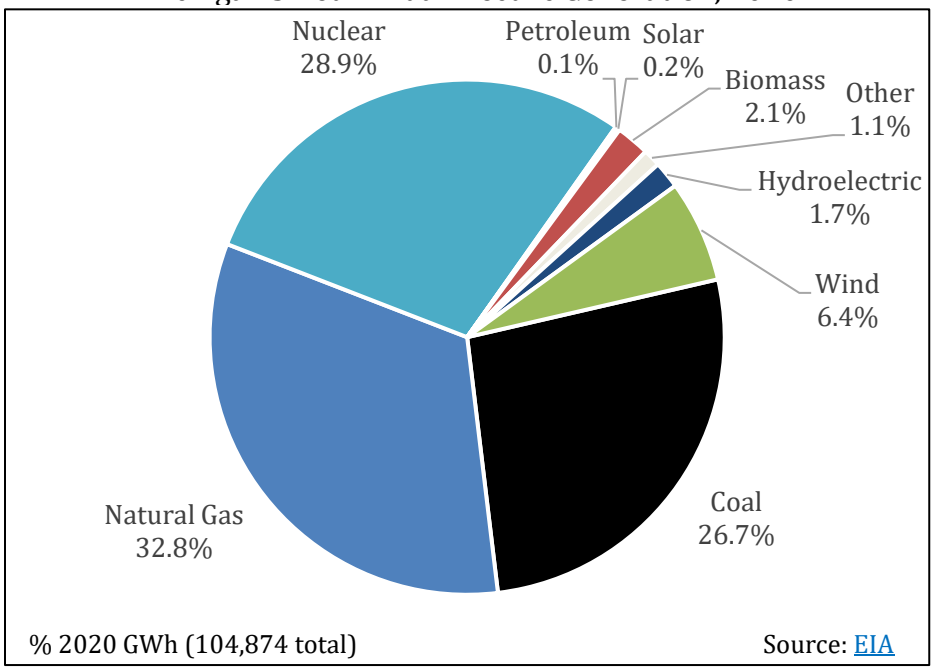
State Brief: Michigan

BACKGROUND

Michigan's Net Annual Electric Generation, 2020



% 2020 GWh (104,874 total) Source: EIA

2020 marked the first year in which natural gas was the largest source of net-electricity generation in Michigan. Nuclear and coal follow closely behind. The state has the most underground natural gas storage capacity of any state in the country. While coal-fired generation continues to be a significant source of Michigan's net electric generation, the U.S. Energy Information Administration reports that about a dozen coal-fired power plants have retired during the past decade and no new coal-fired facilities have been added. An estimated 22 GW of additional coal generation is scheduled for retirement through 2024. Renewables make up about 11% of the state's electricity generation. The Great Lakes State has more shoreline than any other state except Alaska, making offshore wind a highly viable option for energy production. Michigan is among the top 15 states in the nation for wind capacity and generation.

As of mid-2021, Michigan has nearly 521 megawatts (MW) of installed solar capacity. In 2020, the Solar Energy Industries Association (SEIA) ranked Michigan 18th in the nation for projected solar energy capacity growth over five years at 1,802 MW. The 2020 U.S. Energy and Employment Report found that Michigan has 84,764 traditional energy workers (1.9% of total state employment). In 2020, Michigan ranked sixth nationwide for clean energy jobs (including jobs in energy efficiency and solar) and the industry employed 113,456 Michiganders.[1]

The three member Michigan Public Service Commission (MPSC) regulates the state's eight investor-owned utilities (IOUs) and eleven electric cooperatives. No more than two commissioners can represent the same party. All three commissioners were appointed by Democratic Governor Gretchen Whitmer, who took office in January 2019. Republican majorities control both chambers of the state legislature.

POLICY STRENGTHS AND OPPORTUNITIES

The National Renewable Energy Laboratory (NREL) developed the notion of "policy stacking,"[2] an important framework for policymakers to consider. The basic idea behind policy stacking is that there is an interdependency and sequencing of state policy that, when done effectively, can yield greater market certainty, private sector investment, and likelihood of achieving stated public policy objectives.

