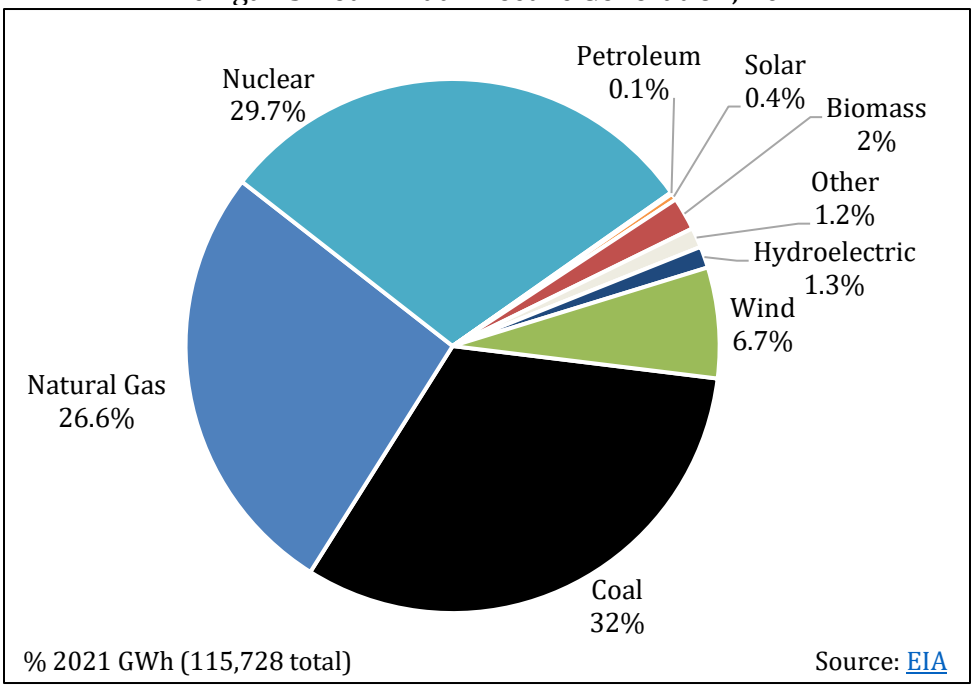
State Brief: Michigan

BACKGROUND

Michigan's Net Annual Electric Generation, 2021



Michigan's electric generation mix is supplied by coal, nuclear, and natural gas resources, each contributing, on average, around one-third to that mix. The state has the most underground natural gas storage capacity in the country, and while coal-fired generation continues to be a significant source of Michigan's net electric generation, the U.S. Energy Information Administration (EIA) reports that generating units at more than a dozen coal-fired power plants have been retired during the last decade. No new coal-fired facilities are planned. Renewable energy resources supplied about 11% of the state's electricity generation in 2021. 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.

In 2022, the Solar Energy Industries Association (SEIA) ranked the state 24th in the country in terms of installed solar capacity (927 megawatts (MW)) and 14th for projected growth over the next five years (2,290 MW). The 2022 U.S. Energy and Employment Report found that Michigan has 393,207 energy workers (9.5% of total state employment), which includes 74,624 workers employed in energy efficiency. In 2021, Michigan ranked 6th nationally for clean energy jobs, with 113,456 Michiganders employed by the industry.[1]

The three member Michigan Public Service Commission (MPSC) regulates the state's eight investor-owned electric utilities (IOUs) and seven natural gas utilities. 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

[1] To see clean energy job numbers for your Congressional District, visit: https://cleanjobsamerica.e2.org/#map.

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

clean energy technology adoption. Tier 2, market creation policies, create a market and/or signal state support for 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.

MODERNIZING UTILITIES AND EMPOWERING CONSUMERS

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, and 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 for Consumers Energy and DTE Energy's five-year distribution plans to address modernization, including integrating new technologies such as solar, storage, and electric vehicles (EVs). In October 2019, the governor's office, in coordination with the MPSC, launched MI Power Grid, an initiative to increase customer engagement with the grid, integrate emerging technologies, and optimize grid performance. In 2021, DTE Energy announced a $7 billion 5-year grid infrastructure initiative. Consumers Energy plans to invest approximately $1 billion annually through 2025 in grid infrastructure as a part of its $5.4 billion Electric Distribution Infrastructure Investment Plan (EDIIP).

