation and acquisitions, including:¹⁵⁴

- retiring the Allen S. King Generation station (511 MW) in 2028;
- retiring the Sherburne County Generating Station (Sherco) Unit 3 (517 MW) in 2030;
- retiring Sherco Unit 1 (680 MW) in 2026;
- retiring Sherco Unit 2 (682 MW) in 2023;
- expiration of Power Purchase Agreement (PPA) with Manitoba Hydro (500 MW) in 2025;
- expiration of PPA with Mankato Energy Center Unit 1 (375 MW) in 2026;
- expiration of PPA with Cannon Falls (358 MW) in 2025; and
- retirements of Wheaton, Blue Lake, and Inver Hills facilities (871 MW) between 2023-2026.

173. As discussed, the Monticello Plant is capable of operating 24 hours a day, seven days a week and provides 671 MW of capacity year-round. No other non-nuclear powered baseload generation source in the Company's system can operate at nearly full capacity year-round due to higher marginal costs. The Company's Monticello Plant and Prairie Island Nuclear Generating plant are the only generation in Xcel Energy's system that provides this level of consistent, reliable, carbon-free energy and capacity. The removal of the Monticello Plant from the Company's supply system would create a several hundred MW capacity deficit and a several million MWh deficit in the region in 2031, if not replaced with other generation resources.¹⁵⁵

174. The Department concluded that the proposed Project would have a positive impact in meeting the State's energy needs.¹⁵⁶

¹⁵³ Ex. DOC-26 at 8 (Shah Direct).

¹⁵⁴ Ex. DOC-26 at 10-11 (Shah Direct).

¹⁵⁵ Ex. XEL-4 at 3-5 (Krug Direct); Ex. XEL-6 at 4 (Mandich Direct).

¹⁵⁶ Ex. DOC-26 at 11-12 (Shah Direct).

175. The ALJ agrees that, in light of the State's projected capacity and energy needs and the Company's generation retirements and PPA expirations, the ISFSI Expansion Project will have a positive impact in meeting the energy needs of Minnesota.

2. Effect of the Project on the Natural and Socioeconomic Environments Compared to the Effect of Not Granting the CN

176. The ISFSI Expansion Project involves construction of a second concrete pad and a modular concrete storage system within the existing enclosed, secure boundaries of the ISFSI. As such, construction impacts are projected to be minimal and mostly temporary.¹⁵⁷

177. The Company's nuclear fleetwide nuclear generation reduces carbon emissions by approximately 7 million tons annually, or the equivalent of removing 1.5 million cars from the road. The Monticello Plant contributes one-third of these benefits. The Monticello Plant's carbon-free generation has led to over 212 million tons of CO₂ emissions avoided since it commenced operations. The Company explained that this generation will be critical for the Company to achieve its own carbon-reduction initiatives and the recently enacted State goal of 100 percent carbon-free electricity by 2040. As the two replacement cases show, retirement of the Plant in 2030 would result in increased carbon emissions, either from required additional fossil-fuel generation or energy market purchases, starting in 2031.¹⁵⁸

178. There are socioeconomic impacts that would result from not granting the CON. Closure and decommissioning of the Monticello Plant in 2030 would result in the loss of the beneficial economic impacts provided by the Plant, such as tax revenues to local communities and the provision of highly skilled jobs.¹⁵⁹

3. Induced Future Developments

179. During the six month construction period, the Project will employ an estimated 40 construction workers, with a peak of 12 at any one time and an average of eight workers. No full-time staff will be required during operation of the expanded ISFSI beyond current Plant personnel. The Project will have minimal impact on other factors required to be considered, such as traffic, utilities and public services or water usage levels.¹⁶⁰

¹⁵⁷ Ex. XEL-5 at 22 (Prochaska Direct); Ex. XEL-1 at Ch.4, p.13, Ch.12 (Initial Filing).

