Will Seuffert Executive Secretary June 24, 2022
Minnesota Public Utilities Commission
121 7th Place East, Suite 350
St. Paul, Minnesota 55101-2147
RE: Comments of the PINGP Study Group to Docket No. E002/CN-08-510

Dear Mr. Seuffert:

Please find attached the comments of the PINGP Study group on Docket 08-510, Xcel's request to use any cask technology authorized by NRC at Prairie Island, without further review by PUC.

The PINGP Study Group is an offshoot of the PUC/DOC Advisory Task Force for the scoping of the EIS for the 2009 CON proceedings. The Task Force developed a scoping issues report, in addition to the agency record. This document, expressing views and concerns of surrounding community officials and citizens, became the basis for the formation of the PINGP Study Group.

We greatly appreciate the opportunity that the Commission has provided for additional comments on this consequential matter.

From first to last, study group members support the primary goal of removal of waste from Prairie Island. And the concerns and positions of the Prairie Island Indian Community. The Prairie Island Indian Community bears a multi-generational burden and unique exposure to the risks and uncertainties of both operations and waste storage and will be the first to suffer the "predictable and severe" consequences of failure of any of these safeguards.

The question of whether adding a new cheaper thin-walled type of canister in concrete vaults to the dual purpose casks already on the IFSI pads at Prairie Island will save money and speed removal, or will simply add complexities, costs and risks to long term storage, monitoring, maintenance and transportation is a matter for the SEIS and PUC to carefully consider. Responsibility rests with PUC's authority as the state's economic regulator, with accountability to the state's environmental priorities under 116D.

As a state, we have not yet grappled with the realities of the requirements of "Continued Storage" under the NRC's new definitions for storage, including "indefinite" at reactor site storage.

The matters raised in these comments about continued PUC oversight, requirements for planning and funding to assure (rather than assume) the requirements of "institutional controls" for environmental protections, were raised as "mitigation measures not addressed or adequately addressed in the final EIS" (4410.3000 Subpart 5). We appreciate the inclusion of consideration of a condition for establishing a mechanism for Institutional Controls and Oversight and urge the Commission to do.

Respectfully submitted,
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Comments of the PINGP Study Group

In the Matter of the Petition of Northern States Power Company d/b/a Xcel Energy for

Certification of Need for Additional Dry Cask Storage at the Prairie Island Nuclear Generating

Plant in Goodhue County

Re: Request for Use of Alternative Storage Technology

PUC Docket Number: E-002/CN-08-510

Topic(s) Open for Comment:

• Should the Commission approve Xcel Energy's request for use of an alternative dry cask storage technology? Possibly.

- The Commission could allow Xcel to consider use of an alternative dry cask storage technology, but this choice needs to be coordinated with the choice of decommissioning strategies. If Xcel is going to use one of the private firms, and that firm has coordinated cask and interim storage options and will take ownership of the waste, then this informs the choice of thin-walled cannister style casks.

  If Xcel chooses SAFESTOR which delays the final decommissioning, asserting or assuming that there will be a storage solution at hand, then it is far riskier to choose a 'cheaper cask'. And it is likely more prudent to continue with the path of getting the TN's approved for transportation. There would be efficiencies and possible cost savings, in a "Continued Storage" scenario, to having one type of cask on site. There are a number of uncertainties still surround the legality and "implement-ability" (Cupit) of the interim storage facilities.

  We appreciate Xcel's approach to watching and waiting to see how and if private decommissioning of plants, is successfully implemented.

- **Should the Commission approve Xcel Energy's request to use "any dry cask storage technology" approved by the NRC, without further review by PUC?** No.

The decision about cask technology is consequential. "The greatest threat to health, safety and environment from cask technology decisions – is short term thinking, with long term consequences."

• If approved, what, if any, additional condition(s) should be included in the Commission's order?

The Department of Commerce-EERA filed a comment June 17, 2022, with four specific "mitigation measures" and stated that "EERA staff believes that these mitigation measures are reasonable and appropriate conditions on any Commission approval of Xcel Energy's request."

