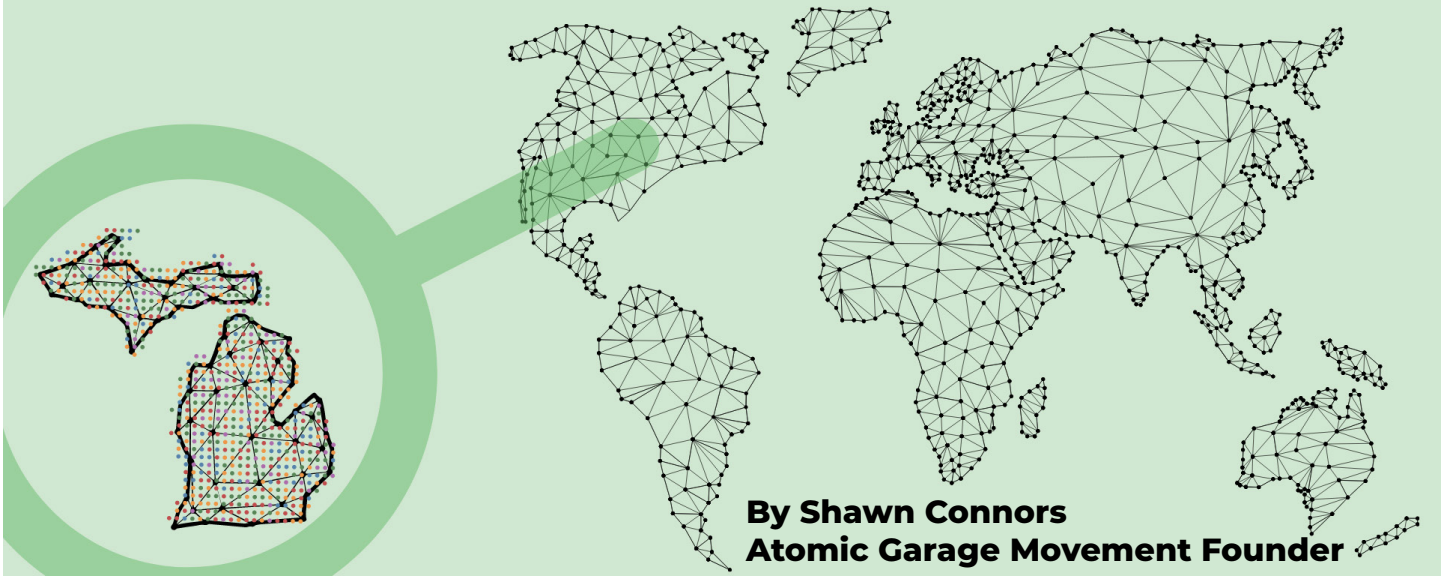
EXECUTIVE Summary

Why Michigan is a Microcosm of World Energy Policy



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Michigan recently passed an extensive bundle of green energy laws highly dependent on wind and solar power while rapidly phasing out fossil fuels. The benchmarks are aggressive. The State wants to produce 100 percent clean energy by 2040, with a 60 percent benchmark of clean energy production by 2035. Michigan officials have included nuclear power as a clean energy alternative. Governor Whitmer has bipartisan and public support for pushing to re-power the Palisades nuclear plant in Southwest Michigan.

What's going on in Michigan is going on all over the world. We need to change direction. Here's why:

Part of the agenda for coming off fossil fuels in Michigan is to remove 6 gigawatts (GW) of coal-powered production by 2030 (coal represents about 20 percent of Michigan's electrical generation). At the same time, the State must approve natural gas-powered generation plans to recapture CO2 emissions. The State will need natural gas plants to back up intermittent wind and solar energy production until battery storage technology becomes available. If that technology does become available, Michigan will need to double mainly wind turbines (less solar in Michigan) to charge those batteries as the rest of the wind fleet provides real-time electricity. Remember, Michigan plans to phase out all fossil fuel use—even as a backup.

The laws are prescriptive regarding what kind of energy MISO grid operators can accept (e.g., solar or wind ahead of baseline power). The laws also use vast and complex remedies to ensure that power production and consumption align with the State's clean energy requirements.

Most media outlets hailed the Michigan clean-energy laws as an excellent example of what needs to happen in other states. I am a critic of these laws, which I call the Michigan Blackout Bundle (MBB). In the two reports linked at the end of this summary, I highlight the following:

1. Michigan cannot replace 6 gigawatts of coal power production with wind and solar power on any timeline. Physics is the reason for that. I explain the physics involved in energy production as it works at Palisades Nuclear Plant and with the MISO grid in Michigan. The bottom line is that depending on wind and solar energy to replace dense fossil fuels violates the first and second laws of thermodynamics.

2. These laws focused on electrical generation. However, Michigan residents are the US's top propane users, and Michigan's substantial industrial presence requires direct thermal energy to work. Changing all that thermal energy into electrical energy and transmitting it is not addressed.

3. Michigan lawmakers vastly underestimate the surface area required to meet their plans. They claim 209,000 more acres need to be added to the 17,000 acres currently used by wind and solar. However, using their own numbers and public domain capacity metrics for wind turbines and solar panels, the State will need more than 1.4 million acres. The front-end material requirements and the extra capacity the grid would require make the whole scheme a non-starter.

4. But some common ground exists. Palisades nuclear plant, now owned by Holtec International, is a single 805-megawatt reactor (805 MWe). It was closed in May 2022 because of electrical market policy rather than production or safety issues. Palisades is on track to be the first US nuclear reactor turned off and then repowered. Holtec has also informed the public that it wishes to site two of its own Small Modular Reactors, SMR-300s, on the Palisades site in the early 2030s. Those two SMRs could conceivably be the first SMRs to go into US commercial operation.

Suggestion: Instead of depending upon arbitrary and non-physics clean-energy laws, let's make energy abundance the top objective of Michigan (and the world). Drop these ridiculous deadlines and let the market move to denser fuels in its own time. Make Michigan a nuclear energy early adopter and an inviting place for nuclear energy development. Michigan has an excellent university and industrial base from which to work. Energy scarcity is a much more pressing problem for the world and Michigan than climate change. It's time for a little common sense.

You can read the complete reports on which this summary is base (no paywall – PDFs) by checking out:

1. "How the Palisades Nuclear Plant Worked and Why Wind and Solar Can Never Replace It or Fossil Fuels"

2. "Making the Case to Re-Power Palisades"