¹⁵⁸ Ex. XEL-6 at 4, 10-11 (Mandich Direct); Ex. XEL-4 at 6-7 (Krug Direct); Ex. XEL-1 at Ch.5, p.1 (Initial Filing).

¹⁵⁹ Ex. XEL-1 at Ch.9, p.21 (Initial Filing).

¹⁶⁰ Ex. XEL-1 at Ch.4, p.13, Ch.14 (Initial Filing).

4. Socially Beneficial Uses of the Output of the Facility

180. The Project enables Xcel Energy to continue to supply reliable and reasonably priced baseload power, important for both residential and business customers. The Project enables Xcel Energy to provide carbon-free energy, a key component of the Company's own carbon reduction goals and the State's 100 percent carbon-free electricity mandate.¹⁶¹

181. Replacing the 671 MW of generation offered by the Monticello Plant would have wide ranging impacts, including the loss of a significant baseload resource, loss of a significant source of carbon-free generation, loss of diversity of resources to meet customers' needs, incremental risk to customers associated with greater reliance on market purchases, and greater land requirements and associated impacts to construct new generation resources.¹⁶²

D. The Project will Comply with Relevant Policies, Rules, and Regulations of Other State and Federal Agencies and Local Governments

182. The final criteria for a granting of a CN requires a demonstration in the record that the proposed facility will comply with all relevant policies, rules, and regulations of other federal, state, and local agencies.¹⁶³

183. The Company explained in its Initial Filing that:

The additional storage will be in compliance with relevant local, state, and federal policies, rules and regulations. In particular, the Plant and ISFSI are designed, operated and monitored in strict compliance with all requirements set forth by the United States Nuclear Regulatory Commission.¹⁶⁴

184. The Company further explained that the Project supports the State of Minnesota's energy policy as set forth in Minnesota Statutes, including Minn. Stat. § 216H.02, subd. 1 which sets a goal of reducing statewide greenhouse gas emissions to a level at least 80 percent below 2005 levels by 2050, and 2023 Minn. L. 7, which accelerated to a goal of providing 100 percent carbon-free electricity by 2040. The Project is consistent with and is an integral part of Xcel Energy's Resource Plan. The Project also complies

¹⁶¹ Ex. XEL-1 at Ch.4, p.14 (Initial Filing).

¹⁶² Ex. XEL-1 at Ch.9, p.21.

¹⁶³ Minn. R. 7855.0120(D).

¹⁶⁴ Ex. XEL-1 at Ch.1, p.2 (Initial Filing).

with Minn. Stat. § 116C.83, subd. 4 by continuing to provide a flexible, modular storage system, facilitating transportation when out of state, offsite storage becomes available.¹⁶⁵

185. No party raised an objection to the Company's assertion.

186. The Department concluded that the record did not demonstrate that the proposed facility would fail to comply with applicable local, State, and federal policies, rules and regulations.¹⁶⁶

- The Department concluded that the Company appears to be in compliance with the State of Minnesota's Renewable Energy Standard and Solar Energy Standard, regardless of whether 2023 statutory changes are taken into consideration. The Department further concluded that the Company does not yet need to comply with the State of Minnesota's Carbon Free Standard.¹⁶⁷
- The Department further concluded that Xcel has appropriately reported to the Public Utilities Commission the status of any transmission upgrades needed to meet the State of Minnesota's Renewable Energy Standard, and that the Company does not appear to require any significant transmission investment to meet that Standard.¹⁶⁸
- The Department also accepted Xcel's conclusion that it was unlikely that either the ISFSI or the Monticello Plant will be subject to an assessment of externality costs going forward.¹⁶⁹

187. The ALJ agrees that the record does not demonstrate that the Company or the proposed facility would fail to comply with all necessary policies, rules and regulations.