In what was dubbed "the largest portfolio of long-range transmission projects in U.S. history for a regional transmission organization," in July 2022, the Midcontinent Independent System Operator (MISO) a $10.3 billion investment in 18 major projects in the Midwest subregion. These projects include more than 2,000 miles of new transmission lines, more than 100 of which will be located in Michigan.

The Infrastructure Investment and Jobs Act of 2021 (IIJA) is a landmark federal spending bill that includes funding earmarked for grid modernization projects. This includes $11 billion for Department of Energy (DOE) grants directed specifically towards electric infrastructure resiliency projects (including grid hardening against severe weather and cybersecurity improvements), $2.5 billion for transmission development, and $3 billion for the Smart Grid Investment Matching Grant Program.[3] Enacted August 2022, the Inflation Reduction Act (IRA) set aside $2 billion for loans for constructing new high-capacity transmission lines and upgrading interties. The bill includes funding for technical assistance and grants for states and tribal governments, which includes assistance for siting transmission projects. The bill also directs DOE to undertake interregional transmission planning, modeling, and analysis, including analysis of transmission for offshore wind and the use of grid-enhancing technologies (GETs).[4]

[3] For more information on the grid-related earmarks included in the IIJA, see Potomac Law Group's January 2022 analysis: "The Infrastructure, Investment & Jobs Act of 2021: What's in It for You? (Part V: Grid Infrastructure and Resiliency)" https://www.potomaclaw.com/news-Infrastructure-Investment-Jobs-Act-of-2021-Whats-In-It-For-You-Part-V-Grid-Infrastructure-and-Resiliency.

[4] J. Runyon and J. Engel. 2022. "The Inflation Reduction Act is Signed into Law." *PowerGrid International*. 16 August. Available: https://www.power-grid.com/td/the-inflation-reduction-act-is-signed-into-law/#gref.

There are policy opportunities to support in-state grid 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. States might 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 regulation (PBR) and submitted a report to the Governor in April 2018. The Commission's review found that PBR could be tailored to the state's unique needs and stated the MSPC's intent to use pilot programs to evaluate the feasibility of different approaches to PBR and to integrate PBR with existing programs.

3. States might also benefit from having clear rules for customer data access. Current MPSC rules require utilities to develop a customer privacy policy and make customer data available to customers and third parties, with customer approval, in a timely manner and a readily accessible format.

4. 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.[5]

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

MAINSTREAMING RENEWABLES

Renewable energy is increasingly seen as the least cost and lowest risk form of energy (excluding energy efficiency). 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 integrating distributed renewable energy resources. In the U.S., the expansion of renewable energy has been one of the most consequential shifts in electricity generation over the last decade. The U.S. Energy Information Administration (EIA) predicts that most of the growth in U.S. electricity generation in 2022 and 2023 will be from new renewable energy sources. It is in the interest of policymakers to ensure that their states are well positioned to benefit from this shift.

Michigan offers renewable energy programs including the Clean Energy for Low-Income Communities Accelerator (CELICA) community solar program and solar energy zoning guidance as a part of its State Energy Program. The MPSC is expected to post a request for proposals (RFP) by September 30, 2022 for the $50 million Low Carbon Energy Infrastructure Enhancement and Development (EIED) Grant program. The program will provide grants to businesses, nonprofits, and local governments for planning, acquiring, or constructing low carbon energy facilities.

While the IIJA does not provide money for specific renewable energy projects, the energy funding in the Act will benefit renewable energy development as grid resiliency, increased deployment of energy storage, and modernized transmission are all essential to the successful integration of renewable energy generation. The IRA appropriated $369 billion to fund a variety of energy and climate initiatives – the largest climate investment in U.S. history. The bill also extended the investment tax credit (ITC) and the production tax credit (PTC) through the end of 2024 and revived the PTC for solar projects. For projects placed in service in 2025, the bill "effectively extended" the ITC and PTC by creating new tax credits for zero emission facilities. The bill also extended the residential energy property

[5] For a discussion of specific workforce needs 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."

tax credit through 2034 and created a new advanced manufacturing production credit, to apply to sales of components for constructing wind and solar energy facilities beginning in 2023.[6]

The IRA also includes several provisions related to energy equity, including $3 billion to the Environmental Protection Agency (EPA) for grants for community-led projects in disadvantaged communities and $27 billion for nonprofit, state, and local climate finance institutions supporting the deployment of low- and zero-emission technologies. In support of rural communities, the bill includes a $1 billion appropriation to the U.S. Department of Agriculture (USDA) for loans to finance renewable energy projects, $1 billion for USDA's Rural Energy for America Programs, and $9.7 billion to USDA to finance rural electric cooperatives' purchases of renewable energy.

