CITIZENS RESEARCH COUNCIL OF MICHIGAN

"The right to criticize government is also an obligation to know what you're talking about."
Lent Upson, First Director of the Citizens Research Council

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Meeting Michigan's Renewable Energy Targets Will Require Regional Coordination

In a Nutshell

- Michigan has adopted ambitious renewable energy targets, requiring the state's electric utilities to achieve a renewable energy credit portfolio of 50 percent by 2030, and 60 percent by 2035.
- Michigan would be more likely to meet these targets and more efficiently decarbonize the electricity sector by pursuing a cooperative regional planning approach.
- Regional Transmission Organizations exist to coordinate transmission and planning amongst their member states and may play a vital role along the path to decarbonization of the electricity sector, but this resource is currently being under-utilized.

By Kala Sperbeck (sperbec2@msu.edu) & Eric Paul Dennis, PE (epdennis@crcmich.org)

In November 2023, Governor Gretchen Whitmer signed into law Public Act (PA) 235 of 2023 requiring Michigan electric utilities to achieve a renewable energy portfolio standard of 50 percent by 2030, and 60 percent by 2035.

The law codifies some of the recommendations of the 2022 MI Healthy Climate Plan, a strategy for reducing greenhouse gas (GHG) emissions within the state. The Citizens Research Council previously analyzed the renewable energy strategies of the MI Healthy Climate Plan and concluded that the goal of generating 60 percent of the state's electricity from renewable resources faced many hurdles. Notably, the plan faces challenges from stabilizing energy production in the face of intermittent resource availability, overcoming local opposition to the siting of renewable facilities, and investing in the necessary transmission infrastructure to move electricity from new generation sites to existing population centers.

Achieving Michigan's renewable energy standard while maintaining reliability and affordability will be a challenge.

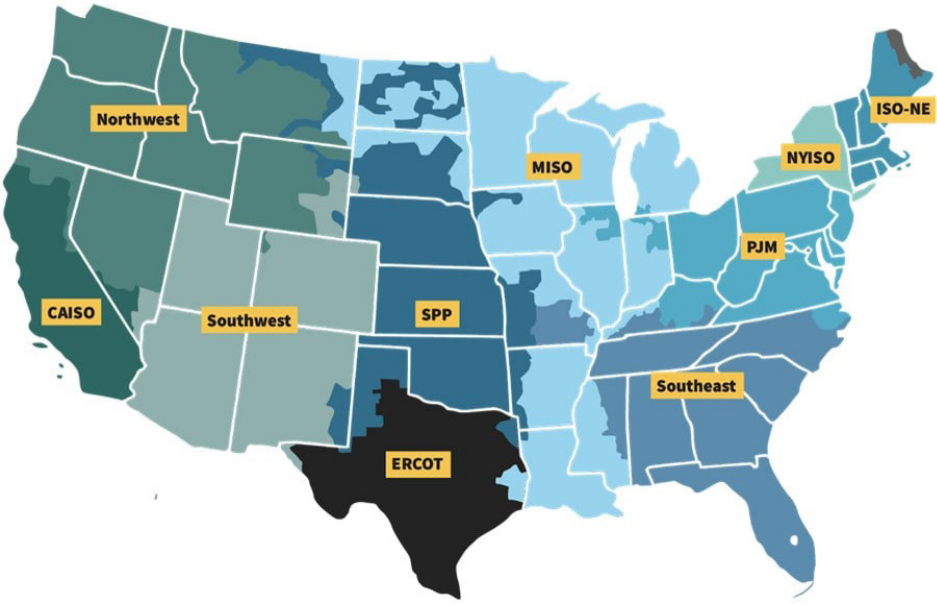
Reducing the carbon emission of electricity production may prove easier and more efficient through multi-state coordination, as resource availability and electricity demand differ geographically. For example, when it's cloudy in one state, another state may be generating excess solar energy. If states could more easily transmit electricity across their borders, it would help mitigate the hurdles of intermittent resource availability while reducing the overall amount of new generation capacity needed.

Existing Means of Regional Coordination – Regional Transmission Organizations

So how can states cooperate in this way? Well, they already do. In 1999 the Federal Energy Regulatory Commission (FERC) issued Order 2000. Among other changes, the Order strongly encouraged the development of Regional Transmission Organizations (RTOs) to oversee electricity transmission within a certain geographic scope.

In December 2001, the first RTO was approved by FERC – the Midcontinent Independent System Operator (MISO). Today, MISO operates in 15 states – ranging from Montana to Michigan and cutting southward to Louisiana and part of Texas. All of Michigan's electric utilities are MISO members, except for the Indiana-Michigan Power Company in the southwest corner of the state.

