The Michigan Clean Energy Framework

Assessing the Economic and Health Benefits of Policies to **Achieve Michigan's Climate Goals**

August 10, 2023

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Prepared for
Evergreen Collaborative

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INTRODUCTION

Since the passage of the Inflation Reduction Act (IRA) in August 2022, the state of Michigan is already benefiting from more than $21 billion in new IRA-related investments and nearly 16,000 newly announced jobs[1]—the largest beneficiary out of all 50 states. These jobs are largely the result of the IRA's robust incentives for the buildout of new clean energy, cleantech, and their associated supply chains, including: vehicle electrification, wind and solar manufacturing and installation, battery storage, industrial decarbonization, and energy efficient building and upgrades. On top of incentivizing the growth of domestic clean energy and cleantech manufacturing, the IRA offers over $50 billion in competitive grant funding for state governments to implement projects and programs that accelerate the clean energy transition and cut greenhouse gas emissions. The extent to which Michigan's own policies support the development and generation of clean energy is critical to the state securing federal investments over the next few years.

When pairing the IRA with the 2021 Infrastructure Investment and Jobs Act (IIJA), the state of Michigan has the most substantial amount of federal resources to implement climate solutions in state history.[2] In 2022, under Gov. Gretchen Whitmer's administration, the Michigan state government set a goal to be carbon neutral (i.e., net-zero emissions) by 2050 with an interim goal of 52% greenhouse gas emissions reductions (relative to 2005 levels) by 2030. Achieving these goals will require robust uptake and implementation of federal climate and clean energy dollars, as well as strong state-level policies that enable emissions reductions across the state's economy.

To reach its net-zero target, Michigan will need to rapidly decarbonize electric power generation, transportation, and its buildings and homes. To guide this, the Whitmer administration's Department of Environment, Great Lakes and Energy (EGLE) released the Michigan Healthy Climate Plan (MIHCP), which set ambitious, sector-specific recommendations to reach those emissions reduction targets.

It is critical to understand how the recent, significant federal climate and clean energy funding will affect and enable state-level decarbonization policies. In this report, 5 Lakes Energy and the Michigan Energy Innovation Business Council (Michigan EIBC) analyze the economic implications of the policy options to decarbonize Michigan's economy and cut emissions—particularly, how state-level targets are now more easily achieved as a result of the IRA's climate investments and incentives.

In this report, we analyze a state policy scenario that would achieve Michigan's 52% emissions reductions by 2030 goal and carbon neutrality by 2050 goal, which we call the "Michigan Clean Energy Framework." This scenario closely resembles state legislation recently introduced and currently being considered by state lawmakers. The Michigan Clean Energy Framework includes the following policies:

[1] Climate Power, "Clean Energy Boom Anniversary Report," July 25, 2023. https://climatepower.us/wp-content/uploads/sites/23/2023/07/Clean-Energy-Boom-Anniversary-Report-1.pdf

[2] U.S. Department of Energy, "Inflation Reduction Act of 2022," accessed July 6, 2023. https://www.energy.gov/lpo/inflation-reduction-act-2022

- Transitioning Michigan's electricity generation energy mix to 60% renewable sources[3] by 2030 and 100% carbon-free sources (renewable sources as well as nuclear) between now and 2035
- Increasing Michigan's energy waste reduction targets to 2% electric efficiency and 1.5% gas efficiency annually in residential, commercial, and industrial uses
- Increasing vehicle electrification across the state—in line with federal vehicle electrification standards and incorporating recent state and federal influxes of funding for charging infrastructure
- Steadily increasing building electrification—achieving full electrification of new sales of appliances, heating and cooling systems, and other building systems by 2040
- Decarbonizing various industries in the state, including increasing energy efficiency at a modest pace that varies by industrial sector

Our findings show that these policies not only achieve Michigan's intended emissions reductions, but also allow Michigan to secure a myriad of other health and economic benefits, such as: increased jobs, public health benefits like lower mortality from pollution and lower health care costs, substantially more federal funding, and lower energy costs for the average household.

In addition, our analysis finds that the IRA:

1. Significantly increases the economic benefits of state-level policies by incentivizing clean energy and technology business activity in ways that lead to significant emissions cuts, and
2. Makes it far more financially feasible for the state to hit its clean energy and other climate targets given the level of federal funding now available.

Moreover, the analysis finds that the adoption of the above state policies would allow Michigan to secure significantly more federal investment than would otherwise be the case—over $5 billion more investment by 2032 and nearly $8 billion more by 2050.

Our analysis finds that the policies in the Michigan Clean Energy Framework would:

- ***Reduce energy costs across the whole economy, including Michigan families' energy bills:***
  - By significantly cutting the amount of spending on transportation fuels and natural gas and keeping electricity costs stable through robust investment in lower-cost renewable sources, the Michigan Clean Energy Framework would reduce average annual household energy costs by approximately $145.
  - Between now and 2050, collectively save Michigan families $5.5 billion in household energy costs.

- ***Leverage billions of dollars in investment from federal policy:***[4]
  - By 2032, state policies to supplement the IRA will bring $5.3 billion more in tax credits, grants, and rebates as Michigan builds out its clean energy economy.
  - By 2050, the state of Michigan would nearly double the funding it brings in from the Inflation Reduction Act if it implements the Michigan Clean Energy Framework.

[3] Renewable resources include wind, solar, geothermal, and hydroelectric power.

[4] Our modeling supports these conclusions by estimating the federal investment amount resulting from the increased development of clean energy driven by the clean energy targets outlined in the Michigan Clean Energy Framework.

- ***Reduce emissions significantly, in line with what's needed to achieve the state's climate goals:***
  - The Michigan Clean Energy Framework, paired with the IRA, would slash greenhouse emissions by 27.4% by 2030, as opposed to just a 6.2% reduction with the IRA on its own if no state policy was implemented.

- ***Reduce premature mortality by hundreds of lives:***
  - Supplementing the IRA with strong state climate policy would lead to nearly 1,000 fewer premature deaths in Michigan by 2050.
  - Save Michigan over $8.3 billion in avoided public health costs by 2050.

This report focuses on and is organized in the following manner:

1. An analysis of the impacts of the IRA on economic sectors that require decarbonization to reach Michigan's climate targets.
2. An assessment of key outstanding state policies needed for Michigan to achieve its emissions reductions targets (a policy framework we call the Michigan Clean Energy Framework).
3. The quantified impact of combining federal policies and the Michigan Clean Energy Framework on the state's economy, public health, and household electricity and energy costs. This analysis also assesses the significant benefits of the Michigan Clean Energy Framework on the opportunity to capture additional federal tax incentives and grants.
4. A survey of clean energy businesses focused on how recent federal funding is affecting their business operations and their projection of how implementing the policies outlined in the Michigan Clean Energy Framework will affect them in the future.

5 Lakes Energy's economic modeling in this report was performed using the Energy Policy Simulator (EPS), a free, open-source, peer-reviewed model developed by Energy Innovation Policy & Technology LLC® and RMI. RMI also contributed as an advisor to this report.

THE INFLATION REDUCTION ACT: WHAT IT MEANS FOR THE CLEAN ENERGY TRANSITION ACROSS ECONOMIC SECTORS

The IRA represents an unprecedented level of federal support for clean energy, especially in terms of the resources the law provides to states.

IRA Impact: Electricity Sector Assumptions

The IRA extends the eligibility timeline for tax credits for the investment and production of solar and wind energy and increases the value of the production tax credits. It also offers a new production tax credit for

nuclear resources and a new investment tax credit for standalone energy storage resources. Combined, these provide the most robust discounts for producing and using carbon-free power in U.S. history.[5]

The IRA also has several programs to encourage the growth of distributed energy generation, such as community solar projects. These programs especially prioritize low-income communities and communities of color. Some of these programs include, but are not limited to: the $27 billion Greenhouse Gas Reduction Fund, the $3 billion Environmental and Climate Justice Block Grants program, the creation of a Residential Clean Energy Credit, and the extension of the Advanced Energy Project Credit.

The EPS has existing assumptions that quantify how much a given level of tax credits and rebates would reduce the cost of constructing distributed generation energy technologies (like rooftop solar and home battery storage systems). We included the IRA's new grant programs that offer robust incentives for the buildout of these technologies and then analyzed the aggregate impact it would have on lowering costs to construct more of these systems in Michigan in line with the state's own clean energy targets.

The IRA also incentivizes the construction of more interstate transmission electricity lines to transport clean power for electricity end-use. We modeled the effects of IRA Section 50151 (Transmission Facility Financing), Section 50152 (Grants to Facilitate the Siting of Interstate Electricity Transmission Lines), and Section 50153 (Interregional and Offshore Wind Electricity Transmission Planning, Modeling and Analysis) by increasing the amount of new transmission lines assumed to be built in the EPS.

IRA Impact: Building Decarbonization Assumptions

The IRA has several rebates, tax credits, and grants for retrofitting existing residential and/or commercial buildings with energy efficiency measures, electrifying building components and systems, and constructing highly efficient new buildings. We used an analysis from the American Council for an Energy-Efficient Economy to estimate the energy efficiency impact of these provisions.[6] We then aligned the EPS's assumptions about the amount of energy savings in the building sector with the expected increase in energy efficiency savings specific to that provision.

IRA Impact: Transportation Sector Assumptions

We focused on the IRA provisions that offer credits for the purchase of new or previously-owned electric passenger vehicles and commercial vehicles that qualify as "clean" under the law. For each of these credits, we reduced the EPS' assumed cost of the corresponding vehicle type to match the tax credit's provided discount.

