OAH 8-2500-38129
MPUC E-002/CN-21-668

STATE OF MINNESOTA
OFFICE OF ADMINISTRATIVE HEARINGs

FOR THE PUBLIC UTILITIES COMMISSION

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

TABLE OF CONTENTS

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This matter came before Administrative Law Judge Eric L. Lipman for a prehearing status and scheduling conference on Thursday, April 20, 2023. The parties requested a conference in lieu of an evidentiary hearing because the matters in dispute were resolved through the filing of surrebuttal testimony. During the conference the parties discussed the final details regarding submission of briefs and completing the record in this matter.

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 Division of Energy Resources and the Energy Environmental Review and Analysis Unit of the Minnesota Department of Commerce (the Department).

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

STATEMENT OF ISSUE

Has Xcel Energy satisfied the requirements for a Certificate of Need for Additional Dry Cask Storage at the Monticello Nuclear Generating Plant Independent Spent Fuel Storage Installation (ISFSI) in Wright County?

SUMMARY OF RECOMMENDATION

The Administrative Law Judge 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. Therefore, the Administrative Law Judge respectfully recommends that the Commission grant Xcel Energy's Application for a CN, subject to certain specified conditions.

Based upon information in the CN Application submitted by Xcel Energy, the Environmental Impact Statement (EIS) prepared by the Department, information presented during the public hearings, testimony and evidence in the contested case record, the Administrative Law Judge makes the following:

FINDINGS OF FACT

I. INTRODUCTION

A. Procedural Background

1. On September 1, 2021, Xcel Energy filed a petition for a CN authorizing additional dry cask spent fuel storage at the Monticello Nuclear Generating Plant (MNGP or Plant) to facilitate continued operation of the 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: the Minnesota Department of Commerce, Division of Energy Resources; the Minnesota Department of Commerce, Energy Environmental Review and Analysis Unit (DOC-EERA); and a coalition of Monticello-area labor groups, the Minnesota Building and Construction Trades Council, Pipefitters Local 539, and Construction and General Laborers Local 563.[3]

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

4. By October 14, 2021, reply comments were received from Xcel Energy and the Minnesota Department of Commerce, Division of Energy Resources.[4]

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.[5]

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

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

Document or 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

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

[4] Ex. XEL-2 (Reply Comments); 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).

[5] *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).

[6] *See generally 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).

Deadline for Surrebuttal Testimony	Friday, April 14, 2023
Start of the Evidentiary Hearing	Thursday, April 20, 2023
Close of the 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.[7]

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

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.[9]

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

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.[11]

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

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 Administrative Law Judge issued the Fourth Prehearing Order cancelling the evidentiary hearings and scheduling a Status and Scheduling Conference on Thursday, April 20, 2023.[13]

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[7] *Id.* at 2-3.
[8] *See* Ex. XEL-3–9; Ex. DOC-24–25.
[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, Notice of Public Hearings, at 1 (Mar. 16, 2023).
[10] *See* Exs. XEL-10–12.
[11] *See 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) (1st Public Hearing Tr.); Public Hearing Transcript (Mar. 30, 2023) (2nd Public Hearing Tr.).
[12] *See* Exs. DOC-27–28.
[13] *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*

14. On May 1, 2023, the Administrative Law Judge issued the Fifth Prehearing Order requesting that the parties provide supplemental information regarding the leak of tritiated water at the Monticello Plant in November of 2022.[14]

15. On May 15, 2023, the Company filed the supplemental information requested in the Administrative Law Judge's Fifth Prehearing Order.[15]

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

II. ENVIRONMENTAL REVIEW

17. On December 28, 2021, DOC-EERA issued a notice informing the public of the forthcoming EIS scoping meetings and the availability of the scoping Environmental Assessment Worksheet (EAW).[17]

18. DOC-EERA also made its Draft Scoping Decision Document available on that date.[18]

19. On January 19, 2022, the U.S. Army Corps of Engineers submitted comments. It stated that it had reviewed the scoping EAW and that a permit from the United States Department of the Army would not be required for the proposed activity.[19]

20. Two public scoping meetings for the EIS were held in January of 2022. One meeting was held in-person at the Monticello Community Center in Monticello, Minnesota on Tuesday, January 25, 2022. A second meeting was held virtually on Wednesday, January 26, 2022.[20]

21. 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 recycling nuclear waste was not a viable option.[21]

22. On January 28, 2022, the City of Monticello submitted written comments on the EIS. It stated that Xcel has been a strong, reliable community partner throughout the life of the Plant, and that City leaders see the benefit of having additional spent fuel casks

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Storage Installation in Wright County, MPUC Docket No. E-002/CN-21-668, Fourth Prehearing Order, at 1-2 (Ap. 18, 2023).

[14] *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).

[15] Xcel Energy's Supplemental Filing (May 15, 2023) (eDocket No. 20235-195855-02).

[16] DOC's Response (May 30, 2023) (eDocket No. 20235-196219-01).

[17] Ex. DOC-3 (Scoping Notice).

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

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

[20] *See generally* Ex. DOC-3 at 1 (Scoping Notice).

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

stored within the existing ISFSI. Further, the City maintained that because the project area has already been reviewed, approved, and used for spent fuel storage, there was sufficient existing information to complete a thorough EIS without expanding the scope of the Department's inquiries.[22]

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

24. 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. The DNR's review of the Natural Heritage Information System noted two eagle nests 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]

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

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

27. On October 4, 2022, DOC-EERA issued the draft EIS for the project. The agency also issued a notice of the availability of the draft EIS and information for public meetings on that draft.[27]

28. Two public informational meetings were held regarding the draft EIS. One meeting was held in-person at the Monticello Community Center in Monticello, Minnesota on Wednesday, October 26, 2022. A second meeting was held virtually on Thursday, October 27, 2022.[28]

29. 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 risks of exposure to radiation to residents and employees from an expanded ISFSI.[29]

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[22] Ex. DOC-8 at 6 (Written Comments on Scope of EIS).
[23] *Id.* at 5.
[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-13 (Draft EIS Notice – Service Lists); DOC-14 (Draft EIS Notice – EQB Monitor).
[27] Ex. DOC-12 (Draft EIS).
[28] Exs. DOC-13 at 1 (Draft EIS Notice – Service Lists); DOC-14 at 4 (Draft EIS Notice – EQB Monitor).
[29] Ex. DOC-16 (Oral Comments on Draft EIS).

30. One public written comment was received regarding the draft EIS. The commenter, a self-described close neighbor of the Monticello Plant, expressed "complete support for Xcel's request for additional storage."[30]

31. On November 14, 2022, Xcel Energy submitted comments on the draft EIS.[31]

32. On January 10, 2023, DOC-EERA issued the final EIS.[32]

33. The agency also issued notices by electronic mail and eDocket filings. The notices advised the public of the availability of the final EIS and the opportunity to comment on that report.[33]

34. On January 23, 2023, Xcel Energy submitted comments on the final EIS. The Company stated that, in its view, the final EIS met all of the regulatory requirements and it supported a determination of that the EIS was adequate.[34]

35. On February 6, 2023, pursuant to Minn. Stat. § 116C.83, subd. 6 (2022), the Commissioner of Commerce issued an Order regarding operation of the facility and Minnesota's groundwater quality standards. The Commissioner determined that the Company demonstrated that the design of the Monticello ISFSI is such that it can be reasonably expected that the operation of the facility will not violate the standards in Minn. Stat. § 116C.76, subd. 1, clauses (1) to (3) (2022).[35]

36. On February 6, 2023, the Commissioner of Commerce, acting as the Responsible Governmental Unit, made the determinations that: the final EIS adequately addressed the potential significant environmental issues and alternatives identified in the scoping decision; the final EIS provided responses to the substantive comments received during the draft EIS review; and the final EIS is "adequate" under Minn. R. 4410.2800, subp. 4 (2021).[36]

37. No party has appealed the Commissioner's decisions regarding the adequacy of the final EIS.[37]

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[30] Ex. DOC-17 at 2 (Written Comments on Draft EIS).
[31] 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).
[32] Ex. DOC-18 (Final EIS).
[33] Ex. DOC-19 (Notice of Final EIS Availability).
[34] Ex. DOC-20 at 2 (Comments on the Adequacy of the Final EIS).
[35] *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).
[36] Ex. DOC-21 at 4-5 (Findings and Order Determining Final EIS to be Adequate).
[37] Minn. R. 4410.0400, subp. 4 (2021).

