

## Sample Comment Suggestions - Table of Comments By Topic

Intro (p.1-2)

The cost of nuclear compared to renewables (p.2-4)

Rate hike (p.3-4)

The overestimation of Xcel's predicted energy needs (p.4)

The failures of new nuclear construction projects (p.4-6)

When should Xcel file its next IRP? What additional information should the Commission require Xcel provide as part of its next IRP? (p.6-7)

Adverse effects to population or environment of area utility serves (p.7-9)

The debunked myth that nuclear must be maintained to meet baseload needs (p.9-11)

The problem of nuclear waste (p.11-12)

Conclusion (p.12-13)

### **Intro:**

Public Utilities Commission,

My name is \_\_\_\_\_ and I am a resident of \_\_\_\_\_ (Xcel customer?). I am writing to express my concern about \_\_\_\_\_ and to urge the Public Utilities Commission to reject or modify Xcel Energy's 2024-2040 IRP.

Regarding the following questions for public comment posed by the PUC -

1. Should the Commission approve, reject, or modify Xcel Energy's 2024-2040 Integrated Resource Plan (IRP)?
2. Are Xcel Energy's forecasted energy and capacity needs reasonable?
3. Does Xcel Energy's proposed IRP result in equitable outcomes for the Company's ratepayers, workers, and the general public?
4. Are there other issues or concerns related to this matter?

The Commission should reject Xcel Energy's 2024-2040 IRP or modify it to exclude any operating license extension of Xcel's Monticello Nuclear Reactor or Xcel's Prairie Island Reactors and forbid any construction of new nuclear reactors, including Small Modular Reactors or "advanced nuclear technologies." Nuclear should be phased out by Monticello's current 2030 closure date and Prairie Island's 2033/34 closure dates, alongside the closure of Xcel's coal power plants, and concurrent with closure of all gas-powered plants in a transition to 100% renewable energy infrastructure for the Upper Midwest. I argue that Xcel's "forecasted energy and capacity needs" are not "reasonable," that the proposed IRP does not "result in equitable outcomes for the Company's ratepayers, workers, and the general public," and that there are gross other issues and concerns surrounding ongoing and past problems with Xcel's nuclear reactors, specifically regarding the health risk to the general public, the environment, and the threat posed to vital natural resources on which we all depend. Xcel must propose a modified IRP which commits to adhering to the scheduled 2030 and 2033/34 closure dates of its nuclear reactors and to not build any new nuclear infrastructure based on the following points: the cost of nuclear compared to renewables, the overestimation of Xcel's predicted energy needs, the failures of new nuclear construction projects, the dangerous waste and accidents that disqualify nuclear as a clean

energy source, and the debunked myth that nuclear must be maintained to cover baseload power needs. There are real living examples of grids operating with nuclear power, and given the gross negligence in handling, reporting on, and addressing the recent 829,000 radioactive leak at Monticello, the PUC must demand Xcel is accountable to its ratepayers and closes its nuclear reactors.

### **The cost of nuclear compared to renewables:**

From Xcel's 2024-2040 UPPER MIDWEST INTEGRATED RESOURCE PLAN DOCKET NO. E002/RP-24-67:

"Summary of filing: • Extending the use of existing nuclear plants into the 2050s. • Continue with the planned retirement of coal facilities by 2030. • Adding substantial new renewable resources by 2030, including 4,200 MW of wind and 400 MW of solar. • The addition of 600 MW of battery storage by 2030. • Adding 2,244 MW of “firm peaking” capacity by 2030. • The integration of over 1,800 MW of additional distributed energy resources, including community solar gardens, distributed solar, energy efficiency, and demand response, by 2030.

Key elements of that plan include: • Extending the lives of both our nuclear plants—over 1,700 MWs of carbon-free baseload generation—into the 2050s; • Adding nearly 10,000 MWs of renewable resources and over 2,100 MWs of energy storage to our system by 2040.

EXISTING AND APPROVED RESOURCES Our current generating resources comprise a diverse portfolio including nuclear, coal, wind, biomass, solar, hydro, natural gas, and oil-fueled facilities. Physical generating assets owned by the Company have a net capacity of approximately 9,500 MWs, including about 2,300 MWs of wind. In addition to these assets, we purchase power from additional physical generating assets representing a capacity of approximately 5,600 MWs. Together, these provide approximately 15,000 MWs of generation resources, of which approximately 7,700 MWs is supplied by renewables. In addition to the physical assets above, customer-owned distributed solar, demand response, and energy efficiency provide additional portfolio diversity ... In total, we currently have approximately 7,700 MWs of renewable capacity serving the NSP System, including: • 4,500 MWs of wind resources; • 2,300 MWs of solar, including community solar programs and grid-scale solar; • 800 MWs of hydroelectric power; and • 130 MWs of biomass and landfill gas. ... Our Monticello and Prairie Island nuclear plants provide a total net capacity of approximately 1,650 MWs."