The IRA also includes the Advanced Technology Vehicle Manufacturing Program, which provides loans for manufacturing facilities that emit low- or zero-greenhouse-gas emissions, and the Domestic Manufacturing

[5] To model how these tax credits will incentivize the construction and use of more clean energy in Michigan, we adjusted the EPS to assess the IRA's larger tax credits and their extended timeline, which makes these incentives available through 2030.

[6] The EPA recently proposed new standards aimed at reducing power plant carbon pollution under Section 111 of the Clean Air Act. These rules and their impact have not been factored into this analysis as this modeling was conducted before the proposal.

Conversion Grant Program, which provides grants for domestic production of efficient hybrid, plug-in electric hybrid, plug-in electric drive, and hydrogen fuel cell vehicles. We reduced the assumed cost of low-emissions vehicles in accordance with the amount of funding offered by these programs.

The effects of the U.S. Environmental Protection Agency's proposed pollution rules for cars and trucks[7] are also considered in our analysis. We adjusted the EPS to account for an increase in the share of electric vehicles in the U.S. fleet that results from both these rules and IRA provisions.[8] The increase in EV sales over the next decade is approximated by the EPA and used to inform the assumptions in this report.[9]

IRA Impact: Industrial Sector Assumptions

We modeled the IRA's Advanced Industrial Facilities Deployment Program, which provides funding to projects at industrial facilities that reduce emissions. To account for this program, we increased the EPS assumption for the amount of industrial carbon capture and sequestration deployed.

STATE POLICIES NECESSARY FOR MICHIGAN TO MEET ITS CLIMATE GOALS

The IRA is a robust law that will help reduce emissions across economic sectors, but there is broad recognition that more action is needed for the U.S. to reach net zero emissions by 2050.[10] This report aims to show what policies are necessary to complement the IRA to meet Michigan's emissions reductions goals and secure the full potential benefits of these investments for the state's residents and businesses.

Prior to the enactment of the IRA, Michigan's economy-wide energy-related carbon dioxide emissions fell by 28%—or over 53 million metric tons—from 2005 to 2020. This was largely because of a steep decline in coal-fired power generation in Michigan's energy mix.[11]

But Michigan's emissions still need to fall by about 27% by 2030 (compared to 2020 emmissions levels) for the state to meet its carbon neutrality by 2050 goal (which is measured against 2005 levels). Since much of Michigan's coal plant fleet has already been retired, other policies will be needed to achieve that progress.

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[7] U.S. Environmental Protection Agency Press Office, "Biden-Harris Administration Proposes Strongest-Ever Pollution Standards for Cars and Trucks to Accelerate Transition to a Clean-Transportation Future," April 12, 2023. https://www.epa.gov/newsreleases/biden-harris-administration-proposes-strongest-ever-pollution-standards-cars-and

[8] Ibid.

[9] Associated Press, "EPA Administrator Micheal Regan announces new rules to spur sales of electric vehicles," April 12, 2023. https://epic.uchicago.edu/news/epa-administrator-micheal-regan-announces-new-rules-to-spur-sales-of-electric-vehicles/#:~:text=Depending%20on%20how%20automakers%20comply,will%20be%20EVs%20in%202032

[10] United Nations Sustainable Development Solutions Network, "The Inflation Reduction Act and US Journey to Net-Zero Emissions: electric vehicles, buildings electrification, hydrogen economy, and more," Dec. 2022. https://www.unsdsn.org/the-inflation-reduction-act-and-us-journey-to-net-zero-emissions-electric-vehicles-buildings-electrification-hydrogen-economy-and-more

[11] See Table 2, U.S. Energy Information Administration, accessed July 6, 2023. https://www.eia.gov/environment/emissions/state/

Our analysis found that the IRA will drive Michigan's emissions down by about 5%[12] from 2023 to 2030 and by about 25% from 2023 to 2050—emphasizing the need for additional and significant state policies to close the gap. If Michigan is going to fulfill its carbon neutrality goal, policies that make significantly deeper cuts to emissions, especially in the electric power, transportation, and buildings sectors, are needed.

For this report, we modeled a set of policies called the Michigan Clean Energy Framework to see how essential state decarbonization policies would interact with the IRA to speed up Michigan's path to carbon neutrality and change the economic impact of such policies.

Summary of State Policies

Electric Power Sector

Our modeling found that the following policies can lead to a 94% reduction in greenhouse gas emissions from the power sector by 2030 and 100% reduction by 2050 compared to emissions levels in 2005.

1. Establish a Renewable Portfolio Standard of 60% by 2030, roughly equivalent to an 80% carbon-free electricity standard, followed by a 100% carbon-free electricity standard by 2035. Accomplishing this goal will also likely require the reform of state laws to make it easier to site renewable energy projects.

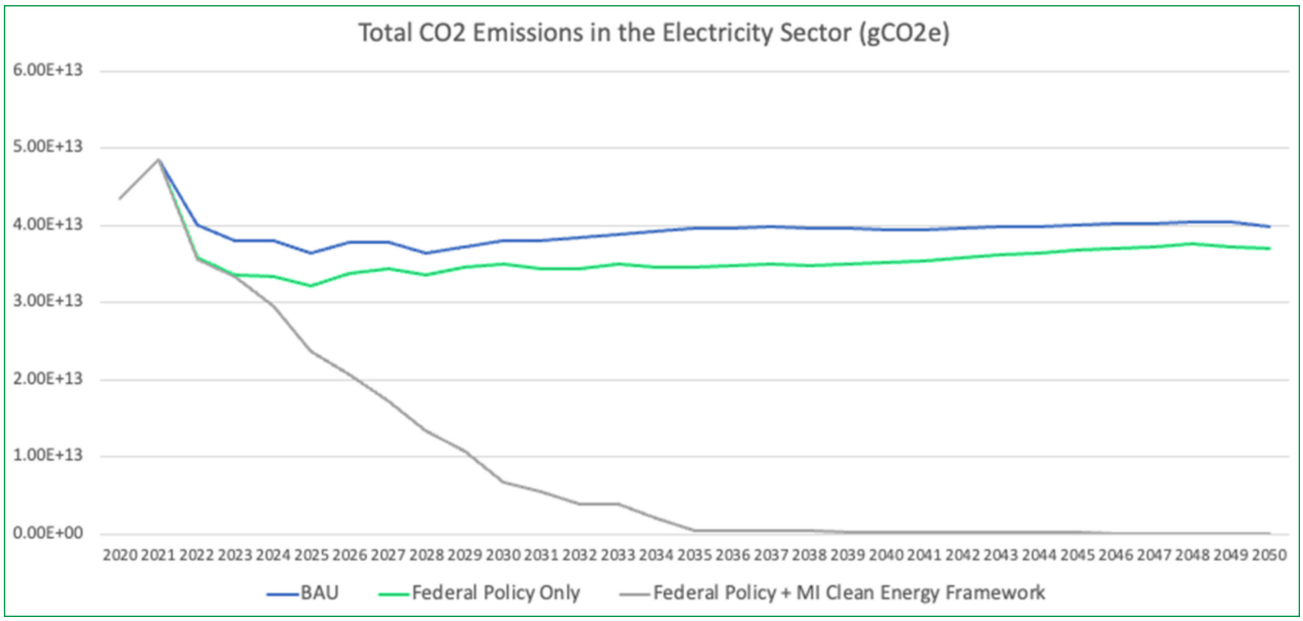
2. Commit to building no new gas plants in Michigan and retire non-peaking gas plants gradually by 2040 to shrink the size of the current gas fleet to reflect reduced utilization in line with the continued growth of carbon-free power generation. In addition, Michigan must meet its commitment to retire the rest of its coal fleet—all of but two of which are slated for retirement by 2028. This policy pathway would only require DTE to expedite its closure of units 1 & 2 at its Monroe Power Plant—a goal far more achievable given a suite of incentives that exist in the IRA to shift to renewables.

3. Significantly expand renewable energy, battery storage, and transmission capacity and demand response to enable the state to transition to clean power while creating a more resilient, reliable, and flexible grid.

4. Support improved planning for transmission, which will be a foundational need for the clean energy transition, including continuing to advocate that the Midcontinent Independent System Operator (MISO) conduct regional transmission planning that aligns with strong state clean energy goals.

[12] Note that several of the models predicting the IRA's emission reductions note a large gap if state policies are or are not passed to supplement the IRA (such as ones modeled in this report).

Figure 1[13]



Transportation Sector

Our modeling found that the following policies can lead to a 35% reduction in greenhouse gas emissions from the transportation sector by 2030 and 85% reduction by 2050 compared to emissions levels in 2005.

1. Comply with the federal clean cars and trucks rule to increase the share of EVs on the road—ensuring strong uptake of the IRA's tax credits for light and heavy-duty (vocational, short-haul, and long-haul) EVs *(Note: No specific state policy was modeled for this report, but vehicle electrification targets will require Michigan to successfully promote consumer uptake of the IRA's tax credits and invest in both EV charging infrastructure and additional state incentives, among other policy interventions)*

Table 1 – EV Sales Standard

EV VEHICLE SALES BY VEHICLE TYPE	2030	2032
Light-Duty Cars and Trucks	47%	67%
Vocational[14]	35%	50%
Short-Haul Trucks	20%	35%
Long-Haul Trucks	10%	20%

[13] "BAU" refers to a hypothetical scenario where no further action is taken on climate policy, federal or state.