III. SUMMARY OF PUBLIC COMMENTS

38. 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.[38]

39. Four written public comments were received in response to the Commission's request for comments on the CN Application. Three of the comments pertained to the November 2022 leak of tritiated water at the Monticello Plant. These commenters stated that:

(i) 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 is assessed; and

(ii) 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]

40. 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]

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

42. 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. She asked about the regulatory duties of the Department and the Commission were while the Plant is in operation and after the Plant is decommissioned.[42]

43. A second commenter asked whether information about the leak was available at the time the EIS was prepared. He requested that "another pass" be made at the EIS to address any new information related to the leak of tritiated water. Additionally, this commenter asked about agency oversight of the Plant, whether there

[38] *See generally* eDocket submissions in MPUC Docket No. 21-668.
[39] 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); 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] 1st Public Hearing Transcript, at 1-4.
[42] *Id.* at 22-25.

are any plans to move spent nuclear fuel from the site, and the features of the Company's off-site well testing program.[43]

44. 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. He stated that the Company was an important employer in the area and that its work has both sustained generations of families and provided area communities with valuable tax benefits. He further observed that, in his view, nuclear energy is both safe and carbon neutral.[44]

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

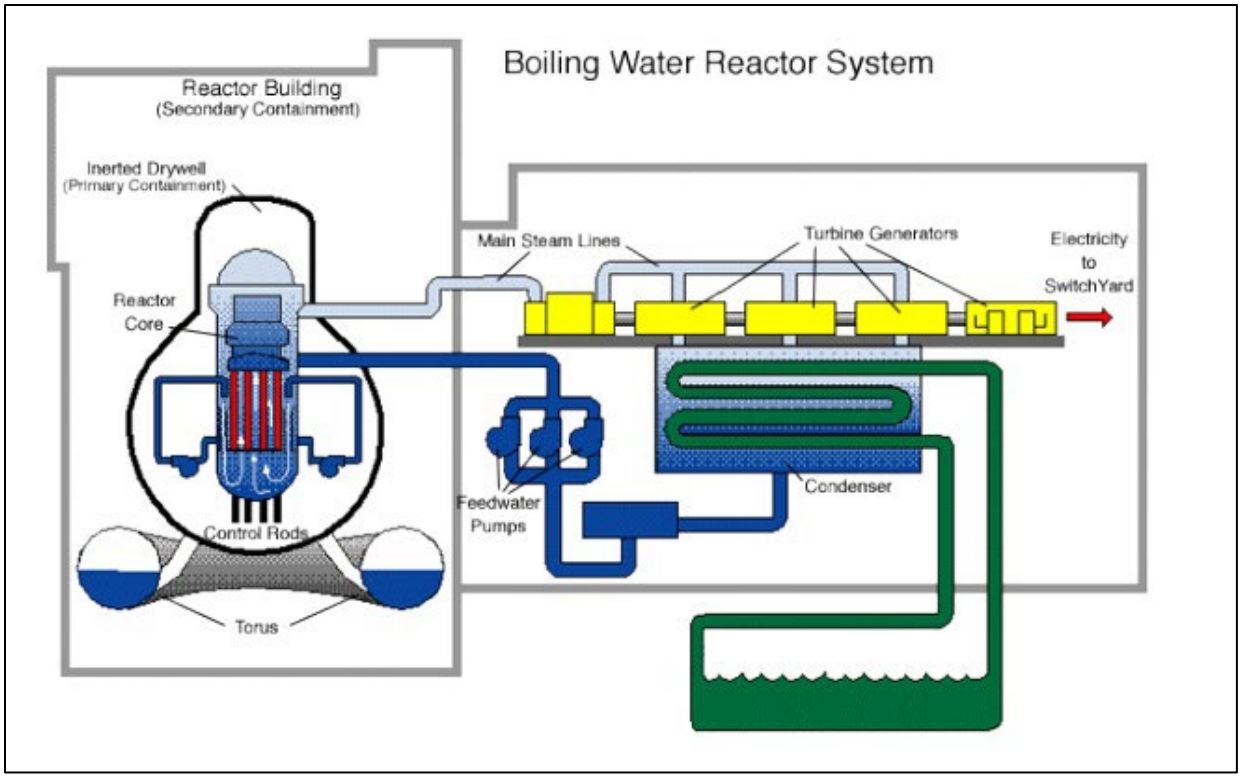
A. Overview of Monticello Plant

45. The Monticello Plant is a single-unit, 671-megawatt (MW) electric generating station in Monticello, Minnesota.[45]

46. The Plant is equipped with a nuclear-powered 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. The steam is then directed toward turbine generators that produce electrical power as they spin. After the steam has made its way through the turbine generators, it is cooled in a condenser and returned to the reactor vessel to be boiled again.[46]

47. The Company provided[47] the following figure illustrating the process:

[43] *Id.* at 28-35.
[44] 2nd Public Hearing Tr. at 26-28.
[45] Ex. XEL-5 at 4-5 (Prochaska Direct).
[46] *Id*.
[47] Ex. XEL-5 at 6, Figure PP-1 (Prochaska Direct).



48. 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 that are 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.[48]

49. The fuel assemblies produce heat via a fission chain reaction whereby a neutron collides with a Uranium-235 atom in a fuel pellet. The collision creates unstable Uranium-235 isotopes that split almost instantly, which in turn produces heat, additional neutrons and other collisions with Uranium-235 atoms. The series of chain reactions occur in a highly controlled and monitored environment.[49]

50. 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. In this process 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]

[48] Ex. XEL-5 at 6 (Prochaska Direct).
[49] *Id.* at 7-8 (Prochaska Direct).
[50] *Id.* at 8 (Prochaska Direct).

51. 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. The pool 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 process. The Spent Fuel Pool was designed to store 2,217 spent fuel assemblies, but its current capacity is limited to 2,209 storage spaces, because eight of the storage spaces did not meet quality control specifications after manufacturing.[51]

52. 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]

53. The Company estimates that 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.[53]

54. The ISFSI Expansion Project involves construction of a second concrete pad and a modular concrete storage system within the enclosed, secure boundaries of the existing ISFSI. The Project provides the necessary storage capacity for the additional spent fuel assemblies.[54]

55. 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 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.[55]

56. 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 regardless of the vendor ultimately chosen, the technology will be licensed by the NRC and consist of welded, sealed canisters stored in an overpack of concrete construction.[56]

57. The number of casks needed to store the spent fuel will be determined by the interplay of three factors: the amount of fuel required to run the Plant for the remainder of its useful life; how much fuel is loaded each cycle; and the storage 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 current design

[51] *Id.* at 18-19 (Prochaska Direct).
[52] *Id.* at 19 (Prochaska Direct).
[53] *Id.* at 22 (Prochaska Direct).
[54] *Id.* (Prochaska Direct).
[55] *Id.* (Prochaska Direct).
[56] *Id.* at 23 (Prochaska Direct).

without needing to alter the existing security perimeter.[57]

58. The Company estimates that the Project, including acquisition of new canisters and cask storage modules, will be $72.1 million in 2020 dollars:

Cost Category	Estimated Cost (2020 Dollars)
Regulatory Processes	$2.5M
Engineering, Design, and Construction	$9.6M
Canisters/Storage Modules/Loading	$60.0M
Total	**$72.1M**.[58]

59. 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.[59]

B. Overview of Independent Spent Fuel Storage Installation

60. 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. The original design of the ISFSI was sufficient to allow operation of the Plant until 2030.[60]

61. 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.[61]

62. 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, the cannister is placed into a transfer cask and the cask is removed from the pool. The canister is then dried, air is removed and replaced with helium, and the cannister is welded shut. Finally, the transfer cask is transported to the ISFSI where the canister is removed and placed inside the storage module.[62]

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[57] *Id.* at 22-23 (Prochaska Direct).
[58] *Id.* at 23-24 (Prochaska Direct).
[59] Ex. XEL-1 at Ch.8, at 28 (Initial Filing).
[60] *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).
[61] Ex. XEL-5 at 19 (Prochaska Direct).
[62] *Id.* at 20 (Prochaska Direct).