In theory, but not always in practice, clean energy policies can be categorized into one of three tiers of the policy stack. Tier 1, market preparation policies, remove technical, legal, regulatory, and infrastructure-related barriers to clean energy technology adoption. Tier 2, market creation policies, create a market and/or signal state support for

[1] This is in addition to the number of traditional energy jobs in the state.

[2] V.A. Krasko and E. Doris, *National Renewable Energy Laboratory*, 2012. Strategic Sequencing for State Distributed PV Policies: A Quantitative Analysis of Policy Impacts and Interactions. http://www.nrel.gov/docs/fy13osti/56428.pdf.

clean energy technologies. Tier 3, market expansion policies, create incentives and other programs to expand an existing clean energy market by encouraging or facilitating technology uptake by additional market participants.

For example, before financial incentives for combined heat and power (CHP) will be successful, two key considerations for deployment are having clear interconnection standards and favorable stand-by rates for customers who opt to add CHP. In this example, states should adopt policies to address interconnection and stand-by rates before adopting financial incentive programs.

GRID MODERNIZATION

Digital technologies have enabled utilities to better manage the grid and provide opportunities for consumers to customize their services to fit their priorities. These technologies allow a two-way flow of information between the electric grid and grid operators and between utilities and their customers.

Emerging technologies improve system reliability and resiliency by enabling better tracking and management of resources. These technologies allow grid operators to incorporate central and distributed energy resources, energy storage technologies, electric vehicles, and assist in addressing the challenges associated with planning, congestion, asset utilization, and energy and system efficiency.

On the customer's side of the meter, dynamic pricing, advanced metering infrastructure, and other technologies allow an exchange of information and electricity between a consumer and their electric provider. Grid modernization is associated with greater consumer choice by allowing customers to meet their energy priorities by producing their own energy or through contracting innovative clean energy services from different providers.

Grid modernization will require a suite of state and federal policy changes to support advancements in grid technologies, grid management, and utility regulation.

Originally implemented in 2018, in August 2020, the MPSC updated requirements on Consumers Energy and DTE Energy's five-year distribution plans to address modernization, including integrating new technologies such as solar, storage, and electric vehicles. In October 2019, the governor's office, in coordination with the MPSC launched MI Power Grid, a program specifically focused on increasing customer engagement with the grid, integrating emerging technologies, and optimizing grid performance. In 2020, Consumers Energy provided 100,000 smart thermostats to its customers to allow easier control of energy use during peak times.

States might wish to provide incentives or cost recovery mechanisms for utilities that meet grid modernization goals. As required by Senate Bill 16-437, the MPSC evaluated performance-based regulations and submitted a report to the Governor in April 2018. States might also benefit from having clear rules for customer data access. Current MPSC rules require utilities to make customer data available to customers and third parties with customer approval and to "provide clear instructions regarding the method by which a customer and a third party, authorized by the customer, may obtain customer usage data in a timely manner and a readily accessible format from the utility."

There are policy opportunities to support in-state modernization efforts:

1. Require that utilities' integrated resource plans (IRPs) include strategies to enhance cybersecurity, integrate distributed energy resources (including electric vehicles and energy storage), increase smart meter deployment and demand response and/or demand-side management (DSM) programs, and measure and report on the results of grid modernization efforts.

2. State departments of workforce services or their equivalent can be directed to work with utilities and other stakeholders to develop training programs for grid technicians and engineers. With new grid technology and distributed energy systems coming online, a new generation of workers can be trained to meet evolving needs, which will keep jobs local, and contribute to economic development.[3]

[3] For a discussion of specific workforce needs that states might explore see: GridWise Alliance and U.S. Department of Energy. 2020. "Grid Modernization Index Insights into a Transformation: Principles for the Next Decade of Progress."

The adoption of incentives for or a requirement to integrate a certain amount of energy storage on the grid alongside enhancing renewable energy and electric vehicle policies can support modernization efforts and improve the chances of successful grid modernization.

