



KEEP MINNESOTA'S NUCLEAR MORATORIUM IN PLACE!



OPPOSE THE REPEAL: (HF 9 | SF 350 / SF 718 / SF 572)

OPPOSE SMR'S AND THE PARTIAL REPEAL: (HF 485 | SF 468)

Minnesota's 31-year-old nuclear moratorium was implemented as part of 1994 legislation that permitted nuclear waste to be stored on site at the Prairie Island Nuclear Generating Facility. Senate File 1706 of the 1994 Regular Session of the 78th Minnesota Legislature, Article 2, Section 1 reads:

“The legislature finds that there is great uncertainty over the means and costs of disposing of radioactive wastes generated at nuclear-powered electric generating plants. Current and future electric ratepayers are at risk to pay for these uncertain and potentially enormous costs. These costs could cause economic hardship for the citizens of this state and damage economic growth. For these reasons the legislature finds it necessary to protect its citizens against these costs. [T]hese potential costs ... do warrant a moratorium on new nuclear plant construction.”¹

KEY FACTS FOR CONSIDERATION

Radioactive waste still has no permanent solution: Nuclear waste (spent fuel rods) must be isolated from the environment for 240,000 years². No long-term storage solution exists in the United States, or globally. All current nuclear waste is stored in temporary storage casks which can leak and are subject to risks from extreme weather events. The “Yucca Mountain” storage solution failed. Many other proposals still under consideration could cost over \$80 billion and would take over 150 years to construct.³

New nuclear takes too long to be a solution to near-term load demand or help meet Minnesota’s “Carbon-Free Electricity by 2040 Law”: Building a nuclear reactor requires 10 to 22 years from planning to operation⁴. Repealing this moratorium to meet current/short-term load demand (for things like Data Centers, etc.) is an unreasonable argument. There is no such thing as a zero or close-to-zero emission nuclear reactor. Even existing reactors emit due to the continuous mining and refining of uranium needed. Emissions from new nuclear are 78 to 178 g-CO2/kWh.⁵

Detrimental supply chain & impacts to Indigenous & BPOC communities: Sites for nuclear reactors, uranium mines, fuel fabrication facilities, and waste storage are often placed on (or near) tribal lands in violation of treaties and/or without Free, Prior and Informed Consent. The Navajo, Hopi, Havasupai and other nations in the Southwest U.S. bear the brunt of the health impacts of uranium mining, milling, and transport on their ancestral lands, with over 500 abandoned uranium mines on Navajo alone.⁶ Leona Morgan, a Dine representative at COP25, calls nuclear waste “a major human rights violation.”⁷ Here, in what we call Minnesota, Blake Johnson, tribal member and government liaison for Prairie Island Indian Community (the closest community to a nuclear reactor in the country), has testified many times before the MN legislature opposing each of the current bills to repeal the nuclear moratorium.

Repealing the moratorium is a distraction from pursuing truly renewable energy solutions: We don't have time to continue "business as usual" while we wait 20 years for nuclear infrastructure that is costly and dangerous. Solar & wind energy can be deployed rapidly (6 mos - 5 years versus 10-22 years for nuclear).⁸

Only new U.S. reactors in over 30 years nearly doubled budget, construction time, or were abandoned: The Vogtle Units 3 and 4 expansions in Georgia took twice the projected timeline to build, or 15 years, and cost \$35 billion (over \$20 billion over budget).⁹ Ratepayers will cover \$11 billion, among the highest bills in the country. Georgia's grid is overbuilt by 40%. The two reactors at V.C. Summer bankrupt designer Westinghouse and were canceled after a 75% cost increase and after ratepayer rates were raised five times.¹⁰ The project cost \$9 billion, produced no electricity, and ratepayers will pay monthly for 15 more years.¹¹

Cost per-kilowatt-hour of nuclear does not compete with renewables: Nuclear power costs three to four times more than the combination of renewable wind and solar power plus back-up batteries.¹² Renewables already power eight percent more of the U.S. grid (12% for MN) than nuclear and were rising the last four years.¹³ Switching to 100% renewables (without nuclear) reduces MN's 2050 annual energy costs by 63.9%.¹⁴

Minnesota's existing nuclear reactors do not have a clean record: In November of 2022, Xcel Energy's Monticello Nuclear Reactor leaked 829,000 gallons of coolant water containing 14 trillion picocuries of radioactive tritium into the groundwater at a concentration 251 times the EPA drinking water limit. Xcel data shows this water reached the Miss. River, drinking water for Minneapolis and St. Paul.¹⁵