63. As of January 9, 2023, 3,940 spent fuel assemblies have been discharged from the Plant's reactor. In the 1980s, 1,058 spent fuel assemblies were shipped to a General Electric storage pool in Morris, Illinois; but this facility is no longer receiving additional fuel assemblies for storage. Of the remaining 2,882 fuel assemblies, 1,830 are stored in the Monticello ISFSI and 1,052 are in the Spent Fuel Pool.[63]

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

64. The Monticello Plant began operating in 1971 and has since generated over 200 million megawatt-hours (MWh) of electricity.[64]

65. The Plant provides "baseload service;" meaning that it operates for extended periods of time to meet foreseeable and minimum demands for electric power. The Monticello Plant can operate 24 hours per day, seven days a week and provides 671 MW of capacity year-round. None of the Company's non-nuclear baseload generation sources can operate at nearly full capacity all-year-round. 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 energy and capacity.[65]

66. The Monticello 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. Inclusion of the Plant in Xcel Energy's generation portfolio thus provides a hedge against changes in availability or fuel prices of other generation sources.[66]

67. Xcel maintains that the Monticello Plant is a key part of its plan to meet the 100 percent carbon-free electricity mandate in 2023 Minn. L. Ch. 7.[67]

D. Current Licensure

68. The Nuclear Regulatory Commission (NRC) regulates the operation of nuclear power plants in the United States. The NRC 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.[68]

69. 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.[69]

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[63] *Id.* at 21 (Prochaska Direct).
[64] Ex. XEL-4 at 3-5 (Krug Direct).
[65] *Id.* (Krug Direct).
[66] *Id.* at 6 (Krug Direct).
[67] *Id.* at 6-7, 9 (Krug Direct).
[68] Ex. XEL-5 at 8-9 (Prochaska Direct).
[69] *Id.* at 29-30.

70. This Subsequent License Renewal (SLR) process typically occurs over an 18-to-24-month period. Xcel Energy anticipates receiving an approved SLR application by the end of 2024.[70]

71. As part of the SLR process, the NRC will impose additional regulatory requirements to further extend the life of the Plant. These requirements will include all the benchmarks needed to obtain the initial 40-year license, along with additional equipment evaluations and replacements to mitigate the effects of aging infrastructure.[71]

72. One component of the updates 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, and still other programs that will be credited as AMPs for this SLR. These AMPs manage the aging effects for key mechanical, electrical, and structural components of the Plant.[72]

73. Company witness Ms. Pamela Prochaska explained that the Company has made a series of "best practice" investments over the last decade that will significantly reduce the scope of retrofitting that will be needed to obtain re-licensure. The Company forecasts that most of the existing AMPs will need only minor changes in order to achieve full compliance with NRC licensing standards.[73]

E. Need to Expand Storage to Operate Beyond Current License

74. 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.[74]

75. 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.[75]

76. Department witness Dr. Steven Rakow noted that Minn. R. 7843.0600, subp. 2 (2021), 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

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[70] *Id.* at 9, 29-31 (Prochaska Direct).
[71] *Id.* at 30 (Prochaska Direct).
[72] Ex. XEL-5 at 30-31 (Prochaska Direct).
[73] *Id.* (Prochaska Direct).
[74] Ex. XEL-4 at 9-10 (Krug Direct).
[75] *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).

in related commission proceedings, including . . . certificate of need cases." Dr. Rakow opined that, in this proceeding, "the commission's resource plan decision constitutes prima facie evidence of the facts stated in that decision."[76]

77. 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.[77]

78. 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.[78]

V. CERTIFICATE OF NEED CRITERIA

79. 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 Minnesota Public Utilities Commission (Commission).[79]

80. The Commission rules incorporate statutory requirements for a CN and specify the criteria that the Commission is to apply in determining whether to grant a CN for additional dry cask storage. 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

[76] Ex. DOC-24 at 9 (Rakow Direct).
[77] Ex. XEL-5 at 21 (Prochaska Direct).
[78] *Id.* at 30 (Prochaska Direct).
[79] Minn. Stat. § 116C.83 (2022).

(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.[80]

81. As the Applicant, Xcel Energy bears the burden of demonstrating the need for the Project by the preponderance of the evidence.[81]

VI. APPLICATION OF CERTIFICATE OF NEED CRITERIA

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

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

> [T]he 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.[82]

83. Minn. R. 7855.0120 does not assign greater or lesser importance to the factors of adequacy, reliability, or efficiency of energy supply. The plain language of the rule suggests that a likely adverse impact on any one of these factors should be weighed before granting a CN.[83]

84. Under this criterion, the Commission considers an applicant's: (1) forecast of demand for the type of energy that would be supplied by the proposed facility; (2) conservation programs and State and federal conservation programs; (3) promotional practices; (4) ability to meet future demand with of current or planned facilities; and (5) ability to make an efficient use of resources with the facility.[84]

1. Demand for Energy and Spent Fuel Storage

85. 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."[85]

86. 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 IRP Docket.[86]

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[80] Minn. R. 7855.0120 (2021); *see also* Minn. Stat. § 216B.243, subd. 3 (2022).
[81] Minn. Stat. § 216B.243, subd. 3; Minn. R. 1400.7300, subd. 5 (2021).
[82] Minn. R. 7855.0120(A).
[83] *Id*.
[84] *Id.*
[85] Minn. R. 7855.0120(A)(1).
[86] Ex. XEL-6 at 5 (Mandich Direct) *See also* MPUC Docket No. E-002/RP-19-368.

87. 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. The approval included the Company's request to retire its coal-powered generators by 2030 and to pursue extending the life of the Monticello Plant until 2040.[87]

88. Although not perfectly aligned with the standards for a CN, the standards that governed the Commission's consideration of an IRP also take into account the adequacy and reliability of energy supply; cost; and socioeconomic and environmental effects of the facility. Applicable rules oblige the Commission to evaluate various 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.[88]

89. 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 carbon reduction goals. The Company hopes to reduce carbon levels from electricity generation by 80 percent (as compared to 2005 levels) in 2030 and generate 100 percent carbon-free electricity by 2050. The Company asserts that it can achieve these carbon reductions while simultaneously maintaining robust shares of firm and dispatchable generation relative to peak load across all seasons.[89]

90. 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.[90]

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[87] *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).
[88] Minn. R. 7843.0500, subp. 3 (2021); *see also* Ex. XEL-6 at 7 (Mandich Direct).
[89] Ex. XEL-1 at 4-11.
[90] *See id* at 1 (filing September 1, 2021).

91. 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 was a key assumption of the IRP and met the IRP criteria.[91]

92. Xcel Energy has consistently maintained that it lacks space for the estimated 13 additional spent fuel storage casks required to extend the Monticello Plant's operating life.[92]

93. The Department argued that its analysis established the Company's forecasts in this proceeding, and in the IRP proceeding, were systemically biased, overstated and unduly optimistic. However, after adjusting the capacity expansion modeling to account for these factors, the Department concluded that extension of the operating life of the Monticello Plant was in the public interest. The Department also emphasizes that the Commission had this analysis available to it when making the IRP decisions for Xcel Energy.[93]

94. The Department did not dispute that there is inadequate storage available at the Monticello Plant for extended power generation operations.[94]

95. The Administrative Law Judge finds that the Commission had the opportunity to evaluate both the Company's forecasts of energy, capacity and storage needs, and the Department's parallel analysis, when making the IRP decisions for Xcel Energy.[95]

96. The Administrative Law Judge finds that the Commission considered the need to extend the Monticello Plant's operating life, and the Company's need for additional spent fuel storage, when it accepted the Company's IRP Alternate Plan.[96]

2. Effect of Conservation Programs

97. The Commission must consider "the effects of existing or expected conservation programs of the applicant, the state government, or the federal government."[97]

98. Company witness Ms. Jessica Peterson stated that the Company offers more than 40 energy efficiency and demand response programs in Minnesota. Since 1990, these conservation programs have saved nearly 11,735 Gigawatt hours of energy and 4,113 MW of demand. These savings avoided the need to build 16 medium-sized

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[91] Ex. XEL-6 at 4, 6 (Mandich Direct).
[92] Ex. XEL-1 at Ch.8, at 28; Ex. XEL-1, Ch.9, at 5 (Initial Filing).
[93] Ex. DOC-26 at 6-7, 12-13 (Shah Direct).
[94] Ex. DOC-25 at 4-5 (Winner Direct).
[95] Ex. DOC-26 at 7, 13 (Shah Direct).
[96] *Id.* at 7.
[97] Minn. R. 7855.0120(A)(2).