The PINGP Study group supports all four mitigation measures and offers elaborated recommendations for moving forward with the following condition identified by EERA (with slightly amended wording):

> Requiring implementation of a planning process and framework for Institutional Control and Oversight of "Continued Storage" of spent nuclear fuel at Prairie Island (or in Minnesota generally); and incorporating existing planning processes or frameworks to make the process more public facing, transparent and inclusive of the affected local governments, communities and other interested persons.

With the new NRC timeline for "indefinite" storage at reactor sites, risks multiply. Regulation becomes more complex. The future costs of responsible long term storage, monitoring, and maintenance rise exponentially. And the potential for serious environmental consequences of failures of continuity in maintenance, management, funding become more likely, if not inevitable.

Why Institutional Controls?

NRC [GEIS] and state environmental impact [FEIS/SEIS] conclusions assume Institutional Controls:

Background:

In 2012, in response to state and tribal suit that the Waste Confidence Decision violates the National Environmental Policy Act [NEPA], the court intervened and vacated the Nuclear Waste Confidence Decision 2010 update. From the court document:

"We further hold that the Commission's evaluation of the risks of spent nuclear fuel is deficient in two ways: First, in concluding that permanent storage will be available "when necessary," the Commission did not calculate the environmental effects of failing to secure permanent storage—a possibility that cannot be ignored. Second, in determining that spent fuel can safely be stored on site at nuclear plants for sixty years after the expiration of a plant's license, the Commission failed to properly examine future dangers and key consequences. For these reasons, we grant the petitions for review, vacate the Commission's orders, and remand for further proceedings."

https://law.justia.com/cases/federal/appellate-courts/cadc/11-1045/11-1045-2012-06-08.html

New timeline assumptions:

To replace the "Confidence Decision" reliance upon presumed availability of a permanent storage solution, NRC established a new timeline framework for "Continued Storage", and issued a new Generic Environmental Impact Statement in 2014 which analyzed three scenarios:

- A geologic repository for disposing of spent fuel becomes available 60 years following the licensed life of a reactor (short-term storage);
- A repository becomes available 100 years beyond the short-term scenario, or 160 years after the licensed life of a reactor (long-term storage); and
- A permanent repository is not available (indefinite storage).

Regulatory Assumptions.

From the GEIS executive summary: "To guide its analysis, the NRC relied on certain assumptions regarding the storage of spent fuel. A detailed discussion of these assumptions is contained in **Section 1.8.3. Appendix B** provides further information supporting the analysis assumptions. Some of these assumptions are listed below:

• Institutional controls would remain in place.

• Spent fuel canisters and casks would be replaced approximately once every 100 years.

• Independent spent fuel storage installation (ISFSI) and dry transfer system (DTS) facilities would also be replaced approximately once every 100 years.

• A DTS (Dry Transfer System) would be built at each ISFSI location for fuel repackaging. See pages 2-31 through 2-34 for 2.2.2.1 Construction and Operation of a DTS

• All spent fuel would be moved from spent fuel pools to dry storage by the end of the short-term storage timeframe (60 years)…"

https://www.nrc.gov/docs/ML1418/ML14188B749.pdf.

Environmental Review conclusions rely upon sustained Institutional Controls and oversight:

The conclusions of both federal and state environmental reviews rely (NRC 2014 GEIS and 2021 PUC SEIS), depend *entirely* upon the assumption of sustained Institutional Controls and oversight. Yet no such mechanism currently exists that assures planning and funding for these requirements. This risks the legitimacy of the basis of federal and state decisions regarding nuclear waste.

To address "Continued Storage" integrity, the 2014 GEIS establishes the requirement of an ongoing series of storage cask and facility replacements, with the support of a dry transfer system [DTS], still under development. The DTS will be necessary, as explained in the GEIS, to "enable retrieval of spent fuel for inspection or repackaging without the need to return the spent fuel to a spent fuel pool." https://www.osti.gov/biblio/22975306-updating-dry-transfer-system

Both the federal and state environmental impact statements establish the "catastrophic" consequences of failure of institutional controls/oversight of cask storage, maintenance, and monitoring. The state's role, and PUC's role as the state's economic regulator, is critical to the institutional oversight necessary to ensure planning and funding for the "Continued Storage" requirements of spent nuclear fuel management.