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.

To reduce barriers to customer and utility participation in the renewable energy market, and to build upon the federal initiatives, 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 and the aggregate cap. In 2018, the MPSC 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. In May 2021, NREL launched the SolarAPP+, an online platform designed to automate the solar permitting process. By running compliance checks and processing permit approvals, the service is intended to drastically reduce permit wait times. Currently restricted to rooftop solar, twenty communities in Arizona and California have adopted the platform, processing over 7,750 permits for more than 51 MW of generation with an estimated 7,750 hours saved in permit review time.

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). Because Michigan does not have enabling legislation for shared renewables, existing programs are developed and managed by electric utilities. 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 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. LMI 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

[6] For a detailed discussion of the IRA's tax provisions, see: A.S. Levin-Nussbaum. 2022. "Update: President Biden Signs Historic Legislation Providing Expansive Clean Energy Tax Incentives." *The National Law Review*. 17 August. Available: https://www.natlawreview.com/article/update-president-biden-signs-historic-legislation-providing-expansive-clean-energy

capacity attributed to LMI customers. States that have a shared renewables program may want to coordinate this program with implementation of the federal Weatherization Assistance Program (WAP) to provide recipients of assistance with access to participation in a shared system.

3. **Adapt Energy Assistance Programs –** Programs such as the Low-income Home Energy Assistance Program (LIHEAP) and WAP provide assistance for paying utility bills and reducing household energy costs. Including distributed energy resources as eligible for funding under these programs can reduce energy costs and increase energy security for those LMI families who are able to benefit from WAP and LIHEAP. Colorado, for example, includes rooftop solar in their WAP program. For approval to add solar to a state's implementation of WAP, a state must show that the investment would be cost-effective – achieving a Savings to Investment Ratio (SIR) of 1.0 or more.[7] Since 2010, Michigan has received $167.8 million from WAP and $17.3 million from the State Energy Program (SEP). These resources have helped fund several energy initiatives in the state including the LMI Access Program, a pilot program that provides access to community solar for LMI subscribers.

4. **Fund Distributed Generation (DG) for Community Organizations –** Organizations or groups that provide support services for LMI communities can be provided funding to install solar or other distributed energy resources. Sites such as homeless shelters, food banks, clinics, and community centers often have enough rooftop area for solar installations. After installation, these resources can reduce an organization's utility bills, freeing up funds for other activities that support the community. As part of the Community Energy Management Program, the Michigan Department of Environment, Great Lakes, and Energy (EGLE) awarded $492,145 in 2021 to 26 institutions to assist with energy efficiency upgrades and renewables projects.

5. **On-Bill Financing/Pay As You Save (PAYS) –** On-bill Financing and Repayment programs enable consumers to invest in energy upgrades with no upfront payment. The utility or a third party will pay the initial costs to install the upgrade with the cost of that upgrade recovered through the utility bill. Because repayment includes consideration of the cost savings resulting from the energy upgrade, customers can see monetary benefits almost immediately. Once equipment costs are recovered, the equipment belongs to the customer. State policies that reduce lending risk by creating a loan loss reserve and/or a credit enhancement fund can encourage lending to customers that might otherwise not qualify for a loan and can keep interest rates low. While there is currently no state policy requiring such financing be made available to consumers, Traverse City Light and Power offers on-bill financing to its customers. The City of Holland also offers on-bill financing to its residents.

6. **Corporate Procurement –** Many Fortune 100 and 500 companies have established either climate goals or commitments to purchase renewable energy. Since 2016, over 41 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. Senate Bill 16-438 directed electric providers to offer voluntary green pricing programs to customers. In October 2018, the MPSC approved Consumers Energy's Large Customer Renewable Energy Program (LC-REP). 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. 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, utilities 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. Utilities are also setting their own GHG reduction goals and are increasingly investing in clean energy resources. In 2016, Public Act 341 increased the state's Renewable Energy Standard to 10% by 2015

[7] For guidance on the state approval process see the WAP Memorandum 024 (2017), the Solar Template for Incorporating Solar Photovoltaics into WAP (2018), and the Preliminary Assessment Guide for Integrating Renewable Energy into Weatherization (2019).

