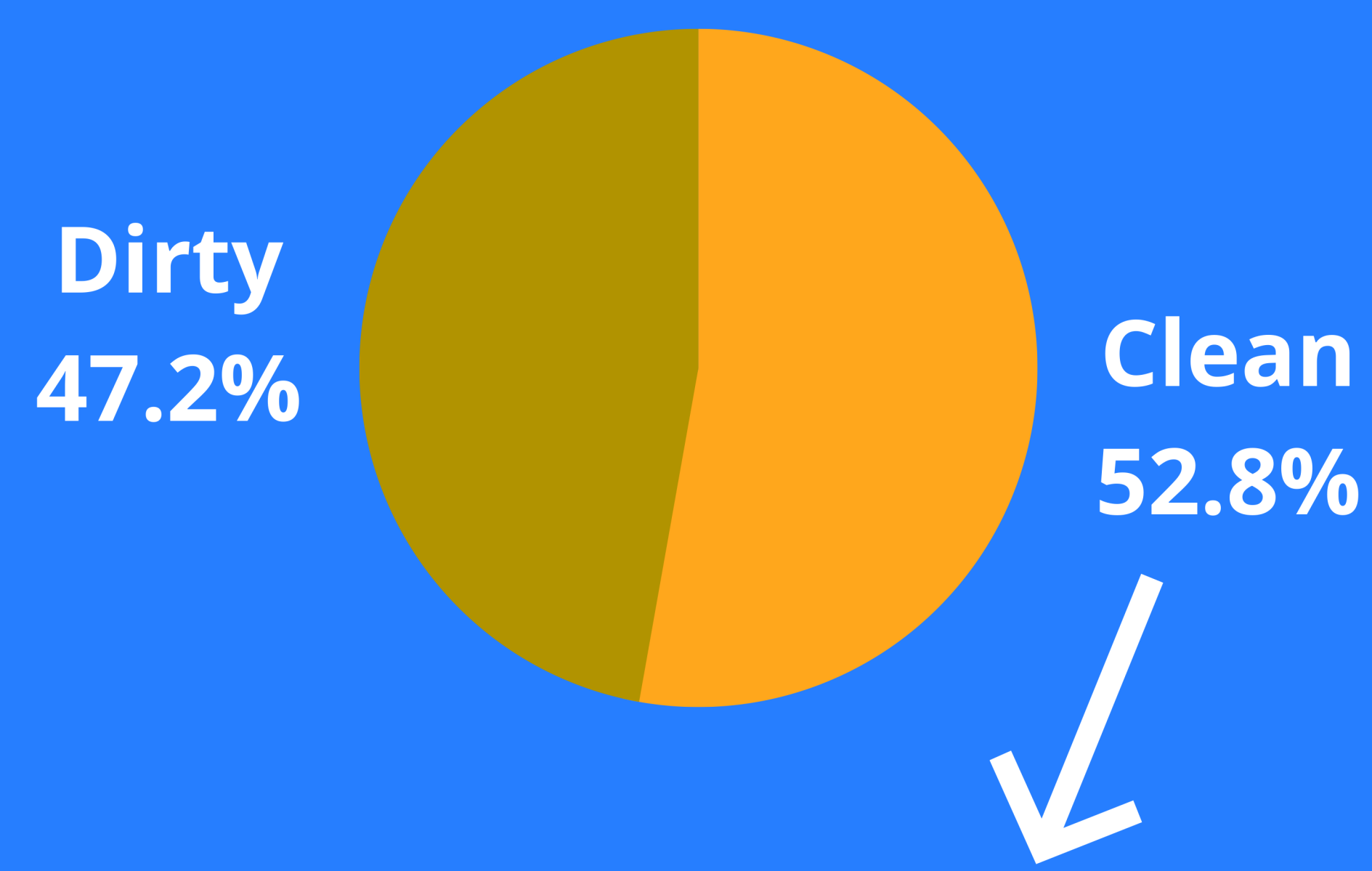


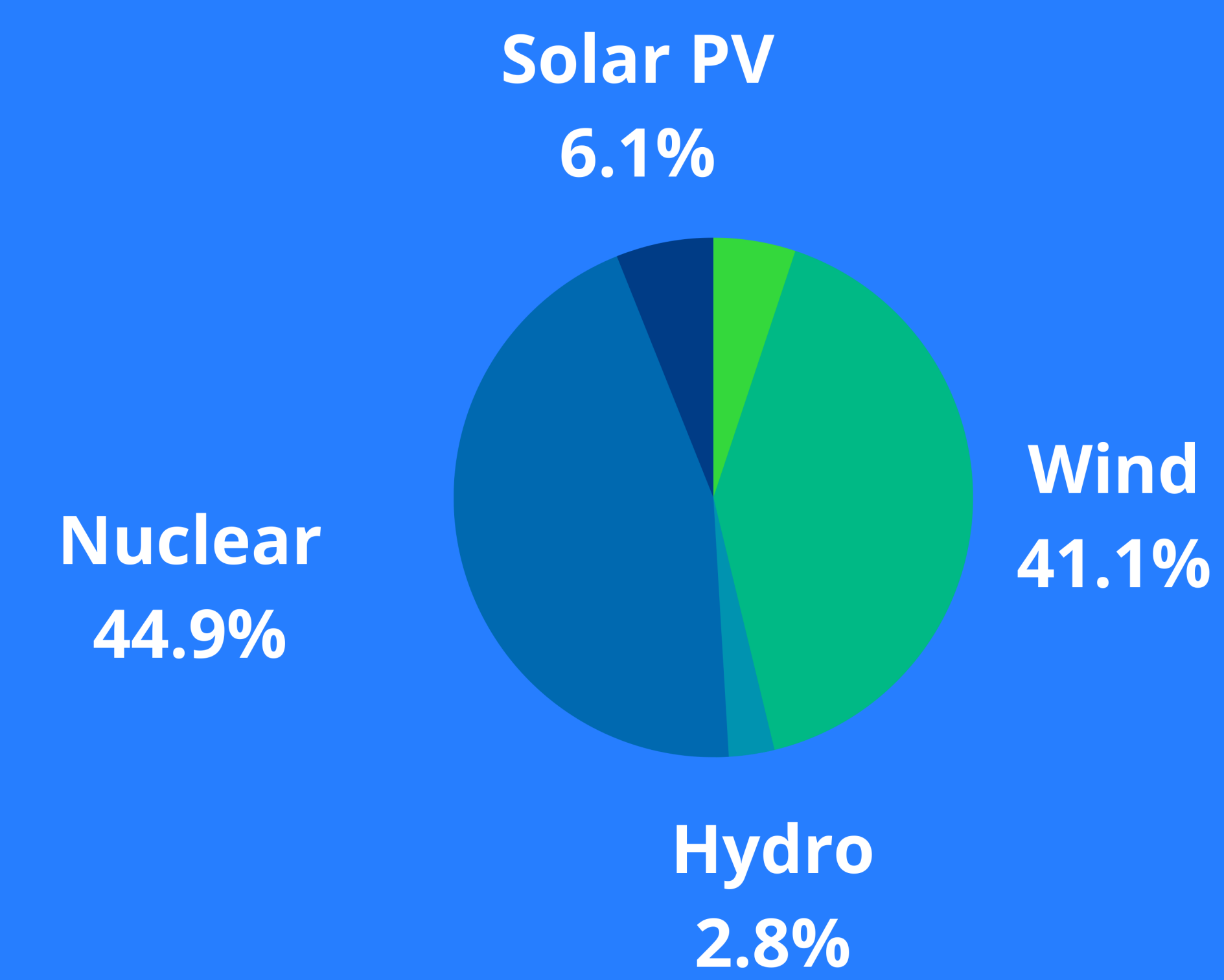


Minnesota Nuclear Moratorium Brief

Minnesota's Power Mix (2021)

