



Center of the American Experiment

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Prepared by Isaac Orr and Mitch Rolling

Center of the American Experiment (American Experiment) submits the following comments for the Draft Climate Action Framework (CAF) for consideration by the Walz administration.

In January of 2020, I applied to be part of the Governor's Advisory Council on Climate Change to advocate for a pragmatic energy policy that seeks to keep costs as low as possible while improving environmental outcomes. Unfortunately, I was not selected.

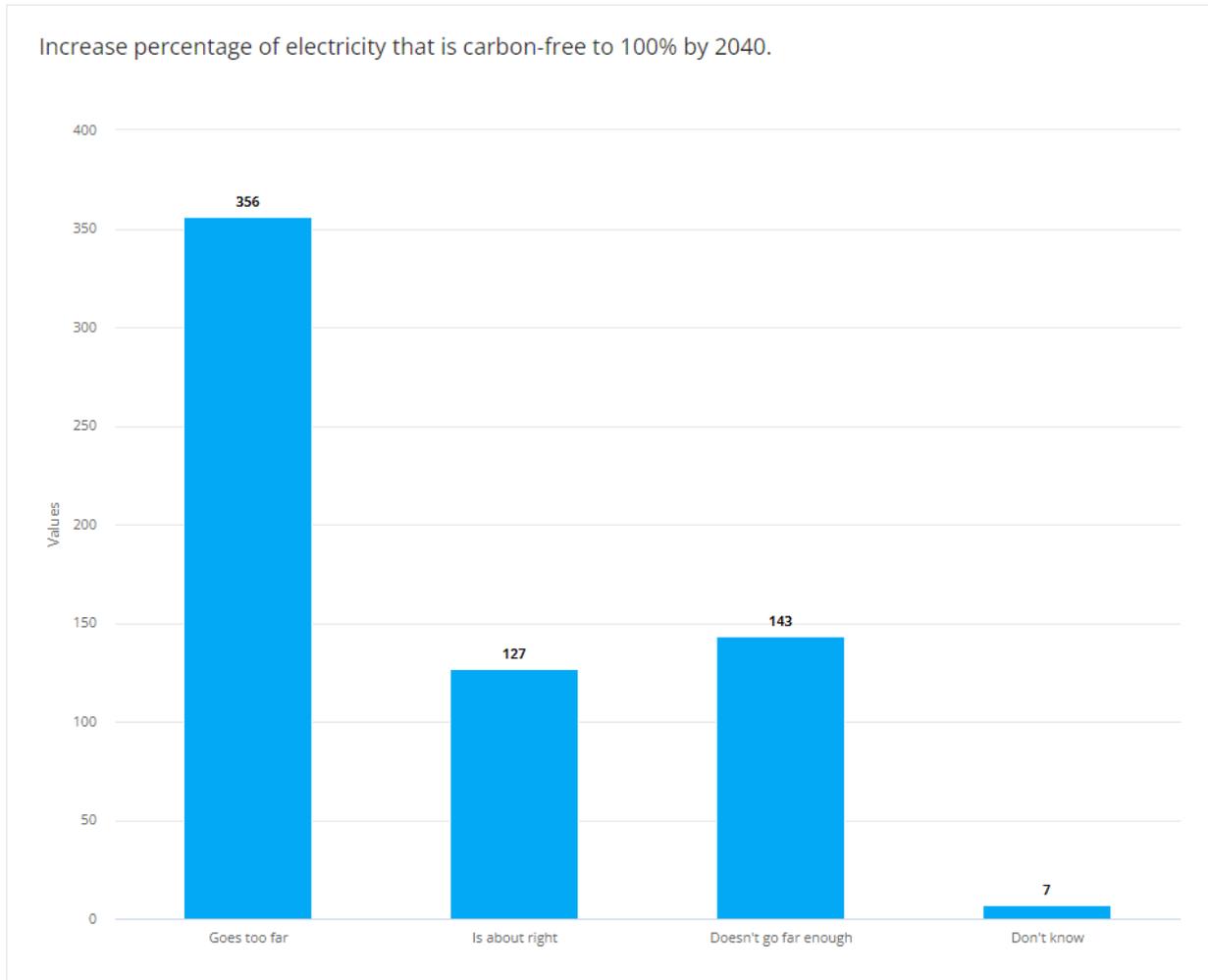
American Experiment believes that the most prudent course of action for improving the quality of life for Minnesota citizens and the climate is to seek pragmatic, cost-effective ways to reduce emissions that will not increase the cost of energy for families and businesses. Unfortunately, this draft of the CAF fails to meet these standards.

This framework appears to have been written without any consideration as to whether the goals contained within it are even technologically or economically feasible. It is childish and irresponsible.

100 Percent Carbon-Free Electricity by 2040

The section on carbon-free electricity is deeply unserious, costly, and dangerous because it will undermine the reliability of our electricity system. It is no surprise that the proposal is deeply unpopular.

According to the Clean Energy and Efficient Building Survey conducted by the Minnesota Department of Natural Resources, 356 respondents said this policy goes too far, compared to the 143 that said the policy did not go far enough and the 127 that said it was about right. This means more Minnesotans think this policy goes too far than support it.



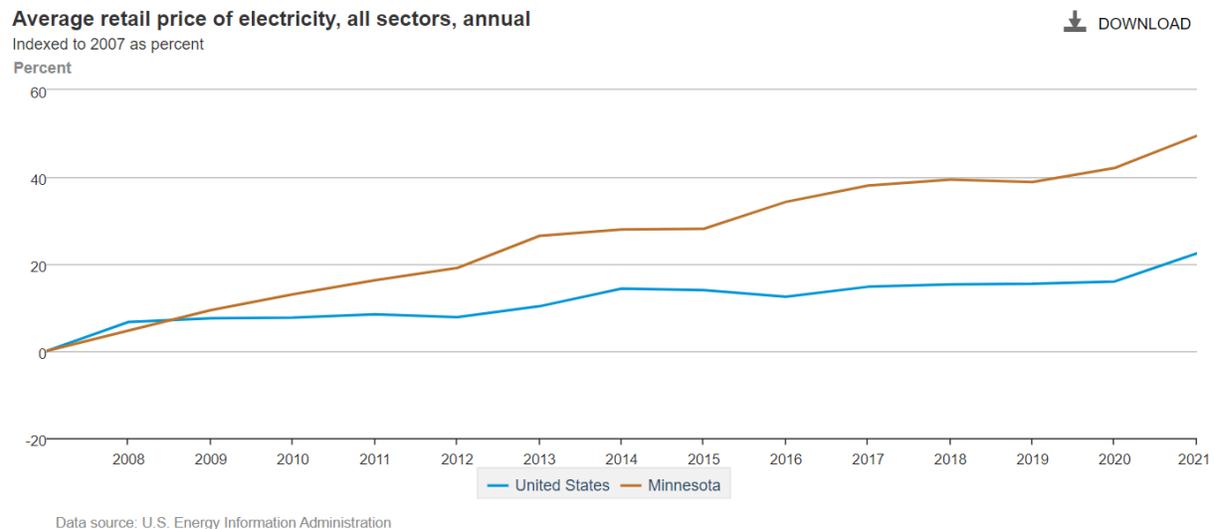
If the administration were serious about reducing emissions, they would prioritize reliable, affordable energy sources that also reduce emissions. These technologies are nuclear power, large Canadian hydroelectricity, and carbon capture and sequestration technology for coal and natural gas plants, not wind and solar.

