The Real Reason the Midwest is Facing Potential Blackouts this Summer

Iowa Environmental Council

As Iowa heats up, forecasters are expecting the summer to be yet another one for the record books in terms of heat. That means more demand for air conditioning and more strain on our electricity resources. At every opportunity, fossil fuel companies claim that renewables are to blame for this strain. This is not true. A rapid and full transition to clean energy can save Iowans money while improving reliability and grid resilience to extreme weather events.

In this whitepaper, we tackle the short- and long-term changes that must happen to get us to that future, and the barriers that are causing the risks we are hearing about for the summer.

What's causing this?

1. **It is <u>not</u> renewable energy.**
2. It is: lack of transmission (getting power from where it's generated to where it's needed) and a failure of utilities to plan for more extreme weather conditions.
3. It is: an unnecessarily slow process for getting renewable energy connected to the grid.
4. It is: the growing failure rate of fossil fuel plants during periods of peak summer demand. Nearly a quarter of fossil fuel generation capacity could be offline when it's needed most this summer.
5. It is: lack of energy efficiency measures (utilities gutted energy efficiency programs in 2018).
6. It is: increased demand due to extreme heat.

What should happen?

- Through smart planning processes, increase investment in a portfolio of solar, storage and wind that will reduce customer bills
- Increase transmission access to get power where it's needed
- Ensure Iowa utilities have transparent plans to move away from expensive, outdated fossil fuels to a reliable mix of affordable clean energy and storage.

How Iowa Fits Into the Regional Electricity System, and Why It Matters

The electric grid in Iowa is operated by the Midcontinent Independent System Operator ("MISO"). MISO controls the grid across a large region of the central U.S., including 15 states and the Canadian province of Manitoba. The grid operator acts to maintain reliable electrical service across the region, including making sure there is enough electricity even when demand is highest, like on a hot summer day.

About 90 percent of electric generation capacity in MISO is owned and committed by utilities based on what they need to serve their own customers. The remaining 10 percent is entered into an auction where utilities can buy access to the extra available capacity. The capacity is essentially a promise by the owner of an energy resource to be available when needed.

A combination of factors resulted in prices for capacity in MISO at the highest possible level for 2022 and 2023 and discussions of possible shortfalls in electricity during summer peak use times.

This spring, MISO announced that the energy demand this summer is expected to increase 1.7% over last summer. When extreme heat or weather events hit this summer, this increase in demand could leave the system vulnerable to blackouts and price spikes.

Failure to plan and slow processes are to blame.

For years, MISO states with differing political agendas have been bickering over how to develop the transmission system needed to unleash the Midwest's vast renewable energy potential. This system build out is expected to save customers tens of billions (yes, billions) of dollars.

Renewable energy has expanded in Iowa and throughout the region. But

the long approval process to get new renewables connected to the grid has slowed building clean energy resources to meet increased demand from extreme weather and replacements for fossil fuels. MISO recently received approval to update its process allowing new generation to connect to the grid. MISO expects that change to reduce the interconnection review times to about one year.

The MISO region leads for its wind energy, but still has connected relatively little solar generation to complement the wind. More wind power is generated at night and in the winter while solar generates most during the middle of the day and in the summer months. Iowa currently has nearly 12,000 MW of wind; **the addition of just 2,600 MW of solar or 1,500 MW of battery storage in all of MISO would have solved the entire region's capacity shortfall projected for this year**.[1]

There are also significant transmission barriers that prevent existing capacity (and new wind resources in Iowa, Minnesota, and the Dakotas) from reaching areas of heavy demand, and generation in the South from reaching the North. MISO South actually had excess capacity that would have limited the capacity price increase, but an export limit of 1.9 GW between North and South was another factor driving up prices in the North.

Utility Advocacy to Gut Energy Efficiency Programs has led to Increased Energy Demand

Iowa's two largest energy utilities are for-profit companies with monopoly service territories, which means they have a captive customer base and earn profit off their customers' basic energy needs. The more energy you use, the more money they make.

This profit motivation led MidAmerican Energy and Alliant Energy to push for legislation that dismantled the state's energy efficiency programs in 2018. Many groups raised concerns that MidAmerican and Alliant, and their supporters in the legislature, dismissed. Now we are realizing the consequences.

Just last summer, MidAmerican Energy reported kilowatt-hour savings for 2020 that were 64% lower than what the utility achieved the year before the law took effect. Alliant Energy's savings were down 40% during the same period. A recent study found that the failure of Iowa utilities to help customers reduce energy use is costing customers $100 million every year.