E. CN Conditions

188. The Department recommended that the Commission apply the same conditions to the Monticello Plant and the ISFSI as it did in a recent wind resource acquisition proceeding, Docket NO. E002/M-20-620. Specifically the Department recommends that points 3a-3d and 3f be applied, which include:¹⁷⁰

¹⁶⁵ Ex. XEL-1 at Ch.4, p.14 (Initial Filing).

¹⁶⁶ Ex. DOC-25 at 39 (Winner Direct).

¹⁶⁷ Ex. DOC-25 at 33 (Winner Direct).

¹⁶⁸ Ex. DOC-25 at 33-34 (Winner Direct).

¹⁶⁹ Ex. XEL-12 at 3 (Prochaska Rebuttal); Ex. DOC-28 at 2-3 (Winner Surrebuttal).

¹⁷⁰ Ex. DOC-24 at 24, SR-D-4 (Rakow Direct); Ex. DOC-27 at 1 (Rakow Surrebuttal).

- Xcel [Energy] must justify any costs (including operations-and-management expense, ongoing capital expense-including revenue requirements related to capital included in rate base-insurance expense, land-lease expense, and property/production tax expense) that are higher than forecasted in this proceeding. Xcel [Energy] bears the burden of proof in any future regulatory proceeding related to the recovery of costs above those forecasted in this proceeding.
- The Commission will otherwise hold the Company accountable for the price and terms used to evaluate the project.
- Ratepayers will not be put at risk for any assumed benefits that do not materialize.
- Xcel [Energy's] customers must be protected from risks associated with the non-deliverability of accredited capacity and/or energy from the project. The Commission may adjust Xcel [Energy]'s recovery of costs associated with this project in the future if actual production varies significantly from assumed production over an extended period.

189. Company witness Mr. Krug agreed with the Departments recommendation, stating in Rebuttal Testimony that:¹⁷¹

Xcel Energy views these conditions as reasonably requiring the Company to report and justify variances from the Project's predicted costs and benefits, in order to recover the costs of the Project from customers. The Company understands and agrees that it will bear the burden of proof in any future regulatory proceeding related to the recovery of the costs associated with the Project and will need to demonstrate the reasonableness of those costs. Moreover, the Company agrees to clearly account for all costs incurred for the Project.

190. In Surrebuttal Testimony, the Department stated that it considered the issue of conditions to be resolved.¹⁷²

191. The ALJ concurs with the parties, and recommends that the Commission adopt the Department's proposed conditions.

¹⁷¹ Ex. XEL-11 at 3-4 (Krug Rebuttal).

¹⁷² Ex. DOC-27 at 2 (Rakow Surrebuttal).

CONCLUSIONS OF LAW

1. The Commission has general jurisdiction over Xcel Energy under Minn. Stat. §§ 216B.01 and 216B.02. The Commission has specific jurisdiction over the CN for additional dry cask spent fuel storage requested by the Company under Minn. Stat. § 116C.83 and Minn. Stat. § 216B.243.
2. The case was properly referred to the OAH under Minn. Stat. §§ 14.48-14.62 and Minn. R. 1400.0200, et seq.
3. The Commission, Department and the Applicant have complied with all applicable procedural requirements, including the preparation of an EIS that complies with Minnesota Environmental Policy Act (MEPA) and Minn. R. Ch. 4410.
4. Minn. R. 7855.0120 sets forth the criteria used by the Commission to determine the need for large energy projects, including expansion of the ISFSI. The Rule states that the Commission shall grant a CN if the record demonstrates, by a preponderance of the evidence, that:

A certificate of need shall be granted to the applicant if it is determined that:

A. 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, considering:

(1) the accuracy of the applicant's forecast of demand for the energy or service that would be supplied by the proposed facility;

(2) the effects of existing or expected conservation programs of the applicant, the state government, or the federal government;

(3) the effects of promotional practices in creating a need for the proposed facility, particularly promotional practices that have occurred since 1974;

(4) the ability of current facilities and planned facilities not requiring certificates of need to meet the future demand; and