Alarmingly, the 65-page document never once mentions nuclear power—except for showing its contribution to the electricity supply in a few graphs— which is the largest source of carbon-free power in the state. Furthermore, it only mentions carbon capture from pastureland and crop fields, and it only mentions hydroelectric power in a graph.

Any proposal for reducing emissions that doesn't advocate for using these technologies that focus on delivering reliable energy first, affordable energy second, and emissions reductions third, is economically unsustainable and unserious.

Electricity Prices

Minnesota electricity costs are skyrocketing because of our state's renewable energy mandates. In fact, Minnesota electricity prices have increased twice as fast as the national average since the Next Generation Energy Act was passed in 2007.¹



Expenditures on wind and solar are driving these price increases because electric companies in Minnesota are not private companies. They are government-approved monopoly companies with the exclusive right to sell electricity in their service territory. Because they are monopolies, companies like Xcel cannot set the price of electricity. Instead, prices in Minnesota are set by the government using a formula.²

This formula, which is sometimes called the revenue requirement formula, allows the utility to charge enough for electricity to recover the costs they incur by providing electricity to customers, plus a profit on the undepreciated portion of the equipment they build, such as wind turbines, solar panels, natural gas plants, or even new corporate offices.

Over the past 15 years, much of Xcel's spending has been due to its desire to shut down its coal plants and replace them with new wind turbines, solar panels, and natural gas plants. These desires even exceed the amount of "renewable" energy Xcel is mandated to purchase by the Next Generation Energy Act. It has boosted Xcel's corporate profits by five percent in the first quarter of 2022 at the expense of Minnesota families and businesses.³

Furthermore, Xcel Energy is seeking to increase its base rates by 21.2 percent over three years to pay for additional wind and solar installations, which will cause rates to rise further and damage the reliability of the electric grid.

¹<https://www.eia.gov/electricity/data/browser/#/topic/7?agg=1,0&geo=g00004&endsec=g&linechart=ELEC.PRICE.US-ALL.A~ELEC.PRICE.MN-ALL.A~&columnchart=ELEC.PRICE.US-ALL.A&map=ELEC.PRICE.US-ALL.A&freq=A&start=2007&end=2021&chartindexed=1&ctype=linechart<ype=pin&rtype=s&pin=&rse=0&maptype=0>

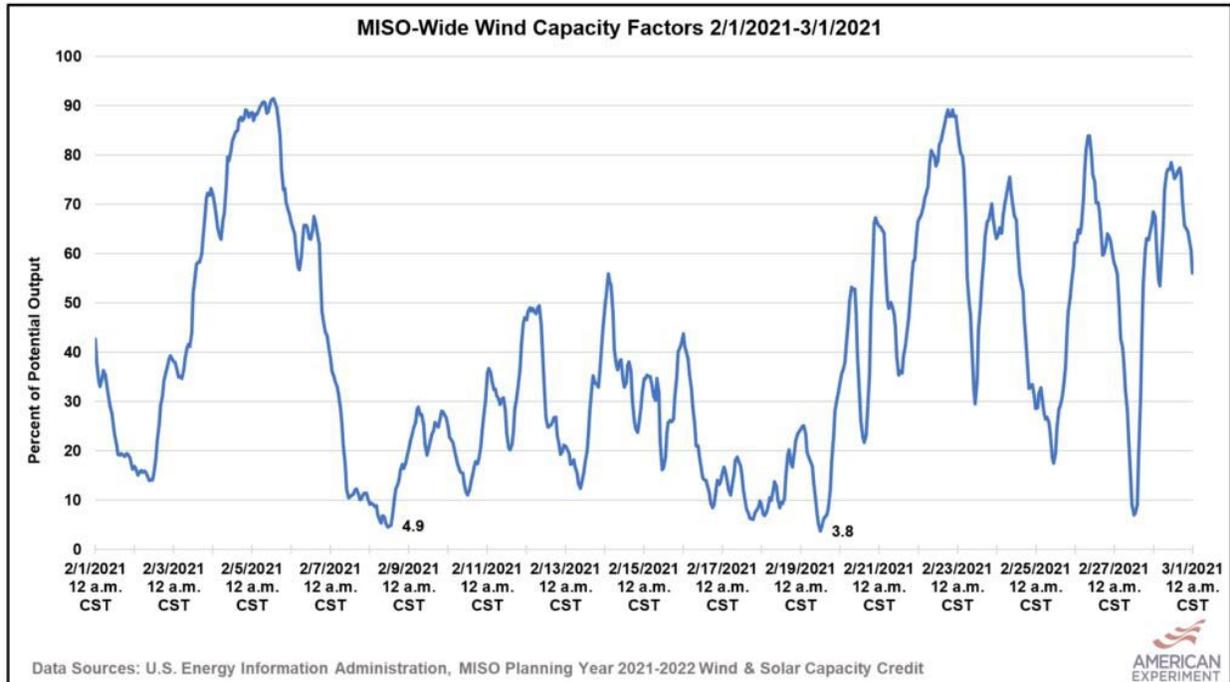
² <https://www.americanexperiment.org/minnesota-regulators-kick-xcels-electricity-price-increase-down-the-road/>

³ <https://www.startribune.com/xcel-quarterly-profits-rise-nearly-5-partly-from-rate-increases/600168726/>

Reliability

Wind and solar are unreliable energy sources that fail to show up when we need the energy most, like the Polar Vortex of 2021.

Minnesota belongs to a regional electric grid called the Midcontinent Independent Systems Operator (MISO). Data from the Energy Information Administration show wind turbines produced less than 4 percent of their potential output during several hours during the Polar Vortex of 2021 when we needed the electricity the most.⁴



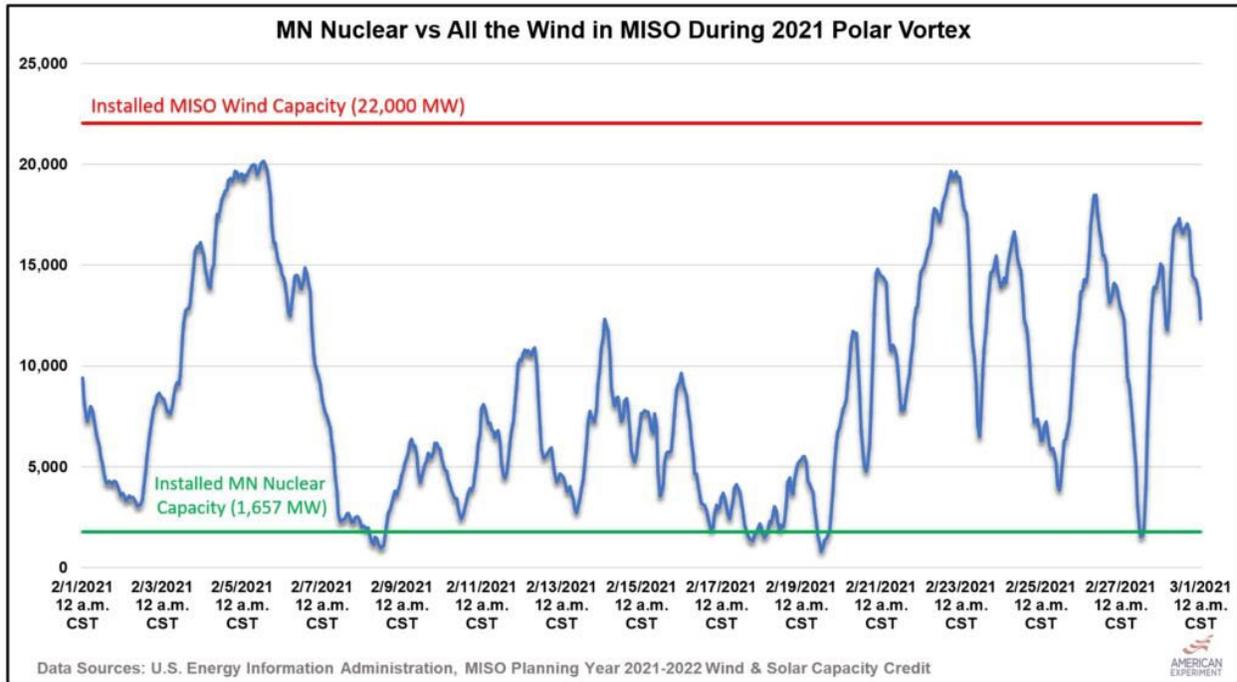
The low reliability of wind and solar means that the 22,000 megawatts (MW) of installed wind capacity in the 15-state MISO footprint was producing less electricity than the 1,100 MW Coal Creek Power Plant in North Dakota—which serves Minnesota electric co-ops—for multiple hours during the winter storm.