Reducing energy use helps customers save on bills, but it's not how utilities make their money. It is critical to re-prioritize customers and systems safety in Iowa and re-invest in efficiency to prevent an overloaded and expensive electrical system.

Iowa Can Meet its Needs with Clean Energy

The good news is that it is possible for Iowa and other states in MISO to ensure a reliable grid that is also clean and affordable. This includes low-cost wind and solar energy, energy efficiency and demand response, transmission, and energy storage. Clean energy resources can provide power at a low, stable cost and provide more flexibility for the grid. For example:

- Solar plus storage projects are excellent capacity resources, providing stable and reliable power that is produced during summer months when it is most needed and is readily available when demand is high.

- Wind power, solar power and energy efficiency are the lowest-cost energy resources in the United States, in addition to being the cleanest. Wind and solar also complement each other, and provide more consistent power when they are combined. And unlike fossil fuels, the price of homegrown clean energy isn't subject to transportation costs. Once online, the "fuel" to run clean energy facilities is free (i.e. the wind and sun).

- Energy storage can cost-effectively meet energy needs. The cost of energy storage fell more than 70% in just four years, and the amount of energy storage in the US has increased more than 1,000% in the last decade. Energy storage combined with renewable energy has become "cost-competitive" and is now replacing gas plants that run to meet peak demand, according to Bloomberg. Energy storage has an important and growing role in keeping our grid reliable and can help free us from dirty, increasingly expensive fossil fuels. Iowa utilities are currently far behind many of their national competitors in exploring storage; many regions of the United States are finding that adding large-scale energy storage projects would help lower energy costs.

- Demand response programs pay customers to temporarily reduce their electricity use, cost-effectively providing energy when the grid needs it the most.

- Transmission – high-capacity power lines that can move electricity long distances – is also critical to lowering prices, protecting reliability, and enabling more clean energy. There is "ample capacity across MISO to meet demand" but MISO is "limited in how much power it can reliably move between its South and Midwest regions." Lack of transmission was a major contributing factor to the tragic 2021 blackouts in Texas. We must learn from those mistakes if we want to avoid repeating them. At the same time, there is a significant backlog of renewable energy projects in our region that developers want to build, but lack the transmission to connect.

Although Iowa's wind supply is well-developed, we are behind in taking advantage of other cost-effective clean energy resources in MISO, particularly solar and energy storage, which provide critical capacity.

In the Iowa zone of MISO alone, 19 solar projects and 7 storage projects totaling more than 2 gigawatts (GW) of capacity are waiting for MISO to finish its reviews before the developers get the green light to build the projects. That is enough to power about 1.6 million homes, and almost twice what is needed to make up the capacity shortfall across the Midwest that's driving high prices.

It is clear that there is plenty of power waiting in line for connection to the grid, but it is being held up by a slow process at MISO and the need for transmission upgrades to move it around the region.

Fortunately, MISO has finally proposed a transmission build-out which would provide $37 billion in benefits to the northern MISO region that includes Iowa. Those benefits include customer savings, improved reliability, and cleaner air. Building this transmission infrastructure would also employ union workers and create nearly 36,000 jobs in Iowa.

Energy efficiency and demand response are also cost-effective but drastically under-used in Iowa's MISO zone. Energy efficiency is not providing any capacity in MISO, including in Iowa, despite providing significant capacity just two years ago.

Iowa's strong energy efficiency programs were gutted in 2018 with legislation pushed by the state's two largest investor-owned utilities. As a result of the utilities' lobbying, the law now sets a cap on energy efficiency spending, even where more spending would save customers money -- limiting this low-cost resource at a time when it is more necessary than ever to ensure a clean, reliable and affordable grid.

The lack of energy efficiency and demand response resources to meet capacity needs is contributing to the capacity shortfall and to higher bills for customers. To address the shortfall, Iowa's utilities should move as quickly as possible to expand these resources, which at today's capacity prices are likely very cost-effective, and can generally be brought online faster than power generation.

The state of Iowa has a role to play, too. Beyond the large renewable energy build already set to happen in the coming years, the state can incentivize - or require - utilities to ramp up demand response and energy efficiency. Iowa regulators can ensure utilities are adequately exploring whether adding solar, storage, and transmission solutions could help complement existing wind resources.

There's a clear way forward to keep our electricity reliable and affordable, IF we're honest about the cause of this problem and the solutions that can help.