ENERGY STORAGE

Energy storage offers a unique opportunity to manage supply and demand dynamically while also maximizing the value of grid resources. By deploying storage to strategic locations, utilities can more effectively manage their energy portfolios. First, storage allows utilities to manage intermittent demand – helping reduce peak demand requirements. Because the generation resources that provide peak power are the system's most expensive, reducing peak demand can save consumers money. Second, the responsiveness of energy storage can allow utilities to implement voltage regulation and other ancillary services, which are useful for improving system efficiency. Third, because storage technologies can both store and dispatch power, storage enables better integration of intermittent power generation resources like renewable energy to the grid. Finally, energy storage can help the commercial sector avoid costly demand charges. As utilities around the country consider implementing or extending demand charges to other sectors, energy storage will become more relevant as a customer cost-saving investment.

The flexibility of battery storage, combined with advanced metering infrastructure, allows customers to control, for instance, how and when they use energy from the grid or from solar panels installed on their home or business. In most cases, this can provide greater cost savings than standalone solar systems. Combined with time-varying rates or real-time pricing programs, state policy can further support customer choice and open a new market for energy services. Prices that better reflect the time-varying and location-dependent costs of producing and delivering electricity can lead to several economic and environmental gains.

Two major trends have enabled increased deployment of energy storage: declining costs and technological advances. State policies can help maximize these benefits by establishing both a framework for easy integration of energy storage resources onto the grid and a marketplace that monetizes the benefits of energy storage for cost-effective investment.

In March 2019, the Michigan Agency for Energy hosted an Energy Storage Symposium that submitted its findings to the Michigan Legislature. The state's renewable portfolio standard provides a credit multiplier for energy storage technologies. In January 2019, NEC Energy Solutions completed an energy storage pilot system for Consumers Energy to enable the utility to study how storage can be deployed throughout its territory.

There are several policy opportunities to take advantage of the growing technological advances in and declining costs of energy storage. The recommendations here draw heavily from the Interstate Renewable Energy Council's (IREC) 2017 report, "Charging Ahead – An Energy Storage Guide for Policymakers." Policymakers in Michigan could consider the following:

1. Amend existing interconnection policies to ensure that storage can connect to the grid through a transparent and simple process. The Interstate Renewable Energy Council (IREC) has produced a series of interconnection protocols that states can easily adopt. The state could establish best practices for interconnecting storage in statute, or legislation could provide an instruction to the MPSC to update existing policy.

2. Instruct utilities and the MPSC to evaluate the value of energy storage in multiple strategic locations across the utility system and consider a requirement to deploy storage where it will be cost effective, or identify the price point at which it will become cost effective.

3. Require the inclusion of energy storage as a critical piece of the energy system as both a demand and supply management resource. Some states have required that utilities evaluate the cost effectiveness of non-wires alternatives (NWAs) to large transmission and generation investments. Alternatively, states might want to require that utilities develop a distribution investment plan that identifies the locations on the distribution system where energy storage or other distributed resources would offer the greatest value.

4. Consider creating a mandatory energy storage procurement target or requirement for energy storage with a documented process for periodic review of progress towards that goal. Procurement targets can limit the amount of utility owned storage; require that a certain amount of storage be targeted to low-income customers; and create carve-outs for storage at the transmission, distribution, and customer levels. Procurement targets can jump-start market creation, spur fast learning, and guide the development of a regulatory framework.

5. Finance and incentivize energy storage for customers and utilities. Incentives could enable customers to use storage to manage their electric load and store locally produced renewable energy. Incentives in the form of rebates, grants, and tax credits can provide a bridge to scalable deployment for storage. These incentives can also be designed to decline as the value of storage becomes more readily monetized, and/or as the cost of storage decreases. Policymakers could allow utilities that provide storage incentives to customers to also recover the costs of installing smart meters. This would enable dynamic and time-varying energy management from multiple distributed battery systems. This should signal to customers the value of leveraging storage while better aligning customer costs with system costs. Financing energy storage installations for commercial customers could help reduce their demand charges. Policymakers might start first with a policy that provides grants to pilot projects, and/or that targets existing solar system owners. Financial incentives should be designed to ensure that the state meets other goals including emissions and peak demand reductions, and equitable access to clean energy.