⁴ <https://www.americanexperiment.org/during-periods-of-the-polar-vortex-coal-creek-generated-more-electricity-than-the-entire-miso-wind-fleet/>

Coal Creek's new owners are seeking to install carbon capture equipment on the plant to reduce emissions from the facility while providing reliable, affordable power when it is needed most. These are the types of pragmatic, common-sense solutions that should be included in the CAF, but they are disappointingly absent.

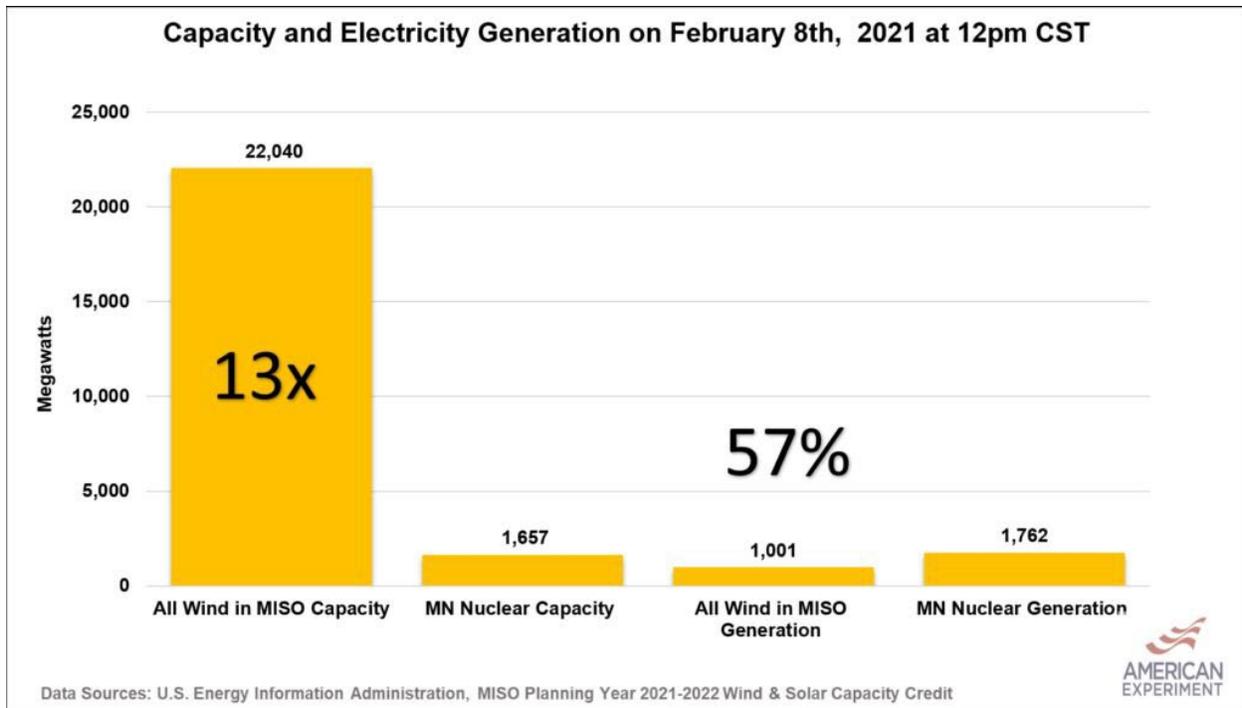
Minnesota's small nuclear fleet also outperformed all of MISO's wind fleet for several hours during the event.

Data from the U.S. Energy Information Administration show that Minnesota's small fleet (1,657 megawatts) of nuclear power plants produced more electricity than the entire wind fleet (22,000 megawatts) in a 15-state region for several hours during February of 2021.⁵



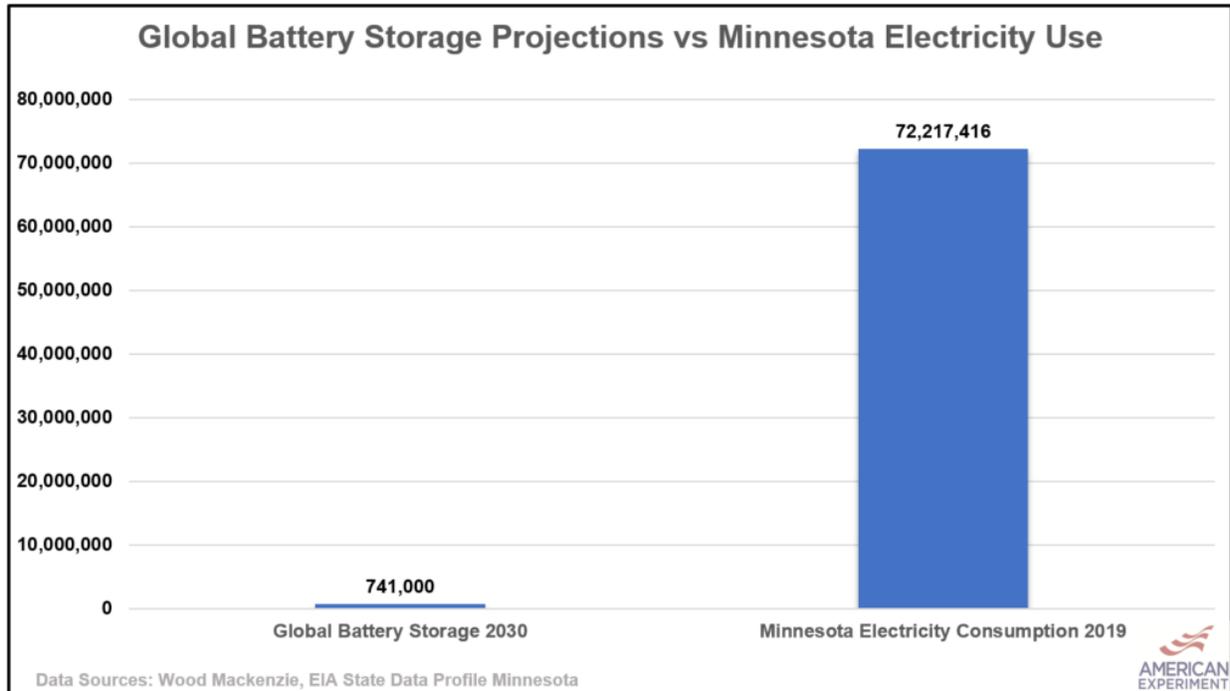
Put another way, for some hours in February, wind produced only 57 percent of the output of Minnesota's nuclear fleet, despite the fact that there is 13 times more wind capacity on the regional grid than Minnesota's nuclear fleet.