(250 MW) power plants.[98]

99. The Company's current IRP proposes a goal of an additional 11,795 Gigawatt hours and 2,156 MW of cumulative savings for the 2020-2034 planning period. Xcel Energy also proposes growing its Demand Response portfolio to over 1,500 MW by 2034 – resulting in 780 Gigawatt hours of annual savings. Notwithstanding these savings, the Company's IRP still projects an increase in customer load over time.[99]

100. The Company's conservation programs are not able to both offset the need for new generation during the planning period and replace the generation provided by the Monticello Plant.[100]

101. Moreover, as Department witness Dr. Rakow explained, the Company's conservation programs were analyzed as part of the IRP modeling process. The result of that analysis determined that pursuit of additional levels of energy efficiency beyond those proposed by the Company would increase system costs.[101]

102. The Administrative Law Judge finds that there is no evidence in the record that suggests that conservation programs could replace the generation from the Monticello Plant if it was retired from service in 2030.[102]

3. Effect of Promotional Activities

103. The Commission must consider "the effects of promotional practices in creating a need for the proposed facility."[103]

104. 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 from extending the life of the Plant beyond 2030.[104]

105. 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 better explanation of the need for additional storage follows from Xcel's expedited retirement of coal plants instead of phasing out the Monticello Plant at the end of its current license.[105]

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[98] Ex. XEL-9 at 3-4 (Peterson Direct).
[99] Ex. XEL-9 at 3-44 (Peterson Direct).
[100] Ex. XEL-9 at 3-44 (Peterson Direct).
[101] Ex. DOC-24 at 10 (Rakow Direct).
[102] *See id.* at 19 (Rakow Direct).
[103] Minn. R. 7855.0120(A)(3).
[104] Ex. XEL-9 at 5 (Peterson Direct).
[105] Ex. DOC-25 at 35 (Winner Direct).

106. The Administrative Law Judge finds that there is no evidence in the record that promotional activities undertaken by Xcel Energy have created a need for the ISFSI expansion.[106]

4. Ability of Current and Planned Facilities that Do Not Require Certificates of Need to Meet State and Regional Energy Needs

107. The Commission must consider "the ability of current facilities and planned facilities not requiring certificates of need to meet the future demand."[107]

a. Existing Facilities

108. The Company maintains that there are not sufficient facilities, that do not otherwise require a CN, to replace the Monticello Plant's generation, if the Plant ceased operations in 2030.[108]

109. Department witness Dr. Rakow explained that during the proceedings on the Company's IRP Docket, the Department concluded that Xcel Prairie Island Nuclear Generating Plant was the least cost way of meeting future demand. However, extending the operations of the Prairie Island Plant would also require a CN. In order to extend the operations of the Prairie Island Plant beyond its current licensure this plant would also require additional facilities for spent fuel storage.[109]

110. The record does not include any facility that could meet the electricity producing capabilities of the Monticello Plant, without also requiring a CN.[110]

111. The Administrative Law Judge 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.[111]

b. Other Alternatives

112. Under Minn. Stat. § 116C.83, subd. 4, any waste generated by a nuclear generation facility must be stored on-site until it can be shipped out-of-state.[112]

113. As described in more detail below, however, there are no permanent or interim out-of-state facilities accepting spent nuclear fuel.[113]

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[106] *Id.*
[107] Minn. R. 7855.0120(A)(4).
[108] Ex. XEL-1 at Ch.4, at 7 (Initial Filing).
[109] Ex. DOC-24 at 10-11 (Rakow Direct).
[110] *Id.*
[111] *Id.* at 12.
[112] Minn. Stat. § 116C.83, subd. 4.
[113] *See* Section VI B, *infra*.

114. Accordingly, absent an exemption, there are no alternative facilities that can either provide the needed additional storage capacity or replace the Monticello Plant's generation capacity.[114]

115. 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.[115]

116. Although baseload alternatives, such as new nuclear-powered or coal-powered generation could replace the Monticello Plant's capabilities, these are unreasonable alternatives. Minn. Stat. § 216B.243, subd. 3b prohibits the construction of new nuclear generating units.[116]

117. A new coal plant has not been considered in Minnesota since 2005. Indeed, a review of the Midcontinent Independent System Operator (MISO) generation interconnection queue indicates a single 20 MW coal unit. This suggests that among the 16 states of MISO, and the province of Manitoba, coal-powered generation is disfavored solution to meeting energy needs.[117]

118. The Administrative Law Judge 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.[118]

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

119. The Commission must consider "the facility's ability to make an efficient use of resources."[119]

120. 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. The Plant reached a record-setting capacity factor of 99.3 percent in 2018. Both witnesses also pointed out that the Plant recently completed a run of 704 days of continuous operation.[120]

121. Company witness Ms. Prochaska further explained that the Company has achieved these efficiency results while reducing Operations and Maintenance (O&M) costs. During the period between 2015 and 2021, these costs were reduced by nearly 30 percent. Further, the Plant's efficiency and availability provide significant benefits to ratepayers. The cost of nuclear fuel is relatively fixed; particularly when compared to fuel

[114] Ex. XEL-1 at Ch.4, at 6 (Initial Filing); Ex. XEL-5 at 24-27 (Prochaska Direct).
[115] Ex. XEL-1 at Ch.4, at 9 (Initial Filing).
[116] Minn. Stat. § 216B.243, subd. 3b; Ex. DOC-24 at 12 (Rakow Direct).
[117] Ex. DOC-24 at 12-13 (Rakow Direct).
[118] *See id.* at 20 (Rakow Direct).
[119] Minn. R. 7855.0120(A)(5).
[120] Ex. XEL-5 at 10 (Prochaska Direct); Ex. XEL-6 at 15 (Mandich Direct).

costs of other generation sources, generally, and during times of high inflation.[121]

122. 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 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.[122]

123. The Administrative Law Judge 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 draw upon on alternative energy resources when appropriate.[123]

124. The Administrative Law Judge finds that the record demonstrates that the denial of a CN would adversely affect the future adequacy, reliability, or efficiency of energy supplies. Moreover, the denial of the CN would negative impact the applicant, its customers, the people of Minnesota and the residents of neighboring states. The Administrative Law Judge concludes that the Company has adequately met the first criteria for a CN.[124]

B. Analysis of Alternatives

125. The second criteria for a CN requires the Commission to evaluate reasonable alternatives to the proposed facility.[125]

126. By rule, the Commission's inquiries are limited to the alternatives proposed before the close of the public hearing and which are supported by substantial evidence from the hearing record as to each criterion.[126]

127. Specifically, when evaluating whether there exists a more reasonable or prudent alternative to the proposed facility, the Commission will compare the proposed facility to potential alternatives, considering:

A. the appropriateness of the size, type, and timing of the facilities;

B. the cost of the proposed facility and alternatives, and the costs of the energy they will supply;

C. the effects on the natural and socioeconomic environments; and

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[121] Ex. XEL-5 at 11 (Prochaska Direct).
[122] Ex. XEL-5 at 13 (Prochaska Direct).
[123] *See* Ex. DOC-24 at 20 (Rakow Direct).
[124] *Id*.
[125] Minn. R. 7855.0120(B).
[126] Minn. R. 7855.0110 (2021).

