KEY FACTS

Data Center Power Play in Michigan

How Clean Energy Can Meet Rising Electricity Demand While Delivering Climate and Health Benefits

Based on new Union of Concerned Scientists analysis:

- **Michigan's electricity demand could nearly double by 2050.**
  Data centers will account for up to 57 percent of demand growth by 2030 and 38 percent by 2050 as electrification of other sectors plays a bigger role over time. Estimates are highly speculative, highlighting the need for both increased transparency from data centers and flexible utility planning.

- **Michigan can meet the challenge of increased electricity demand with renewables and energy storage.**
  By maintaining existing clean energy policies and implementing a carbon dioxide (CO_2) reduction policy, Michigan can meet 95 percent of its electricity demand by 2050 with a mix of renewable sources—for example, solar and wind (72 percent)—and other low-carbon sources, such as nuclear and fossil gas with carbon capture and storage (24 percent).

- **Clean energy policies reduce heat-trapping emissions and help avoid the negative health impacts of burning fossil fuels.**
  By implementing a CO_2 reduction policy, Michigan could reach net-zero CO_2 by 2050 and avoid more than 1,000 mortalities caused by pollution (compared with current policies).

- **The economic benefits of a clean energy future in Michigan far outweigh the costs.**
  Expanding clean energy policies will substantially reduce pollution resulting from the energy sector in Michigan, resulting in $3.5 billion in reduced health costs locally and $408 billion in reduced climate damages globally by 2050.

Union of Concerned Scientists

After a long period with minimal growth, energy demand in Michigan is expected to expand rapidly over the next decade and beyond. The key near-term driver is the rise of artificial intelligence (AI) and the energy-hungry data centers needed to develop and run AI models. Michigan's two largest utilities have indicated that up to 22 gigawatts (GW) of data center projects are in their combined pipelines (Connolly 2025; Walton 2025). While not all of this load is guaranteed (or even expected) to come online, even a more conservative 5 GW, combined with accelerating load growth from electrifying transportation and buildings, could double Michigan's energy consumption by 2050.

Thanks to Michigan's forward-thinking clean energy laws enacted in 2023, electric utilities must provide 60 percent renewable energy by 2035 and 100 percent "clean energy" by 2040 (Public Act 235 2025).[1] Combined, these requirements ensure that as load grows and fossil fuel infrastructure is retired, electric utilities will seek the cleanest available resources to replace outdated alternatives.

However, the state faces challenges to its ability to ensure a clean, affordable, and reliable energy future. First is the pace of demand growth, which is expected to be greatest over the next five years; without careful planning, utilities may not be able to build new clean resources as quickly as new load comes online. Second, the clean energy laws only apply to in-state electricity sales; utilities could continue to produce and sell power from fossil fuel plants across state lines, increasing air pollution within the state and derailing progress on climate goals. In light of these risks, Michiganders have voiced concerns about proposed data center projects and the potential impacts to their communities (Thompson 2025).

The Union of Concerned Scientists (UCS) explored how Michigan can meet new electricity demand by utilizing policies and pathways that prioritize the needs of Michiganders for access to clean energy and clean air. We focused on the role of data centers; their rapid, uncertain load growth; and the implications for Michigan's energy system.

We found that with stronger policies in place to drive greater investments in clean energy and fossil fuel retirements, Michigan can reliably and affordably meet the growing demand from data centers, while continuing to be a climate leader and delivering substantial economic and health-related benefits.

Methodology

Using the Regional Energy Deployment System (ReEDS) electricity model from the National Renewable Energy Laboratory,[2] UCS examined three electricity demand and policy scenarios to estimate the impacts of data center load growth at the state level and nationally. The results provide information on the generation mix, costs, emissions, and health impacts observed in different scenarios. *For a more detailed look into the analysis, see the national report on the project's webpage. For more information on methodology, see the technical appendix.*

The Michigan analysis explored these scenarios:

The **Current Policies scenario** reflects recent changes in federal tax credits enacted by the One Big Beautiful Bill Act (OBBBA) in 2025, as well as state electricity sector policies. For Michigan, these include existing renewable and low-carbon electricity standards. We modeled this scenario under three levels of data center demand.