Though Xcel's nuclear reactors only represent one quarter of the capacity that its renewable infrastructure represents, Xcel claims they provide 30 percent of the total electric energy their customers consume, according to page 75 of the proposed 2024-2040 IRP. Xcel also reports that they have maintained a cost of production between 2019 and 2023 that is \$31.25 per kWh, which is actually as much as \$7 per kWh more than the average cost of electricity generated by solar. This means the ratepayer is paying an increased and unfavorable rate for more expensive nuclear power, simply because Xcel already has the infrastructure in place for nuclear and undoubtedly desires to squeeze any last profits out of the highly capital intensive initial investment required to build the reactors. However, if the grid space were freed up for solar or other renewable energy rather than clogged by the more expensive nuclear energy, the Upper Midwest and State of Minnesota could more quickly reach its renewable energy goals and spare the public the health risks and risks to vital resources posed by nuclear energy.

At only 571 MW, Monticello represents only 3% of Xcel's total generation resources. The reactor has an average annual operating cost of \$150-\$250 million. The average cost of running a reactor (not accounting for additional possible millions of dollars needed to address age-related accidents, clean-up leaks, or deal with storing, transporting, and handling additional spent fuel) could add enough solar generating capacity to cover Monticello's 571 MW over the next five years at a cost equal to or less than the cost of running Monticello - when compared to the cost of the new Sherco solar installation.

Therefore, running the reactor beyond 2030 imposes a greater expense on ratepayers while further delaying the transition to clean and renewable energy. It is a waste of ratepayers money to continue to run Monticello rather than investing that same money in expanding solar.

Beyond the expenses tallied above for running the reactor, Xcel spent an additional \$600 million on Monticello in 2013 to "boost the plants output." The recent leak of 829,000 gallons of radioactive coolant water into the groundwater has cost Xcel, and therefore ratepayers, a likely \$350,000 for the new steel pile wall - which Xcel admits is only intended to "slow" the movement of radioactive water towards the Mississippi River but will not be able to keep that contaminated water from entering the river and mixing with the drinking water source for 20 million people downstream. Beyond that, there are the costs of the additional pumping wells and storage tanks for holding all of the tritiated leak water that Xcel is pumping out of the ground, which they plan to evaporate, sending tritium vapor into rain clouds over neighboring fields, homes, and croplands, and adding tritium to the food chain to be ingested - causing cancer, including crossing the placenta and causing embryonic cancer, and leading to loss of pregnancy and birth abnormalities. These accidents add to the threat to public health and the cost of running the reactors and are strong reasons that running Monticello and Prairie Island reactors beyond their 2030/33/34 closure dates is not equitable to ratepayers who deserve clean and renewable energy without threats to their safe drinking water, threats which disproportionately effect children and women.

Xcel reports that it will take two years (2023-2025) to add 250 MW to its solar array at Sherco and the newly approved expansion represents an additional investment of \$406 million from Xcel Energy. Xcel also notes the entire Sherco Solar project will create an estimated \$350 million in local economic benefits through payments to landowners and local governments. The company says it is working with the state and local communities to bring new jobs and investments to areas affected by the coal plant retirements and that Sherco Solar will provide nearly 400 union construction jobs. These arguments could also be used to justify substituting solar or other renewables for the power generated by Monticello, a similar town to Becker where Sherco is located, only 8 miles away. Two similar-sized solar arrays, ostensibly taking four years to build or add to Xcel's existing project, could cover the generation capacity of Monticello. This project could likewise make use of Xcel's existing infrastructure and could provide good jobs and local economic incentives just as Xcel proves the Sherco project has. All of this could be done, given Xcel's estimates of costs to expand Sherco, for equal to or less than the cost of running Monticello. Eight-hundred million dollars of solar generation capacity would be an investment in renewable infrastructure for the future that would be equal to ratepayers funding the already overdue Monticello reactor for another four years.

Xcel Energy is building the Sherco Solar arrays adjacent to the existing Sherco plant, allowing the company to reuse the facility's existing grid connections. That will provide customers with power in the most efficient and cost-effective way. The projects will help meet Xcel Energy customers' energy needs as the company transitions from coal. Xcel Energy is on track to reduce carbon emissions 85% from customers' electricity in the Upper Midwest by 2030. The company plans to retire all of its coal units by the end of 2030. The same should be true for Xcel's nuclear reactors.

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### **Rate hikes:**

Minnesota State regulators recently approved electric rate hikes for Xcel Energy customers. Xcel asked to increase its electric rates by [21 percent](#) (\$677 million) over the next three years.

Xcel later reduced its request to \$440 million over three years. The Minnesota Department of Commerce and an administrative law judge recommended a smaller amount.

After several days of hearings, the state Public Utilities Commission approved a rate increase of 9.6 percent over three years, or \$306 million — less than half of Xcel's original request.