D. the expected reliability of the proposed facility and alternatives.[127]

1. Off-Site Storage Alternatives

128. 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 those wastes out of state to a permanent or interim storage facility as soon as these transfers are feasible. Additionally, as noted earlier, Minnesota law requires that until shipment out of state can be facilitated, the spent fuel generated by a Minnesota nuclear generation facility must be stored on the site of that facility.[128]

129. As detailed below, the Company examined four off-site storage alternatives for spent nuclear fuel and no such off-site storage is available.[129]

a. Reprocessing Spent Nuclear Fuel

130. 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.[130]

131. Company witness Ms. Pamela Prochaska explained that for a time commercial reprocessing of spent nuclear fuel was banned in the United States, and notwithstanding a later lifting of the ban, no private companies are operating or developing reprocessing facilities.[131]

132. Reprocessing is not an available or viable alternative to expansion of the ISFSI.[132]

b. Existing Off-Site Storage Facilities

133. The only facility storing spent fuel on a contractual basis from commercial nuclear power reactors is General Electric's facility in Morris, Illinois. However, this facility is no longer accepting additional spent fuel from commercial nuclear power plants.[133]

134. Utilizing off-site contractual storage facilities is not an available or viable alternative to expansion of the ISFSI.[134]

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[127] Minn. R. 7855.0120(B).
[128] Minn. Stat. § 116C.83, subd. 4.
[129] Ex. XEL-5 at 24-27 (Prochaska Direct).
[130] Ex. XEL-5 at 25 (Prochaska Direct); Ex. DOC-25 at 8 (Winner Direct).
[131] Ex. XEL-5 at 25 (Prochaska Direct); Ex. DOC-25 at 8 (Winner Direct).
[132] Ex. DOC-25 at 9 (Winner Direct).
[133] Ex. XEL-5 at 25-26 (Prochaska Direct); Ex. DOC-25 at 9-10 (Winner Direct).
[134] Ex. DOC-25 at 9-10 (Winner Direct).

c. Private Centralized Interim Storage

135. 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 timelines for construction and, in the case of Holtec International, for permitting, these two interim storage projects are not viable options at this time.[135]

136. 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.[136]

137. Private centralized interim storage is not yet operational in the United States, nor will it be available in 2028. Accordingly, interim storage is not a viable alternative to expansion of the ISFSI.[137]

d. Permanent Off-Site Storage

138. 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, and the adjudicatory hearings on the application before the NRC Atomic Safety and Licensing Board remains suspended.[138]

139. 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.[139]

140. The lack of meaningful progress in licensing for Yucca Mountain over the last decade renders permanent off-site storage an unreasonable alternative to expansion of the ISFSI.[140]

141. The Company addressed each alternative and provided sufficient explanation for the impracticability or impossibility of each alternative.[141]

142. A resource that is not available is not a "reasonable and prudent alternative" as those words are used in Minn. R. 7855.0120(B).[142]

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[135] Ex. XEL-5 at 26-27 (Prochaska Direct).
[136] Ex. DOC-25 at 14 (Winner Direct).
[137] *Id*.
[138] Ex. XEL-5 at 27 (Prochaska Direct); Ex. DOC-25 at 15 (Winner Direct).
[139] Ex. DOC-25 at 15 (Winner Direct).
[140] *Id*.
[141] Ex. XEL-5 at 24-27 (Prochaska Direct).
[142] Minn. R. 7855.0120(B); Ex. XEL-5 at 24-27 (Prochaska Direct).

2. On-Site Storage Alternatives

143. The Company examined three on-site storage alternatives for spent nuclear fuel that would not require an expansion of the ISFSI.[143]

a. New On-Site Location

144. As part of the original ISFSI CN application process, the Company undertook a study 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 for storage. 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.[144]

145. Mr. Flo explained that there is sufficient room within the footprint of the existing ISFSI to support the needed storage and the soil below the new pad was previously disturbed during the initial construction effort. Accordingly, there are greater environmental impacts associated with construction in any of the possible alternative locations.[145]

146. Company witness Dan Flo explained that because of the availability and suitable of the existing site, the Company did not expend a lot of planning resources on an alternative location for a second ISFSI within the Monticello Plant.[146]

147. The Department agreed with the Company that it is not useful to evaluate alternative ISFSI locations within the Monticello Plant site. Department witness Ms. Winner explained that the final EIS makes clear that using the expanded ISFSI site or an alternative site within the Monticello Plant site, the construction processes would be similar, and the impacts would likely be minimal.[147]

148. The Administrative Law Judge finds that the record demonstrates that the chosen on-site storage location is the most viable and reasonable option, as it results in the fewest environmental impacts and disturbances.[148]

b. Non-Cask Alternatives

149. 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.[149]

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[143] Ex. XEL-1, Ch.9 (Initial Filing).
[144] Ex. XEL-7 at 7 (Flo Direct).
[145] *Id.* at 7-8 (Flo Direct).
[146] *Id.* at 8 (Flo Direct).
[147] Ex. DOC-25 at 23-24 (Winner Direct).
[148] *Id;* Ex. XEL-7 at 7-8 (Flo Direct).
[149] Ex. XEL-1 at Ch.9, at 6-9 (Initial Filing).

150. 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 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.[150]

151. 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.[151]

152. The Administrative Law Judge agrees with the parties that fuel rod consolidation is not a viable alternative to expansion of the ISFSI.[152]

153. 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 additional spaces would only create enough storage for six additional years of plant operations.[153]

154. 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.[154]

155. The Administrative Law Judge agrees with the parties that re-racking the existing Spent Fuel Pool is not a viable alternative to expansion of the ISFSI.[155]

156. 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.[156]

157. 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 related operating costs, such as pool maintenance, future off-site transport, or new regulatory requirements.[157]

158. The Administrative Law Judge agrees with the parties that cost concerns render construction of a new Spent Fuel Pool a poor alternative to expanding the ISFSI.[158]

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[150] *Id.* at 6-7 (Initial Filing).
[151] Ex. DOC-25 at 17 (Winner Direct).
[152] *Id*.
[153] Ex. XEL-1 at Ch.9, at 8; Ex. DOC-25 at 17-18 (Winner Direct).
[154] Ex. DOC-25 at 18 (Winner Direct).
[155] *Id*.
[156] Ex. XEL-1 at Ch.9, at 9 (Initial Filing).
[157] Ex. DOC-25 at 19 (Winner Direct).
[158] *Id*.

159. 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.[159]

160. The Company currently utilizes horizontal canister storage at the Monticello Plant. Each canister holds 61 spent fuel assemblies.[160]

161. In its initial filing, the Company provided an analysis of vertical canister storage as a potential alternative to horizontal canister storage. The principal disadvantage of using vertical canister storage is that it may increase radiation dosages to workers during transfers and may require additional structures, such as a crane.[161]

162. 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. The casks are made of steel, or a steel and lead combination, and store the 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.[162]

163. The key disadvantages of implementing this approach are that it would require extensive modifications to move the spent fuel storage pool racks and those racks would exceed the lifting capability of the Plant reactor building crane by a considerable margin.[163]

164. The Company recommended either horizontal or vertical storage. As the Company reasons, the site has experience loading and maintaining canister-based systems; the proposed private interim storage facilities are designed to store canister-based systems; and canister-based systems have lower overall costs.[164]

165. The Company has not proposed a specific canister-based system as of the close of the contested case record. Instead, the Company explained that it will choose a specific vendor and technology closer to the date of installation using a competitive bidding process. In this way, the Company could assess all available NRC-licensed designs.[165]

166. The Department agreed with the Company's evaluations of the advantages and disadvantages of the three systems. The Department further explained that because

[159] Ex. XEL-1 at Ch.9, at 9 (Initial Filing).
[160] Ex. XEL-1 at Ch.9, at 10 (Initial Filing).
[161] Ex, XEL-1 at Ch.9, at 14-15 (Initial Filing).
[162] Ex. XEL-1 at Ch.9, at 15-17 (Initial Filing).
[163] *Id.* at 17 (Initial Filing).
[164] *Id.* (Initial Filing).
[165] *Id.* (Initial Filing).