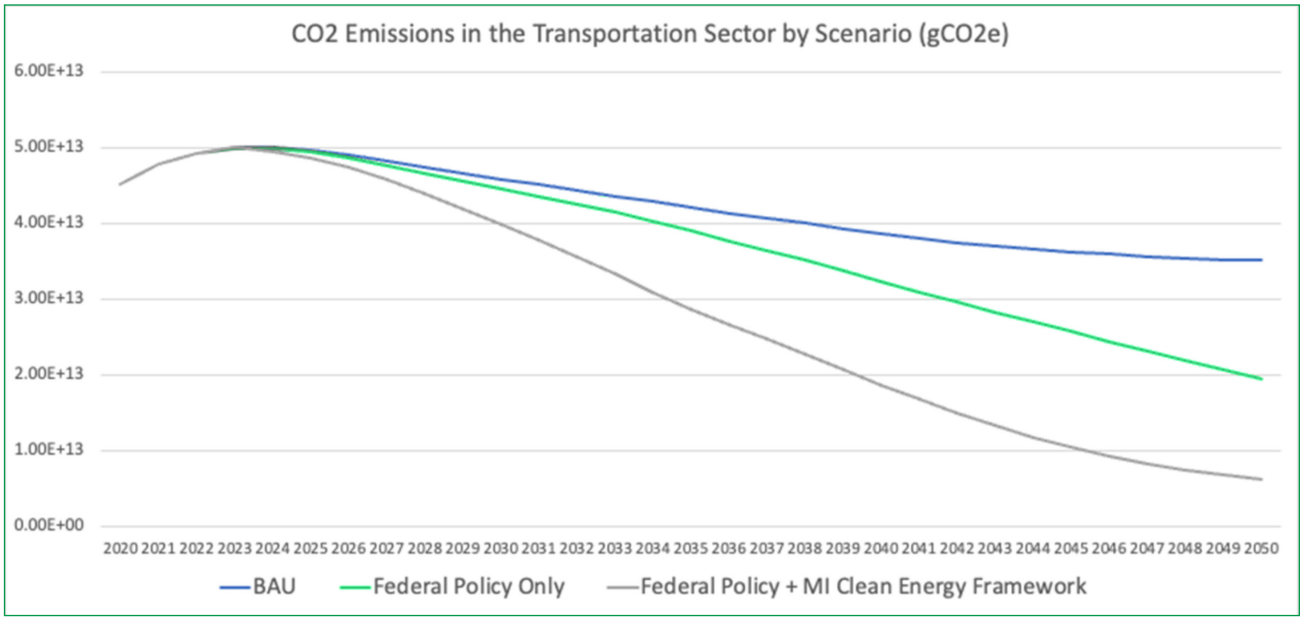
[14] Refers to heavy-duty vehicles generally used as work trucks and with a gross vehicle weight rating (GVWR) above 8,500 pounds, excluding those that meet certain criteria as defined in Code of Federal Regulations Title 49, Subtitle B, Chapter V, Part 523, § 523.7. https://www.ecfr.gov/current/title-49/subtitle-B/chapter-V/part-523/section-523.7

2. Reform electric rates to account for the benefits and flexibility that electric vehicles bring to the grid and to ensure new electric load is managed and optimized (*Note: This could be achieved via actions taken by the Michigan Public Service Commission*).

3. Build enough EV charging stations to accommodate the federal clean cars and trucks rule. This will require implementation of the funding for EV charging from the IIJA to achieve the target of 255 chargers per every 100,000 people by 2050.

4. Reduce vehicle miles traveled (VMT) by about 2% compared to 2023 levels by supporting multi-modal transportation and land use reform measures that can reduce car dependence. Policies include investment in public transit (e.g. bus rapid transit, commuter rail) and support for local governments to invest in transit-oriented development and reduce exclusionary zoning and minimum parking requirements. Federal resources to further assist in reducing VMT include the IIJA's Carbon Reduction Program and several other legacy formula programs with significant flexibility.[15]

Figure 2



Buildings Sector

Our modeling found that the following policies can lead to a 34% reduction in greenhouse gas emissions from the buildings sector by 2030 and 97% by 2050 compared to emissions levels in 2005.

[15] Georgetown Climate Center, "Issue Brief: Estimating the Greenhouse Gas Impact of Federal Infrastructure Investments in the IIJA," Dec. 16, 2021. https://www.georgetownclimate.org/articles/federal-infrastructure-investment-analysis.html

1. Strengthen energy waste reduction requirements to a 2.5% annual savings target for electric and a 1.5% annual saving target for gas with a strong focus on whole home efficiency and the building envelope to ensure that homes are prepared for the building electrification transition.

2. Allow fuel-switching and electrification as a part of Michigan's energy waste reduction programs.

3. Set clear, state-level targets for the installation of electric heat pumps in residential homes with a focus on low-income and underserved households (e.g.,100,000 electric heat pumps installed by 2025). Targets should be ambitious enough to set Michigan on a path to 100% of all newly sold appliances and HVAC to be electric by 2035. These targets can take advantage of rebates that the IRA provides for heat pumps, such as the $4.5 billion High-Efficiency Electric Home Rebate Program, which gives grants to states agencies and Indian tribes to fund rebates for efficient products, including up to $1,750 for a heat pump water heater and up to $8,000 for a heat pump for space heating or cooling.[16]

4. Adopt the 2021 International Energy Conservation Code (IECC) with EV-, electric-, solar PV-, and battery storage-readiness provisions this year, the building decarbonization overlay designed by the New Buildings Institute, and all-electric commercial and residential codes in new construction built after the year 2026. Section 50131 of the IRA includes about $1 billion in funding for grants to assist state and local governments adopt building energy codes that meet or exceed the IECC or achieve equivalent or greater energy savings.

5. Create an incentive program to encourage manufacturers to produce heat pumps and to help residents purchase and install heat pumps and induction stoves. Additionally, create incentives for households—especially low-income—to conduct whole-home efficiency upgrades (energy waste reduction technology, rooftop solar, appliance and heating/cooling electrification) to improve efficiency and lower energy use. These incentives would complement and accelerate rebates for heat pumps and retrofitting provided by the IRA.

6. Create a state program that consolidates incentives across federal, state, and utility resources to fund whole-home retrofits in a one-stop-shop service, including the IRA's home electrification rebate and home efficiency rebate.[17] Whole-home retrofits include health and safety upgrades (like lead or asbestos removal), weatherization services, appliance electrification, and solar PV. Consolidating multiple funding streams into a single incentive program will create clear market signals for electric appliance manufacturers and make accessing incentives easier for residents.

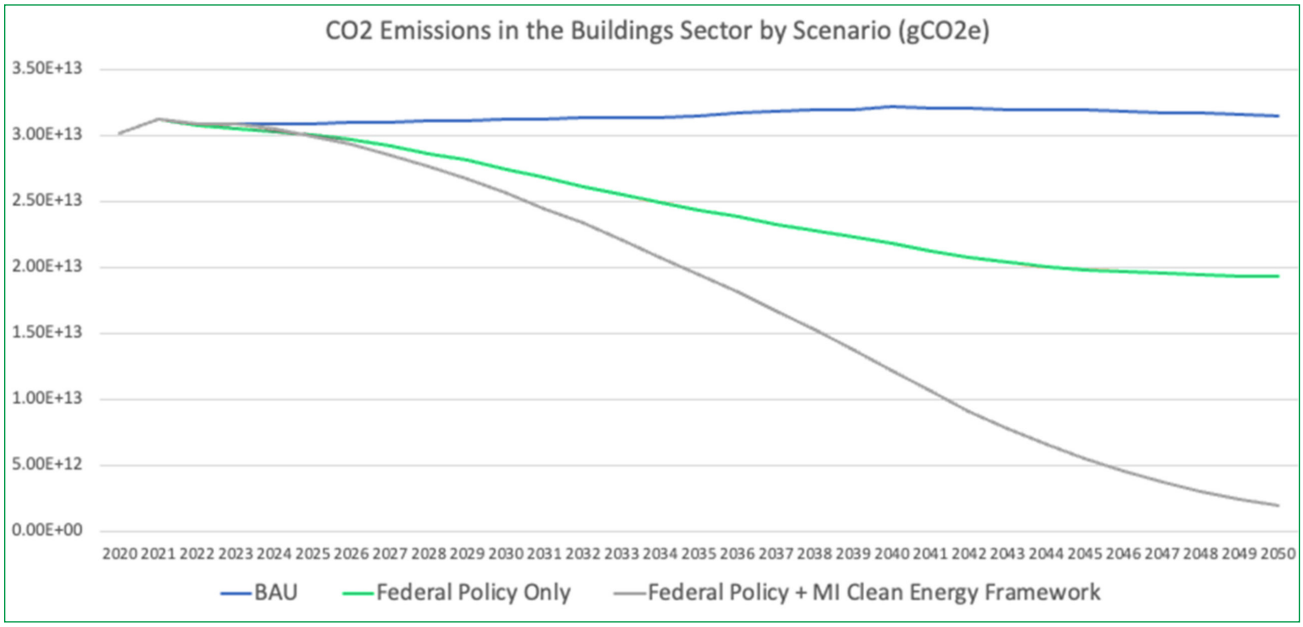
7. Develop strong workforce training and attraction/retention programs to ensure that Michigan has a robust contractor network well-versed in decarbonized building work.
8. Reform electric rates to account for the benefits and flexibility that electric appliances bring to the grid

[16] U.S. Department of Energy, "Home Energy Rebate Programs," accessed July 6, 2023. https://www.energy.gov/scep/home-energy-rebate-programs

[17] U.S. Department of Energy, "Home Energy Rebate Programs," accessed July 6, 2023. https://www.energy.gov/scep/home-energy-rebate-programs-guidance

(*Note: This could be achieved via actions taken by the Michigan Public Service Commission*).