Image: Regional Electrical Power Grids in the Continental United States



Source: Federal Energy Regulatory Commission – RTOs and ISOs

As an RTO, MISO does not directly own transmission lines or any hard infrastructure, but has various responsibilities in managing the grid. MISO monitors the real-time demand and production of electricity across the entire region, within and across state borders. Electricity produced in Michigan may actually be consumed in another MISO state, and the electricity Michiganders are consuming at any given moment may actually be produced elsewhere. MISO also imports and exports power from adjacent regional grids to balance electricity demand with generation across a broader region.

In addition, MISO manages wholesale electricity market exchanges. If one utility isn't generating enough electricity to meet demand while another utility is generating excess electricity, MISO will coordinate the sale of energy from the over-producer to the under-producer. This helps keep the lights on for all MISO customers, even in the face of maintenance or malfunction at a generating plant and regardless of state borders.

MISO also plans the future of the electricity grid in its region. MISO's top priority for this future grid is encapsulated in its Reliability Imperative – the notion that it, its member states, and the utilities are all responsible for securing electricity reliability across the region. Beyond reliability, MISO also emphasizes the importance of affordability and sustainability. It conducts significant research on electricity needs across the region and produces recommendations to meet those needs.

Limitations of RTO Model

In spite of MISO's regional scope, it has very little authority over decisions made by individual states and utilities. It cannot mandate that any state build infrastructure, set goals, or pass laws, even if it would benefit the MISO region as a whole. Member states are expected to coordinate with the RTO through the Organization of MISO States, but zoning jurisdiction and infrastructure approval ultimately belongs to the individual states, subject to the investment plans of individual utilities. Thus, Michigan and MISO's other member states generally operate independently in their capacity requirements, transmission buildout, and renewable energy plans.

Given MISO's limited authority, decarbonization and grid reliability are subject to the policies of member states and subsequent investment plans of utility companies.

This approach has been adequate since the establishment of MISO in 2001. However, in recent years there has been a rapid evolution of the grid from generation based on "dispatchable" power generation facilities such as coal and nuclear plants to "intermittent" (weather dependent) sources such as wind and solar. This transition implies a greater need to move electricity across the region to match generation capacity in one area with power demand arising in another area.

In its Renewable Integration Impact Assessment (RIIA), MISO found that it can manage up to about 30 percent renewable energy penetration across the region without significant infrastructure and technology investments or changes to the market exchange framework. Its models indicate, however, that an inflection point exists somewhere between 30 percent and 40 percent. At this point, neither MISO's current infrastructure nor its system operations will be sufficient to maintain a reliable electricity supply for any of the states in the region. Current levels of regional cooperation will not address these challenges. Instead, more intentional regional planning and coordination are needed.

Michigan's Renewable Energy Requirements

Under Michigan's Clean and Renewable Energy and Energy Waste Reduction Act (PA 295 of 2008) as revised by PA 235 of 2023, electric utility providers will be required to achieve a renewable energy credit portfolio of 50 percent by 2030, ramping to 60 percent by 2035. Notably, this law does not require utilities to literally produce and deliver 50-60 percent of their delivered electricity from renewable resources. Generating and delivering renewable energy is the primary method by which utilities can obtain renewable energy credits, but there are alternatives:

- Purchasing renewable energy and capacity through MISO's Planning Resource Auction. If the renewable energy is purchased from outside of Michigan, renewable energy credits can only be obtained if the associated renewable energy is accredited to meet MISO's resource adequacy obligations.
- Purchasing renewable energy credits from within the MISO region without associated renewable energy or capacity. Utilities are limited to five percent of their renewable energy credit portfolio under this provision, and this option sunsets after 2035.
- Substituting energy waste reduction credits for renewable energy credits. Utilities are limited to 10 percent of their renewable energy credit portfolio under this provision.
- Obtaining credits from renewable energy produced "behind the meter" by distributed energy systems owned by a customer of the utility.
- Additional "Michigan incentive renewable energy credits" can be generated in various ways, such as providing renewable or stored energy during peak demand and using Michigan resident labor to construct the facility.
- Credits can be banked for up to five years and applied during years when the utility may fall short.

These provisions apply to investor-owned utilities such as DTE and Consumers Energy. The requirements for municipal electric utilities and cooperative electric providers are similar, but these agencies have some additional flexibility.

Critically, the new law enables the Michigan Public Service Commission to grant unlimited extensions to utilities that can demonstrate that "compliance is not practically feasible." Factors that would justify an extension include showing that meeting Michigan's renewable energy requirements would excessively raise rates or result in grid reliability issues.