- **Mid Demand Growth:** This scenario uses our core, mid-case assumption for data center demand growth.
- **No Demand Growth:** This counterfactual scenario isolates the impacts of data center demand growth.
- **High Demand Growth:** This sensitivity assumes data center demand growth is near the higher end of recent projections.

The **Michigan CO_2 Reduction Policy scenario** (CO_2 Reduction Policy) uses our Mid Demand Growth assumption and explores a policy that strengthens existing clean energy laws (which only apply to sales of electricity) by adding a requirement to reduce power plant carbon dioxide (CO_2) emissions from electricity imports and exports. We modeled a requirement for an 80 percent reduction from 2023 levels by 2040 and a 100 percent reduction by 2045.

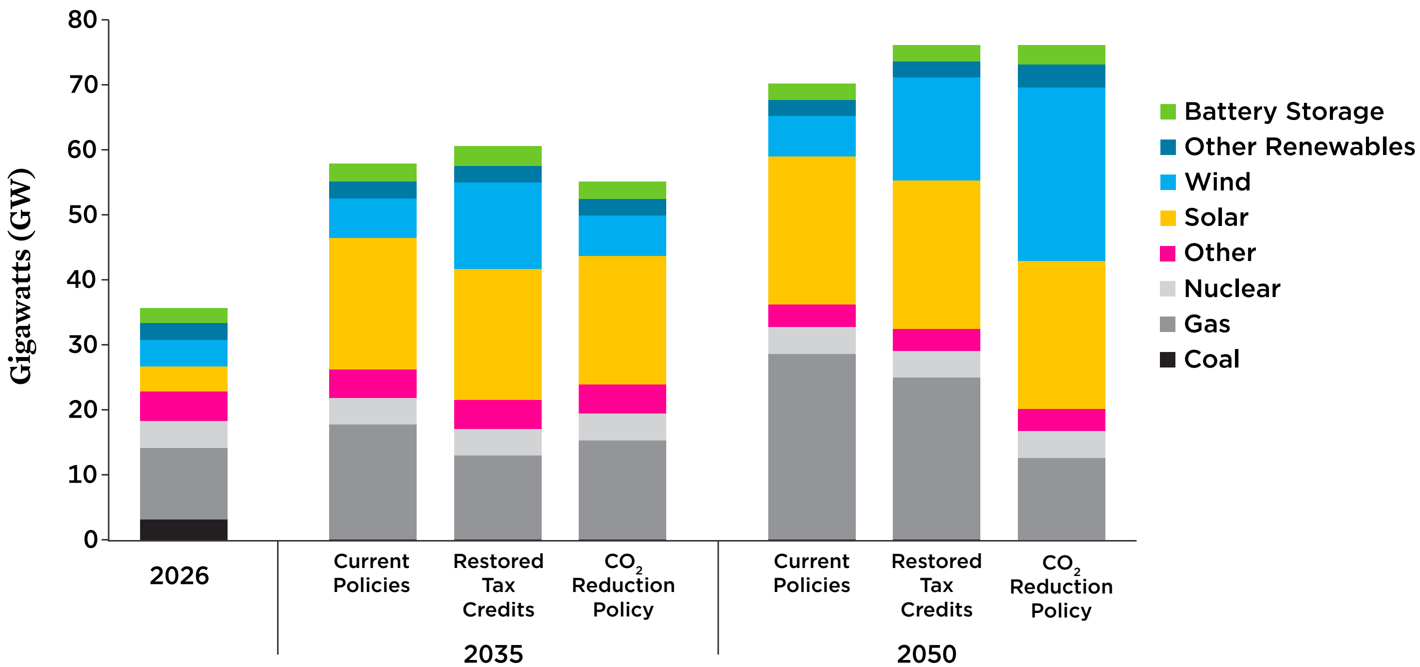
The **Restored Tax Credits scenario** takes the Mid Demand Growth assumption and includes the electricity sector tax credit provisions of the 2022 Inflation Reduction Act (IRA), isolating the impacts of recent rollbacks in federal tax credits for comparison.

The Uncertainty of Data Center Load Growth

The Mid Demand Growth scenario uses electricity demand projections from Evolved Energy Research (EER) and its reference trajectory for data center load growth. To account for uncertainty, UCS adjusted the inputs based on recent announced builds and utility filings. We assumed that half of announced data centers would get built. We also used a higher demand projection as a sensitivity.