Figure 3



Industrial Sector

Our modeling found that the following policies can lead to a 31% reduction in greenhouse gas emissions from the industrial sector by 2030 and 78% by 2050, compared to emissions levels in 2005.

1. Increase incentives and requirements for industrial equipment efficiency, emissions controls, and clean technology upgrades. An example of such an incentive is a state tax credit for industrial decarbonization that would supplement similar IRA provisions. For example, Section 50161 of the IRA offers financial assistance to demonstrations by eligible industrial facilities of greenhouse gas reduction measures. The state tax credit could be structured to provide further support for innovative deep decarbonization retrofits for facilities that qualify and receive funding from the IRA.

2. Work with utilities, industrial firms, federal agencies, and other stakeholders to accelerate the electrification of industrial processes, such as metal fabrication, and the development of alternative zero-carbon options for hard-to-electrify processes.

THE EMISSIONS, HEALTH, AND ECONOMIC BENEFITS OF THE MICHIGAN CLEAN ENERGY FRAMEWORK

Our modeling combines the state policies outlined above with the expected impacts of the IRA to create a scenario showing the climate, health, and economic effects through 2050 of these federal and state policies. Our model illustrates the benefits of the state taking swift and ambitious action on climate policy.

As shown in Table 2, federal policy reduces Michigan's emissions, but the state policies we modeled are necessary for the state to achieve 2030 and 2050 carbon emissions reduction targets.

Table 2 - Emissions Timeline

SCENARIO	FEDERAL POLICY ONLY	FEDERAL + STATE POLICY
2030: Total Emissions Change relative to 2020	-6.2%	-27.4%
2050: Total Emissions Change relative to 2020	-25.6%	-75.0%

Note: To measure recent progress and to clarify the emissions that still need to be cut, we used 2020 emissions levels in this table (as opposed to 2005 levels, which is what the state uses to measure its 2050 carbon neutrality goal).

Our modeling found that Michigan can meet these targets while also growing its economy, adding jobs, and improving health outcomes. Table 3 shows the economic and health benefits, as estimated by the EPS, achieved by enacting federal and state policy to reduce emissions. These benefits are relative to a baseline scenario where the state takes no significant state policy action and a hypothetical baseline scenario where the state takes no state policy action and the effects of the IRA do not take place. The economic benefits manifest in the form of lower household energy costs, GDP growth, and job creation, driven by the policies' stimulating effects on the economy, as described further below. The health benefits, meanwhile, come from fewer premature deaths—caused primarily by lower pollution from the switch to cleaner sources of energy achieved by these policies.

While federal policy alone provides benefits, the combination of federal policy with the state policies in the Michigan Clean Energy Framework achieves exponentially greater benefits because of the much larger degree that it shifts Michigan's economy toward cleaner energy.

Table 3 - Health and Economic Benefits

SCENARIO	FEDERAL POLICY ONLY	FEDERAL + STATE POLICY
2035: avoided premature mortality (lives)	121	322
2050: avoided premature mortality (lives)	239	986
2035: monetized benefit from avoided premature mortality ($)	$1,025,030,000	$2,721,040,000

2050: monetized benefit from avoided premature mortality ($)	**$2,019,580,000**	**$8,324,780,000**
2035: percent change in GDP	**0.82%**	**2.42%**
2050: percent change in GDP	**1.43%**	**2.51%**
2035: total job-years added	**38,057**	**123,198**
2050: total job-years added	**79,175**	**158,260**
2024-2032: total federal tax credits/grants/ rebates in Michigan in the power sector ($)	**$4,661,922,390**	**$9,930,679,935**
2024-2050: total federal tax credits/grants/ rebates in Michigan in the power sector ($)	**$6,883,083,500**	**$14,692,447,215**

In addition to the information in the above table, our analysis finds that the IRA expands and magnifies the economic impact of the state policies we modeled.

To better illustrate this phenomenon, we can also model the state policies in a scenario in which we remove the effects of the IRA. In that scenario, the GDP growth increases of 2.42% by 2035 and 2.51% by 2050 fall to 1.37% by 2035 and 1.08% by 2050. This difference emphasizes the level of impact that the IRA's tax credits and grants provide to Michigan's economy. Essentially, the IRA financially enables states to set and implement the policies needed to reach our climate goals.

In addition to stimulating GDP growth, as shown in Table 3, the federal and state policies modeled also increase job growth. This includes direct jobs, indirect jobs, and induced jobs.

Direct jobs are those that are created to fulfill the specific demand for a product or service. For example, investment in a wind project will employ a number of workers to build, deploy, and maintain the wind turbines.

Indirect jobs are those that are created to produce the goods and services needed by workers with direct jobs. For example, demand for steel, component parts, and manufacturing equipment for the wind turbines will create jobs in those industries, though those workers will not participate directly in their construction.

Induced jobs are those resulting from increased economic activity generated by direct and indirect job holders. For example, the workers constructing the wind turbines or providing the necessary steel may take a lunch break at a local restaurant or may need childcare to accommodate their work schedule, resulting in increased spending.

"Job-year" refers to one year of one job.

COSTS OF DELAYING ACTION

Our analysis shows that Michigan residents would suffer from significantly greater negative health effects and the state's economy would lose out on billions of dollars of growth and tens of thousands of new jobs if the Michigan Clean Energy Framework, or policies to achieve similar goals, are not enacted. There are also costs associated with delaying action on these policies.

The policies included in Michigan Clean Energy Framework would enable the state to attract more federal investment because, by providing more avenues for clean energy investment, the policies allow the state to better take advantage of federal rebates and grants being offered to clean energy projects by federal laws like the IRA and the IIJA. For example, setting state-level targets for heat pump deployment will cause more Michigan local governments, businesses, or homeowners to seek federal rebates for heat pumps. Or, similarly, state-level incentives for EVs and EV charging installations will lead to more federal government assistance for EV deployment flowing into the state.

But each year it does not enact those policies, the state misses out on that additional federal investment. The amount of lost federal investment was estimated using the EPS.[18]

Table 4 illustrates this phenomenon by comparing the amount of investment—measured in grants, tax credits, and rebates—Michigan will see if it passes the policies in the Michigan Clean Energy Framework in 2023 versus 2024. That one-year delay cuts the amount of federal grants and rebates going to the state by about $1 billion from 2024 to 2032 compared to a scenario where the framework is enacted immediately.

Table 4 - Impact of Delaying State Policy

SCENARIO	INFLATION REDUCTION ACT INVESTMENT IF STATE POLICIES PASS IN 2023	INFLATION REDUCTION ACT INVESTMENT IF STATE POLICIES PASS IN 2024	AMOUNT LOST
2024-2032: total federal tax credits/grants/rebates in Michigan in the Power Sector ($)	$9,930,679,935	$8,997,107,596	-$933,572,339
2024-2050: total federal tax credits/grants/rebates in Michigan in the Power Sector ($)	$14,692,447,215	$13,598,598,236	-$1,093,848,979

[18] The model assumes that economic activity generated by policies—such as building more renewable energy projects or completing more energy efficiency retrofits—is financed by a certain amount of tax credits, rebates, grants and other forms of federal investment.

IMPACTS ON HOUSEHOLD ENERGY COSTS

One of the driving forces behind the greater economic benefits identified in our analysis is a decline in energy costs. While electricity consumption increases across the state's economy as buildings and transportation electrify, the EPS assumptions showed this rise in electricity consumption is more than offset by declines in spending on fuels like gasoline and natural gas.[19]

We looked at how that energy costs trend translates to the average energy bill of a household in Michigan. The Michigan Clean Energy Framework leads to lower household energy costs over time. In addition, it lowers bill costs more than the IRA does alone (Table 5). These results suggest that the goal of hitting carbon emissions reduction targets and the goal of keeping energy affordable to the average household are in harmony, not conflict, with each other.

Table 5[20] - Average Annual Household Energy Costs[21]

SCENARIO	FEDERAL POLICY ONLY	FEDERAL + STATE POLICY	NO POLICY
2020 average annual household energy costs (home and transportation) ($)	$3,814.08	$3,814.08	$3,814.08
2035 average annual household energy costs (home and transportation) ($)	$3,779.67	$3,669.39	$3,814.74
2050 average annual household energy costs (home and transportation) ($)	$3,749.95	$3,681.28	$3,755.03

The table above shows averages across all households in Michigan, some of which will have made changes in their energy use and some of which will not. On average, the households that switch from gasoline vehicles to EVs, adopt recommended energy efficiency measures, and electrify heating, water heating and cooking by 2035 will have an annual household energy cost of $2618.06, resulting in an annual savings of $1,196.02.

Electricity Rates

In addition to the use of the EPS to model the trend on overall energy spending, we also developed our own model to forecast how electric rates on a per kWh basis will change in response to changes in the mix of electricity generation sources triggered by policy changes.

[19] In the federal plus state policy scenario, the EPS found that consumption of electricity in residential buildings would rise by about $936 million, or 24%, from 2020 to 2035. But residential spending on transportation fuels (chiefly gasoline) falls by about $2.5 billion, or 26.5%, and spending on natural gas in residential buildings falls by about $1.7 billion, or 25%, over the same period.

[20] No Policy" refers to a hypothetical scenario where neither the Michigan Clean Energy Framework nor the IRA are implemented.

[21] In 2021 dollars.