What might be involved in developing and establishing a forum for Institutional Oversight?

Please note: The following comments are not intended to direct the Commission but to inform possible approaches. Institutional Controls relates directly to regulatory authority. But there is also the potential for a complimentary approach of Institutional Oversight which will require --as noted in NRC commentary –the collaboration of all responsible parties, including federal, state and local governments and authorities; and including affected communities.

- Establish a forum and/or workgroup with objectives and a timeline.

- Identify players/stakeholders and resources - e.g. PUC & EERA staff, environmental organization, Xcel (policy/planning and engineer), NRC, PIIC (government and staff), Red Wing (government and staff), state staff (EQB* and legislative), other interested parties to the dockets.
- Identify existing industry and government nuclear community engagement model/principles**
- Identify state and federal EJ principles (NEI/EPA) -
- Identify existing planning, funding and reporting mechanisms
  A. State/PUC
  B. Federal/NRC
- Create Timelines – for planning, funding and reporting based on new NRC timeline framework
- Create an RFP for an independent facilitator, to do all of the above. (Xcel funded, see cost recovery)

What information will be needed for "Continued Storage" planning?

- Access to a regularly updated inventory of rods in the pool and dry casks on the pad: fuel content, age, time in pool and cask– specifically identifying ratings for high burn up fuel***. (This information to be held, as privileged, by PUC.) **See Resource Appendix 1**.
- Ongoing updates on costs and planning for the requirements of facility and cask replacement, and DTS facility deployment at reactor site – along the NRC timeline.
- Updates on investments in equipment, technology and techniques for safe and efficient routine and emergency handling of radioactive waste for "long-term" and "indefinite storage" at PINGP
- Updates on cost recovery from DOE (as in current Triennial Decommissioning Plan)

A "Continued Storage" plan at Prairie Island would include, but not be limited to:

• Management and security of radioactive waste storage for as long as it remains on Prairie Island

• Continuous monitoring of the performance of the casks and facility.

• Continuous monitoringof the environment including surface water and streams, groundwater, soil, and atmosphere.

• Maintenance and periodic replacement of the casks, as established in the NRC GEIS.

• Maintenance and complete replacement of the (now) temporary radioactive waste storage facility.

• Identification of equipment/technology investments needed for safe, efficient routine and emergency handling of radioactive waste for the long-term -- until such time as the federal government or a private company takes ownership and removes the waste from Prairie Island.

- Potential sites for ISFSI replacement and Dry Transfer System installations at Prairie Island. See: GEIS ES.16.1.12 Historic and Cultural Resources.

*State nuclear statutes are under 116C.

** E.g. https://www.iaea.org/publications/14885/stakeholder-engagement-in-nuclear-programmes
https://www.energy.gov/sites/prod/files/2017/01/f34/Draft

***High Burnup Fuel (HBF) Burnup is the measure of duration of nuclear reactor fuel usage, referred to in gigawatt-days per metric ton of uranium (GWd/MTU). Fuel over 45 GWd/MTU is high burnup. As burnup increases so does the radioactivity and temperature of the fuel assemblies, which intensifies challenges in storage and transportation. HBF has three to four times more radioactivity than Low Burnup Fuel (LBF). HBF saves nuclear reactor operators costs by increasing the time between refueling. Allowable burnup levels have increased from industry pressure and NRC complicity. The current limit in the US is 62 GWd/MTU. There are troubling and potentially dangerous uncertainties in the stability and safety of aging HBF that seriously complicate storage, transport, and disposal of SNF. All SNF is deadly and must be kept out of our biosphere for at least a million years; running the fuel to high burnup levels makes that much more difficult. Sierra Club Guidance on the Management of High-Level Nuclear Waste, 2020. See also: http://www.environmental-defense-institute.org/publications/AlvarezHighBurnup.pdf