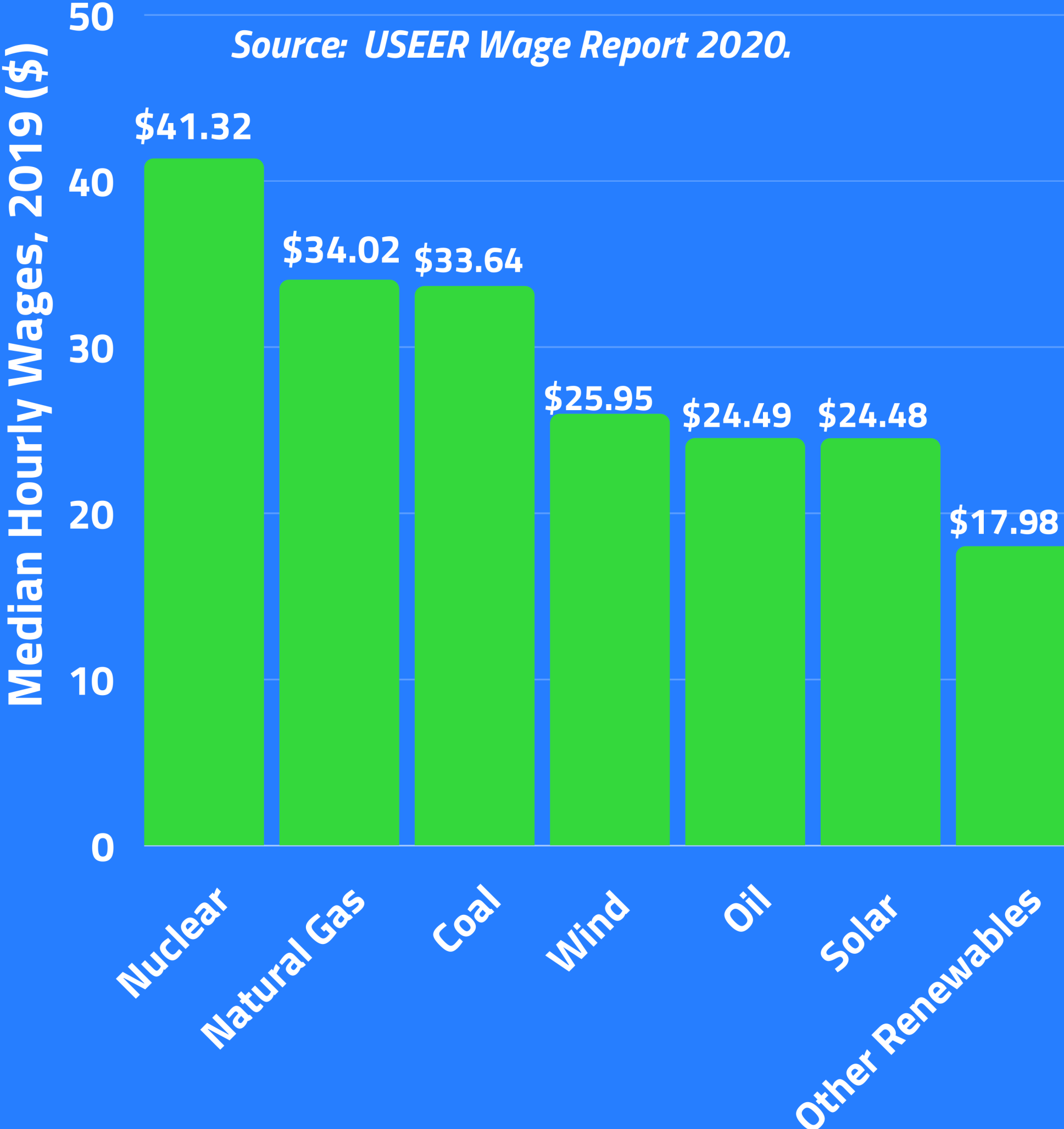


MN Clean Power Mix (2021)



Source: U.S. Energy Information Administration (2021)

Energy Industry Wages



Nuclear energy accounts for the highest median hourly wage in the energy sector

The passage of [HF7/SF6](#) in Minnesota has set new, aggressive climate change goals for the state, including 100% of Minnesota's electricity from "clean" sources by 2040. In order to accomplish this major feat, electrification across sectors is vital. However, this may be impossible if Minnesota lawmakers do not take legislative action to permit the new build of the most reliable, energy-dense, clean source of energy available—[nuclear energy](#). This brief outlines the benefits of the energy source to Minnesotans and makes the case to remove the nuclear moratorium in the state.

CURRENT LEGISLATION

[Minnesota Statute 216B.243, subdivision 3b](#), passed in 1994, states that "the [Minnesota public utilities] commission may not issue a certificate of need for the construction of a new nuclear-powered electric generating plant". Despite the Prairie Island and Monticello nuclear power plants operating successfully and safely for decades, this moratorium remains in place due to misunderstood perceptions about the technology.