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 90% by 2040 and will phase out coal by 2025. DTE has a net-zero carbon emissions by 2050 goal.

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 thereafter. This order also commissioned the Michigan Healthy Climate Plan, released in April 2022, to provide a policy roadmap for achieving these goals.

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 to continue to spur the development of renewable resources and save ratepayers money. Additionally, states might add one or more carve-outs to incentivize the development of distributed generation and offshore resources. Embedding an RPS within a 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.

ENERGY STORAGE

Energy storage offers a unique opportunity to dynamically manage supply and demand 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 improve system efficiency. Third, because storage technologies can both store and dispatch power, storage enables better integration of intermittent power generation resources, like wind and solar, to the grid.

The flexibility of battery storage combined with advanced metering infrastructure can allow customers to control 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 also lead to a number of economic and environmental gains.

Energy storage can also help the commercial sector avoid demand charges, which establish an incremental cost above energy usage based on the highest period (highest 15 minutes, for example) of demand during the month. Eliminating spikes in demand with storage can reduce these costly charges for businesses. As utilities around the country consider implementing or extending demand charges to other sectors, energy storage will become more relevant as both a customer cost-saving investment and a system efficiency measure.

Declining costs and technological advancements in battery storage have contributed to increased deployment. State policies can further encourage this 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.

Michigan'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. Following the release of the Federal Energy Regulatory Commission's (FERC) Order 841 in 2021, the MSPC issued an order allowing utilities to develop and propose energy storage pilot programs. Pilot programs will be used to enable a better understanding of the benefits of energy storage on the grid. The Energy Storage Roadmap for Michigan, released March 2022, provides policy recommendations for meeting energy storage targets of 2.5 MW by 2030 and 4 GW by 2040, "which the roadmap identified as needed to enable more integration of renewable energy generation to replace retiring fossil fuel plants, ensure grid reliability and avoid curtailment of renewables." The Michigan Healthy Climate Plan, published April 2022, proposes energy storage targets of 1 GW by 2025 and 4 GW by 2040.

The IIJA provides a unique opportunity for funding energy storage projects. According to an analysis by the Energy Storage Association, the IIJA provides $505 million for grants to support energy storage demonstration projects, $6.15 billion for building out the U.S. battery supply chain, and $14.7 billion for grid resilience programs that include energy storage as a qualified technology. The IRA extended the ITC to include standalone energy storage systems. When the ITC is replaced by the technology neutral Clean Electricity Investment Tax Credit (CEITC) in 2025, qualified storage facilities placed in service after 2024 will remain eligible. The advanced manufacturing production credit, established by the bill, will apply to battery cells and modules and the critical minerals used in their production. The $27 billion GHG Reduction Fund, also established by the bill, will provide funding enabling low-income or disadvantaged communities to adopt zero-emission technologies including energy storage.

There are several policy opportunities to take advantage of the growing technological advances in and declining costs of energy storage and build upon recent federal initiatives. 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. 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. 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.

3. 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.

4. 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 of storage. Incentives can be designed to decline as storage values become more readily monetized and/or as the cost of storage decreases. Policymakers could allow utilities that provide incentives to customers to recover the costs of installing smart meters. This would enable dynamic and time-varying energy management from multiple distributed battery systems. This could also signal to customers the value of leveraging storage and better align customer costs with system costs. Financing energy storage installations for commercial customers could help reduce their demand charges. Policymakers might want to start first with a policy that provides grants to pilot projects. Policy might also target solar system owners. Financial incentives should be designed to ensure that the state will meet other goals including emissions and peak demand reductions, and equitable access to clean energy.

THE BUILT ENVIRONMENT

In the U.S., buildings consume nearly 40% of total energy used.[8] Because it reduces energy demand and emissions, and creates savings for utility customers, energy efficiency[9] often plays a prominent role in state energy and climate policies. Coupled with beneficial electrification, which involves replacing direct fossil fuel use with electricity, there is even greater potential to reduce energy costs and pollution, and provide more resilient, comfortable, and healthy buildings. This is especially the case in states where increasing levels of low carbon resources are supplying the electric grid. When policies are adopted to shift energy uses based on fossil fuels (such as natural gas) for building heating, water heating, and appliances, to highly efficient electric alternatives, states can maximize achieving the dual objectives of increased energy efficiency and reduced emissions. In some cases, this can also result in lower energy costs.