• Should the Commission make any findings regarding cost recovery in this docket:

The Commission, needs to consider cask cost and cost recovery question from a broader perspective. The decision of what cask technologies to authorize at Prairie Island is critical to every aspect of the future of nuclear waste management in Minnesota. To allow this choice to proceed upon a 'least cost' basis, without contested case information development, and without continued PUC oversight would be against the public interest of the state, the Prairie Island Indian Community, other affected local and downriver communities, and Minnesota's environment.

The PUC as the economic regulator, with statutory responsibility for protection of the environment, must retain oversight of planning and funding. In this oversight, PUC must consider not only the cost of casks, but the effect of a cask technology or a combination of cask technologies, on the costs of -"Continued Storage" management and integrity.

Estimated costs of "Continued Storage" at reactor sites:

The 2014 GEIS lays out projected costs for "Continued Storage" at reactor sites (page **2-35**):

- "Based on EPRI data (EPRI 1995), the NRC estimates a construction cost of $8.58M for the development of a DTS to handle bare spent fuel that could accommodate repackaging, as needed, to replace casks."
- "Based on EPRI's estimates, the NRC estimates that replacing a single cask costs $1.66M, which includes procuring a new cask at $1.02M, unloading fuel from the old cask at $321,000, and subsequent loading of spent fuel into the new cask at $321,000."
- "The initial transfer of spent fuel into a dry cask costs $1.34M per cask (see Section 2.2.1.2) because the unloading of spent fuel from the old cask is not required"

"The total cost for complete replacement of an at-reactor storage facility (i.e., dismantling the old ISFSI and DTS, building a new ISFSI and DTS, procuring new casks, and transferring the spent fuel from the old facilities to the new facilities) is about $392M. The total cost for complete replacement of an away-from-reactor facility is about $7.11B."

Xcel DOE cost recovery should be used to fund "Continued Storage" requirements:

One finding that the Commission should make regarding cost recovery, is that past, present and future federal payments to Xcel for storage 'cost recovery' are applied to fund:

- Institutional Oversight planning, with federal, state and community collaboration;
- ISFSI maintenance and management along each of the new NRC timeframes;
- Cask and pad replacement recommendations along the new NRC timeframes:
- And most critically, provision for the DTS transfer facility needed to ensure the ability at reactor site for cask repair, transfer and preparation for transportation, which is essential to the requirements outlined in the GEIS, by NRC.

Triennial Nuclear Decommissioning Study and Assumptions

The Triennial Report, in consultation with Mr. Levin, does not go far enough in considering the future costs for the required facility and cask replacements and transfer facility in the NRC GEIS guidance for ”Continued Storage”. The Triennial Decommissioning Study does not clearly establish, or is not sufficiently transparent about, what funds will be available specifically to fund nuclear waste management after the cessation of operations. There is no consideration of the additional expense of “Continued Storage”, under NRC assumptions. How will the Triennial report:

1) Consider the lines of expense from the NRC GEIS, for “Continued Storage” as identified above.
2) Consider the extent to which funds accruing in the Nuclear Waste Fund, established in section 302(c) of the Nuclear Waste Policy Act of 1982 [42 U.S.C. 10222(c)[, might be used, and should be used, to provide funds to construct, operate, maintain and safeguard spent nuclear fuel for “Continued Storage” in dry casks at the sites for civilian nuclear power reactors.
3) Take these requirements and costs into consideration.

How might it affect discussion if provision for these costs were calculated – documented -- and claimed to be recovered from the federal government?

Cost Recovery in this docket: To move essential planning and funding mechanisms forward, the following costs should be fully recoverable:

The costs for funding a forum, community engagement and ongoing reports and information development related to that forum/workgroup for Institutional Oversight.