In Michigan, data center capacity is projected to grow from 0.2 GW in 2025, reaching 1.2 GW to 2.3 GW by 2030 and 2.2 GW to 5.3 GW by 2050 under the Mid and High Demand Growth cases. As a result, total electricity demand is expected to increase 18 to 24 percent by 2030 and 69 to 90 percent by 2050. Data centers drive 40 to 57 percent of this growth through 2030, but their share falls to 20 to 38 percent by 2050 as other sectors expand (especially transportation). These rates exceed national

FIGURE 1. Michigan Electricity Generating Capacity, Mid Demand Growth



Michigan solar and wind capacity is 10 GW to 20 GW higher by 2050 under the Restored Tax Credits and CO_2 Reduction Policy scenarios than under the Current Policies scenario. Gas capacity is 4 GW to 16 GW lower by 2050. To integrate higher levels of wind and solar, total battery storage capacity increases by 10 to 30 percent compared with the 2026 levels, reaching 2.5 GW to 2.9 GW by 2050.

Notes: "Gas" includes fossil gas with CCS. "Other renewables" includes biopower, geothermal, and hydropower. "Other" includes imports and oil and gas steam plants.

averages, highlighting the need for transparent and flexible long-term energy planning to manage uncertainty around future data center development.

Results

Electricity Generation and Capacity

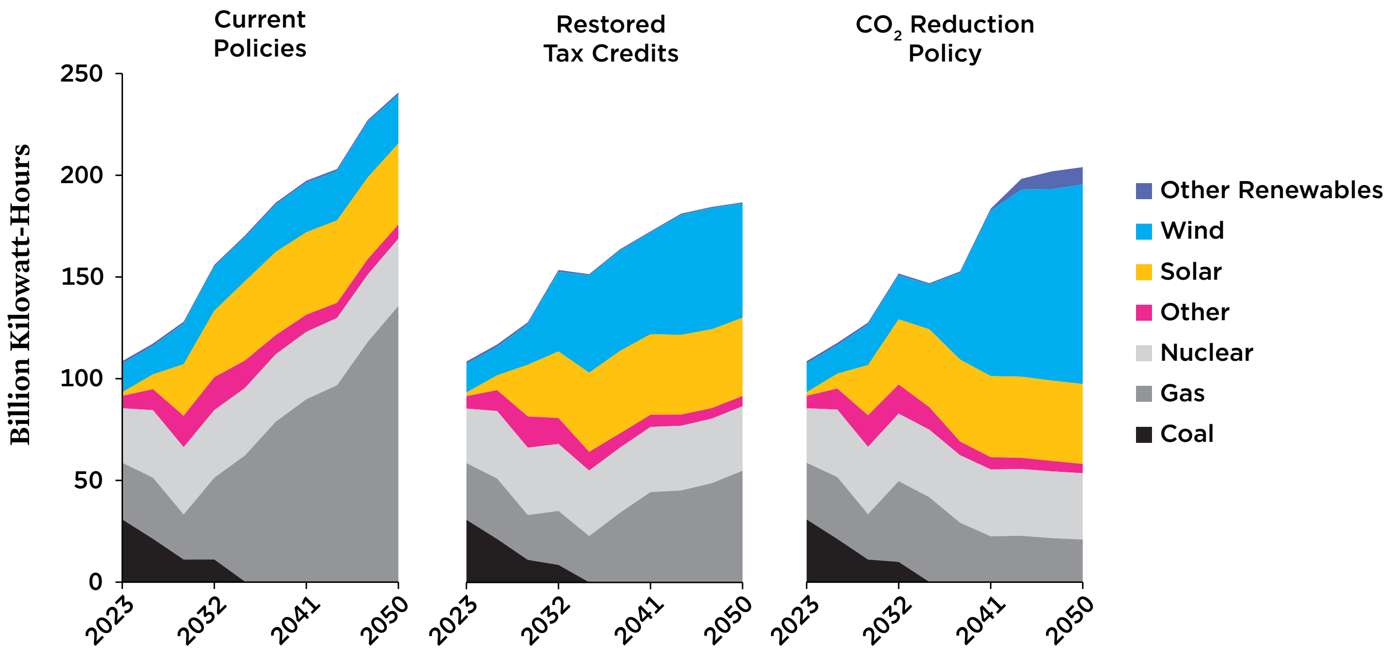
If Michigan stays on the Current Policies pathway, UCS modeling projects that the capacity of conventional fossil gas power plants will increase from 11 GW to nearly 29 GW by 2050 (Figure 1). However, under the CO_2 Reduction Policy scenario, gas capacity would initially increase to 15 GW by 2035, but the total capacity would fall back to 13 GW by 2050; of that, 3 GW would be gas with carbon capture and storage (CCS). While this would be a higher total capacity than the current fleet of fossil gas plants, those plants would be dispatched much less often. Total generation would decrease by 82 percent, with gas plants primarily serving only to balance the system, maintain reliability, and integrate high levels of wind and solar over longer time frames.