Xcel Energy proposed to use a competitive bidding process to select the storage technology and vendor, the Department did not believe further cost analysis of various cask technologies is necessary at this time.[166]

167. The Administrative Law Judge agrees with the parties' assessments of the three dry cask alternatives available to store spent nuclear fuel.[167]

168. The Administrative Law Judge agrees that use of a competitive bidding process to select the particular storage technology and vendor is appropriate and that more particularized cost analysis is not required at this time.[168]

169. The Company has demonstrated both 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.[169]

3. Generation Alternatives

170. 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.[170]

171. 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) against two replacement cases. There are no reasonable generation alternatives that, on their own, could replace Monticello Plant in terms of size, type, and timing.[171]

172. For this reason, the replacement case modeling evaluated replacing the Monticello Plant's energy and capacity with a mix of generation resources.[172]

173. Xcel Energy permitted the model to choose generic energy storage, wind, solar, natural gas-fueled combustion turbines, demand response, and energy efficiency resources.[173]

174. 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:

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[166] Ex. DOC-25 at 20-23 (Winner Direct).
[167] *Id.* at 22-23 (Winner Direct).
[168] *Id.* at 23 (Winner Direct).
[169] *Id.* at 23-24 (Winner Direct).
[170] Ex. DOC-24 at 12 (Rakow Direct).
[171] *Id.* at 12 (Rakow Direct).
[172] Ex. XEL-6 at 8 (Mandich Direct).
[173] Ex. XEL-1 at Ch.9, at 28 (Initial Filing).

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	• King (2028) • Sherco 3 (2030) • Prairie Island (2033-2034)	• King (2028) • Sherco 3 (2030) • Monticello (2030) • Prairie Island (2033-2034)	• King (2028) • Sherco 3 (2030) • Monticello (2030) • Prairie Island (2033-2034)
	Resources optimized	All available	All available	• 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	Not Applicable	• CT: 750 • Wind: 750 • Solar: 200 *Plus fewer market sales and additional market purchases*	• Storage: 300 • Solar: 700 • Wind: 950 *Plus additional market purchases*
Cost	2020-2045 PVSC ($ million), delta from Alternate Plan	Not Applicable	63	89
	2020-2045 PVRR ($ million), delta from Alternate Plan	Not Applicable	(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.[174]

a. Size, Type, and Timing

175. 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.[175]

176. Replacement Case 2 also considered retiring Monticello at its currently scheduled date and restricted the resource planning model from selecting any

[174] Ex. XEL-6 at 10-11 (Mandich Direct).
[175] *Id.* at 8 (Mandich Direct).

incremental gas-fired combustion beyond those that were included in the IRP Alternate Plan. Under these 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.[176]

177. The Department agreed that the two replacement cases detailed by the Company provided a reasonable spectrum of alternatives for the alternatives analysis.[177]

178. The Administrative Law Judge 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.[178]

b. Cost

179. The Company's analysis shows that Replacement Case 1 results in approximately $63 million more in Present Value of Societal Costs when compared to continuing operations of the Monticello Plant.[179]

180. Although Replacement Case 1 includes lower costs for running the Monticello Plant for an additional 10 years, these reductions are largely offset by the costs of the incremental gas-combustion, wind, and solar resources needed to supplant the Monticello Plant's generation of energy. 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 of energy. Thus, Replacement Case 1 includes higher emissions and associated costs of carbon when compared to continuing operation of the Monticello Plant.[180]

181. The Company's analysis shows that Replacement Case 1 results in approximately $38 million in ***lower*** costs, from a Present Value of Revenue Requirements perspective, over the analysis period.[181]

182. But that result, in isolation, is misleading. The Present Value of Revenue Requirements analysis does not include the costs of externalities or the regulatory costs of carbon. Nor does Replacement Case 1 include the costs associated with compliance with the new mandate requiring 100 percent carbon-free electricity generation by 2040.[182]

183. Replacement Case 1 under includes significant cost categories and these omissions weigh heavily against selecting Replacement Case 1 as an alternative.[183]

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[176] *Id.* at 9 (Mandich Direct).
[177] Ex. DOC-24 at 13 (Rakow Direct).
[178] *Id.* at 13-14 (Rakow Direct).
[179] Ex. XEL-6 at 12 (Mandich Direct).
[180] *Id.* (Mandich Direct).
[181] *Id.* (Mandich Direct).
[182] Ex. XEL-6 at 12-13 (Mandich Direct); Minn. Stat. § 216B.2422, subd. 3 (2022); 2023 Minn. Laws, Ch. 7.
[183] Ex. XEL-6 at 12-13 (Mandich Direct).

184. The Company's analysis shows that Replacement Case 2 results in higher costs from both a Present Value of Societal Costs and a Present Value of Revenue Requirements perspective. The added costs are approximately $90 million over the analysis period. As in Replacement Case 1, the lower costs for running the Monticello Plant for an additional 10 years are offset by the cost of new storage, wind, and solar resources adopted in earlier years. Additionally, Replacement Case 2 results in increased integration costs associated with higher levels of wind and solar resources. Replacement Case 2 also relies more heavily on market purchases than the IRP Alternate Plan.[184]

185. Lastly, the recently enacted 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. These savings were not anticipated during the IRP planning process.[185]

186. The Administrative Law Judge 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.[186]

187. The Administrative Law Judge also finds that the cost considerations weigh in the favor of extending the Monticello Plant and granting the CN, as compared to the Company's two replacement cases.[187]

c. Effects Upon the Natural and Socioeconomic Environments

i. Comparison with Replacement Cases

188. The Company's analysis shows that Replacement Case 1 initially achieves lower levels of carbon emissions (when measured against a 2005 baseline) in 2030, but then regresses from this 2030 low after the Monticello Plant retires. This regression is due to an increase in gas combustion generation and market purchases required to meet projected 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.[188]

189. 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.[189]

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[184] Ex. XEL-6 at 13 (Mandich Direct).
[185] Ex. XEL-6 at 13-14 (Mandich Direct).
[186] *Id.* at 10-14 (Mandich Direct).
[187] *Id.* at 14 (Mandich Direct).
[188] *Id.* at 14 (Mandich Direct).
[189] *Id.* at 14-15 (Mandich Direct).

190. 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 likely generate significant impacts through additional greenhouse gas emissions, and flora and fauna impacts.[190]

191. The Administrative Law Judge 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.[191]

ii. Leakage of Tritiated Water

192. During its regular groundwater testing, Xcel Energy detected tritium in the groundwater under the plant. The findings were made on November 21 and November 22, 2022.[192]

193. Tritium is a radiogenic and radioactive isotope of hydrogen. As a result, the U.S. Department of Energy classifies waste streams that included radionuclides such as tritium as "high level radioactive waste."[193]

194. The Company promptly notified the State Duty Officer upon confirmation of the leak and notified the NRC within four hours of that initial notification. The State Duty Officer report number for the notification is 209805.[194]

195. On November 23, 2022, staff from the Minnesota Department of Health and the Minnesota Department of Natural Resources contacted the Company to discuss the notification and response status. Minnesota Pollution Control Agency staff contacted the Company on November 28, 2022, to discuss the State Duty Officer Report and response actions taken to date. The Company also notified the City of Monticello and Wright County on November 28, 2022. The Company has continued to update state regulators and local governments on the status of its response to the leak.[195]

196. During the investigation of the source of the leak, the Company inspected over 170 locations and found a single source of the leak on December 19, 2022. The leak was in a ½-inch gap between two buildings. The two buildings have walls that are made of two to three feet of concrete, which had to be drilled through with a borescope to locate the source of the leak.[196]

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[190] Ex. DOC-24 at 17-18 (Rakow Direct).
[191] *Id.* at 18 (Rakow Direct).
[192] Xcel Energy's Supplemental Submission (Xcel Supplement), at 2 (eDocket No. 20235-195855-02).
[193] Ex. DOC-25, Schedule DW-D-2 at 119; 10 C.F.R. § 60.2 (2021).
[194] Xcel Supplement, at 5.
[195] *Id.* at 2.
[196] *Id.* at 2-3.