The proposed 2024-2040 IRP states that Xcel will not impose rate increases greater than 1% a year. How can this be believed when Xcel has just demanded a rate increase of an astronomical 7% a year, though the PUC only granted 3.3% a year. Xcel does not inspire confidence that it will be accountable to maintaining its promises of keeping rates low for customers over the coming IRP period. The PUC should deny Xcel's 2024-2040 IRP until Xcel can provide better proof that it will keep rates low. Closing costly nuclear reactors, such as Monticello, where the recent leak of 829,000 gallons of radioactive water has caused unexpected expenses which are passed on to customers, is one way to keep rate hikes down. The PUC should require that Xcel invest in transitioning that generating capacity to solar and other renewable infrastructure that will have better longevity than a 53-year-old nuclear reactor and which can produce power at proven lower kW/h rates.

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### **The overestimation of Xcel's predicted energy needs:**

The 571 MW capacity of the Monticello reactor could be covered simply by more accurately projecting energy needs in the Upper Midwest for the next five to fifteen years and focusing on conservation and efficiency efforts. Xcel's projected "two percent average annual growth in electric energy requirements is stronger than the actual growth seen over the past few years due, primarily, to forecasted large new data center loads and acceleration in adoption of Electric Vehicles." However, "electric energy requirements increased at an average annual rate of 0.2 percent from 2019 to 2022," according to page 65 of Xcel's 2024-2040 proposed IRP.

On page 66, Xcel writes: "We forecast an approximate 35 percent increase in energy requirements over the 2024-2040 planning period." That seems to be a gross over-estimate compared to the actual average annual rate of growth demonstrated over the period of the previous IRP. Even when considering the growth of electric vehicles, Xcel fails to provide a justification for anticipating energy demands are ten times greater over the next five years than they have been over the last five.

### **The failures of new nuclear construction projects:**

Attempted projects to construct new conventional reactors and new Small Modular Reactors in recent decades have been catastrophic failures plagued with budget overruns and wasting tens of billions of dollars, often covered by ratepayers and federal subsidies funded by tax dollars, without generating power. The amount of solar and wind or other renewable energy infrastructure that could be built with this money could produce far greater amounts of energy for the consumer while maintaining a more flexible grid through increased storage capacity for on-demand release of energy to match consumption.

In the case of the only two attempts to build new conventional reactors in the United States in the last fifteen years - the Vogtle Units 3 and 4 expansion in Georgia and the Virgil C. Summer reactors in South Carolina - both projects had cost overruns of billions of dollars that were passed on to ratepayers.

In Georgia, ratepayers are footing the bill for budget overruns on Georgia Power's Vogtle nuclear

reactors. The state approved a plan to allow Georgia Power to force ratepayers to cover the \$7.56 billion the company will spend finishing its two new nuclear reactors near Augusta through rate hikes.

According to David Schlissel, director of resource planning analysis for IEEFA, both reactors at Vogtle arrived seven years behind schedule and the project cost \$17 billion over budget. The original cost estimate for the project came to around \$14 billion but recent estimates are over \$30 billion.

The astronomical cost overruns at Vogtle and similar overruns for two of the same reactors under construction in South Carolina forced the reactors' developer Westinghouse into bankruptcy and caused South Carolina to abandon both of their reactors despite the time and work already put into construction - wasting \$9 billion without generating any power.

In the case of SMRs, the first SMR project approved in the United States has already been canceled due to cost overruns that caused utility partners to pull out because ratepayers would not foot the bill. NuScale Power Corp., the first company to win approval for a small “modular” nuclear reactor (SMR) design in the U.S., pulled the plug on its flagship project in Utah after costs ballooned 53 percent. NuScale and non-profit state utility partner UAMPS agreed to build a dozen 77-megawatt reactors at the Idaho National Laboratory (INL) to begin delivering electricity in 2029. But the cost per-megawatt-hour rose from \$53 to \$89, and subscribers began to pull out. The deal was canceled in November despite receiving \$232 million in federal taxpayer handouts from a \$1.4 billion non-competitive DOE grant.

NuScale chief executive officer John Hopkins said, “Once you’re on a dead horse, you dismount quickly. That’s where we are here.” Another deal with Standard Power to build 24 SMNRs is faltering. NuScale pitches their project as “carbon free,” failing to acknowledge the carbon-intensive nuclear fuel chain, production of the reactors, and radioactive waste handling and transportation. David Schlissel, director at the Institute for Energy Economics and Financial Analysis said, “We are happy for the communities who dodged a huge financial debacle ... As we have repeatedly shown, SMRs that are being hyped by the nuclear industry and its allies are simply too late, too expensive, too uncertain ... There are less risky and more proven alternatives for addressing growing energy needs and the global warming crisis.”

On page 155 of Xcel's 2024-2040 IRP, the modeling EnCompass software, did not select an SMR when given the option to select an SMR as a future energy source. This proves that even Xcel's own modeling software cannot justify the huge cost of building new nuclear infrastructure, even with technologies that are advertised as smaller and easier to construct.