(5) the effect of the proposed facility, or a suitable modification thereof, in making efficient use of resources;

B. 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, considering:

(1) the appropriateness of the size, the type, and the timing of the proposed facility compared to those of reasonable alternatives;

(2) 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;

(3) the effects of the proposed facility upon the natural and socioeconomic environments compared to the effects of reasonable alternatives; and

(4) the expected reliability of the proposed facility compared to the expected reliability of reasonable alternatives;

C. 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, considering:

(1) the relationship of the proposed facility, or a suitable modification thereof, to overall state energy needs;

(2) the effects of the proposed facility, or a suitable modification thereof, upon the natural and socioeconomic environments compared to the effects of not building the facility;

(3) the effects of the proposed facility, or a suitable modification thereof, in inducing future development; and

(4) the socially beneficial uses of the output of the proposed facility, or a suitable modification thereof, including its uses to protect or enhance environmental quality; and

D. 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.

5. The record in this proceeding and in the Company's most recent IRP Docket demonstrate the reasonableness of Xcel Energy's forecast for energy demand and corresponding need for additional spent fuel storage.

6. Conservation efforts have been considered by the Company, and cannot replace the need for the Project.

7. No promotional activities have given rise to the need for the Project.

8. There are no current or planned facilities not requiring a CN that can meet the needs met by the Project.

9. The Project makes efficient use of resources by generating reliable, carbon-free energy with minimal physical environmental footprint.

10. The Project will enhance the future adequacy, reliability, and efficiency of energy supply in Minnesota and the region.

11. An evaluation of alternatives demonstrated that there is not a more reasonable or prudent alternative that the Project, considering the Project size, type and timing; cost; human and environmental impacts, and reliability.

12. The record demonstrates that the consequences to society of granting the CN are expected to be more favorable than the consequences of denying the CON.

13. The record demonstrates that the Project can be constructed and operated in compliance with all applicable federal, State, and local policies, rules and regulations.

14. Application of each of the factors listed in Minn. R. 7855.0120 supports granting of the requested CON.

RECOMMENDATION

15. It is recommended that the Minnesota Public Utilities Commission issue to Northern States Power Company d/b/a Xcel Energy a Certificate of Need for Additional Dry Cask Storage at the Monticello Nuclear Generating Plant Independent Spent Fuel Storage Installation in Wright County, with the following conditions:

- a. Xcel Energy must justify any costs (including operations-and-management expense, ongoing capital expense-including revenue requirements related to capital included in rate base-insurance expense, land-lease expense, and property/production tax expense) that are higher than forecasted in this

proceeding. Xcel Energy bears the burden of proof in any future regulatory proceeding related to the recovery of costs above those forecasted in this proceeding.

- b. The Commission will otherwise hold the Company accountable for the price and terms used to evaluate the Project.
- c. Ratepayers will not be put at risk for any assumed benefits that do not materialize.
- d. Xcel Energy's customers must be protected from risks associated with the non-deliverability of accredited capacity and/or energy from the Project. The Commission may adjust Xcel Energy's recovery of costs associated with this Project in the future if actual production varies significantly from assumed production over an extended period.

Dated: _____

ERIC L. LIPMAN
Administrative Law Judge

NOTICE

Notice is hereby given that exceptions to this Report, if any, by any party adversely affected must be filed under the time frames established in the Commission's rules of practice and procedure, Minn. R. 7829.2700 and 7829.3100, unless otherwise directed by the Commission. Pursuant to Minn. R. 7829.2700, subp. 3, the parties will be granted an opportunity for oral argument before the Commission prior to its decision. The Commission will make the final determination of the matter after the expiration of the period for filing exceptions, or after oral argument, if an oral argument is held. The Commission may, at its own discretion, accept, modify, or reject the ALJ's recommendations. The recommendations of the ALJ have no legal effect unless expressly adopted by the Commission as its final order.

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