197. The Company completed installation of a system to capture the leaking water in the first week of January 2023.[197]

198. On March 24, 2023, the Company discovered that this system was no longer fully capturing the leaking water, and that some additional water had escaped after the installation of the containment system. The Company then made the decision to fully shut down the plant to repair the leak, and did so the next day, on March 25, 2023.[198]

199. Xcel Energy asserts that maintaining the operability of the Plant was important in finding the precise location of the leak. If the Plant had not been online, the source of the leak would not have been discovered as rapidly because there would not have been water flowing through the pipe.[199]

200. The Company originally planned to permanently repair the leak during a regularly scheduled refueling outage in April. However, the Company discovered in late March that a small amount of leaked water escaped the containment system and seeped into the ground. While this was quickly detected and remediated within 24 hours, the Company decided to take the unit offline so that it could permanently fix the leak.[200]

201. The leak was fully repaired on March 28, 2023.[201]

202. During that repair, the Company confirmed the existence of a single source of the leak. It also proactively replaced a pipe that was made of the same material and situated in a similar position to the pipe that had leaked. Both the leaking pipe and the other pipe have been submitted for metallurgical testing.[202]

203. The Plant was restarted after the repair, and both new pipes are functioning properly and leak-free.[203]

204. Approximately 400,000 gallons of water leaked before the source of the leak was discovered and contained. The amount of tritium contained in the leaked water was approximately 8 curies. To date, the Company has recovered 4.111 curies of the 8 curies leaked.[204]

205. The Company has drilled additional monitoring and recovery wells and is pumping contaminated water out of the aquifer. This water is processed and reused at the Plant.[205]

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[197] *Id.* at 3.
[198] *Id.* at 3.
[199] *Id.* at 6.
[200] *Id.*
[201] *Id.* at 3.
[202] *Id.*
[203] *Id.*
[204] *Id*.
[205] *Id.* at 6.

206. The Company's tests reveal that the level of tritium was highest in the well located directly under the plant. Readings from other wells on the property demonstrated that the contamination was isolated, had not left the Plant site, and had not impacted the Plant's drinking water well.[206]

207. The Minnesota Department of Health has concluded that there is "no health risk" due to the leak, and that there is no evidence of impact to wildlife or plants, including crops.[207]

208. The circumstances of the leak do not change the analysis of broader environmental effects from the proposed project.[208]

209. None of the information regarding the leak demonstrates that MNGP is an unsafe generation plant, or that continued operation of the Plant would negatively impact the safety of the Company's employees, customers or the nearby community.[209]

210. Nothing in the hearing record suggests that the occurrence of the leak, or the Company's handling of the leak, demonstrates that the ongoing operation of the MNGP will not be conducted in compliance with policies, rules and regulations.[210]

211. The Administrative Law Judge also finds that environmental considerations weigh in favor of extending the Monticello Plant and granting the CN, as compared to the Company's two replacement cases.[211]

212. The Administrative Law Judge finds that the circumstances around the leak of tritiated water at the Plant and the Company's response to that leak does not alter the analysis of the likely impacts to the natural and socioeconomic environments by granting the CN.[212]

d. Reliability

213. Company witness Ms. Mandich explained that the Monticello Plant is a significant baseload resource on the Northern States Power system. It has generated over 200 million MWh of energy and avoided 210 million tons of carbon emissions over the past 50 years.[213]

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[206] *Id.* at 5.
[207] *Id.* at 11.
[208] DOC Supplemental Response, at 5-7 (eDocket No. 20235-196219-01).
[209] *Id.*
[210] *Id*.
[211] *Id*.
[212] *Id.* at 5-6.
[213] Ex. XEL-6 at 15 (Mandich Direct).

214. 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.[214]

215. The Monticello Plant and the Prairie Island Nuclear Generating Plant, together represent almost 27 percent of the total electric energy Xcel Energy customers consumed in 2021. The two plants also produce 45 percent of the Company's carbon-free energy.[215]

216. The Company's analysis shows that, in Replacement Case 1, the carbon-free baseload energy generated by the Monticello Plant is partially replaced with a mix of renewables and gas generation. 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. Replacement Case 1 does not fully replace generation from the Monticello Plant, resulting in both reduced sales and increased market purchases. Also, without the baseload support of the Plant, customers would be exposed to additional price volatility from electricity markets under Replacement Case 1.[216]

217. 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. Replacement Case 2 has less firm and dispatchable capacity because of increased reliance on variable renewables and duration-limited energy storage. This variability likewise exposes customers to increased market purchases and market price volatility.[217]

218. The Administrative Law Judge 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.[218]

219. The Administrative Law Judge also finds that reliability considerations weigh strongly in favor of extending the Monticello Plant and granting the CN. Neither replacement case can provide the capacity and energy generated by the Monticello Plant with the same level of dependability.[219]

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[214] *Id*. (Mandich Direct).
[215] *Id.* (Mandich Direct).
[216] *Id.* at 15-16 (Mandich Direct).
[217] *Id.* at 16 (Mandich Direct).
[218] *Id.* at 14-16 (Mandich Direct).
[219] *Id.* (Mandich Direct).

220. The Administrative Law Judge 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.[220]

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

221. 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.[221]

222. Under applicable rules, the Commission must 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.[222]

1. Overall State Energy Needs

223. The Department reviewed the most recent IRP dockets from three investor-owned utilities in Minnesota. It 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 witness Mr. Sachin Shah to further conclude that the State needs more capacity and energy during the 2023-2028 timeframe.[223]

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

[220] *Id.* (Mandich Direct).
[221] Minn. R. 7855.0120(C).
[222] *Id*.
[223] Ex. DOC-26 at 8 (Shah Direct).

DOC-DER Analysis of Docket No. 21-33	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.[224]

225. As noted above, no other non-nuclear powered baseload generation source in the Company's system can operate at nearly full capacity, year-round. 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 energy and capacity.[225]

226. If it is not replaced with other generation resources, the removal of the Monticello Plant from the Company's supply system would create a several hundred MW capacity deficit and a several million MW deficit in the region.[226]

227. The Department concluded that the proposed Project would have a positive impact in meeting the State's energy needs.[227]

228. The Administrative Law Judge agrees that due to the planned retirement of other generation resources, and expiration of certain Power Purchase Agreements, the ISFSI Expansion Project will have a positive impact in meeting the energy needs of Minnesota.[228]

[224] Ex. DOC-26 at 10-11 (Shah Direct).
[225] Ex. DOC-24 at 12 (Rakow Direct).
[226] Ex. XEL-4 at 3-5 (Krug Direct); Ex. XEL-6 at 4 (Mandich Direct).
[227] Ex. DOC-26 at 11-12 (Shah Direct).
[228] *Id*.