Michigan has taken steps to incorporate energy efficiency and beneficial electrification into its built environment. The state has adopted, as its mandatory building code, the International Energy Conservation Code (IECC) 2015 Edition, with amendments. The code contains requirements for commercial and residential energy efficiency and conservation. The MPSC is expected to post a request for proposals (RFP) by September 30, 2022 for the $25 million Low Carbon Energy Infrastructure Enhancement and Development (EIED) grant program. The program will provide grants to businesses, nonprofits, and local governments for planning, acquiring, or constructing low carbon energy facilities, which can include electrification programs.

The IIJA provides $500 million for grants to fund energy efficiency and renewable energy upgrades in public schools, $3.5 billion for the Weatherization Assistance Program, and further funds the Energy Efficiency and Conservation Block Grant program by $550 million and the State Energy Program by $500 million. The IRA appropriates $4.3 billion to DOE for an energy efficiency rebate program that will be administered through state energy offices. Another $4.3 billion appropriation will fund electrification rebates for single- and multi-family homes. The bill also extends the tax credits for residential energy efficiency improvements and new efficient home construction and increases the maximum deduction for energy efficient commercial buildings. A $837.5 million appropriation will be used by the Department of Housing and Urban Development (HUD) for resiliency, energy efficiency, renewable energy, and grid integration projects at public housing units.

Policymakers in Michigan can consider a variety of policies to encourage energy efficiency and beneficial electrification:

Energy Efficiency Policies

1. **Building Codes –** The Department of Energy projects that, over time, improvements in building codes can have the greatest single impact in energy efficiency within the built environment. On average, commercial buildings waste 30% of energy used.[10] Because buildings will be around for generations, energy efficiency within the built environment is a matter of statewide and long-term importance. States can set requirements for energy systems, require disclosure of energy use, and set performance standards for energy use or emissions. Building codes can be required by state legislation or implemented through 'home rule,' where local governments set their own standards.

   The IIJA appropriated $225 million for a competitive grant program to support the "sustained cost-effective implementation of updated building energy codes." The grant program will run for five years, through fiscal years 2022 – 2026. On July 21, 2022, DOE issued a Notice of Intent (NOI) to publish a funding opportunity to support the implementation of "resilient and efficient" building energy codes. This competitive grant program requires the participation of a "relevant state agency" and projects must be tied to "an updated building energy code."

2. **Appliance Efficiency Standards** – Appliance efficiency standards set minimum requirements for efficiency in everything from washing machines to water heaters. Efficiency standards save consumers money on utility bills

[8] For additional information, see ACEEE Building Policies and Codes.
[9] Energy efficiency includes a multitude of measures to reduce the energy consumption of a building. These measures range from installing energy efficient appliances to full building renovations updating a building envelope.
[10] For more information, see the Office of Energy Efficiency & Renewable Energy's Commercial Buildings Integration (CBI) Program.

and reduce energy demand on the grid, most importantly reducing peak energy demand. Some states have elected to adopt the federal appliance standards that were in effect on January 1, 2017.[11] These include, among other things, standards on metal halide lamp fixtures, residential furnaces and boilers, and external AC to DC power supplies.

3. **Energy Saving Performance Contracts (ESPCs)** – ESPCs are a financing mechanism for energy efficiency upgrades. ESPCs are often used within large institutions, such as college or government campuses, allowing them to meet their energy and environmental goals. An energy service company will pay the upfront cost of efficiency upgrades and execute the project, often guaranteeing the projected energy savings. The large institution will then pay back the service company with savings from their utility bills. This allows institutions to pay for their upgrades from their operating budget, instead of finding new financing, such as loans or bonds, for capital upgrades. Essentially, they pay their upgrade costs with their energy savings.

   Michigan has allowed energy performance contracting since 2012 with rules and processes promulgated by the Michigan Department of Technology, Management, and Budget (DTMB).

4. **Low-Income Energy Efficiency Programs –** While equity should be incorporated into all policy development, it is often necessary to ensure that specific programs are targeted towards historically underserved populations. Recent research suggests that weatherization can reduce energy use by 25-35%, allowing households to reduce their financial energy burden. The federal Weatherization Assistance Program (WAP) provides energy efficiency upgrades for income qualified homeowners. However, in many states there is difficulty in reaching individuals who may be eligible. Lawmakers can pass legislation requiring outreach and education to groups eligible for WAP.