This model first generates a forecast of wholesale electric power prices. We estimate the wholesale electric power prices for each hour in a given year based on data[22] on the costs of electricity generation from all electric power sources in Zone 7 of MISO, which covers almost all of the Lower Peninsula of Michigan. We use these cost estimates to forecast the costs of generating electricity from these sources out to 2030 based on the EIA Annual Energy Outlook's forecasts for future fuel prices. Next, we use the EPS' forecast of the amounts of generation and capacity by source (such as nuclear, natural gas, solar, wind, hydro, etc.) per year to determine how this mix of generation sources will change over the course of the time period studied. Finally, we use the National Renewable Energy Laboratory's Annual Technology Baseline, adjusted by our own methods to reflect changes to tax credits from the IRA, to forecast the levelized cost of electricity of the new clean energy sources projected by the EPS.

The model produces a projected average retail electricity price for all customer classes in 2025 and 2030 based on the mix of generation sources expected by the EPS. After 2030, the Annual Energy Outlook's forecasts for future fuel prices become more uncertain. The forecasts also do not account for regulatory and legal changes to ease the permitting and siting for the construction of renewable energy projects and transmission lines so that enough of this infrastructure can be built to enable the grid to reach carbon neutrality by 2050.

The state policies examined in this report lead to much higher amounts of renewable and other non-emitting sources of generation and capacity compared to a scenario where the state fails to enact the Michigan Clean Energy Framework. Our electric rate analysis shows that this more aggressive shift to clean energy can occur with minimal impact on rates in the 2025-2030 timeframe. Table 6 shows that the federal plus state policy scenario slightly lowers rates by less than 1 cent per kWh in 2025 and 2030 compared to the scenario where these policies are not enacted.

Table 6[23] - Electricity Rate Impact

YEAR	FEDERAL + STATE POLICY ($/kWh)	NO POLICY SCENARIO ($/kWh)	DIFFERENCE ($/kWh)
2025	$0.0813	$.0830	-$0.0021
2030	$0.0690	$0.074	-$0.0047

YEAR	FEDERAL POLICY ONLY ($/kWh)	NO POLICY SCENARIO ($/kWh)	DIFFERENCE ($/kWh)
2025	$.082	$.0830	-$0.0012
2030	$.071	$0.074	-$0.0027

[22] U.S. Energy Information Administration, Form EIA-923. https://www.eia.gov/electricity/data/eia923/

[23] "No Policy" refers to a hypothetical scenario where neither the Michigan Clean Energy Framework nor the IRA are implemented.

One factor not captured by this analysis through the EPS is price volatility. The investments in clean energy infrastructure created by the Michigan Clean Energy Framework would also reduce the volatility risks to ratepayers that come from fossil fuel-burning power plants. The costs of operating these plants are driven by fuel prices that are often volatile. Utilities pass this volatility risk onto their ratepayers by charging them for the fuel they purchase. An example of the dangers that these risks pose to ratepayers came in the winter of 2022 to 2023, when spikes in the market price of natural gas, caused by factors like the war in Ukraine, led to Michigan electricity rates increasing by at least 10% in 2023 according to one analysis[24] as utilities like DTE and Consumers Energy passed the rising costs of the gas they purchase to fuel power plants onto customers through a power supply cost recovery factor that appears on ratepayer bills.

As Michigan prepares for the sunset of its remaining coal-fired power plants and power demand increases as homes and vehicles electrify, investor-owned utilities (IOUs) will be weighing decisions about investing in new power generation sources—choosing whether to build new fossil fuel-fired power plants versus scaling clean sources like wind, solar, nuclear, and storage that are not as exposed to fuel price volatility.

In a 2022 report, RMI analyzed the economics of power generation sources post-IRA. Their findings show that, due to robust tax credits and resulting economies of scale (i.e., when more is built, supply goes up, and cost goes down), renewable costs fall below the go-forward cost of a combined cycle gas plant by at least $30–$40/MWh. This means it will be cheaper on a per megawatt hour basis to build new wind and solar than to continue to operate existing gas in almost every case. When taking full advantage of the tax credits in the IRA, RMI found that clean, renewable sources will be cheaper than 99% of proposed gas plants. Setting a clean energy target sets an economic pathway for the state to ensure utility companies are not stranding assets—investing in fossil fuel plants that have a short life economically—and placing the remaining costs of the non-operational infrastructure on ratepayers.

SURVEY OF MICHIGAN EIBC MEMBERS

The private sector is already responding to the influx of federal funding and the prospect of additional state policies. To illustrate these effects, Michigan EIBC interviewed Michigan clean energy companies to understand how these policies factor into their planning, current operations, and projected business outcomes.

Twenty-four Michigan EIBC member companies filled out a 16-question survey. Among them were ten companies that self-identified as being within the realm of renewable energy generation, three identified as working in energy storage, three in electric vehicle charging, and the rest spread amongst construction, consulting, and energy efficiency.

[24] Bandyk, "Utilities can help consumers by moving away from natural gas," Detroit News, Jan. 18, 2023. https://www.detroitnews.com/story/opinion/2023/01/19/move-away-from-natural-gas-to-lower-energy-costs/69819666007/

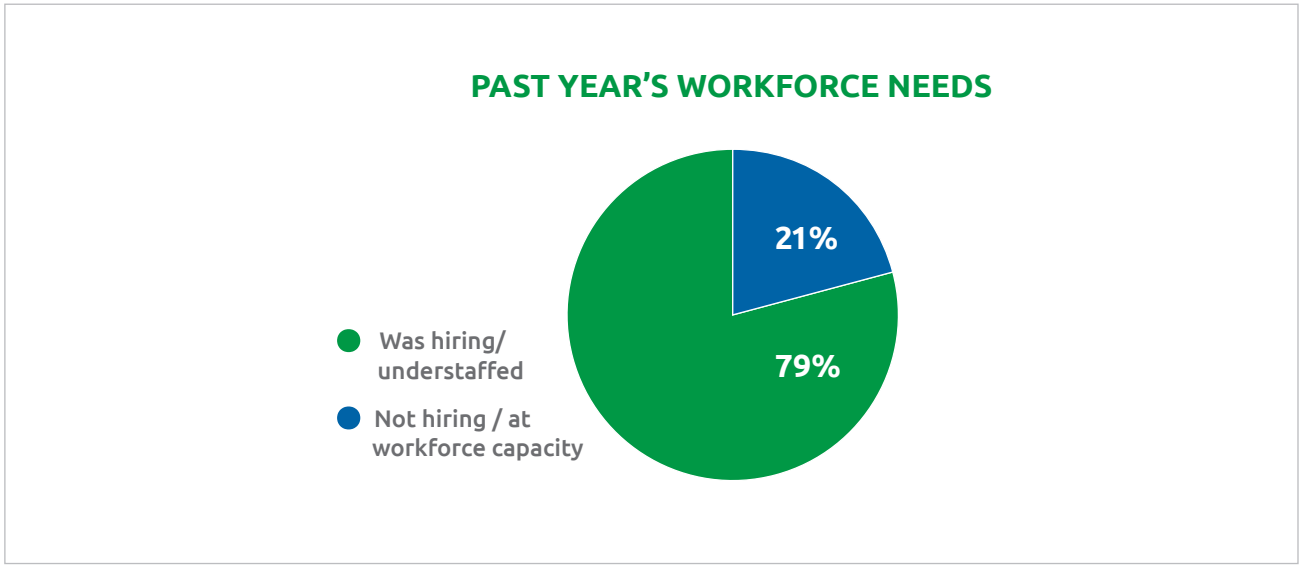
Based on the responses to the survey, three companies were selected for follow-up interviews: FLO EV Charging, Walker-Miller Energy Services, and Ventower Industries. An effort was made to select companies from varied industry sectors. A set of standard questions was developed to guide the interviews including several follow-up questions to those asked in the survey. These interviews were used to develop case studies.

Survey Results and Discussion

Hiring Needs

Most of the survey respondents described their workforce needs as understaffed over the previous year (79%, n = 19). Additionally, all survey respondents expressed plans to expand their workforce over the course of the next year, indicating significant expected industry growth.