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

229. 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.[229]

230. The Company's nuclear generation reduces carbon emissions by approximately 7 million tons annually – the equivalent of removing 1.5 million cars from the road. The Monticello Plant contributes one-third of these benefits. Since it began operations, the Monticello Plant's carbon-free generation has led to over 212 million tons of CO_2 emissions avoided. 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 from either required fossil-fuel generation or energy market purchases.[230]

231. There are also significant socioeconomic impacts from not granting the CN. 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 hundreds of well-paying jobs.[231]

3. Induced Future Developments

232. 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, beyond current Plant personnel, will be required during operation of the expanded ISFSI. The Project will have minimal impact on other factors, such as traffic, utilities and public services or water usage levels.[232]

4. Socially Beneficial Uses of the Output of the Facility

233. The Project enables Xcel Energy to continue to supply reliable and reasonably priced baseload power for 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.[233]

234. 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

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[229] Ex. XEL-5 at 22 (Prochaska Direct); Ex. XEL-1 at Ch.4, at 13, Ch.12 (Initial Filing).
[230] 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).
[231] Ex. XEL-1 at Ch.9, at 21 (Initial Filing).
[232] Ex. XEL-1 at Ch.4, at 13; Ex. XEL-1, Ch.14 (Initial Filing).
[233] Ex. XEL-1 at Ch.4, at 14 (Initial Filing).

a significant source of carbon-free generation; reductions in the 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 when constructing replacement generation resources.[234]

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

235. 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 federal, state and local agencies.[235]

236. 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.[236]

237. The Company further explained that the Project supports the State of Minnesota's energy policy as set forth in Minnesota Statutes, including the goal of reducing statewide greenhouse gas emissions to a level at least 80 percent below 2005 levels by 2050, and the goal of providing 100 percent carbon-free electricity by 2040.[237]

238. The Project is consistent with and is an integral part of Xcel Energy's Resource Plan.[238]

239. The Project also complies 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.[239]

240. The Department concluded that the record did not demonstrate that the proposed facility would fail to comply with applicable federal, state and local policies, rules and regulations.[240]

241. The Department concluded that the Company complies with the State of Minnesota's Renewable Energy Standard and Solar Energy Standard.[241]

242. The Department further concluded that Xcel has appropriately reported to the Public Utilities Commission the status of any transmission upgrades needed to meet

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[234] Ex. XEL-1 at Ch.9, at 21.
[235] Minn. R. 7855.0120(D).
[236] Ex. XEL-1 at Ch.1, at 2 (Initial Filing).
[237] Ex. DOC-25 at 32 (Winner Direct).
[238] Ex. XEL-1 at Ch.4, at 14 (Initial Filing).
[239] *Id*.
[240] Ex. DOC-25 at 39 (Winner Direct).
[241] *Id.* at 33 (Winner Direct).

the State of Minnesota's Renewable Energy Standard. It maintained that the Company does not appear to require significant transmission investments to meet that Standard.[242]

243. 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.[243]

244. The Administrative Law Judge 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.[244]

E. Conditions on the Certificate of Need

245. 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, *In the Matter of a Petition from Northern States Power Company, d/b/a/ Xcel Energy, for Approval of Updated Pricing for the Border Winds and Pleasant Valley Wind Repowering Projects*, MPUC Docket No. E002/M-20-620. Specifically, the Department recommends that points 3a-3d and 3f be applied, which include:

> A. Xcel [Energy] must justify any costs (including operations and management expense, ongoing capital expense, 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.
>
> B. Xcel [Energy] bears the burden of proof in any future regulatory proceeding related to the recovery of costs above those forecasted in this proceeding.
>
> C. The Commission will otherwise hold the Company accountable for the price and terms used to evaluate the project.
>
> D. Ratepayers will not be put at risk for any assumed benefits that do not materialize.
>
> E. Xcel [Energy's] customers must be protected from risks associated with the non-deliverability of accredited capacity, energy or both, 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.[245]

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[242] *Id.* at 33-34 (Winner Direct).
[243] Ex. XEL-12 at 3 (Prochaska Rebuttal); Ex. DOC-28 at 2-3 (Winner Surrebuttal).
[244] DOC Supplemental Response at 5; *see also* Ex. DOC-22 (Groundwater Order).
[245] Ex. DOC-24 at 24, SR-D-4 (Rakow Direct); Ex. DOC-27 at 1 (Rakow Surrebuttal).

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

> 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.[246]

247. In Surrebuttal Testimony, the Department stated that it considered the issue of conditions to be resolved.[247]

248. In its response to questions posed by the tribunal regarding the leak of tritiated water in late 2022 and early 2023, the Department urged addition of a further condition on the CN. It recommended that the Company "file quarterly reports describing its remediation activities, including groundwater monitoring and treatment as a condition on any certificate of need approval for the project."[248]

249. The Administrative Law Judge concurs with the parties and recommends that the Commission adopt the Department's proposed conditions.[249]

CONCLUSIONS OF LAW

1. The Commission has general jurisdiction over Xcel Energy under Minn. Stat. §§ 216B.01 and 216B.02.

2. Under Minn. Stat. §§ 116C.83 and 216B.243 (2022) the Commission has jurisdiction over the CN for additional dry cask spent fuel storage.

3. The case was properly referred to the OAH under Minn. Stat. §§ 14.48-14.62 (2022) and Minn. R. 1400.5010-.8400 (2021).

4. 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 and Minn. R. 4410.0200-.9910 (2021).

[246] Ex. XEL-11 at 3-4 (Krug Rebuttal).
[247] Ex. DOC-27 at 2 (Rakow Surrebuttal).
[248] DOC Supplemental Response at 7.
[249] *Id.* at 5-7.

5. 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. 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:

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

c. the effects of existing or expected conservation programs of the applicant, the state government, or the federal government;

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

e. the ability of current facilities and planned facilities not requiring certificates of need to meet the future demand; and

f. the effect of the proposed facility, or a suitable modification thereof, in making efficient use of resources;

g. 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;

h. the appropriateness of the size, the type, and the timing of the proposed facility compared to those of reasonable alternatives;

i. 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;

j. the effects of the proposed facility upon the natural and socioeconomic environments compared to the effects of reasonable alternatives; and

k. the expected reliability of the proposed facility compared to the expected reliability of reasonable alternatives;

l. 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:

m. the relationship of the proposed facility, or a suitable modification thereof, to overall state energy needs;

n. 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;

o. the effects of the proposed facility, or a suitable modification thereof, in inducing future development; and

p. 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

q. 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.

6. 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.

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

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

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

10. The Project makes efficient use of resources by generating reliable, carbon-free energy with minimal impacts to the physical environment.

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

12. 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 system reliability.

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

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

15. Application of each of the factors listed in Minn. R. 7855.0120 supports granting of the requested CN.

RECOMMENDATION

It is respectfully 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:

1. Xcel [Energy] must justify any costs (including operations and management expense, ongoing capital expense, 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.

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

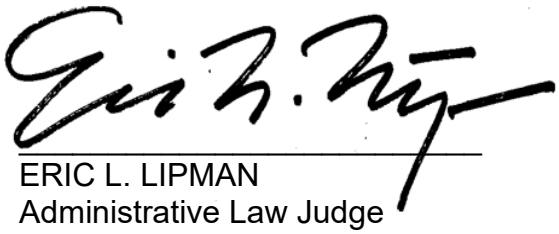
    b. The Commission will otherwise hold the Company accountable for the price and terms used to evaluate the project.

    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, energy or both, 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.

e. Xcel Energy must file quarterly reports describing its activities to remediate the leak of tritiated water until such time as the leakage has been fully remediated. Further, the reports must include detail the Company's groundwater monitoring and treatment of tritiated groundwater.

Dated: June 29, 2023



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, .3100 (2021), unless otherwise directed by the Commission. Exceptions should be specific and stated and numbered separately. Oral argument before a majority of the Commission will be permitted pursuant to Minn. R. 7829.2700, subp. 3 (2021). 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 Administrative Law Judge's recommendations. The recommendations of the Administrative Law Judge have no legal effect unless expressly adopted by the Commission as its final order.

MINNESOTA
OFFICE OF
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PO Box 64620
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June 29, 2023

See Attached Service List

Re: ***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 8-2500-38129
MPUC E-002/CN-21-668

To All Persons on the Attached Service List:

Enclosed and served upon you is the Administrative Law Judge's **SUMMARY OF TESTIMONY, FINDINGS OF FACT, CONCLUSIONS OF LAW, AND RECOMMENDATION** in the above-entitled matter.

If you have any questions, please contact me at (651) 361-7943, dara.xiong@state.mn.us, or via facsimile at (651) 539-0310.

Sincerely,

DARA XIONG
Legal Assistant

Enclosure
cc: Docket Coordinator

STATE OF MINNESOTA
OFFICE OF ADMINISTRATIVE HEARINGS
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CERTIFICATE OF SERVICE

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

On June 29, 2023, a true and correct copy of the **SUMMARY OF TESTIMONY, FINDINGS OF FACT, CONCLUSIONS OF LAW, AND RECOMMENDATION** was served by eService, and United States mail, (in the manner indicated below) to the following individuals:

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