A key difference between the two pathways is that the CO_2 Reduction Policy scenario closes the loophole that allows Michigan utilities to burn fossil fuels for energy export, meaning less electricity is generated in the state. Michigan currently exports minimal energy, but exports would increase to more than 56 gigawatt-hours (GWh) annually under the Current Policies scenario compared with exports of only 19 GWh under the CO_2 Reduction Policy scenario.

In addition to gas with CCS, bioenergy with CCS is deployed in the CO_2 Reduction scenario to meet the clean energy and emissions requirements, contributing to negative emissions in later years. Renewables like wind and solar make up about 42 percent of generation in 2035 and 72 percent in 2050—more than twice as much compared with estimates under Current Policies (Figure 2, p. 4).

Battery storage also supports the transition to clean energy in Michigan, reaching around 2.9 GW of storage capacity in 2050. This capacity supports Michigan's grid as the state phases out the last remaining coal plants while greatly expanding wind and solar capacity.

FIGURE 2. Michigan Electricity Generation, Mid Demand Growth



Under the Restored Tax Credits and CO_2 Reduction Policy scenarios, wind and solar meet most of the growth in electricity demand from data centers and the electrification of other sectors. Reliance on gas and coal generation greatly diminishes.

Notes: "Gas" includes fossil gas with CCS. "Other renewables" includes biopower, geothermal, and hydropower. "Other" includes imports and oil and gas steam plants.

Emissions Reductions

The CO_2 Reduction Policy scenario cuts emissions 53 percent by 2035 and reaches net zero prior to 2050, consistent with policy targets.[3] In contrast, because of the energy export loophole, emissions rise 26 percent between 2023 and 2050 under Current Policies despite the existing clean energy laws. The CO_2 Reduction Policy closes this loophole (Figure 3, p. 5).

Other heat-trapping gases and pollutants also decline under the CO_2 Reduction Policy scenario. Methane emissions nearly double under Current Policies compared with a 66 percent reduction under CO_2 Reduction Policy. Both scenarios show reduced emissions of nitrogen oxide (NOx) and sulfur dioxide (SO_2) emissions, two harmful pollutants and precursors to unhealthy particulate matter. However, reductions are more than 10 percentage points greater under CO_2 Reduction Policy than under Current Policies.

Health and Climate Impacts

Adopting a CO_2 reduction policy in Michigan yields important public health benefits, such as avoided health-related costs from respiratory illness, heart attacks, and mortalities. Results show a reduction of 26 percent, or $3.5 billion, compared with Current Policies from 2026 through 2050. These estimates are based on emissions of SO_2 and NOx from coal and fossil gas plants. While some of these impacts will affect neighboring states, most of the health benefits from reduced pollution accrue to the communities where the power plants are located.

Clean energy policies also avoid climate damages of $408 billion by 2050, based on EPA estimates of the "social cost of greenhouse gas" emissions (Figure 4, p. 6).[4] While these are global estimates (that is, the $408 billion cannot be accrued entirely to Michigan), there are already clear signs of the impacts of climate change in the state, including rising temperatures, increased rainfall, and more frequent and intense storms (MI EGLE 2022). Implementing a CO_2 reduction policy, in concert with other states and nations, will slow climate change, reducing these impacts.