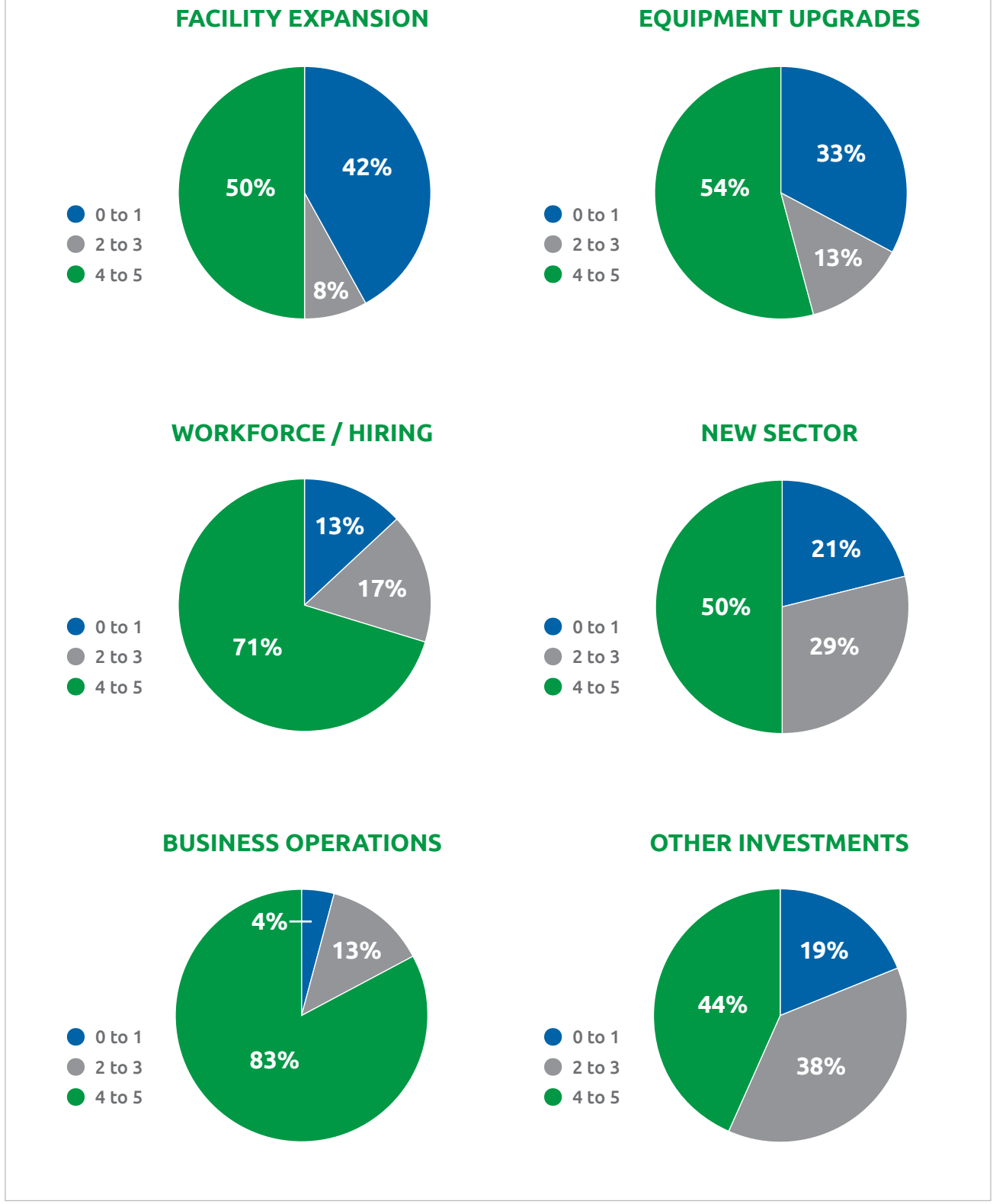
Figure 4



Use of Federal Opportunities

Survey respondents were asked to quantify, on a scale of 0-5 (where 0 was unlikely and 5 was very likely), their intent to use federal opportunities to invest in the following: facility expansion, equipment upgrades, workforce expansion, expansion into a new business sector, business operations, or other investments. As shown in Figure 5, most respondents ranked their intent to invest in all of these investment categories highly (with a score of 4 or 5): to expand their facility (50%, n = 12), to upgrade equipment (54%, n = 13), to expand the workforce/ hire (71%, n = 17), to expand into a new business sector (50%, n = 12), to expand business operations (83%, n = 20), and to make other investments (44%, n = 7). Those other investments listed by respondents were access to project funding sources, aerospace, transmission/hydrogen/long duration storage, and solar development in rural Michigan. It is especially striking that such a high percentage of respondents plan to use federal funding to expand their workforce and business operations. This further supports the expectation that Michigan's clean energy industry will grow and expand in response to federal opportunities.

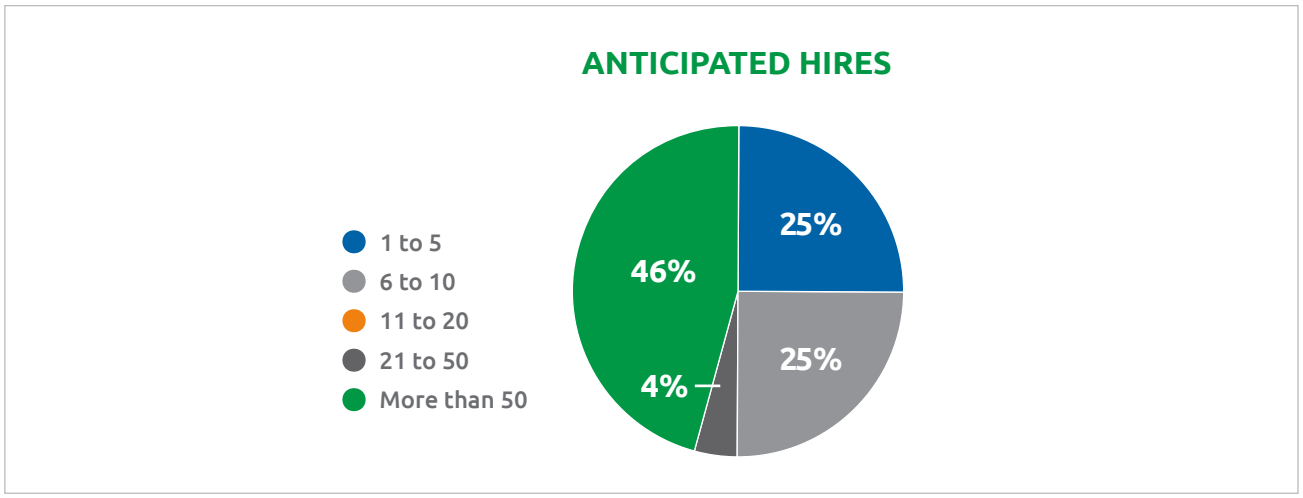
Figure 5


FACILITY EXPANSION
42%
8%
50%
0 to 1
2 to 3
4 to 5
EQUIPMENT UPGRADES
33%
13%
54%
0 to 1
2 to 3
4 to 5
WORKFORCE / HIRING
13%
17%
71%
0 to 1
2 to 3
4 to 5
NEW SECTOR
21%
29%
50%
0 to 1
2 to 3
4 to 5
BUSINESS OPERATIONS
4%
13%
83%
0 to 1
2 to 3
4 to 5
OTHER INVESTMENTS
19%
38%
44%
0 to 1
2 to 3
4 to 5

Levels of Planned Expansion

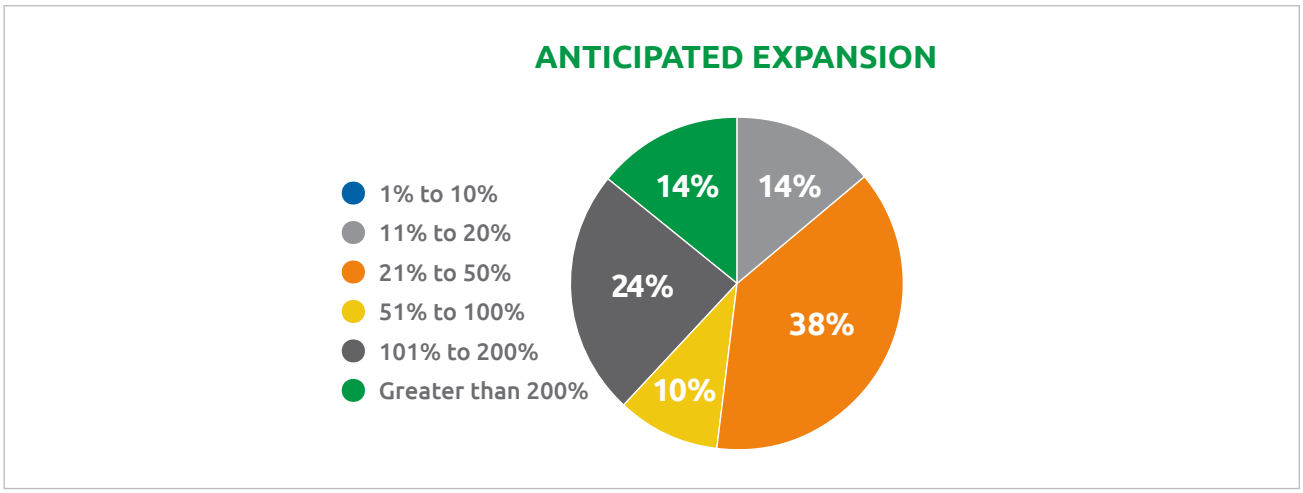
Survey respondents were asked how many workers they intend to hire in the coming year. The vast majority (75%, n = 18) expressed plans to hire at least five more employees, with a large portion expecting to hire 50 or more employees in the coming year (46%, n = 11). These data indicate that Michigan's clean energy workforce is growing and support the conclusion that federal opportunities will lead to increased hiring in the clean energy industry in the near future.

Figure 6



Survey respondents were also asked by what percentage they plan on expanding business operations over the next year. Most respondents expect to experience growth, but there was variability in the anticipated level of that expansion.