   Michigan's Energy Assistance Program currently offers energy assistance and self-sufficiency services to eligible residents.

5. **Energy Efficiency Resource Standards (EERS)** – EERSs require utilities to demonstrate a reduction in energy demand from programs offered to their consumers. Because this means selling less energy and reducing revenues, there is not always an incentive for utilities to make their consumers more productive or efficient users of energy. If legislatures want to ensure a more productive and efficient energy distribution system that takes advantage of the latest technological innovations, they may want to require that utilities demonstrate a percent reduction in demand through efficiency or "demand side" programs. Legislators can also instruct their utility commissions to consider energy efficiency when approving rate cases by allowing cost-recovery of energy efficiency improvements on utility bills.

   Michigan's EERS for non-rate regulated electric utilities expired in 2021, impacting approximately 10% of the state's electric load. Financial incentives for meeting efficiency targets have led the state's electric IOUs to pursue savings of at least 1.5% annually, and the most recent resource plans approved for Consumers Energy and DTE project savings of 2% annually from 2021 and beyond.

6. **Revenue Decoupling and Performance-Based Incentives –** Utilities earn revenue by selling energy. As a result, there is little to no incentive for them to promote energy efficiency because it leads to a reduction in sales, and therefore a reduction in revenue. Revenue decoupling disconnects revenue from the amount of energy sold. This provides utilities a set amount of revenue regardless of the amount of energy sold. While this does not directly incentivize energy efficiency, it does remove the inherent disincentive to promote energy efficiency.

   Incentive policies can be layered on top of a decoupling policy. For example, if a utility meets set energy reduction targets, performance-based incentives, as determined by a state's PUC, can provide monetary rewards for meeting those targets. As the electricity generation mix changes, it is important to incorporate a regular review of decoupling and other incentive policies to ensure they are still meeting their intended purpose.

   Act 342 allows utilities with fewer than 100,000 customers to propose a decoupling mechanism for energy efficiency programs. Performance incentive programs are approved on a case-by-case basis by the Public Service Commission. While these incentives have proven successful in Michigan (see above), it is important to

[11] Based upon research conducted by the Center for the New Energy Economy.

incorporate a regular review of decoupling and other incentive policies to ensure they are still meeting their intended purpose.

Electrification Policies

1. **Strategically Target Beneficial Electrification** – Target areas of beneficial electrification in buildings include space and water heating systems and other systems and appliances that typically use natural gas or another fossil fuel as an energy source. According to the Environment and Energy Study Institute, new electric heat pump technology can heat space and water at efficiencies of 200 to 300%, compared to 67% efficiency in typical Energy Star gas water heaters.[12] This not only allows savings on energy bills, it also results in reduced greenhouse gas emissions and improved indoor air quality.

2. **Adopt Tools for Advancing Electrification Policies** – Building codes and financial incentive programs can be used to advance beneficial electrification. While in some states, local governments are primarily responsible for adopting and implementing building energy codes, in other states, a state legislature, or a code commission tasked by the legislature, adopts and implements statewide standards. Incentive programs established and implemented by states, local governments, or utilities can target replacing systems and appliances that traditionally rely on fossil fuel resources with high efficiency electric systems and appliances including water heaters, furnaces, ovens, and ranges. As an example, heat pump water heaters and space heating systems are being promoted as high efficiency replacements for traditionally fossil-based equipment. In conjunction with utility regulatory policy, these technologies can also serve as demand response management tools by utilities in exchange for compensation to the ratepaying customer.

   As a note, cities across the country are implementing new building codes promoting beneficial electrification by limiting or banning the installation of natural gas in new construction. State legislatures can pass enabling legislation, allowing municipalities to make independent decisions on beneficial electrification. On the other hand, some states have adopted pre-emptive legislation, banning local governments from adopting policies that limit utility service.[13]

Programmatically, there will always be greatest benefit by combining measures – incentives that bundle improvements will generate greater gains than individual measures. For example, a high efficiency heat pump will be much more effective and efficient when coupled with improved building insulation. Rather than only realizing the gains of the new mechanical component, this combination of measures will increase the efficiency of the entire system.

ELECTRIFICATION OF THE TRANSPORTATION SECTOR

Bloomberg New Energy Finance estimates that nearly 80% of new car sales in the U.S. 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 this "range anxiety."