Costs for “Continued Storage” planning, and integrating this information and analysis into existing dockets – Triennial Decommissioning and Integrated Resource Planning, in addition to any other regulatory framework or process that the Commission may adopt.

• Are there other issues or concerns related to this matter?

For the recent study commissioned by Xcel to examine the options of SAFESTOR or contracting with a private decommissioning firm, Xcel directed the consultant to NOT include long term storage costs considerations under SAFESTOR. There are two problems with this.

1) First, it privileges the SAFESTOR option as least cost; and
2) Second, by claiming as a rationale that a storage solution will be available by the end of the 60 years, it essentially reinstates the “Confidence Decision” premise, which has been overturned by the court. Also “available” and “implementable” are two different measures.

The utility must NOT be allowed to skirt, skip or otherwise evade responsibility for planning for and funding “Continued Storage” provisions identified in the NRC GEIS; including cask/facility replacement and funding a DTS, in its structuring of decommissioning options. The ultimate cost concern here is not the relative costs of the casks, but how that choice of technology affects the future costs and risks associated with “Continued Storage” scenarios.

Review of cask technologies from Xcel's request:

" 1 Cost of Cask Technologies:

The TN-40 is an all metal bolted lid design dry cask technology. In this design, the thick-walled steel cask provides both confinement of the fuel and shielding from the radiation emitted from the fuel. Competing dry cask systems use a thinner walled steel canister with a welded lid for confinement and partial radiation shielding, which is then placed in a thick walled concrete vault or overpack that provides the bulk of the radiation shielding.

In contrast, a typical canister-based system uses a confinement shell less than one-inch thick. This is then placed in a concrete overpack or storage module that provides the majority of the radiation shielding. Fabrication of the relatively thin-walled and much lighter canisters requires less infrastructure at a fabricator and results in lower costs.

2. Relative Fabrication Costs

The TN-40 design incorporates both the confinement and radiation shielding aspects into a single, 10.5-inch-thick walled steel component, resulting in a final assembly weighing 100 tons. This requires a specialized facility to handle and fabricate such a large and heavy component

In contrast, a typical canister-based system uses a confinement shell less than one-inch thick. This is then placed in a concrete overpack or storage module that provides the majority of the radiation shielding. Fabrication of the relatively thin-walled and much lighter canisters requires less infrastructure at a fabricator and results in lower costs."

Note: Thin Walled cannisters are undergoing extensive review in San Onofre Decommissioning: Microsoft Word - SpentNuclearFuelFactSheet-Short2018-07-11.docx (eesi.org)

Reference Appendix 1:

Dry Storage Cask Inventory Assessment - Department of Energy (2016)

This report uses the data contained in FCRD-NFST-2013-000263 to define the existing inventory of UNF in dry storage. This information is integrated with data on dry storage canisters and casks from the report, Storage and Transport Cask Data for Used Commercial Nuclear Fuel, 2013 U. S. Edition (ATI-TR13047, August 9, 2013), in a Microsoft Access database (hereinafter referred to as the Dry Storage Cask/Inventory Database). The Dry Storage Cask/Inventory Database is used to produce queries for assessing the various systems used for the existing inventory of dry storage casks. The database and this report will be revised in the future as the inventory of fuel in dry storage changes and as additional information becomes available.

The canistered storage cask systems listed in the dry storage inventory are incomplete designations for the actual storage cask used. For instance the HI-STORM 100 system has numerous storage cask variants associated with it. Not enough information is currently available publicly regarding the current dry storage inventory to define the canistered storage casks at this level of fidelity; therefore, the dry storage inventory is not defined beyond the storage system level.

Because of this uncertainty, the number of unique combinations of reactor sites, canistered storage systems and canistered storage casks in the current dry storage inventory is potentially larger than that presented in FCRD-NFST-2013- 000263. A total of 16 canistered storage cask systems are represented by the current inventory of canistered systems in dry storage. These storage cask systems represent a total of 35 unique canistered storage casks in use.

Example of Dry Cask Inventory:

Fgure 3.2-1 Dry Storage Cask/Inventory Database Structure