In fact, as the Pioneer Press reported in 2022, Xcel Energy was considering operating that very same SMR in Idaho, they should know first-hand, after hundreds of millions of dollars were wasted on that project that could instead have built hundreds of MW worth of solar generating capacity.

The State of Minnesota has considered lifting its moratorium before on new nuclear technologies and has considered allocating funding to research SMRs. The PUC must be accountable to ratepayers by refusing to sink public funds into this waste of time and money which is a proven failure and a distraction from investments in true renewables and a diversion of funding, grid, capacity, labor, and resources away from a renewable energy infrastructure for the Upper Midwest. The cost per MWh for energy produced by an SMR is three times the cost per MWh of energy produced by solar. The answer is clear.

The IEEFA’s SMR report found that SMRs in China, Russia, and Argentina are also overbudget and far over their schedules for completion. China’s 150-MWe Shidao Bay 1 high-temperature gas-cooled reactor tripled its original budget, while Russia’s two 35-MW floating reactors came in 300% over budget. Both projects are running 4-5 times over their planned construction times, taking as long as 12-

13 years, proving that SMRs are not only too costly but also take too long to construct to be a true climate solution.

“What we need to do now due to the threat of climate change” is invest in wind, solar and battery storage, which is cheaper and less time-consuming to deploy than nuclear, Schlissel said. “That is the option that has the biggest impact in the shortest period of time.”

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Xcel should also present plans to transition to renewables or close all gas-powered plants rather than building new ones.

**When should Xcel file its next IRP? What additional information should the Commission require Xcel provide as part of its next IRP?:**

Xcel's last IRP, approved April 2022, states that Minnesota Statutes, section 216B.2422, requires Xcel to submit IRPs to the PUC approximately every two years for review and approval. Among the plan's approved activities are the closure of Xcel's last remaining coal plants serving Minnesota by 2030 and the pursuit of a ten-year extension of the company's federal operating license for its nuclear generating plant at Monticello, which is scheduled to expire in 2030.

The Minnesota Department of Commerce and the Office of the Attorney General formally intervene in the commission's review process, commenting on the utility's plan and presenting their own analysis and recommendations, as do environmental and energy advocacy organizations, cities and counties, utility customers, labor organizations, members of the public, and others. All information gathered during the process is reviewed by the commission, which, under its rules, is required to consider the following factors in making its decisions. “Resource options and resource plans must be evaluated 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.”

Given that Xcel most recently approved IRP, in April 2022, states that "subsequent plans were modified to address issues raised by other parties to the proceeding," the PUC and Attorney General's office, and

Minnesota Department of Commerce must intervene to deny the proposed 2024-2040 Xcel IRP until it can securely address the list of factors given above.

Regarding question of when next IRP should be: should be submitted within two years of the current IRP's approval, in 2027, in order to again address whether or not it is equitable to rate payers to continue operation of Monticello Reactor beyond the 2030 closure date and in order to address extension of Prairie Island Reactors when they are eligible for applying to NRC for second 20 year license extensions in 3 years.

While elements of the commission's order scheduled for implementation towards the end of the plan's timeline are subject to revision in future IRPs, those slated to occur within five years of the order are deemed to be part of the utility's current "action plan."

Since closing Monticello in 2030 is still more than five years away, this issue can be addressed in the next IRP. The commission should not grant approval to run Monticello beyond 2030 until either this current IRP or the next IRP filed before 2030 contend with the issues surrounding the Monticello Reactor that are still unfolding as Xcel grapples with its license extension application at the NRC. To date, new information is still being revealed about the true contamination to reach the river, about Xcel's lack of transparency and misinformation in communications with the public. Furthermore, incredible doubt has been cast on the license extension application by the fact that the NRC's Draft Site-Specific Environmental Impact Statement does not include information from the period of highest contamination of the Mississippi River. Though its own DSEIS acknowledges that one of the wells closest to the river had just tested for radioactive contamination exceeding the EPA safe drinking water standard and had been rising steadily - growing five-fold in the previous three weeks - the NRC chose the very same day that well tested over the drinking water standard as the day to cease information-gathering for its DSEIS process. This clearly illustrates that the DSEIS ignores the likely greatest impacts to the river and public drinking water for 20 million people. No assessment of the safety of continuing to operate the Monticello Reactor can be complete without a thorough review of well tests in the six months after August 18, 2023.

The 2022 IRP states that: "by 2026, Xcel will acquire: at least 720 MW of company-owned solar generation that can utilize the interconnection capacity made available by the retirement of Sherco Unit 2 in 2023 (this may include the 460 MW solar plant to be located at the Sherco site that was approved by the commission in September 2022); and an additional 600 MW of solar resources at any location."