The state of Michigan and its utilities offer several incentives to promote EVs. In 2019, Consumers Energy announced the launch of the multi-year PowerMIDrive program that includes rebates for residential charging equipment, public Level 2 chargers, and fast chargers throughout Michigan. In partnership with the University of Michigan, the state developed the Optimized EV Charger Placement Plan as a part of the State Energy Program in order to reach a goal of worry-free EV travel throughout the state by 2030. To facilitate the rollout of the planned network, the Charge Up Michigan Program offers rebates to public and private organizations for eligible charging infrastructure installations. In April 2022, Lieutenant Governor Garlin Gilchrist announced more than $577,000 in grants for six programs to increase access to and adoption of EVs through the Michigan Mobility Funding Platform.

[12] For more information, see EESI's Beneficial Electrification.
[13] See, "Battle Brews over Banning Natural Gas to Homes." The Wall Street Journal, 1 June 2021, https://www.wsj.com/articles/battle-brews-over-banning-natural-gas-to-homes-11622334674.

The American Council for an Energy-Efficient Economy (ACEEE) published a State Transportation Electrification Scorecard evaluating 31 states' progress in electrifying transportation in six key policy areas. Michigan ranked 29th in the 2021 report.

The IIJA provides nearly $5 billion over the next five years to support the electrification of the transportation sector. In 2022, $615 million will be made available for the installation of charging stations along designated alternative fuel corridors. The Act also provides approximately $1.1 billion for grants to state and local governments to assist with the purchase or lease of low- or no-emission vehicles for transportation fleets. To be eligible, a state must have a Zero-Emission Fleet Transition Plan in place.

The IRA extended the $7,500 EV tax credit for purchases of new plug-in EVs through 2032 and removed the eligibility cap based on number of vehicles sold by manufacturers. The Act includes requirements for material sourcing that must be met by manufacturers starting in 2027. The IRA also created a new $4,000 refundable tax credit for the purchase of used EVs and a new credit for commercial EVs. Appropriations in the Act include $1 billion for replacing medium- and heavy-duty vehicles with EVs, $3 billion to fund projects to reduce transportation sector emissions, and $3 billion to procure alternatively fueled vehicles for the federal fleet.

There are opportunities to expand the market for EVs in Michigan:

1. **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 the 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 policymakers might consider updating the Optimized EV Charger Placement Plan. The state's existing registration fee for EVs could help fund this effort.

   The IIJA included a new National Electric Vehicle Infrastructure (NEVI) formula grant program to provide dedicated funding to states to deploy charging infrastructure with the goal of creating an interconnected network of vehicle charging stations across the nation's highways. To be eligible to receive funding, states must develop and submit a NEVI plan to the Federal Highway Administration (FHWA) by August 1, 2022. NEVI funds cannot be obligated until a state's plan is approved by the FHWA. Michigan released its NEVI state plan in August 2022 following a collaborative effort across several state departments to coordinate the use of Michigan's expected allocation of $110 million in formula funding from the IIJA.

   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, Wisconsin to the Illinois border in Kenosha County was designated as "EV ready" in 2020. In August 2022, Governor Whitmer announced that the state would join Indiana, Illinois, and Wisconsin to build the Lake Michigan EV Circuit, an initiative to construct, enhance, and maintain an EV charging infrastructure network along over 1100 miles of shoreline.

2. **Parking Infrastructure Requirements –** In tandem with the development of a statewide plan, legislation could set requirements for parking lots and other 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 Codes could also be updated to include requirements for EV charging infrastructure.

3. **EV and Charging Equipment Financing and Financial Incentives –** Providing financial incentives and innovative financing options can help spur greater market penetration of EVs. Sales, property, and income tax credits are some of the simplest methods for addressing the high up-front costs of EVs and EV charging equipment. 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 the credit is not applied at the time of purchase.[14] States have adopted other financial incentives including low-interest loans and vouchers. A handful of states qualify EV charging equipment 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.

States might consider adopting programs to incentivize the purchase of used EVs. With increasing battery capacities and falling prices, there are an increasing number of EVs with relatively low milage that are being traded in. States might also consider programs that target low- and moderate-income (LMI) customers that may not qualify for a loan directly. Such a program could facilitate sales through such things as loan loss reserve and interest buy down programs.