There is no need: On page 155 of Xcel's 2024-2040 IRP currently before the MN PUC, the modeling EnCompass software did not select Small Modular Reactors (SMR) when given the option as a future energy source. This proves that even Xcel's own modeling software cannot justify the huge cost of building new nuclear infrastructure. A Minnesota Department of Commerce filing on the current docket for the IRP writes:

*"In summary, the analysis shows that the increased energy output from the nuclear units ... is largely reducing energy from wind and, to a much lesser extent, energy from solar." This means that considering only the extensions of the operating licenses of Xcel's current nuclear reactors would reduce energy from wind and solar – counter to the State of Minnesota's goal of furthering renewable energy generation.*¹⁶

Small Nuclear Reactors (SMRs) are no better: No commercialized SMRs exist or are ready for deployment in the United States. Capital costs per kilowatt-hour were 41% higher for SMRs compared to large nuclear reactors¹⁷ and tests thus far have difficulty meeting demand fluctuations.¹⁸ A 2022 study published by the Proceedings of the National Academy of Sciences, showed most SMRs increase the volume of nuclear waste by a factor of 2 to 30 times more than traditional reactors.¹⁹ NuScale, the first SMR approved in the U.S., failed following a 53% cost per-megawatt-hour increase and a tripling of total cost estimates to \$9.3 billion.²⁰

1 CHAPTER 641 - S.F. No. 1706, Minnesota Session Laws – 1994 Regular Session, 78th Legislature. <https://www.revisor.mn.gov/laws/1994/>

2 Scientific American. January 28, 2009. <https://www.scientificamerican.com/article/nuclear-waste-lethal-trash-or-renewable-energy-source/>

3 The Telegraph. May 5, 2024. <https://www.telegraph.co.uk/business/2024/05/05/66bn-nuclear-graveyard-became-expensive-challenge/>

4 Jacobson, M.Z. (2023). No Miracles Needed, Cambridge University Press, New York, 437 pp..

5 Jacobson, M.Z. (2020). 100% Clean, Renewable Energy and Storage for Everything, Cambridge University Press, New York, 427 pp.

6 <https://haulno.com/>

7 Pressenza. December 12, 2019. <https://www.pressenza.com/2019/12/cop25-leona-morgan-continuing-to-produce-nuclear-energy>

8 Mark Jacobson, U.S. House Testimony. January 17, 2024, <https://web.stanford.edu/group/efmh/jacobson/Articles/I/24-01-MZJ-HRTTestimony.pdf>

9 Associated Press, May 25, 2023. <https://apnews.com/article/georgia-nuclear-power-plant-vogtle-rates-costs-75c7a413cda3935dd551be9115e88a64>

10 Utility Dive, July 31, 2017. <https://www.utilitydive.com/news/santee-cooper-scana-abandon-summer-nuclear-plant-construction/448262/>

11 South Carolina Daily Gazette, April 5, 2024. <https://scdailygazette.com/2024/04/05/heres-how-much-sc-power-customers-are-still-paying>

12 U.S. Energy Information Administration, March 2022. https://www.eia.gov/outlooks/aeo/assumptions/pdf/table_8.2.pdf

13 U.S. EIA STEO, February 11, 2025. <https://www.eia.gov/outlooks/steo/>

14 Jacobson, M.Z., et al. (2021), Zero air pollution and zero carbon from all energy at low cost throughout the U.S. with 100% wind-water-solar and storage, Renewable Energy, 184, 430-444, 2022, <https://web.stanford.edu/group/efmh/jacobson/Articles/I/WWS-USA.html>

15 NUREG-1437, Supp 26, Second Renewal, "Site-Specific Environmental Impact Statement for Second Renewal Regarding Subsequent License Renewal for Monticello Nuclear Generating Plant, Unit 1" Final Report. <https://www.nrc.gov/docs/ML2430/ML24309A221.pdf>

16 Docket No. E002/RP-24-67, Attachment 3, Page 19

17 Van Hee, N., Peremans, H., & Nimmegeers, P. (2024). Economic potential and barriers of small modular reactors in Europe. Renewable and Sustainable Energy Reviews, 203, 114743. <https://doi.org/10.1016/j.rser.2024.114743>

18 Natural Resources Defense Council. (2023, December). Small modular nuclear reactors - more questions than answers. <https://www.nrdc.org/sites/default/files/2023-12/small-modular-nuclear-reactors-ib.pdf>

19 Krall, L. M., Macfarlane, A. M., & Ewing, R. C. (2022). Nuclear waste from small modular reactors. Proceedings of the National Academy of Sciences, 119(23). <https://doi.org/10.1073/pnas.2111833119>

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