This shows that the Commission finds it reasonable to request Xcel to expand solar capacity by as much as 1320 MW over the course of four years. This statement from the previous IRP also points to the fact that taking a Sherco Unit offline frees up capacity for solar and other renewables - the same could be true of taking Xcel's nuclear reactors offline.

#### **Adverse effects to population or environment of area utility serves:**

Xcel's most recent approved IRP from April 2022 states: "Resource options and resource plans must be evaluated on their ability to: ... minimize adverse socioeconomic effects and adverse effects upon the environment." Despite claims by the industry and operators, nuclear is not clean power. It may have lower carbon emissions than burning fossil fuels, but the nuclear fuel chain is actually very heavily carbon intensive - from the mining and processing of uranium and nuclear fuel to the transport and handling of nuclear waste. Moreover, the harmful contamination from unanticipated leaks and accidents and routine emissions has grave consequences for those in the utility's service area. Although meltdowns and catastrophic accidents such as Three-Mile Island, Fukushima, and Chernobyl have garnered a lot of attention, there are far more common releases from nuclear reactors that are still dangerous and deadly to our local populations and contaminate our water, land, and air.

Currently, information continues to emerge regarding the 829,000 gallon leak of radioactively contaminated coolant water into the ground water under Xcel's Monticello Nuclear Reactor. The leak, which Xcel failed to notify the public of until four months afterward, has reached the Mississippi River and, despite many reassurances by Xcel and the NRC and this was an impossibility, the tritiated water has been detected in the river - the drinking water source for 20 million people. The NRC has been forced to walk back these comments and now admits the leak has reached the river. Xcel still maintains that there is no threat to the public but they have not shared data from well tests after August 18, 2023. On August 18, 2023, the currently available well test data, obtained only through a special request for information by the NRC, shows that monitoring well 37-A, one of the closest to the Mississippi River, tested for tritium in excess of the EPA safe drinking water standard. Xcel tries to placate the public with claims that there is no risk to public health, safety, or the environment, but more and more information emerges pointing the other way. If there is no risk then why is Xcel not more forthright with all of this information? It took Xcel a year after the leak was discovered to release information on the actual volume of the leak. This incident at Monticello and its mishandling point to the dangers posed by aging nuclear reactors that are running far beyond their 40 design-based lifespan. Xcel and the NRC have failed to prove that there is no harm posed to the public. The NRC's own website, and the Health Department's, state that no dose of radiation is safe. However, the NRC allows its operators to expose the public to twenty times the dose of radiation per year that the EPA considers safe. Pregnant women and children are most at risk as their bodies are even more susceptible to damage from radiation and can handle much smaller amounts. Tritium, such as that in found in high concentrations in the leaked coolant water at Monticello which has moved to the Mississippi River, can cross the placenta when ingested and can move through the body like water - it is in fact the radioactive form of Hydrogen. Some sources like to say that tritium is weak radiologically because it is a beta-emitter. That may mean it is less able to penetrate skin the way some other forms of radiation can, however, it can cause cancer and damage to cells when ingested as through drinking water or inhaled as water vapor - such as the vapor released through Xcel's evaporation of the tritiated ground water it is pumping into storage pools at Monticello currently. Tritium has not been well studied enough, but newer research confirms that tritium is linked to cancers, to birth abnormalities, to embryonic cancers, and to loss of pregnancy. It can move through the food chain when tritiated water or water vapor falls on agricultural fields or is used to irrigate. Monticello's recent leak was one of the highest tritium concentrations to leak from a reactor in the United States. However, all reactors release tritium as part of their routine functioning, meaning that any reactor still running in the Upper Midwest or in Minnesota as part of Xcel's energy mix is contaminating drinking water.

Routine emissions also account for increased cancer rates around reactor sites. In his 2024 report entitled "Health Trends Near Monticello Nuclear Reactor," Joe Mangano writes:

"No nuclear power reactor has ever been close to operating for 80 years; only a small handful have recently surpassed 50 years in service, including Monticello Health and safety issues posed by very old reactors are unknown; but routine environmental emissions of radioactivity are more likely to increase over time, due to the corroding of mechanical parts. At very least, any regulatory decision on the application to extend Monticello's license should include an understanding of health trends in the local population.

The table shows that for the earliest period available (1968-1971), the two-county mortality rate was 6.2% below that of other Minnesota ... The period 1968-1971 covers a period before and immediately after the Monticello reactor began operating; thus, any environmental exposures to radioactivity from reactors would not be expected to affect mortality rates in this period. Immediately after the four-year baseline period, covering the years 1972-1978, all-cause local mortality was just -0.6% below other Minnesota. Thereafter, in the following four decades, the local rate exceeded that of other Minnesota



counties (+12.7%, +9.2%, +2.6%, and +0.9%). If the two-county rate was expected to remain at 6.2% below other Minnesota, as it was in 1968-1971, an excess of deaths has occurred. From 1972-2020, this excess was 4,319 deaths, just over 10% of the Sherburne/Wright total of 43,057 deaths. Provisional data for 2021, 2022, and 2023, suggests the trend of excess deaths has continued.