NEWS

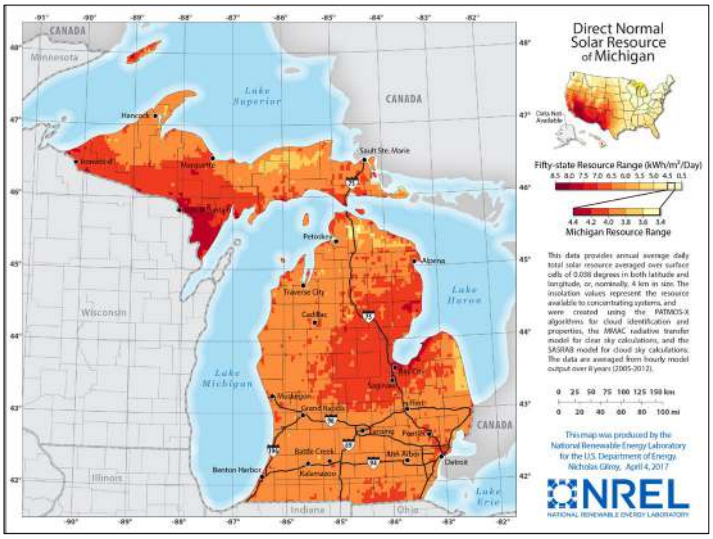
- August 30, 2022: $11M DOE Center for Next-Gen Battery Technology
- August 30, 2022: New: Most Michigan Voters Support Inflation Reduction Act, Want Further Climate Change Action
- August 22, 2022: Gilchrist Announces Expanded Collaboration with Electric Vehicle Charging Company Volta
- August 19, 2022: American Battery Solutions Launches Energy Storage Division, Battery Storage Platform
- August 10, 2022: Ford Motor Company and DTE Energy Announce the Largest Renewable Energy Purchase from a Utility in U.S. History
- August 8, 2022: New Research Shows Old Mines Hold the Power to Energize Communities
- July 8, 2022: Consumers Energy to Invest $170M to Modernize Michigan's Natural Gas System
- June 23, 2022: Michigan Energy Regulators Approve Broadly Supported Settlement on Consumers Energy's Long-Term Resource Plan
- May 9, 2022: Consumers Energy Searching for Landowners to Help Lead Michigan's Clean Energy Transformation
- May 2, 2022: Michigan Awards Grants to Spur EV Equity and Economic Development
- March 21, 2022: Consumers Energy to Expand Low-Income Efficiency Programs under Michigan-Approved Agreement
- January 27, 2022: WEC Energy to Pilot Hydrogen Fuel in Michigan Natural Gas Plant

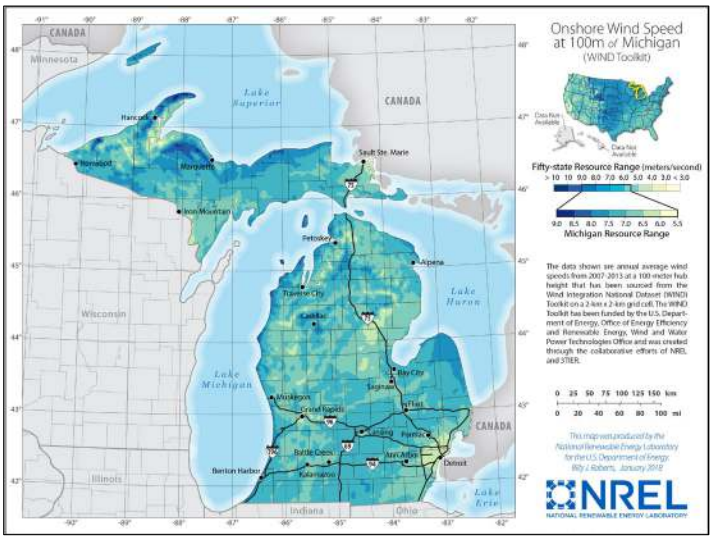
OTHER RESOURCES

- 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/
- Michigan Conservative Energy Forum: https://www.micef.org
- 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: https://programs.dsireusa.org/system/program/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
- American Clean Power Association, Michigan State Fact Sheet: https://cleanpower.org/wp-content/uploads/2022/07/Michigan_clean_energy_factsheet.pdf
- SPOT for Clean Energy, Michigan: https://spotforcleanenergy.org/state/michigan/

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

MICHIGAN'S WIND AND SOLAR RESOURCES
WIND https://windexchange.energy.gov/states/mi





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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