Health impacts and climate damages are similar in all scenarios over the first years. However, the impacts begin to diverge as federal tax credits for renewables expire in the 2030s. The CO_2 Reduction Policy scenario continues to show decreasing total impacts and damages, but these increase under all other scenarios. This pathway can also prevent the unnecessary loss of life due to fossil fuel pollution, with an estimated 23 percent fewer mortalities compared with Current Policies. While energy cost estimates rarely include the costs of health impacts and climate damages, the net benefits of a CO_2 reduction policy in Michigan clearly outweigh the costs.

Costs of New Demand

Electricity system costs in Michigan under the Current Policies scenario, Mid Demand Growth, total $187 billion from 2026 to 2050. Under the High Demand Growth scenario, total costs increase to $220 billion. These costs include capacity investments, fuel, and operations and maintenance, but they do not consider health costs and climate damages.

Under the CO_2 Reduction Policy scenario, total costs are $208 billion between 2026 and 2050, increasing to $241 billion under the High Demand Growth assumptions. While this represents an increase in costs compared with Current Policies, it is important to balance those costs against the substantial reduction in health and climate damages that cleaner energy policies bring—a total reduction of $412 billion when comparing the Current Policies and CO_2 Reduction Policy scenarios.

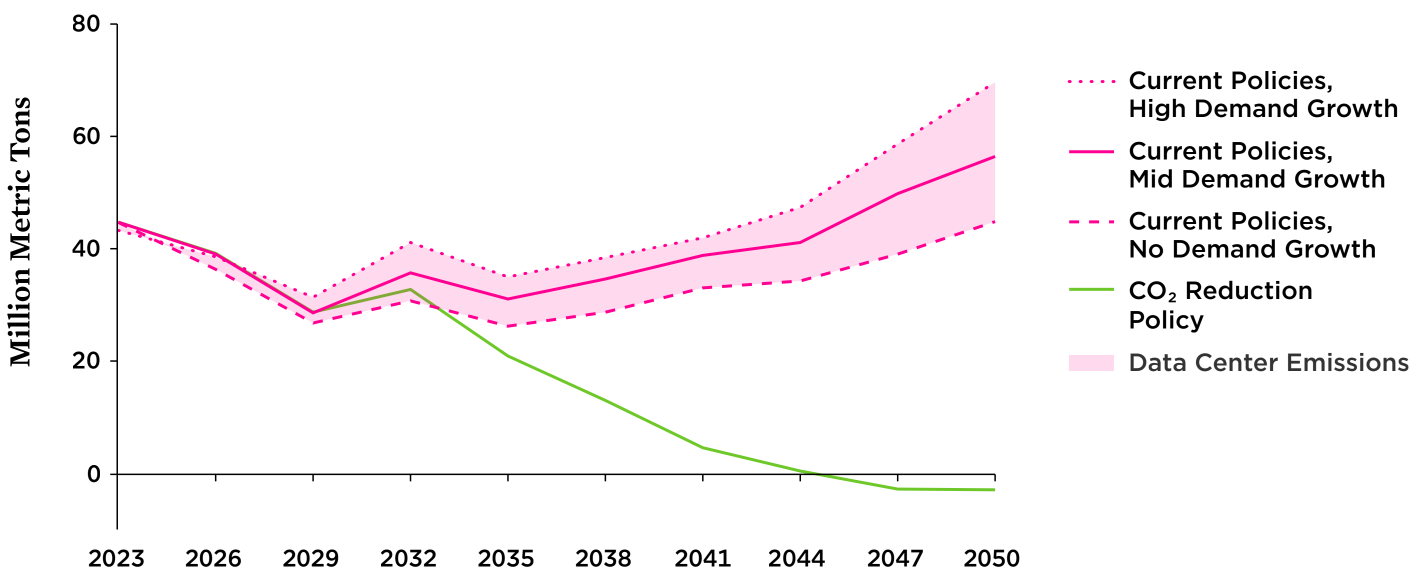
The Restored Tax Credits scenario lowers the costs of transitioning to clean energy due to increased availability of incentives for new renewables and batteries. Under the CO_2 Reduction Policy scenario combined with Restored Tax Credits, bulk costs from 2026 to 2050 are $194 billion, a savings of 7 percent compared with the same scenario with current, more limited tax credits. This indicates that federal policies like the IRA enable a smoother transition toward clean energy.