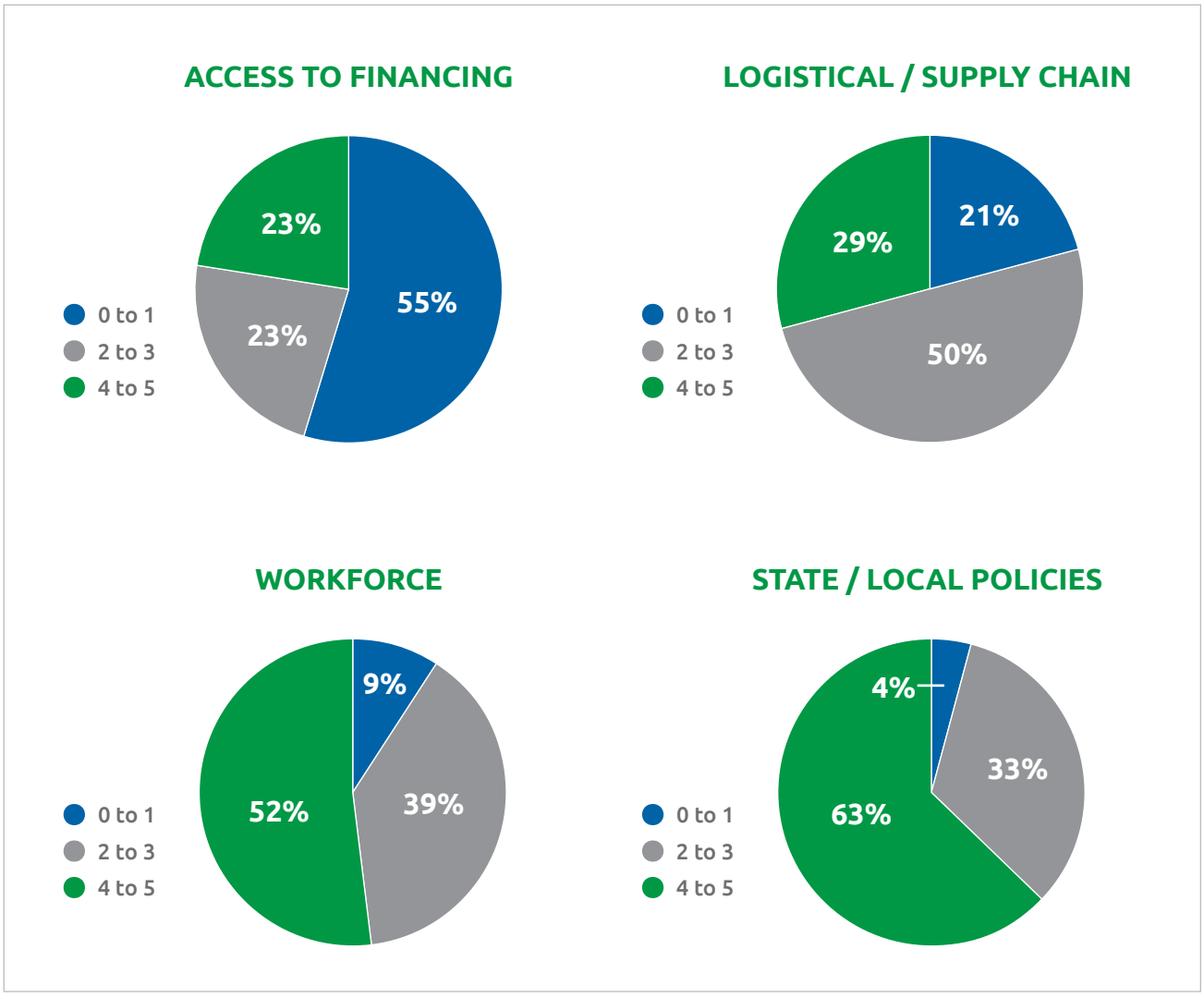
Figure 7



Barriers to Expansion

Survey respondents were asked to quantify, on a scale of 0-5 (where 0 was no barrier and 5 was a significant barrier), the extent to which the following barriers harmed their potential expansion: access to financing, logistical/supply chain, workforce challenges, state/local policies, and other. As shown in Figure 8, respondents indicated that access to financing and logistical/supply chain barriers are not significant in Michigan. However, it is clear that access to workforce and state and local policies are significant barriers to the expansion of the clean energy industry in the state. Other barriers listed by respondents were interconnection issues at the state and regional level, utility obstruction, overly prescriptive grant requirements, and the need for U.S. Treasury guidance on tax credits.

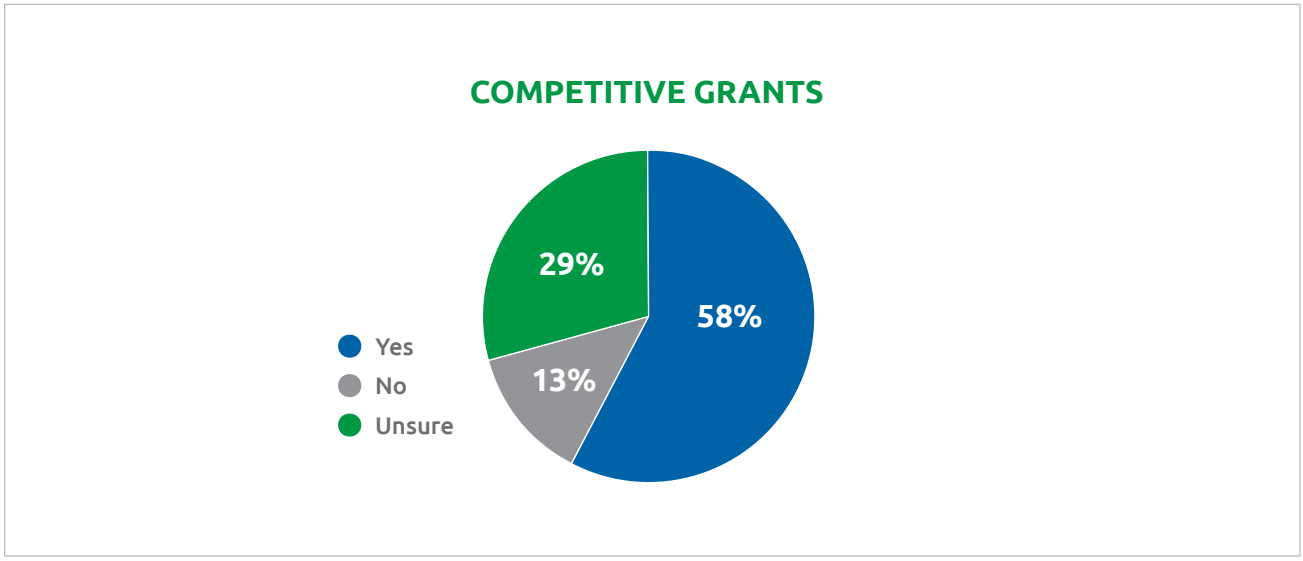
Figure 8



Competitive Grants

Most survey respondents plan on applying for competitive grants through the IRA or IIJA (58%, n = 14). However, 29% (n = 7) of the companies were unsure whether they would be applying for competitive federal grants, which may indicate a need for further information and outreach on these programs.

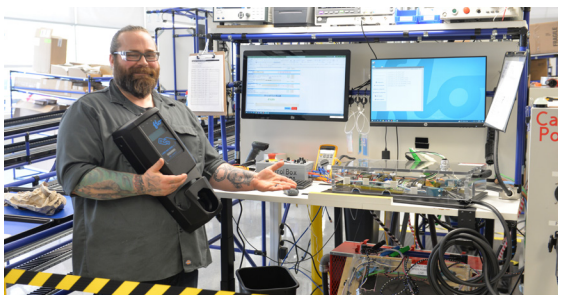
Figure 9



CASE STUDIES

FLO EV Charging

Michigan EIBC member company FLO is a North American EV charger manufacturer boasting ninety-thousand chargers deployed across the continent. To meet rising competition and to take advantage of new federal and state opportunities in the United States, the company has been scaling up at a rapid pace. According to company representatives, funding from the National Electric Vehicle Infrastructure (NEVI) program and the Inflation Reduction Act will drastically reshape the EV charging landscape over the next five years as companies begin to expand within the industry and businesses from other sectors begin to enter the space.



In 2022, FLO broke ground on a large EV charger manufacturing facility in Auburn Hills, Michigan. Despite opportunities in surrounding states with comparable workforce, FLO chose to open this facility in Michigan because of the state's positive business climate, deep automotive history and talent chain, and signals that the state government sought to be an active partner in

economic development. In addition, the MI Healthy Climate Plan's goals to significantly expand EV charger infrastructure throughout the state have encouraged multiple companies to move into the state. As a manufacturer and deployer of EV charging infrastructure, FLO sees an advantage in maintaining a local supply chain while competing to build out the state's charger network. In addition to support from Gov. Whitmer's administration, FLO ranked EV and charging deployment goals, consumer and business incentives, and clean fuel standards, respectively, as the most effective state policies for encouraging growth in the EV charging industry. However, given past experiences, these policies can take time to incentivize changes in the market. For example, if Michigan passed a clean fuel standard today, FLO estimates it would take around three years for the company to scale operations to meet the level of anticipated new opportunity and demand given that it is a new market entrant in Michigan and implementing the program alone would take a full year. This highlights the need to enact supportive state policies as soon as possible.

Walker-Miller Energy Services

Walker-Miller Energy Services is an African American- and woman-owned energy consulting company based in Detroit, which has been in business for 23 years. Boasting a business model focused on energy efficiency, electrifying homes, and workforce development and training for the evolving energy economy, the IRA and IIJA are critical to the heart of Walker Miller's operations. Additionally, state-level efforts to expand Michigan's energy waste reduction (EWR) standards are also prompting Walker-Miller to prepare for the imminent need to increase the scale of their business.

"We are already seeing an uptick in the need for our workforce development programs, even before the IRA dollars hit," says Ben Dueweke, Director of Community Partnerships for Walker-Miller, "We can now set up programs that will be in position to capture IRA funding once it becomes available." Dueweke explained that the workforce development programs that Walker-Miller runs have not only assisted in training individuals in the new technologies that are being implemented in residential energy efficiency, but have also ensured the placement of those individuals at companies that offer highly competitive wages. Walker-Miller specifically recruits trainees who live in the communities they will work in, especially in areas of Detroit that have experienced job loss and historic disinvestment. In concert with the IRA's labor requirements, such workforce development programs will ensure a consistent stream of skilled, qualified labor to the advanced energy industry as its workforce demands increase with scale – all without requiring students to seek higher education or take on student debt.