⁵ <https://www.americanexperiment.org/tune-in-to-my-testimony-at-3pm-in-support-of-nuclear-power/>



Wind and solar advocates often argue that battery storage will provide the needed solution for the unreliable nature of wind and solar, but batteries are not a serious solution to this problem.

An analysis from Wood Mackenzie finds that there will be just 740,000 megawatts of battery storage capacity *globally* by 2030, which is about one percent of Minnesota's annual consumption. In other words, there won't be enough battery storage globally in 2030 to power Minnesota for four days.



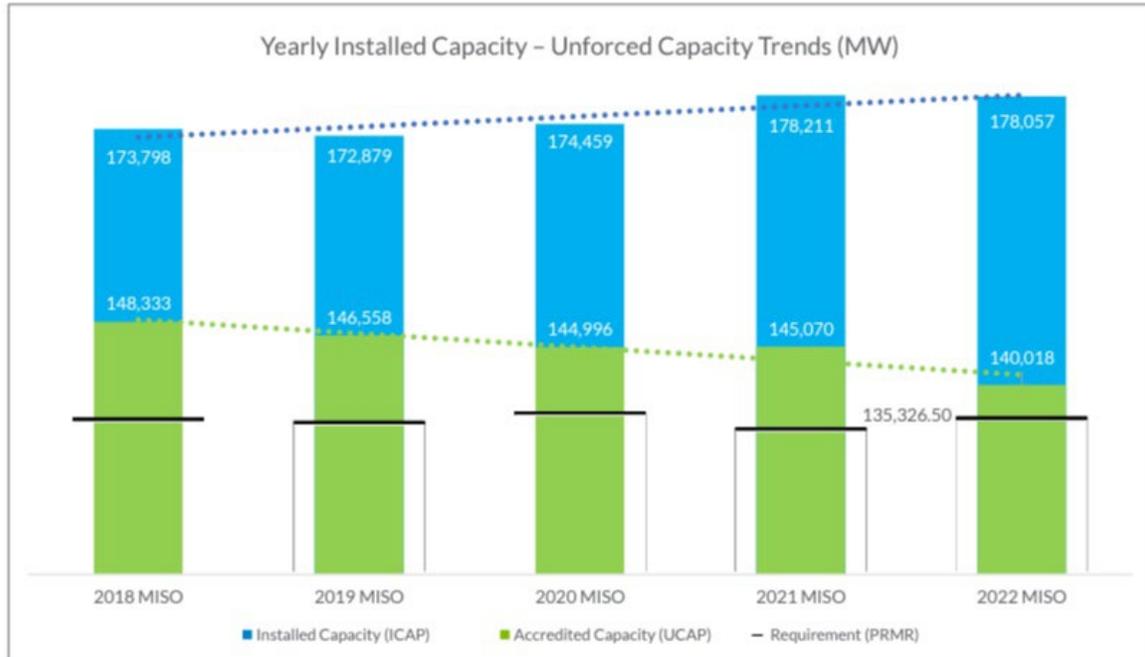
MISO has already issued a warning describing the lack of reliable capacity to meet its reserve margin this year because of the retirement of dispatchable coal and nuclear generators and an increase in unreliable wind and solar facilities.⁶

The graph below from the slideshow released by MISO shows the installed capacity (ICAP) of power plants on the MISO system increasing, but accredited capacity (UCAP), or the amount that is considered reliable, is falling every year. In layman's terms, the amount of reliable power plant capacity on the grid is declining, even though we are building a lot more wind and solar.⁷

⁶ <https://cdn.misoenergy.org/2022%20PRA%20Results624053.pdf>

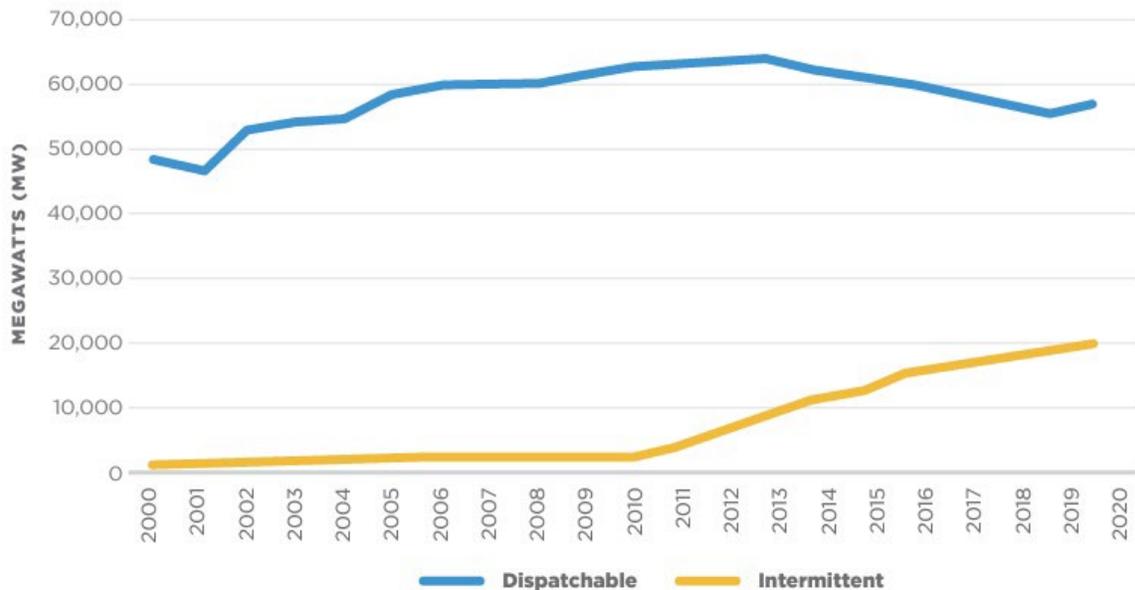
⁷ <https://www.americanexperiment.org/regional-grid-doesnt-have-enough-capacity-to-meet-its-reserve-margin-increasing-blackout-risks/>

Although installed capacity has increased in the last five years, accredited capacity has decreased due to thermal retirements and the increasing transition to renewables



We see this exact same trend in resource plans throughout the country. Electric companies continue to retire coal and nuclear plants prematurely and replace them with wind, solar, and sometimes natural gas. The graph below shows that California has seen its dispatchable capacity decline since 2013, as non-dispatchable wind and solar capacity grew.