Data Center Impacts

Using the No Demand Growth scenarios, UCS isolated the impacts of data center load growth from demand drivers like electrification. Under Current Policies, data center demand is responsible for $18 billion (10 percent) of electricity costs from 2026 to 2050 under the Mid Demand Growth scenario, and $51 billion (23 percent) of costs under the High Demand Growth scenario. Regardless of which policy pathway Michigan chooses, the cost increases have substantial implications; in the absence of policies or regulations to protect ratepayers, utilities may pass the costs to serve data centers down through ratemaking processes.

The rapid growth in energy demand from data centers drives changes to Michigan's power supply. Under Current Policies, some wind and solar is added to the grid to meet additional demand, but nearly half the extra capacity needed by 2050 (2.3 GW) comes from new gas. However, under the CO_2 Reduction Policy, total gas capacity falls by nearly 1 GW. To make up

FIGURE 3. Power Plant CO_2 Emissions



Under the Current Policies scenario, CO_2 emissions steadily increase after tax credits for wind and solar expire. Under the CO_2 Reduction Policy scenario, emissions continue to decline. The difference between High, Mid, and No Demand Growth for Current Policies shows the emissions attributable to data centers.

for this reduction in gas capacity (and the need to dispatch gas less often), an additional 5 GW of new wind and solar resources are added (Figure 5, p. 7).

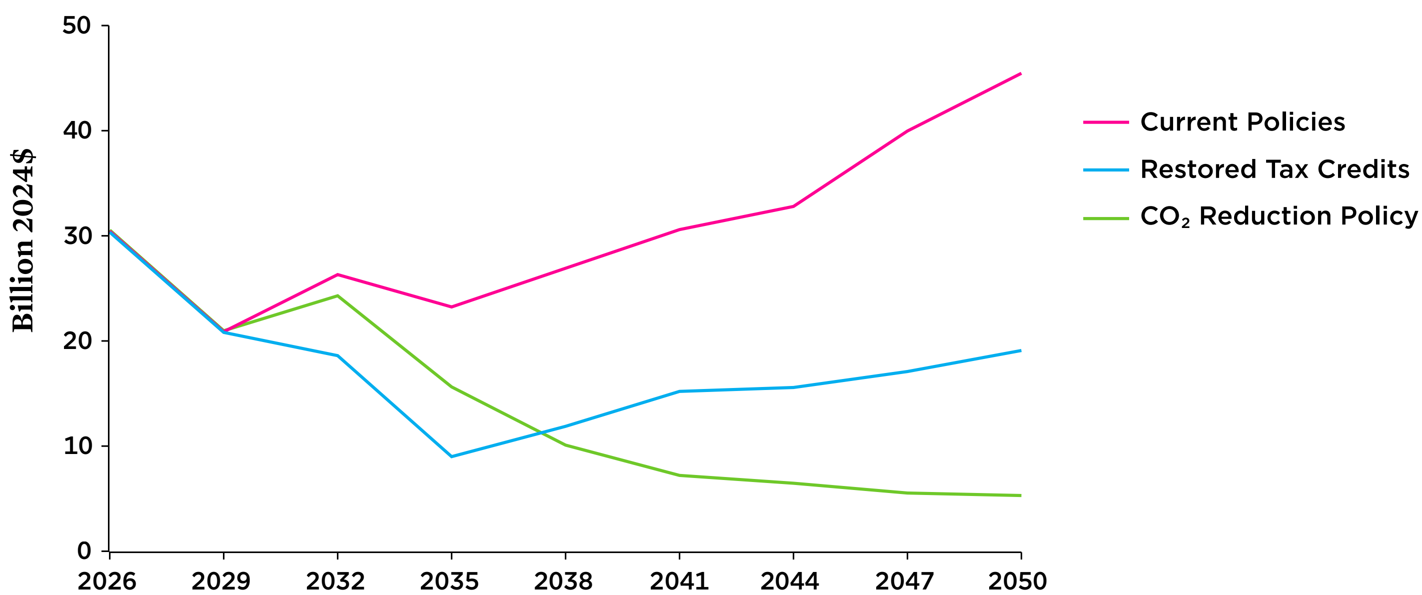
Under the Current Policies scenario, fossil fuel combustion driven by data center demand is responsible for increased emissions and pollution and the associated health and climate damages. Additional emissions range from more than 11 million tons of CO_2 in 2050 under Current Policies, Mid Demand Growth from data centers, to nearly 25 million tons in the High Demand Growth case. Pollutants from fossil gas combustion lead to additional health damages ranging from $1.6 billion to $4.1 billion from 2026 to 2050. The additional climate damages range from $118 billion to $213 billion. Adopting CO_2 reduction policies ensures that primarily clean energy sources, delivering health and climate benefits, meet data center demand.