Michigan EIBC member Walker-Miller sees the potential increase

and expansion of the state's energy waste reduction standard as a mechanism that would directly cause the company to scale up its operations. "I think we would be in a great position to help our utility partners understand what that [EWR expansion] looks like. These efficiency programs are going to require more technical understanding of these homes and we are set up to do that. We have a contractor network that we already supply with a developed workforce, but we would definitely have to scale up." Dueweke also pointed out that the utility energy waste reduction programs have been extremely beneficial to the population of the state, as the programs lower energy costs, especially for low- to medium-income households that currently struggle to pay their utility bills. As Dueweke concluded, "The faster we can grow this industry, the better off Michigan will be."

"We are already seeing an uptick in the need for our workforce development programs, even before the IRA dollars hit. We can now set up programs that will be in position to capture IRA funding once it becomes available… The faster we can grow this industry, the better off Michigan will be."

- Ben Dueweke,
Director of Community Partnerships for Walker-Miller.

Ventower Industries

Michigan EIBC member Ventower Industries is a quality-driven steel fabricator located in Monroe, Michigan specializing in solutions for the energy and industrial product markets. The company offers diversified steel manufacturing of wind turbine towers, pressure vessels, and other industrial products. Ventower was founded in 2008 with the vision to develop a manufacturing facility in Michigan to serve the growing wind turbine tower market in the Great Lakes states. The state was specifically chosen due to its deep manufacturing history and unique opportunities for growth, specifically those created by Michigan's renewable portfolio standard (RPS) and programs from the Michigan Economic Development Corporation.

Ventower expects to experience steady growth over the next five to ten years, in part due to new federal funding from the IRA and IIJA. The company is rapidly preparing to add capacity to current facilities, upgrade equipment, and expand into new technologies including solar and hydrogen storage. They note the importance of the industry remaining diversified and staying in the renewable energy space. As an example of this, Ventower is planning to expand their Michigan operations this summer to begin making racking for solar panels.

In addition, Ventower believes the implementation of Gov. Whitmer's stated MI Healthy Climate Plan's goals to increase the state's RPS would lead to direct growth in their business and the clean energy manufacturing industry. They estimate that a 60% or greater RPS would allow them sufficient certainty and stability to double their capacity within a year. Ventower ranked siting reform, workforce issues, IRA treasury guidance, and supply chain concerns as some of the most pressing barriers currently limiting their growth.

CONCLUSION

Our analysis demonstrates that Michigan's economy, public health, and its ability to adapt to climate change hinge on whether the state will pursue policies consistent with the vision articulated in the MI Healthy Climate Plan. Our model shows that if the recent influx of IRA funding is paired with commonsense state-level decarbonization policy similar to the core components of the Michigan Clean Energy Framework (such as legislation recently introduced) Michigan would secure a myriad of benefits, including but not limited to cost savings, job creation, and historic investment in the state's economy.

APPENDIX

EPS Assumptions for IRA Analysis

SECTOR	POLICY / STRATEGY	MODELED AS… (i.e. levers pulled)
Electricity	• Section 13101: Extension and Modification of Credit for Electricity Produced from Certain Renewable Resources (PTC), $51 billion • Section 13102: Extension and Modification of Energy Credit (ITC), $13.96 billion • Section 13105: Zero-Emission Nuclear Power Production Credit, $30 billion • Section 50151: Transmission Facility Financing, $2 billion • Section 50152: Grants to Facilitate the Siting of Interstate Electricity Transmission Lines, $0.76 billion • Section 50153: Interregional and Offshore Wind Electricity Transmission Planning, Modeling and Analysis, $0.1 billion • Section 13302: Residential Clean Energy Credit, $22 billion • Section 13501: Extension of the Advanced Energy Project Credit, $6.255 billion • Section 60103: Greenhouse Gas Reduction Fund, $27 billion • Section 60201: Environmental and Climate Justice Block Grants, $3 billion	• (from Energy Innovation [EI]) Government revenue accounting for generation and capacity construction subsidies: deficit spending: 0; corporate taxes: 5 • (from EI) Nuclear use non-BAU retirement schedule • (from EI) generation subsidy, applying from 2023-2032 ($/MW) • Nuclear preexisting retiring: 12 • Nuclear newly built: 12 • Onshore wind newly built: 7.57 • Solar PV newly built: 6.25 • Municipal solid waste newly built: 4.48 • (from EI) Capacity construction subsidy, applying from 2023-2032 (fraction of system cost) • Solar PV: 0.346 • Solar thermal: 0.372 • Geothermal: 0.372 • Offshore wind: 0.439 • (from EI) cross-sector: reduce BAU subsidies for solar • Transmission growth: 2.2% lever setting

Buildings	• **Section 13301: Extension, Increase, and Modifications of Nonbusiness Energy Property Credit Section, $12.45 billion** • **Section 30002: Improving Energy Efficiency or Water Efficiency or Climate Resilience of Affordable Housing, $1 billion** • **Section 50121: Home Energy Performance-Based, Whole House Rebates, $4.3 billion** • **Section 13303: Energy Efficient Commercial Buildings Deduction, $0.36 billion** • **Section 13304: New Energy Efficient Home Credit, $2 billion** • **Section 50122: High-Efficiency Electric Home Rebate Program, $4.5 billion**	• **Retrofitting residential buildings: 6.56% lever setting. Reach by 2031. Maps to projected energy savings.** • **Shifting new residential building components to other fuels, applies to all components: 58.5% lever setting. Reach by 2031. Maps to projected energy savings.** • **Commercial building efficiency standards, applies to all components: 1.14% lever setting. Reach by 2031. Maps to projected energy savings.** • **Distributed solar subsidy: 30% of PV system cost. Applies uniformly from 2022-2031**
Transportation	• **Section 13401: Clean Vehicle Tax Credit, $7.54 billion** • **Section 13402: Credit for Previously-Owned Clean Vehicles, $1.347 billion** • **Section 13403: Qualified Commercial Clean Vehicles, $3.583 billion** • **Section 50142: Advanced Technology Vehicle Manufacturing, $3.025 billion** • **Section 50143: Domestic Manufacturing Conversion Grants, $2 billion** • **Section 60101: Clean Heavy-Duty Vehicles, $1 billion**	• **EV Subsidy (passenger and freight LDVs and HDVs). Amounts varying between 10-20% for 2022-2032**

Industry	• Section 50161: Advanced Industrial Facilities Deployment Program, $5.8 billion	• Industrial Carbon Capture: setting of 1.13% chosen uniformly across all industries, linearly increasing from 2022-2031 to model the resulting capital expenditures
Land use, Agriculture, and Waste	• Section 23001: National Forest System Restoration and Fuels Reduction Projects, $2.15 billion • Section 23002: Competitive Grants for Non-Federal Forest Landowners, $0.55 billion • Section 23003: State and Private Forestry Conservation Programs, $2.2 billion	• Avoid deforestation: 2.5mil / 50mil available acres = 5% of potential achieved by 2032
District Heat and Hydrogen	• Section 13204: Clean Hydrogen, $13.16 billion	• Shift production pathways to electrolysis: 76% lever setting

SURVEY QUESTIONS

1. What would you identify as your industry sector?

2. How would you describe your workforce needs over the past year?

   ❑ Was hiring/understaffed ❑ Not hiring/at workforce capacity

3. How do you anticipate your future workforce needs? (over the course of the next year)

   ❑ Will likely need to hire/will likely be understaffed
   ❑ Will not need to hire/will likely be at capacity

4. Do you plan on meeting prevailing wage AND apprenticeship requirements in order to qualify for any other tax credits? (PTC, ITC, energy efficient commercial buildings deduction, clean hydrogen, etc.)

   ❑ Yes ❑ No ❑ Unsure

5. Do you plan on applying for any competitive grant opportunities through the IRA or IIJA?

   ❑ Yes ❑ No ❑ Unsure

6. Why are you declining to apply for competitive grants?

   ❑ Onerous requirements ❑ Unaware of available grant opportunities
   ❑ Time or staffing requirements ❑ Other

7. What competitive grant opportunities do you plan on applying for?

8. On a scale of 0 (unlikely to invest) to 5 (highly likely to invest), how likely are you to use the federal opportunities in the IIJA and/or IRA (e.g., formula funding, competitive grants, tax credits) to invest in any of the following over the next two years?

	< Unlikely to invest ····· **Highly likely to Invest >**					
Facility expansion	0	1	2	3	4	5
Equipment upgrades	0	1	2	3	4	5
Workforce/hiring	0	1	2	3	4	5
Expansion into a new field/industry sector	0	1	2	3	4	5
Expansion of business operations	0	1	2	3	4	5
Other	0	1	2	3	4	5

9. If you are anticipating investment in an area that is not listed above (and selected other), what is that expected area of investment?

5 Lakes Energy is a Michigan-based policy consulting firm dedicated to advancing policies and programs that promote clean energy and sound water policy for a resilient environment.

The Michigan Energy Innovation Business Council is a trade organization with more than 160 business members tasked with growing Michigan's advanced energy economy by fostering opportunities for innovation and business growth and offering a unified voice in creating a business-friendly environment for the advanced energy industry in Michigan.

Evergreen is leading the fight to put bold climate action at the top of America's agenda, implement an all-out mobilization to defeat climate change and create millions of good union jobs in a just and thriving clean energy economy.

RMI is an independent nonprofit founded in 1982 that transforms global energy systems through market-driven solutions to align with a 1.5°C future and secure a clean, prosperous, zero-carbon future for all.

The Michigan Clean Energy Framework

Assessing the Economic and Health Benefits of Policies to **Achieve Michigan's Climate Goals**