Dispatchable Power Plant Capacity in California



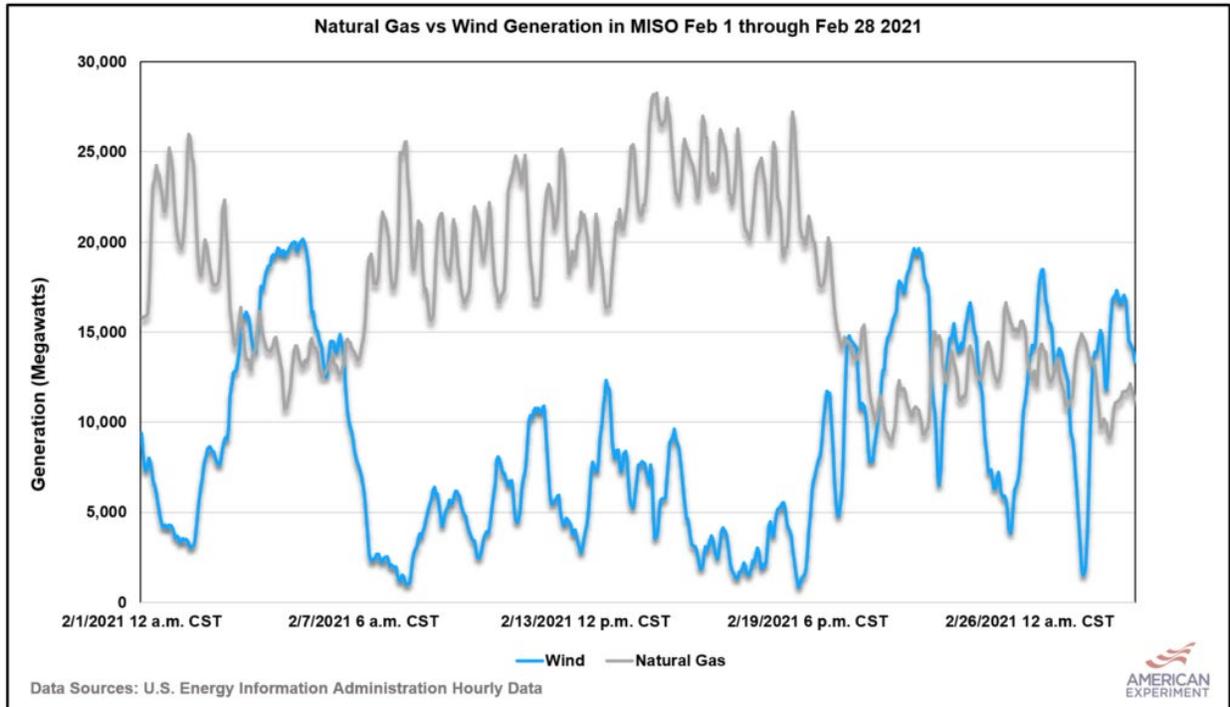
California increased the amount of intermittent power plant capacity on its grid and decreased dispatchable capacity. From 2012 through 2020, the amount of intermittent capacity increased by 13,600 MW while dispatchable capacity fell by 6,600 MW.

California's closure of reliable nuclear and natural gas plants and wishful thinking when it came to keeping the lights on using wind, solar and electricity imports from their saner neighbors are the main reasons why the Golden State had rolling blackouts in the summer of 2020.⁸ Repeating California's policies and expecting different results is insanity.

Emissions

The unreliability of wind and solar mean they are not even the best technologies to reduce emissions. That honor goes to nuclear power. The graph below shows wind generation versus natural gas generation during February of 2021. As you can see, natural gas generation, along with its associated carbon dioxide emissions, increases as wind generation falls.

⁸ <https://www.sandiegouniontribune.com/business/energy-green/story/2020-08-25/a-lesson-from-the-blackouts-california-is-too-reliant-on-out-of-state-energy-imports-and-the-problem-will-get-worse>



If MISO had 22,000 MW of nuclear power plants instead of wind turbines, the graph would show a strong, steady line of carbon-free power at around 21,000 MW, not dramatically falling wind production and natural gas backup.

Conclusion

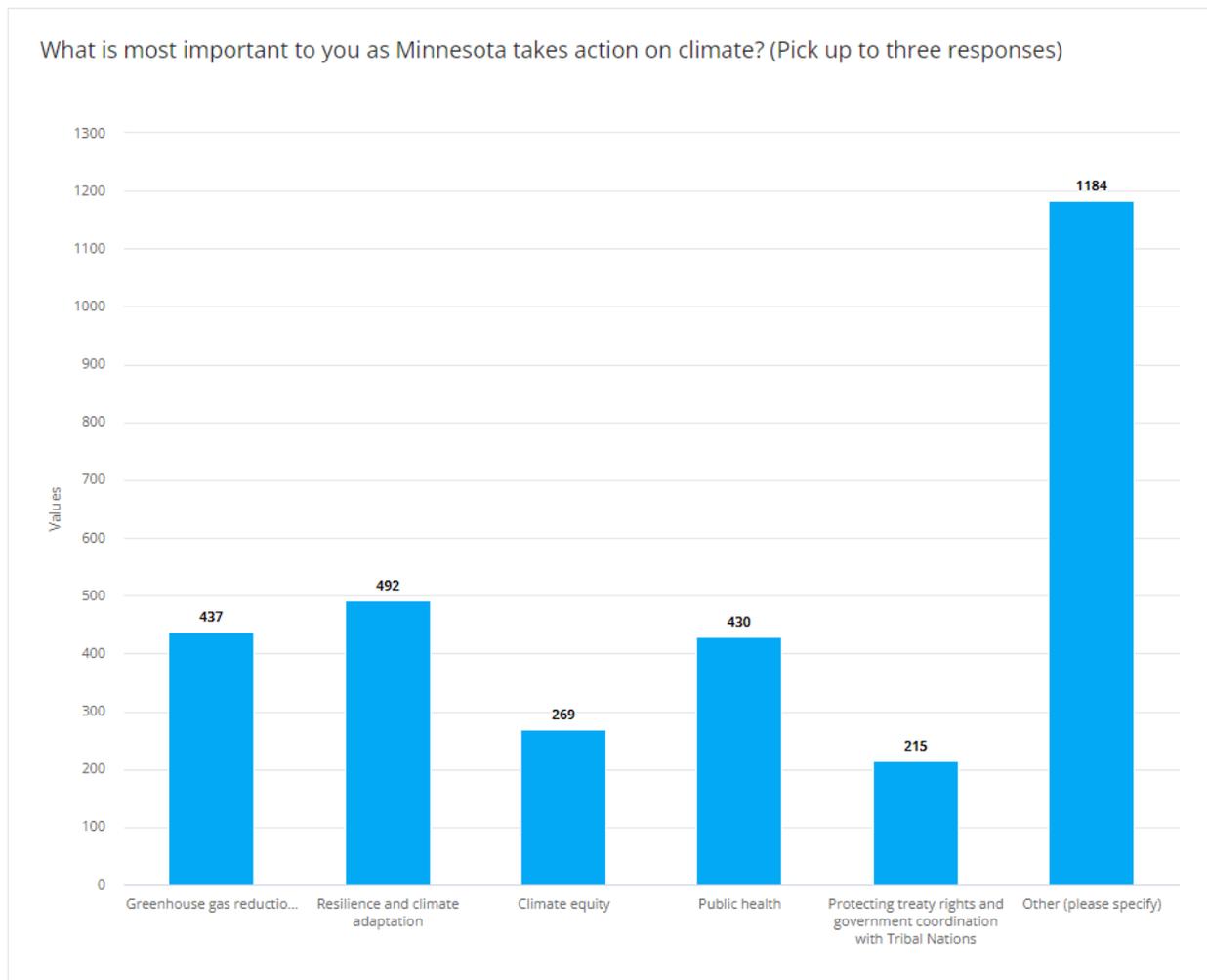
Attempting to decarbonize the Minnesota electric grid without new nuclear, incentivizing large hydro in Canada, or embracing carbon capture and sequestration is like pushing a string. Wind and solar are unreliable energy sources that increase the cost of delivering electricity on demand.

In short, the administration needs to get serious about electricity policy.