Conclusions and Recommendations

By building on its legacy of forward-thinking energy policy, Michigan can meet energy demand from data centers using resources that are clean and healthy and that reduce negative financial impacts. Michigan utilities are already fielding multiple proposals for power-hungry data centers with uncertain trajectories for development.[5] Policymakers must help the state meet new demand with clean energy resources, as well as protect consumers from added costs brought on by data center growth in the state.

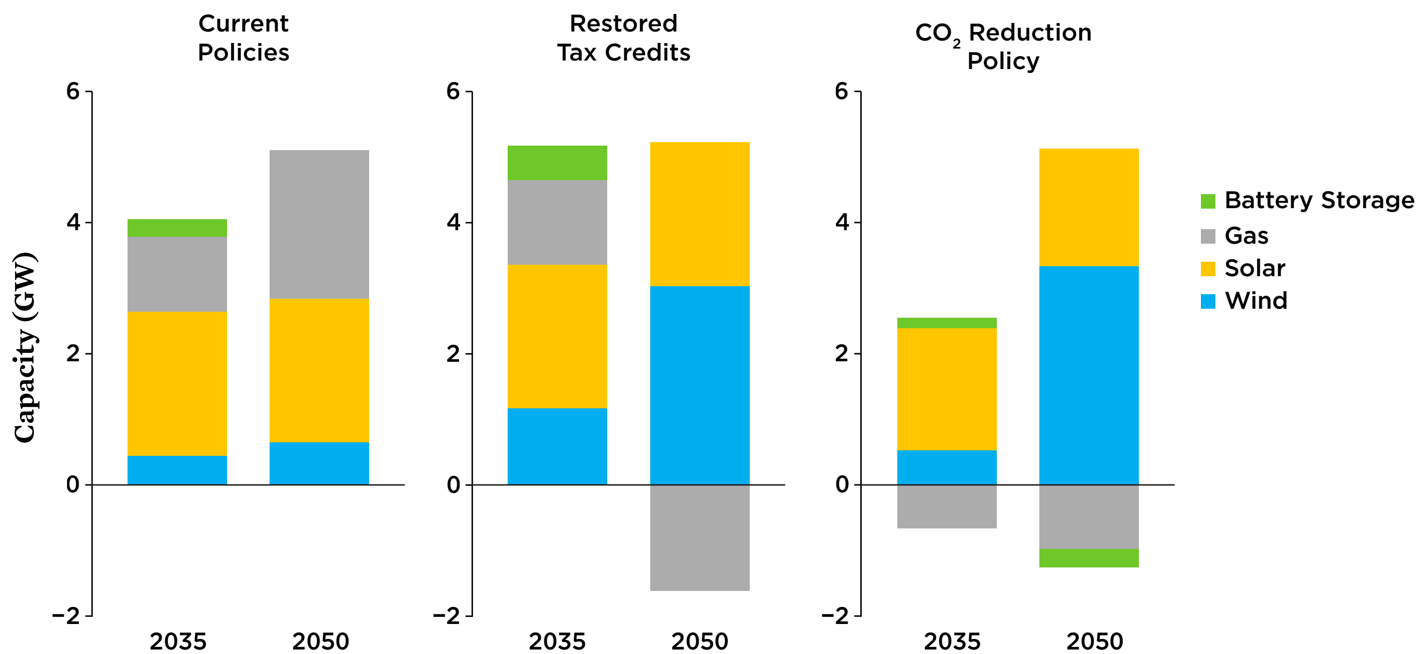
- **Michigan regulators must require utilities to be transparent about their plans to meet the needs of new data centers.** Transparency must include required reporting on data center load flexibility, self-supply by data centers, and clean energy plans. In this way, utilities can develop clear road maps to meet the renewable portfolio standard and clean energy standard requirements in the near term, when data center demand is expected to grow the fastest. Transparency is also critical to ensuring that utilities do not overbuild for this speculative load, while they also develop flexible planning processes to be ready for load that does materialize.
- **The Michigan legislature must remain committed to the state's current clean energy policies and reinforce these commitments with a CO_2 reduction policy.** This would close the loophole that allows Michigan utilities to burn fossil fuels in-state for electricity sales to other states. UCS modeling used a policy with limits phased in over time, with a target of 80 percent reduction by 2040 (compared with 2023 levels) and 100 percent by 2045. This aggressive but phased policy gives utilities a reasonable planning timeline