Any analysis of health trends near a nuclear facility should include cancer, as each of the 100-plus radioactive isotopes produced and released by reactors is carcinogenic. Cancer, easily the most-studied disease among irradiated populations, was the focus of the sole federal analysis of health near U.S. reactors, the 1990 NCI study. About one-quarter of all U.S. deaths are now attributable to cancer.

The total cancer deaths in excess of the local rate continuing to be 6.8% lower – was 601 of the 9,931 cancer deaths from 1972-2020. The data for the most recent three years raise concern. The excess age-adjusted death rate for all cancers in the two-county area exceeded the rate elsewhere in the state, by 2.4%, 9.5%, and 20.6%. Cancer deaths climbed steadily from 366 to 407 to 439. Excesses in Sherburne/Wright as high as those in 2022 and 2023 have never been observed in any of the 56 years included in the 1968-2023 database."

On the question of instances of child cancer mortality, Mangano found: "However, the two-county rate, which was 37% below other Minnesota in the earlier period, has now moved to 14% ABOVE, since 1993. The rate in other Minnesota counties has dropped by nearly half."

### **The debunked myth that nuclear must be maintained to meet baseload needs:**

On page 34 of the 2024-2040 IRP, Xcel writes: "The closing of our (and other utilities') baseload coal units and the substantial additions of intermittent renewable resources has and will continue to provide many benefits to our customers and communities. At the same time, however, it also means that we must develop our plans thoughtfully to ensure that we continue to have the resources to meet our customers' needs at all times."

However, the need for baseload power generation has been debunked as a myth and it has been proven that renewables are capable of fully supplying a grid with more flexible and consumer-needs-tailored energy than the grid-clogging constant generation of nuclear or coal. One prominent example of a grid transitioning to renewables with no reliance on nuclear power is the case of Germany, which closed down its last reactors this year.

Analysts with Frontier Group found:

- the need for baseload power is vastly exaggerated and there are sources of carbon-free baseload power other than nuclear. Moreover, nuclear power is a competitor with, not a complement to, clean sources of electricity.
- Grid operators can use a variety of tools to make intermittent renewable resources like wind operate more like baseload resources. Research shows that the variability of wind power can be vastly reduced by spreading wind turbines out over a large geographic area. In addition, wind power can be integrated with energy storage technologies to produce reliable electricity.
- Energy sources such as geothermal energy have the capability to produce consistent electricity 24/7, operating as true baseload resources in their own right.
- Demand-side approaches – including strong energy efficiency measures and demand-side management programs – can reduce the base load and provide the opportunity to curb demand at times when renewable electricity production is unexpectedly low.
- Energy storage – including batteries for plug-in vehicles – can be paired with smart grid technologies to store renewable electricity and release it to the grid when needed.

- It was the potential for these new methods of balancing supply and demand that led Federal Energy Regulatory Commission Chairman Jon Wellinghoff to say in 2009, "I think base-load capacity is going to become an anachronism."

Ecologist Mark Diesendorf writes for Renew Economy, that:

"The record shows time and time again that wind and solar power [contribute to a dependable power supply](#) and help prevent blackouts and other grid problems. Just one of many examples: the California grid operator, which manages a grid with nation's highest levels of solar power, [confirms](#) that solar energy can provide many grid reliability services like voltage support and frequency response, both of which are necessary to ensure a constant and stable power flow. We also know that high penetrations of renewables can be managed reliably. For example, wind energy in Texas often provides more than 30 percent or even 40 percent of the state's daily power needs *throughout the entire day*. Meanwhile, numerous [studies](#) also show very high levels of renewable energy can be reliably integrated into the electricity transmission system. Research from the non-partisan National Renewable Energy Laboratory (NREL) shows that with continued innovation in grid practices, increased flexibility in our power system, and improved power management among different grid regions of the country, we will be able to [power our country primarily with wind and solar power](#)."

The north German states of [Mecklenburg-Vorpommern](#) and [Schleswig-Holstein](#) are already operating on 100% net renewable energy and does not rely on baseload power stations.

Diesendorf further explains that computer simulations modeling supply and demand by the hour can scale up existing commercially available renewable energy sources to 80-100% and confirm that they cover supply and demand.

He writes, "In the USA a major computer simulation by a large team of scientists and engineers found that 80-90% renewable electricity is technically feasible and reliable (They didn't examine 100%.) The 2012 report, [Renewable Electricity Futures Study. Vol.1. Technical report TP-6A20-A52409-1](#) ([www.osti.gov/bridge](http://www.osti.gov/bridge)) was published by the US National Renewable Energy Laboratory (NREL). The simulation balances supply and demand each hour. First, the fluctuations in variable wind and solar PV are balanced by flexible renewable energy sources that are dispatchable, i.e. can supply power on demand. These are hydro with dams, Open Cycle Gas Turbines (OCGTs) and concentrated solar thermal power (CST) with thermal storage. It's not essential for every power station in the system to be dispatchable. Incidentally the gas turbines can themselves be fueled by 'green gas', for example from composting municipal and agricultural wastes, or produced from surpluses of renewable electricity."