The true threat to Minnesota comes from the continued use of fossil fuels and the effects of climate change. While used nuclear fuel has yet to cause a single death in human history, air pollution from fossil fuels kills [tens of thousands](#) yearly in the United States, while drought, forest fires, and flooding worsened by global warming are a greater and growing threat. Finding solutions to the true threats to the health and well-being of Moratorium.

BENEFITS OF NUCLEAR ENERGY FOR MINNESOTA

ENERGY DEMAND AND STABILITY

- With rising populations and the increased electrification of home heating and vehicles, Minnesota's electricity demand is projected to increase, putting more stress on an already fragile grid.
- The capacity factor of nuclear energy, which is the amount of time a power plant produces power, is [93%](#) —the highest of any power source by far. The capacity factor for hydropower is 42%, while wind and solar sit around 35% and 25%, respectively.
- Other countries and states are turning to nuclear to meet their needs and goals as well. [Japan](#) has lifted a decade-long moratorium on new nuclear power to keep up with ambitious decarbonization goals while keeping its grid secure. Similarly, renewable-heavy California has [extended](#) the life of Diablo Canyon over fears of future blackouts and brownouts as the state expands its renewable energy portfolio.

JOBS AND ECONOMY

- Nuclear energy provides the best benefits for workers in the energy sector and the most just transition for fossil fuel workers. The median hourly wage and unionization rates for nuclear energy workers is the highest across the sector, and fossil fuel jobs have the capacity to transition existing skills and experience to nuclear positions.
- Nuclear supports communities as well. Nuclear plants "on [average](#) deliver around \$400 million annually to the economic livelihood of local communities." This revenue can be used to support local government by funding schools, infrastructure, and public safety.