Transportation

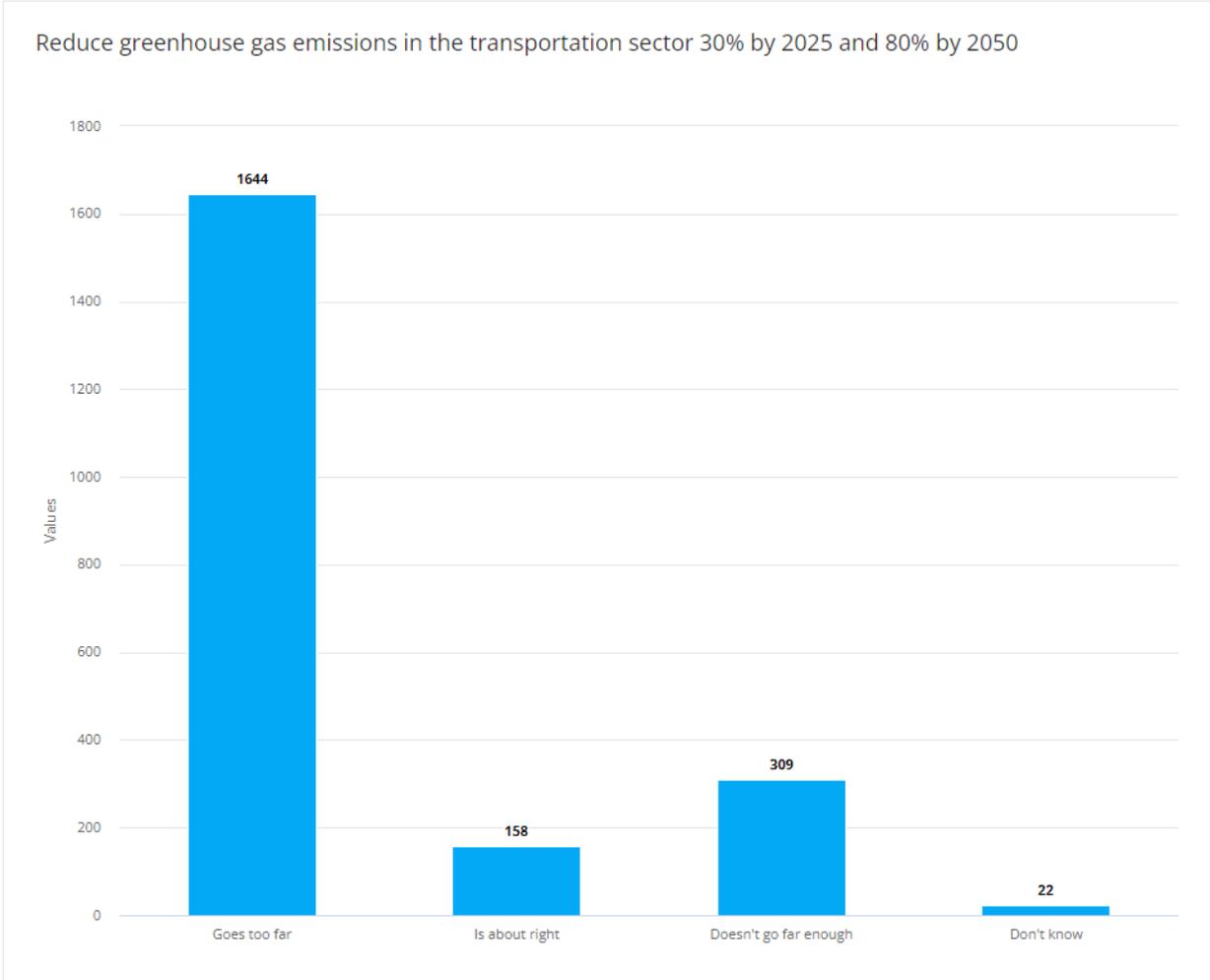
The policies involved in the Governor's CAF, mainly the Clean Fuel Standard and policies designed to mandate and incentivize electric vehicle adoption, are expensive, impractical, and deeply unpopular with Minnesotans.

In fact, according to the Clean Energy and Efficient Building Survey conducted by the Minnesota Department of Natural Resources found, 1,184 respondents chose "other" as their top priority, more than doubling the next-highest category prioritizing resilience and adaptation.

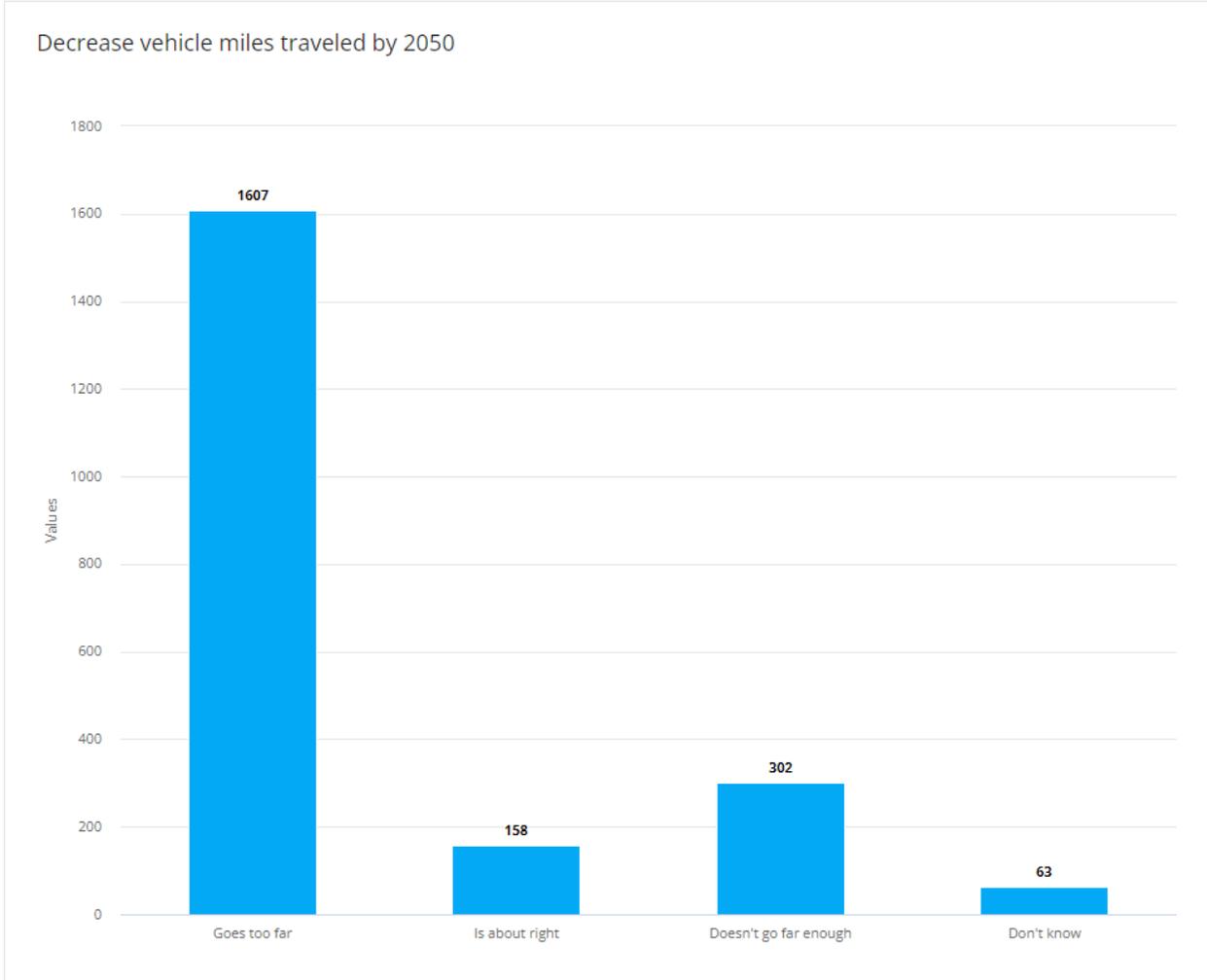


When asked if reducing greenhouse gas emissions in the transportation sector by 30% by 2025 and 80% by 2050 goes too far, is about right, or doesn't go far enough, 1,644 respondents said this policy goes too far, compared to the 309 that said the policy did not go far enough and 158 that said it was about right.