MAINSTREAMING RENEWABLES

As the renewable energy industry matured, technology improved, and global production of generating equipment increased. Renewable energy is increasingly seen as the least cost and lowest risk form of energy (excluding energy efficiency). A 2021 Energy Information Administration report predicts that the share of the United States' electricity generation mix supplied by renewable energy resources will increase from 21% in 2020 to 42% by 2050. With increased deployment, utilities are learning more about how to integrate renewables effectively, investors are becoming more comfortable with the technologies, and building code officials are recognizing common standards and best practices. For these reasons, it is in the interest of policymakers to ensure that their states are well positioned to benefit from the transition to clean and sustainable energy resources.

To reduce barriers to customer and utility participation in the renewable energy market, policymakers in Michigan might consider several options.

Customer-Oriented Policies

1. **Interconnection, Net Metering, and Streamlined Permitting –** In general, customers want a clear, streamlined, affordable, and predictable system for connecting renewable energy systems to the grid. To ensure this, Michigan's policymakers could consider adopting IREC's model interconnection procedures and removing net metering system size limitations. In 2019, the Michigan PSC approved a phase out the state's net metering policy in favor of an inflow/outflow credit mechanism which deducts transmission charges from the retail rate credit. Allowing aggregated net metering would be especially beneficial to the state's commercial properties and public entities like state and local governments, universities, and schools. The state might also consider establishing either statewide standards for streamlined permitting processes, or resources to support local governments that voluntarily implement a streamlined program, as Ypsilanti has done. State incentives, such as tax credits, financial incentives, or loans can be tied to systems that are established within a designated streamlined permitting jurisdiction.

2. **Shared Renewables –** Due to building and property attributes and ownership issues, many customers are unable to install renewable energy technologies where they live or work. Allowing shared, or community, renewable energy projects addresses these barriers. These projects have multiple owners or subscribers who pay for a portion of the project or the generation provided by the system. Michigan might consider adopting a virtual net metering policy. Virtual net metering allows a customer to receive credits from a shared system as if the generation were on site. Virtual net metering is different from a power purchase agreement (PPA), which pays the customer for the proportion of power they produce. Because it is treated as a credit on the customer's bill, the customer can avoid the tax implications of a PPA payment - which can adversely affect the economics of the system (and may come as a surprise to the participant). Currently, Consumers Energy offers a solar garden

program, and SpartanSolar operates a community solar program for Michigan's electric cooperatives with 2 MW of total solar generation capacity split between two locations.

Low credit ratings often deter participation in renewable energy markets; this can affect low- and moderate-income (LMI) households' adoption of renewable energy solutions. Supportive policies for shared renewables can be designed to encourage participation by LMI households; this can increase adoption of renewable technologies and reduce energy costs. Low-income participation can be ensured either through a percentage mandate for the overall annual contracted capacity, or by offering a higher rate of payment for the portion of shared solar capacity attributed to LMI customers. States that have a shared renewable program may want to coordinate this program with implementation of the federal Weatherization Assistance Program (WAP) or the Low Income Home Energy Assistance Program to provide recipients of assistance with participation in a shared renewable system. Since 2010, Michigan has received $148.7 million from WAP and $13.7 million from the State Energy Program (SEP). These resources have helped fund a number of energy initiatives in the state including the Low- to Moderate-Income Access Program, a pilot program that provides access to community solar for low- and moderate-income subscribers. As part of the Community Energy Management Program, the Michigan Department of Environment, Great Lakes, and Energy (EGLE) awarded $492,145 to 26 institutions to assist with energy efficiency upgrades and renewables projects.