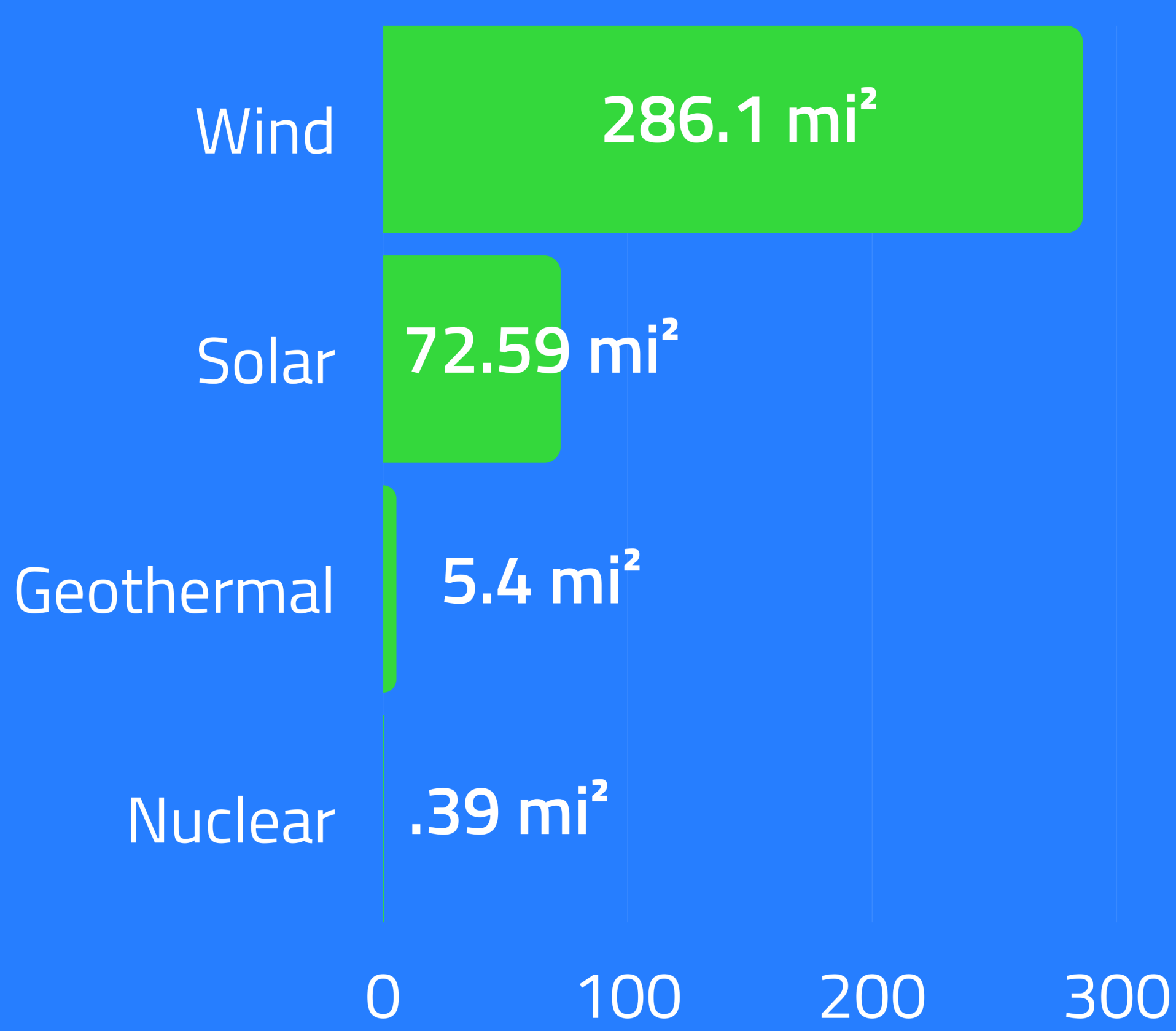
ABOUT GENERATION ATOMIC

Generation Atomic is a volunteer driven pro-nuclear environmental non-profit that has been fighting for affordable and reliable clean energy from atomic power since 2016. We are funded by a division of Idaho National Laboratory called Gateway to Accelerated Innovation in Nuclear, as well as philanthropists and grassroots contributors. Learn more at [GenerationAtomic.Org](#).



Minnesota Nuclear Moratorium Brief

HOW MUCH LAND DOES IT TAKE TO POWER A CITY OF 1 MILLION?



Source: Lovering, Jessica et al., Land-use intensity of electricity production and tomorrow's energy landscape. 2022.

80%

80% OF FORMER AND EXISTING COAL PLANTS COULD BE ECONOMICALLY CONVERTED TO A NUCLEAR PLANT. (DOE, 2022)

7000

BUILDING A NUCLEAR REACTOR CAN EMPLOY UP TO 7,000 WORKERS FROM VARIOUS SECTORS AT PEAK CONSTRUCTION

To learn more about nuclear energy visit whatisnuclear.com
For any other questions or inquiries, please email eric@generationatomic.org.