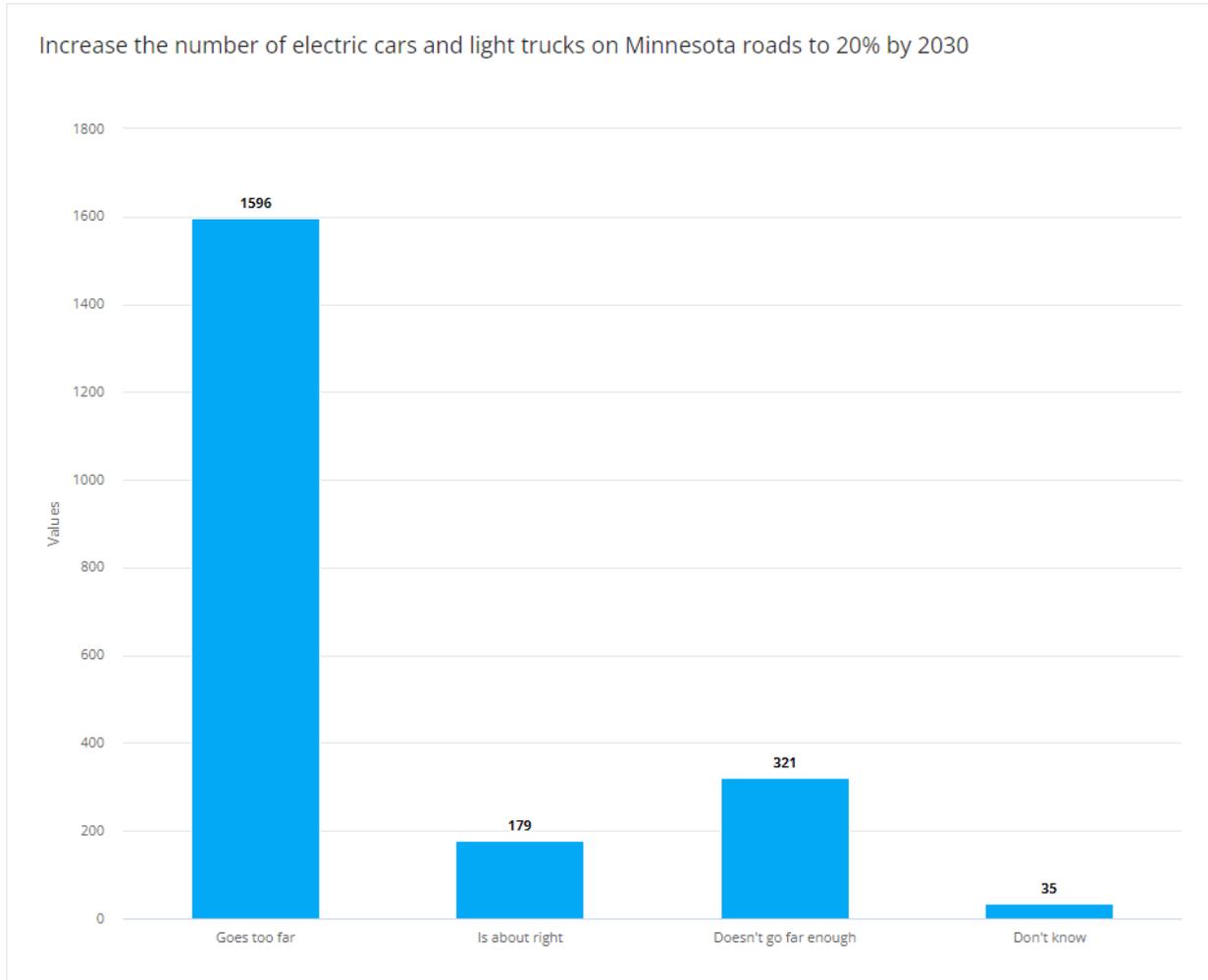
This means 3.5 *times* as many Minnesotans think this legislation goes too far compared to those who think the policy is about right or doesn't go far enough.



Similar results were found regarding decreasing vehicle miles traveled:



And a vast majority of survey respondents said increasing EV sales to 20 percent by 2030 goes too far:



Our in-depth comments focus specifically on the Clean Fuel Standard (CFS) and electric vehicle (EV) mandates.

Clean Fuel Standard

The Clean Fuel Standard is deeply unpopular with Minnesotans because it will increase fuel prices for zero measurable environmental benefits. We have attached our detailed policy report *Gas Station Inflation: How the Walz Administration's "Clean Fuel Standard" would increase pain at the pump* in our email.

According to American Experiment's Thinking Minnesota poll, 50 percent of Minnesotans strongly oppose the new mandates, 9 percent somewhat oppose them, 16 percent somewhat support them, and 21 percent strongly support them. Only 4 percent had no opinion, and 1 percent refused to answer

If the CFS is written to be like the California standard, with a requirement for fuels sold in Minnesota to reduce the CI score of their fuels by 20 percent reduction by 2035, the program will cost between 20 and 54 cents per gallon.

However, if the CFS is adopted as written by DFL members of the Minnesota House of Representatives to require a 25 percent reduction below the 2018 baseline by the end of 2030, a 75 percent reduction by the end of 2040, and a 100 percent reduction by the end of 2050, the costs will be much higher.⁹

Making the CFS more onerous over a shorter period would push fuel prices up further and faster. Requiring a 25 percent reduction in carbon intensity by 2030 would push up the program's cost to 36 cents to 67 cents per gallon by 2030. The stricter mandates would cost the average Minnesota household *an additional \$380 to \$710 per year* in additional gasoline costs (in constant 2022 dollars) by 2030.

Requiring a 75 percent CI reduction by 2040 would yield cost increases measured in dollars per gallon, not in cents per gallon. The graph shows that by 2040, gasoline costs would increase between \$1.08 per gallon and \$2.02 per gallon. This means that by 2040, the average Minnesota family using 1,053 gallons of gas would pay an additional \$1,137 to \$2,127 per year under the California fuel standards.

These numbers are so large that it is difficult to believe anyone could possibly propose such a policy, but the math doesn't lie. This huge increase in costs illustrates the dangers of choosing an emissions reduction target first and seeking ways to achieve it without accounting for cost.

Therefore American Experiment believes the CAF *must* consider costs as the primary concern and look for reasonably achieved emissions reductions that do not increase energy costs.

Electric vehicles

Electric vehicles are not practical vehicles in Minnesota; they are vanity purchases for wealthy liberals. In fact, 39 to 48 percent of EV-owning households in North America had three or more cars in 2017.¹⁰ Only 11 to 17 percent of North American EV owning homes only had one car. This suggests EVs are not considered practical as the primary means of transportation, even among EV owners.

According to AAA, EVs can lose more than 40 percent of their battery range when temperatures reach 20 degrees Fahrenheit, and battery range fell by more than 50 percent during the Polar 8 Vortex of January 2019. Cold temperatures also result in longer charging times, further reducing the utility of electric vehicles.