There are several additional policy options that Michigan might consider to promote renewable energy uptake by low- and moderate-income consumers. Generally, successful state policies should be tailored to these customers, be cost-effective and financially sustainable, have measurable performance indicators, and be flexible enough to allow later changes in design.[4]

3. **Corporate Procurement –** Many Fortune 100 and 500 companies have established either climate goals or commitments to purchase renewable energy. Since 2016, nearly 31 gigawatts (GW) of renewable contracts have been announced by corporate entities. In 2020 alone, corporations signed 100 agreements for over 10 GW of renewable energy. This is leading policymakers to provide additional avenues for businesses to procure renewable energy. In October 2018, the MPSC approved Consumers Energy's Large Customer Renewable Energy Program (LC-REP) and Senate Bill 16-438 directs electric providers to offer voluntary green pricing programs to customers. Michigan's Electric Customer Choice Program allows retail customers to choose their electric provider based on their needs. With Michigan's substantial wind capacity and Consumers' LC-REP, the state is becoming an attractive environment for corporate procurement of renewable energy. Michigan's policy also allows companies to purchase renewable energy credits, develop or lease onsite renewable energy projects, and enter into onsite third-party PPAs. The products available in Michigan meet all six of the Corporate Renewable Energy Buyers' Principles, and the state was ranked 31st overall in the Retail Industry Leaders Association's 2020 rankings of state corporate procurement policies. It is prudent to incorporate corporate renewable purchase commitments into the IRPs that utilities submit to regulators to plan for resource needs over multiple decades. By integrating these renewable purchase commitments into the IRP process, regulators can avoid over-building resources and stranding generation assets.

Utility-Oriented Policies

Some states have created programs that aim to reduce greenhouse gas (GHG) emissions and increase investments in clean energy resources. Consumers Energy has a goal to reduce carbon emissions more than 90% by 2040. In 2016, Public Act 341 increased the state's Renewable Energy Standard to 10% by 2015 and 15% by 2021. After the threat of a ballot initiative in November 2018 that would have required 30% of all electric sales to be renewable by 2030, Michigan's two largest IOUs, DTE and Consumers Energy, announced a 50% clean energy goal. By 2030, the utilities plan to achieve half of this goal through renewable energy and the other half through energy efficiency. Consumers Energy has a renewable energy target of 42% by 2030 and 56% by 2040. Consumers Energy will phase out coal by 2025 and DTE plans to be coal-free by 2040.

[4] In May 2021, the University of Michigan's Urban Energy Justice Lab unveiled their Energy Equity Project, which intends to create a standardization framework for the evaluation of equity in clean energy programs. The project aligns with the Biden administration's Justice40 Initiative, which aims to ensure that 40% of climate investment benefits (which include renewable energy) are realized by disadvantaged communities.

Michigan's governor signed Executive Directive 2019-12 committing the state to joining the U.S. Climate Alliance and to reducing emissions 26-28% from 2005 levels by 2025. Executive Directive 2020-10 set a goal of carbon neutrality by 2050 and net negative GHG emissions after 2050.

To increase utility adoption of clean energy technologies, Michigan's policy makers might consider the following:

1. **Accelerating and Amending Renewable Portfolio Standards –** States can revisit existing RPS policies to increase targets and/or accelerate target dates to continue to spur the development of renewable resources and save ratepayers money. Additionally, states might add one or more carve-outs to further incentivize the development of distributed generation and offshore resources. Embedding an RPS within broader clean electricity or emissions standard can allow technological flexibility.

2. **Clean Peak Standards (CPS) –** Clean Peak Standards aim to increase the share of clean energy resources used to meet peak demand and decrease energy bills over the long-term by reducing peak demand in the hours when energy costs are highest. These objectives can be met through different policy options, including planning and procurement that focuses on peak demand; a moratorium on the construction of new peaking units or a phase out of existing units; incentives – including carve-outs in states with RPSs – for clean energy resources delivered during peak times; and/or adopting a new clean peak standard that sets a target for clean energy deliveries during peak times.

ELECTRIFICATION OF THE TRANSPORTATION SECTOR

An estimated 58% of new car sales will be electric by 2040. Therefore, a key part of building a modernized grid involves designing infrastructure that will facilitate easy connection of electric vehicles (EVs) to the grid. One of the most important barriers to increased adoption of EVs is the consumer's awareness of the availability of EV charging stations. Ultimately, drivers want to be sure that their car will get them where they need to go. The good news is that both supportive policies for developing charging infrastructure and technological advancements have eased "range anxiety."