FIGURE 4. Quantified Health Costs and Climate Damages, Mid Demand Growth



Under the Current Policies and Restored Tax Credits scenarios, health costs and climate damages increase steadily after tax credits for wind and solar expire (which occurs five years later under Restored Tax Credits). Under the CO_2 Reduction Policy, these costs continue to decline.

FIGURE 5. Capacity Changes Due to Data Centers Under Different Scenarios



The charts show the difference between the Mid Demand Growth and No Demand Growth cases for each policy scenario. This isolates the impact of data centers on electricity capacity. Under the Current Policies scenario, more than 2 GW of gas capacity is added by 2050 just to meet the additional demand from data centers, while gas capacity is reduced by up to 1.6 GW under the two clean energy policy scenarios; expansion of wind and solar capacity make up the difference.

for compliance, while ensuring that the state meets climate goals and reduces health impacts for Michiganders.

- **The Michigan legislature should enact financial policies to ensure that the state's progress toward a clean, healthy environment does not depend on policy elsewhere.** In the absence of federal incentives, legislators should create policies to ensure that clean energy investments and benefits continue flowing to Michigan communities, and that momentum toward the clean energy transition is maintained. Incentives could include tax credits, loan guarantees, direct funding through grants, or other financial assistance.
- **Legislators and regulators must prioritize the needs of Michigan communities and protect ratepayers from the higher electricity costs that data centers are responsible for.** When considering incentives to draw data center developers to Michigan, legislators should guarantee that economic growth directly benefits impacted communities by funneling funding toward consumer energy programs, such as energy bill assistance, energy waste reduction programming, and incentives or financing for distributed energy resources (e.g., EV chargers, rooftop solar). Regulators should require utilities to implement ratepayer protections ensuring that other customers do not bear the costs of connecting data centers to the grid and feeding the centers' growing demand. Regulators should also require periodic reporting from utilities on the impacts of load growth on residential electric bills.

This fact sheet is part of a multistate analysis of ways to meet data center load growth with clean energy solutions. Learn more at www.ucs.org/resources/data-center-power-play.

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Acknowledgments

This report was made possible by the generous support of The Joyce Foundation, the Heising-Simons Foundation, the Philip J. Solondz Family Foundation, and UCS members.

For their thoughtful reviews and contributions to this Michigan fact sheet, we thank Boratha Tan (Vote Solar), Sergio Cira-Reyes (Urban Core Collective), and Marc S. Miller (for editing assistance). At UCS we thank Sam Gomberg, Cynthia DeRocco, Heather Tuttle, Chitra Kumar, and Jeff Deyette.

Organizational affiliations are listed for identification purposes only. The opinions expressed herein do not necessarily reflect those of the organizations that funded the work or the individuals who reviewed it. The Union of Concerned Scientists bears sole responsibility for the report's contents.

Endnotes

1. The Michigan law defines nuclear and fossil gas with carbon capture and storage (CCS) as "clean" energy. Elsewhere in the report, we use the more accurate descriptor "low-carbon."
2. On December 1, 2025, the US Department of Energy announced that the National Renewable Energy Laboratory (NREL) would be renamed the National Laboratory of the Rockies. In our report and supporting materials, we have chosen to use the original name for clarity.
3. The use of bioenergy with CCS results in negative emissions in later years, as shown in Figure 3.
4. See the technical appendix for additional detail.
5. The Michigan Public Service Commission recently ruled on Consumers Energy Company's application for data center–specific terms and conditions and DTE Electric is seeking final approval for a 1.4 GW data center (MPSC 2025; DTE Electric 2025).

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https://doi.org/10.47923/2026.16051