As a case in point - Germany has shut down all of its remaining nuclear reactors, and is still pursuing the goal of closing coal plants by 2030 and being carbon neutral by 2045 - goals that match the other portfolio goals of Xcel and the State of Minnesota - proving it can be done and that the myth that nuclear is the only solution to meet baseload requirements is false. An overwhelming number of studies and simulations, as well as living examples from Germany's own grid and grids high in renewables such as Texas' wind power and California's solar, show that a constant source of power generation such as a nuclear reactor is not the answer to meeting baseload needs and that in fact the concept of baseload is antiquated and inaccurate.

Any basic internet search will turn up scores of resources on the question of baseload. The studies and reports provided by clean energy groups, non-profits, the Natural Resource Defense Council - really most studies put forward by those other than members of the U.S. Government or nuclear advocacy groups - show that nuclear and coal, which produce power 24/7, clog up the grid and prevent the kind of flexibility that renewables and proper energy storage can provide to best match the power generated with energy consumption. The idea that nuclear power must be necessary to meet our energy needs is perpetuated by the reactor owners and operators in order to stretch their profits out over as many

decades as possible, and unsurprisingly as they likely spent tens of billions of dollars to construct and maintain those reactors up front. The high capitol required to generate nuclear power incentivizes reactor owners to run their power plants as long as possible, without regard for safety hazards caused by aging and without regard for the science that proscribed the reactors' 40-year lifespan.

Now, Xcel is pushing to run its reactors to twice their design-based lifespan. No reactors have run for 80 years to date, so we have no way of assuring that this is feasible or safe. The leaks at Monticello since 2022, and the gross mishandling of safety information surrounding the circumstances of the leak and the threat to the public, prove that the reactor's infrastructure is not equipped to withstand such aging and that the NRC is not functioning properly in enforcing oversight measures that account for aging, such as requiring more frequent inspections of age-sensitive infrastructure. The pipe that leaked is only required to be inspected every 10 years. If Xcel can avoid this risk to public health and our vital natural resources by replacing Monticello with solar power, at a cost similar to the cost of simply continuing to run Monticello, it could also free-up grid space for flexible renewables and move Minnesota closer to its goal to implement 100% truly renewable energy sources. If Germany can do, and the argument to keep nuclear on board for the sake of baseload is a debunked myth, than the only reason for the PUC to agree to extend Monticello's operating lifetime would be to line Xcel's pockets with ratepayer dollars - certainly not in service of Minnesotans' best interests.

Sources:

[frontiergroup.org/articles/do-we-really-need-nuclear-power-baseload-electricity/#:~:text=However%2C%20the%20need%20for%20baseload%20power%20is%20vastly,not%20a%20complement%20to%2C%20clean%20sources%20of%20electricity.](https://frontiergroup.org/articles/do-we-really-need-nuclear-power-baseload-electricity/#:~:text=However%2C%20the%20need%20for%20baseload%20power%20is%20vastly,not%20a%20complement%20to%2C%20clean%20sources%20of%20electricity.)

[reneweconomy.com.au/dispelling-the-nuclear-baseload-myth-nothing-renewables-cant-do-better-94486/](https://reneweconomy.com.au/dispelling-the-nuclear-baseload-myth-nothing-renewables-cant-do-better-94486/)

### **The problem of nuclear waste:**

By allowing nuclear to remain in Xcel's proposed energy mix for its 2024-2040 IRP, the PUC is condoning the continued accumulation of 20 tons of uranium oxide spent fuel a year. In total, Xcel's reactors would each generate 1,600 tons of spent fuel over their 80-year life spans if allowed to continue operating. We can keep 1,200 tons of spent fuel out of our environment by closing Xcel's three reactors by their scheduled 2030/33/34 closure dates.

This high level spent uranium fuel, containing some of the most dangerous radioactive substances, has nowhere to go. This is a crucial and inherent problem with nuclear power that has no solution even though many reactors have been operating 30, 40, and 50 years by now. The waste is too dangerous and lasts for thousands, tens of thousands, or hundreds of thousands of years depending on the isotope. For now, Xcel's three reactors store this radioactive fuel in large casks at ground level on site = meaning they are all near to the Mississippi River and within its flood plain. All it would take is a wildfire, tornado, or other unforeseen natural disaster to release this fuel into the river and groundwater. No power source that causes such toxic substances to continue to accumulate in huge quantities on the banks of the drinking water source for 20 million can be called safe, green, or clean. It is time to acknowledge this inconvenient threat and demand that nuclear power no longer be an option in the Upper Midwest or in Minnesota's energy future.