In 2019, Consumers Energy announced the launch of the multi-year PowerMIDrive program that includes rebates for residential, public, and fast chargers throughout Michigan. The MPSC recently approved DTE Energy's plan to invest $13 million in its "Charging Forward" program, a three-year electric school bus charging pilot project. The American Council for an Energy-Efficient Economy (ACEEE) published a State Transportation Electrification Scorecard evaluating 29 states' progress in electrifying transportation in six key policy areas. Michigan ranked 29th in the 2021 report.

There are several policy opportunities to further encourage and prepare for increased market penetration of EVs in the state, including:

1. **EV and EV Charging Equipment Financing and Financial Incentives –** Providing financial incentives and innovative financing options can help increase market penetration of EVs. Sales, property, and income tax credits are some of the simplest methods for addressing the up-front costs of EVs and EVSE. While sales tax credits are typically applied at the time of purchase, property and income tax credits may do less to address upfront cost barriers as receipt of the credit is typically removed in time from the purchase.[5] Some states have adopted other financial incentives including low-interest loans, grants, vouchers, and rebates. A handful of states qualify EVSE under their property assessed clean energy (PACE) programs. A simple solution is to increase and expand existing tax credits to incentivize commercial, publicly available charging stations.

2. **Charging Infrastructure Plan –** Locating charging infrastructure is different from locating conventional fueling stations. While some drivers will need to charge more quickly, others will refuel when they are parked for longer periods of time, for example when shopping at a mall or going to work. Charging infrastructure plans should attempt to pair the appropriate level of charging (level 2 or direct current fast charging) with a reasonable amount of time a person will be at that location. Legislation could direct a state agency to develop an infrastructure plan through a stakeholder process. Michigan's existing registration fee for EVs could help fund

[5] A study by the Congressional Research Service suggests that tax credits are important tools for ensuring increased adoption of alternative-fueled vehicles.

these efforts. For example, in Washington a portion of each EV registration fee is used to fund charging infrastructure development across the state.

Regional collaborations around the US are emerging to coordinate the development of electric transportation infrastructure. The Michigan to Montana (M2M) Alternative Fuel Corridor, a project that began in 2017, will traverse Interstate 94 from Port Huron, Michigan to Billings, Montana, and is the first alternative fuel corridor in the Midwest. A 110 mile southern stretch of Interstate 94 (from Madison, WI to the IL border in Kenosha County) was designated as "EV ready" and in 2020 the corridor was marked with signs to indicate EV charging stations every 50 miles (with stations no more than 5 miles off of the interstate). Michigan might consider the potential for designing policy to compliment this regional initiative.

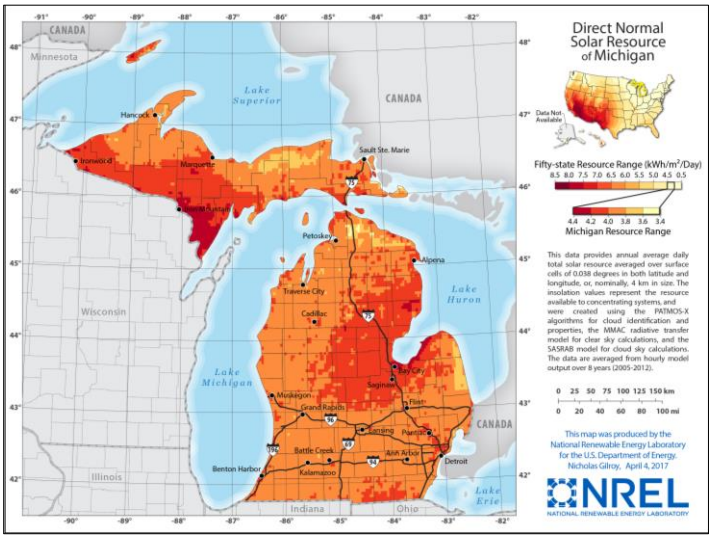
3. **Parking Infrastructure Requirements –** In tandem with the development of a statewide plan, legislation could set requirements for EV parking infrastructure. Some states have adopted permitting standards for parking lots, requiring, for instance, that for every 100 parking spaces, there must be at least one EV charging space. Legislation could also incentivize utilities to develop make-ready locations. These locations supply power to the point where a utility or third-party developer might install an EV charging station. Michigan's statewide building energy code could also be updated to include requirements for EV charging infrastructure.