Need for Additional Coordination to Achieve Michigan's Renewable Energy Targets

Despite the various ways in which utilities can generate renewable energy credits, the 50 percent by 2030 target is notably ambitious. In 2022, about 12 percent of Michigan's electricity was generated from renewable resources. Currently, all of Michigan's electric utilities meet a 15 percent renewable portfolio standard using renewable energy credits and waste reduction credits. Ramping up to meet the 2030-2035 50-60 percent requirements may prove "not practically feasible" for many utilities without additional provisions for regional coordination.

The Michigan Public Service Commission can grant unlimited extensions for utilities to meet Michigan's renewable energy portfolio standard if "compliance is not practically feasible."

Meaningful coordination on the planning and development of a renewable grid would recognize that states have different renewable energy potentials. These differences may result from climatic factors – some regions have inherently more solar and wind potential than others. There are also differences related to land use – some states have more sites available for large solar or wind farms than others. State policy is another factor, as some states (like Michigan) have adopted aggressive renewable energy targets while others, such as Mississippi, provide no requirements or incentives.

In order for MISO member states with renewable energy targets to meet their goals, MISO estimates that as much as 100GW of renewable capacity will need to be added to its grid in the next decade – a 53 percent increase. This is an unprecedented amount of new installations. The average MISO-wide grid addition between 2014 and 2022 was 3.4GW/year (1.8 percent). In 2020, states added the largest amount in a single year – 6.6GW (3.5 percent).

Despite these investments in renewable generation, MISO's "accredited" generation capacity is declining as many states move to shutter coal plants to meet renewable energy and environmental goals. This transition is happening while electric power demand is increasing with the advent of electrified vehicles and appliances, as well as new demand sources like data centers and manufacturing facilities.

MISO and other RTOs have thus far been largely successful at balancing generation with demand such that reliability has not suffered and mitigation efforts like rolling blackouts have not been necessary. However, as electricity demand increases and reliably dispatchable generation is shuttered, the task of maintaining reliability will become increasingly fraught.

Unless future-oriented regional planning is pursued in earnest, Michigan will not likely meet its renewable energy goals. Furthermore, the transition from dispatchable generation to weather-dependent intermittent generation without updated transmission infrastructure imposes risks on reliability.

Passage of PA 235 and associated renewable energy portfolio standard is a good start to decarbonizing Michigan's power grid. However, successfully achieving the requirements of the law while maintaining reliability and affordability will require strategic planning in coordination with MISO and its member states. A coherent, future-oriented plan would include an assessment of each state's renewable generation potential, dispatchable capacity, and subsequent need for inter-state transmission lines to allow power to more easily be moved across the grid from where it is produced to where it is needed.

Conclusion

Climate change is a global problem, so it should be no surprise that solutions will have to span broad regions as well. Michigan's renewable energy targets are commendable, but if it, or any other state in the region wishes to see meaningful progress in decarbonizing its electricity sector, it will need to work closely with neighbors.

The benefits of regional coordination have been known since the introduction of RTOs in 1999. FERC's revolutionary Order 2000 emphasized the potential for increased reliability with regional coordination. The results have been successful, but this framework is facing new challenges and must be met with renewed dedication to cooperative efforts. MISO's RIIA acknowledged that "diversity of technology and geography improves the ability of renewables to serve load." Michigan and its neighbors need to actively coordinate policy, planning, and investment strategies through the existing resource that is MISO to make the most effective decisions to reach their renewable energy goals.

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Kala graduated from the University of Notre Dame with a Bachelor of Science in 2018. She began her undergraduate career with an interest in biology, but quickly became passionate about the environmental sciences and renewable energy. Kala is currently pursuing a Master's of Public Policy (MPP) at Michigan State University. Upon completion of the program, Kala hopes to find a position as a policy analyst where she can help address the myriad environmental, social, and political issues facing the world today.

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Eric joined the Citizens Research Council in 2022 as an expert in civil infrastructure policy. Previous to his position with the Research Council, Eric spent nearly ten years as a transportation systems analyst, focusing on the policy implications of emerging technologies such as autonomous vehicles, connected vehicles, and intelligent transportation systems. Eric has been a Michigan-licensed professional engineer (PE) since 2012. As a practicing engineer, Eric has design and project experience across multiple domains, including highways, airfields, telecommunications, and watershed management. Eric received his Bachelor's degree in civil engineering from Michigan State University in 2006. Eric also holds Masters degrees in environmental engineering and urban/regional planning, both from the University of Michigan.

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