⁹ <https://www.americanexperiment.org/dfi-lawmakers-make-california-fuel-standard-much-more-expensive/>

¹⁰ <https://cleantechnica.com/2017/06/15/many-cars-electric-car-drivers/>

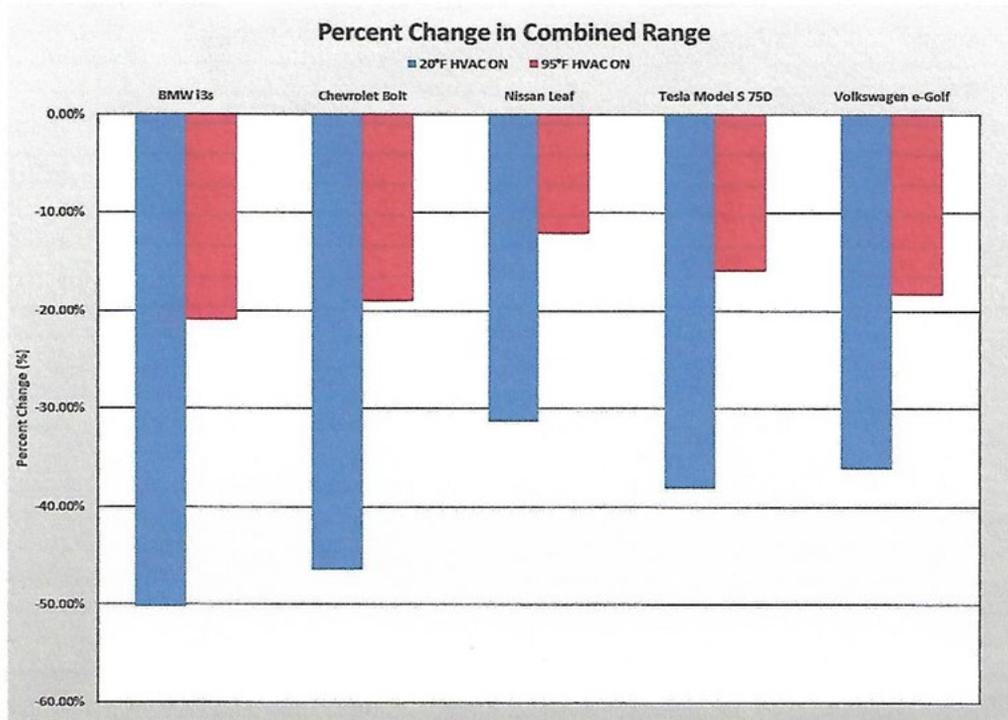


Figure 51: Percent change in combined driving range relative to testing conducted at 75°F Image Source: AAA

Municipalities in Minnesota that have sought to electrify public transit have already experienced problems in their limited time using EVs.¹¹ A report in the [Minneapolis Star Tribune](#) indicates that Metro Transit is pulling the plug on its electric vehicle ambitions:

In late 2018, Metro Transit unveiled an ambitious plan to add electric buses to its fleet — a clean alternative that was cheered by environmental and social justice groups.

The [idea](#) was to stop buying buses by 2022 powered by diesel fuel.

Since then, the transit agency has deployed just eight electric buses. And a proposal to spend \$122 million on 143 new biodiesel buses will be considered by the Metropolitan Council next week. The deal represents about 15% of Metro Transit's fleet of 900 buses.

Metro Transit's retreat from electric buses was foreseeable.

Reports of problems with the C Line electric buses were [detailed here in 2019](#), and on Tuesday, the electric chargers overheated, resulting in all eight buses being sidelined.

In addition to charging problems, American Experiment outlined how electric buses are much more expensive compared to their diesel counterparts. An electric bus costs around \$1.2 million, while a diesel bus sells for about \$748,000. We also questioned how useful electric buses would

¹¹ <https://www.americanexperiment.org/metro-transit-pulls-the-plug-on-electric-vehicle-experiment/>

be compared to their diesel rivals because electric vehicles lose 40 percent of their charge operating with the heater on in cold weather.

While we saw this coming, the announcement triggered some environmental activists, according to the Strib:

This has exasperated many of the same groups that applauded Metro Transit's commitment to electric buses three years ago.

"Every new diesel bus locks us into a minimum of 12 more years of dirty exhaust, climate pollution and reliance on imported fossil fuel," said Joshua Houdek, senior program manager at the Sierra Club North Star Chapter. "We should be transitioning to clean electric buses now."

"We need to see rapid electrification of our state's bus fleets to address climate change in Minnesota, and every new purchase of a diesel bus will prolong that delay and slow our response to the climate crisis," said Madi Johnson, Clean Transportation and Membership Organizer for MN350, a Minneapolis-based environmental group."

The loss of battery charge played a role in Metro Transit's decision, too:

"Cold climates like Minnesota's can also sap electric vehicle charges. The plan adopted three years ago called for half of the area's new bus rapid transit buses to be electric powered. But Metro Transit officials are now saying electric buses not a good fit because the new lines cover so much territory so establishing a network of charging stations would prove challenging."

Metro Transit said it wasn't entirely closing the door on new electric buses in the future to serve shorter routes, but Metro Transit's decision shows the technology is not yet ready for prime time.

If the administration wants to make incremental progress on reducing emissions from the transportation sector, they should be promoting hybrid vehicles and battery electric hybrid vehicles. These vehicles can generate practical emissions reductions and replace traditional ICE vehicles on a one-to-one basis.

Promoting and mandating full battery electric vehicles before the technology is competitive on price or utility is a sure-fire way to spur the kind of malinvestment we see in Minnesota's electricity sector with wind turbines and solar panels.

Adaptation

American Experiment believes the most cost-effective climate strategy will focus on adaptation first and mitigation second. Starting a pilot program for painting roofs white in densely populated areas will help offset the impacts of the urban heat island effect.

These roof-painting projects can be easily targeted to low-income communities, and these projects can be structured to collect data to determine whether the projects are reducing temperatures in these neighborhoods and reducing energy consumption.

An article at Yale 360 offers support for white roofs, arguing that replacing dark roofs with white roofs could lower heatwave maximum temperatures by 2 degrees Celsius, or 3.6 degrees Fahrenheit.¹²

Conclusion

The Draft CAF needs a lot of work before it can be considered a serious document with a plan to ensure we have abundant supplies of reliable, affordable energy that also reduce emissions over time. Many of the provisions are deeply unserious and are the product of putting a higher priority on reducing emissions than providing people with the energy they rely upon every day.

This is the same tactic that Germany took when they shut down their coal and nuclear power plants, built wind turbines and solar panels, and became totally dependent upon imports of Russian natural gas to keep the lights on when the wind wasn't blowing or the sun isn't shining. The results are devastating.

Germany is experiencing steep cost increases due to its bad energy policy, which is dragging down the entire European economy. The Bundesbank, Germany's central bank, recently warned that a gas embargo would cause the country's economic output to decline by as much as 5 percent this year.¹³

Any serious climate framework will stress the need for dispatchable carbon-free nuclear, hydroelectric, and carbon capture technology to serve as the basis of a zero-emissions electric grid. This reliable grid will present opportunities for electrifying other sectors of the economy.

Thank you for the opportunity to comment, and I hope that I can serve on Governor's Advisory Council on Climate Change in the future.

Sincerely,

Isaac Orr

Policy Fellow

Center of the American Experiment

¹² <https://e360.yale.edu/features/urban-heat-can-white-roofs-help-cool-the-worlds-warming-cities>

¹³ <https://www.nytimes.com/2022/04/29/business/europe-economy-gdp.html>