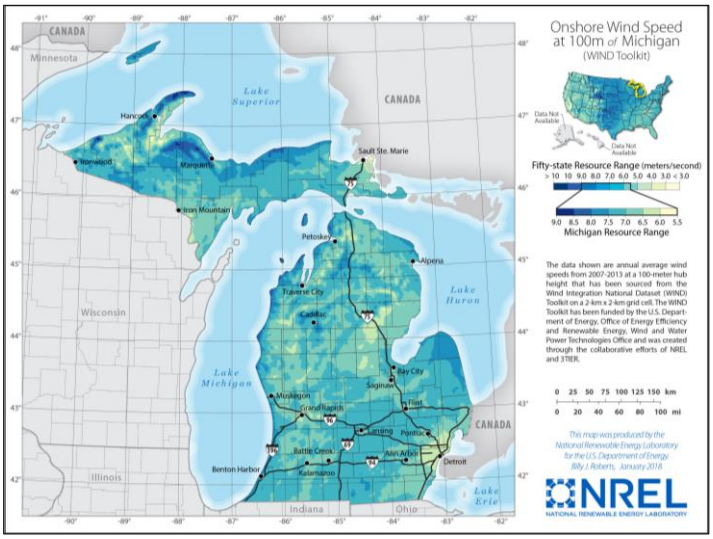
NEWS

- July 6, 2021: Offshore Wind Could Provide Double the Electricity Michigan Residents Used in 2019
- June 23, 2021: Report: EV Technology, Manufacturing to Create Job Growth in Michigan
- June 14, 2021: State Legislation Would Expand Commercial Clean Energy Financing Program
- June 11, 2021: Consumers Energy Aims to Fast-Track Michigan's EV Transition
- June 10, 2021: National Grid Renewables' Operating 40 MW Michigan Solar Portfolio Constructed by Michigan Workers, Will Provide Millions in Economic Benefit
- June 9, 2021: DTE Energy to Bring Additional Renewable Energy to More Customers in Michigan
- May 12, 2021: Michigan Utilities Should Prioritize Public Health Inequities in Retirement Plans, Regulator Says
- May 10, 2021: DTE, Consumers Energy Urge Michigan to Not Allow Dual Participation for Storage Projects
- April 22, 2021: Whitmer Aims for Government-Owned Buildings to Use All Renewable Energy
- January 22, 2021: Detroit Affordable Housing Project Will Give Renters Benefits of Solar Ownership
- January 19, 2021: Michigan Solar Ruling Could Expand the Role of Residential Energy Storage

MICHIGAN'S WIND AND SOLAR RESOURCES

WIND https://windexchange.energy.gov/states/mi





OTHER RESOURCES

- Michigan Office of Climate and Energy: https://www.michigan.gov/energy
- Michigan Office of the Environmental Justice Public Advocate: https://www.michigan.gov/environmentaljustice/
- The Great Lakes Renewable Energy Association: https://www.2glrea.org/
- American Clean Power Association, Michigan State Fact Sheet: https://cleanpower.org/wp-content/uploads/2021/05/Michigan_clean_energy_factsheet_Q2-2021.pdf
- The American Council for an Energy-Efficient Economy State and Local Policy Database, Michigan: https://database.aceee.org/state/michigan
- The Database of State Incentives for Renewables and Efficiency, Michigan: http://programs.dsireusa.org/system/program?fromSir=0&state=MI
- U.S. Department of Energy's Alternative Fuels Data Center, Michigan: https://afdc.energy.gov/states/mi
- U.S. Energy Information Administration, Michigan: https://www.eia.gov/state/?sid=MI
- SPOT for Clean Energy, Michigan: https://spotforcleanenergy.org/state/michigan/

Our Resources

CNEE Homepage: https://cnee.colostate.edu/

The SPOT for Clean Energy: https://spotforcleanenergy.org/

The Advanced Energy Legislation (AEL) Tracker: https://www.aeltracker.org/

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