In the case of waste that is removed from the site of a reactor or "cleaned up" when a reactor is decommissioned - this is most often sent to interim or long-term storage sites far away from the original source. While this highly radioactive and dangerous material travels hundreds or thousands of miles - putting everyone on route at risk should a cask on a truck, train, or ship spill - the waste

ultimately often lands at sites in communities of color, economically oppressed communities, and near indigenous lands. Communities of indigenous people or people of color are often targeted and bribed to accept these waste facilities. Often facilities are planned and greenlighted even when communities staunchly oppose them. This is an environmental justice and racism issue, and Minnesota cannot continue to accumulate this toxic waste when it may ultimately end up in the backyard of someone in New Mexico who wants nothing more than a safe home for their children.

The toxic waste at storage facilities also continues to threaten the groundwater. Much of the waste in New Mexico sits above the Ogallala Aquifer, one of the world's largest freshwater aquifers and a drinking water source for millions of people.

But the PUC knows this. In August 2023, the Minnesota Public Utilities Commission unanimously approved a certificate of need for Xcel to build a new concrete pad and add about 14 additional casks for spent fuel storage. PUC Commissioner John Tuma said this about the decision: "I get where we're going ... But I'm saying this as an apology to our great-great grandchildren down the road — sorry for leaving you with a mess." If the PUC acknowledges the disgrace to public health and the environment of continuing to produce this toxic waste, and Xcel has shown in its proposed 2024-2040 IRP the possibility to ramp up renewable infrastructure, how can the PUC abide by allowing nuclear reactors to operate beyond their scheduled closure dates? The need for nuclear as a baseload source has been disproved. Renewables can cover this need with proper storage and available grid capacity, which comes from taking coal, nuclear, and gas plants offline. Xcel needs to be pushed to accelerate its goals to grow renewable infrastructure, not dump hundreds of thousands of ratepayers dollars each year into operating failing and unsafe nuclear reactors.

Sources:

[www.mprnews.org/story/2023/08/24/xcel-plan-to-store-more-nuclear-waste-at-monticello-plant-gets-ok](http://www.mprnews.org/story/2023/08/24/xcel-plan-to-store-more-nuclear-waste-at-monticello-plant-gets-ok)

### **Conclusion:**

The commission should not grant approval to run Monticello beyond 2030 until either this current IRP contends with the issues surrounding the Monticello Reactor that are still unfolding as Xcel grapples with its license extension application at the NRC. To date, new information is still being revealed about the true contamination to reach the river, about Xcel's lack of transparency and misinformation in communications with the public. Furthermore, incredible doubt has been cast on the license extension application by the fact that the NRC's Draft Site-Specific Environmental Impact Statement does not include information from the period of highest contamination of the Mississippi River. Though its own DSEIS acknowledges that one of the wells closest to the river had just tested for radioactive contamination exceeding the EPA safe drinking water standard and had been rising steadily - growing five-fold in the previous three weeks - the NRC chose the very same day that well tested over the drinking water standard as the day to cease information-gathering for its DSEIS process. This clearly illustrates that the DSEIS ignores the likely greatest impacts to the river and public drinking water for 20 million people. No assessment of the safety of continuing to operate the Monticello Reactor can be complete without a thorough review of well tests in the six months after August 18, 2023.

The Monticello reactor was only designed to run for 40 years, it is now twenty years beyond that and a second license extension would allow the reactor to run for twice the time period it was designed to serve. That is reckless endangerment of the local and downstream populations of the state of Minnesota and the Upper Midwest. Furthermore, the NRC and Xcel have proven they cannot be accountable to the public for regulating the Monticello reactor safely. In their comments at the NRC's operating license extension public hearing on May 15, 2024 in Monticello, MN, they acknowledged that radioactively contaminated water from the November 2022 Monticello leak has been detected in the Mississippi

River after Xcel staff and NRC staff both publicly denied this was a possibility. Xcel and NRC staff have both stated again and again that the public is not at risk but the NRC's own website and that of the Health Department acknowledge no dose of radiation is safe. Again, around the handling of information when the leak was discovered, Xcel failed to notify the public when they sent information to the NRC about the leak. They were busy filing an application for a license extension in January 2023 and waited until March 2023, four months after the leak was discovered, to notify the public.

It has been proven that renewables can cover energy demands with proper storage capacity and that removing 24/7 coal and nuclear allow more flexibility on the grid. Xcel has demonstrated through its Sherco project that it can preserve local economies, jobs, and community benefits to workers by shifting to jobs in renewables and can use its existing infrastructure to onboard new renewable capacity. The 571 MW capacity of Monticello could easily be replaced by more renewables and through conservation and efficiency efforts. There is no reason, in the public interest, to keep the Monticello reactor open. Any acceptable IRP proposal from Xcel must include keeping Monticello's 2030 closure date and moving as rapidly as possible take other coal, nuclear, and gas options out of the energy mix to meet a 100% renewable energy profile for Minnesota and the Upper Midwest.