Overreliance on Expensive and Volatile Fossil Fuels is a Major Cause of Reliability Problems

Unfortunately, some fossil fuel and corporate interests have tried to mislead the public about what caused winter blackouts two years ago and the current issues in MISO, claiming clean energy is to blame. The facts make it clear that this is not true. The Texas blackouts that caused gas price spikes in Iowa in February 2021 were largely the result of gas and coal plants' inability to operate in the extreme cold and purposeful isolation of Texas from access to power from neighboring states.[2]

These fossil-fuel based power plants will become even more unreliable as climate change drives more extreme weather. Hotter, drier weather will exacerbate the failures of power plants — particularly coal, gas and nuclear generators -- because these plants rely on the ability to draw vast quantities of cold water from rivers.[3] Warming river temperatures and drier conditions will decrease these power plants' efficiencies and place additional stress on more scarce water resources.

At the same time, “low” gas prices are long gone. In large part because of Vladimir Putin’s invasion of Ukraine, the price of fossil gas (also called “natural gas” or just “gas”) have surged to their highest levels since 2008. As Europe has recognized the national security risk of overreliance on fossil fuels produced in anti-democratic countries like Russia and China, the US has also quadrupled its exports of fossil gas since 2016, which drives up prices in America. In this new era of price volatility for gas, gas power plants can no longer credibly claim to provide energy at a stable and low cost.

And of course, burning fossil fuels is the reason our weather is becoming more extreme in the first place. Utilities have known for decades that burning fossil fuels is changing our climate, bringing extreme heat, flooding, drought, and wildfires, which strain infrastructure and contribute to blackouts. Weather extremes are not going away, and the global scientific consensus is that they will continue to worsen if we do not decrease our dependence on fossil fuel combustion.

Fortunately, we have the tools at hand to responsibly reduce our overreliance on expensive and risky fossil fuels, all while lowering customers’ electricity bills. Analysis filed with the Iowa Utilities Board shows that MidAmerican Energy could save Iowans nearly $1.2 billion by retiring all of its coal plants by 2030, and replacing them with 2,060 MW of solar, 740 MW of storage, and 2,000 MW of wind, energy efficiency, and demand response. That is because the costs to continue operating these plants are higher than building renewables to replace them. This is without considering the economic development benefits new clean energy brings in terms of job creation, additional revenues to farmers and landowners, and attracting companies who seek to make their products with clean energy.

You don’t have to take our word for it. The findings of this analysis are consistent with several independent studies conducted on a national level that found we can responsibly phase out fossil-fueled power plants, lower customers’ bills, and create a more resilient and reliable grid by investing in solar, wind and storage.

The fossil fuel industry’s response to every clean energy goal is the same: it’s too expensive, it’s unworkable, the sky will fall. They said this about the Clean Air Act, the landmark US

clean air law from the 1970s. They were dead wrong – the benefits of the Clean Air Act have outweighed the costs 30 to one. It's an old, self-serving story, and it's no surprise they continue to retell it.

More Clean Energy Resources are Needed to Ensure Low Cost and Reliability in Iowa

Building cost-effective infrastructure and continuing to ramp up clean energy resources will allow Iowa to reliably meet our electricity needs at the lower cost. Here's how we can do that:

- Continue the deployment of clean energy. Existing solar and storage projects in Iowa could more than meet our capacity needs. Deploying these resources will also help lower costs for consumers.

- Focus on expanding energy efficiency and demand response. These measures can be implemented quickly, they help customers save money and be part of the solution, and are very cost-effective.

- Capture Iowa's plentiful wind resource and soon-to-expand solar energy using battery storage that can be dispatched to meet capacity and reliability needs in Iowa. The cost of energy storage has dropped rapidly and it is already being used to meet capacity needs elsewhere in the US.

- Move as quickly as possible to build out transmission infrastructure, in particular projects to benefit the entire region that will allow clean, affordable energy to move efficiently and reliably to where it's needed.

Iowa has all of the tools we need to lower energy costs, create good jobs, and protect ourselves from the whims of dictators half a world away. If we are thoughtful but expedient about transitioning to clean energy, we will come out far ahead. It's time to get moving.

Endnotes

1. The shortfall was 1,231.8 MW (135,326.5 MW minus 134,094.7 MW), equivalent to roughly 2,662 MW of solar or 1,500 MW of battery storage across the entire MISO footprint.
2. Morehouse, Catherine. “Spiking temperatures could cause more blackouts this summer. They won’t be the last.” Politico, May 31, 2022. https://www.politico.com/news/2022/05/31/spiking-temperatures-could-cause-more-blackouts-this-summer-they-wont-be-the-last-00034858
3. *Id.*

Authors

This paper was authored by Kerri Johannsen and Steve Guyer of the Iowa Environmental Council.

Iowa Environmental Council