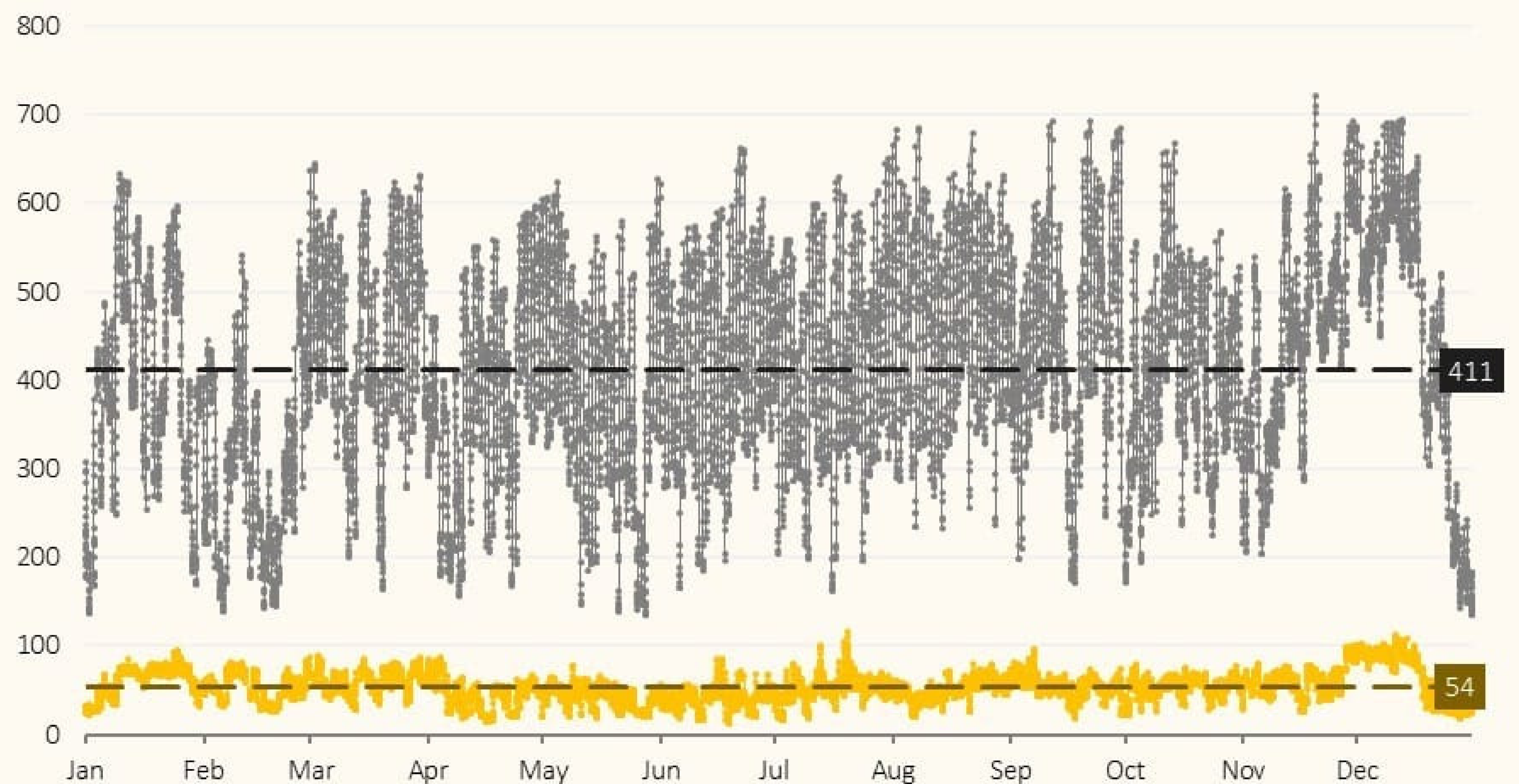
CLIMATE CHANGE

- Over [73%](#) of all energy consumed in Minnesota comes from fossil fuels used for heating, industrial processes, transportation, and electricity generation. More than half of imported electricity is generated with fossil fuels.
- A comparison of the carbon intensity of electricity between France and Germany demonstrates the importance of nuclear energy in combatting climate change. Germany's climate strategy has focused largely on the use of wind and solar while phasing out its existing nuclear fleet, while France's electricity primarily comes from nuclear.
- Due to the intermittency of wind and solar, Germany has had to rely on fossil fuels to make up for energy shortfalls, making their carbon intensity in the past year approximately [seven times higher](#) than that of France.

How dirty was French and German electricity production in 2022?



Specific carbon intensity of electricity in grams of CO₂ emitted per kWh generated
Hourly emissions: ● France, ● Germany. Annual average emissions rate: — France, — Germany



Notes: Specific carbon intensity of electricity in gCO₂/kWh values of 1150g, 900g, 700g, 400g, 400g, and 250g are used for lignite coal, hard coal, oil, natural gas, waste, and biomass respectively, with 0g used for nuclear, hydro, wind, and solar sources
Sources: ENTSO-E

ENVIRONMENTAL JUSTICE

- Harvard University estimates that fossil fuel air pollution is responsible for [1 in 5](#) deaths worldwide, while [numerous studies](#) have found that low-income, minority communities are far more likely to be exposed to higher levels of dangerous fine particulate air pollution.
- If Minnesota were to replace its existing coal generation with nuclear power generation, it would reduce emissions by 6,628,265 metric tons of CO₂, the equivalent of removing nearly 13 million [cars from the road](#) every year. This would drastically improve air quality and reduce the concentration of the six common pollutants (PM_{2.5} and PM₁₀, SO₂, NO_x, VOCs, CO and Pb). If Minnesota were to replace its coal plants with either solar or wind alone, it would require roughly 63,000 or 34,000 tons of copper, respectively. With nuclear, only 9,200 tons are required.

HOW YOU CAN HELP

The future of energy in the State of Minnesota depends on legislative action, and as such, we urge you to support the feasibility study on advanced nuclear and eventually, the removal of the nuclear moratorium in Minnesota. For further information or request for testimony, please feel free to reach out to eric@generationatomic.org