




# 2019 Clean Energy Plan

**Consumers Energy**  
Count on Us®

A Brighter Energy Future for Michigan



Solar Gardens power plant at Grand Valley State University.

*This Clean Energy Plan charts a course for Consumers Energy to embrace the opportunities and meet the challenges of a new era, while safely serving Michigan with affordable, reliable energy for decades to come.*

## **Executive Summary**

# A New Energy Future for Michigan

Consumers Energy is seizing a once-in-a-generation opportunity to redefine our company and to help reshape Michigan's energy future.

We're viewing the world through a wider lens — considering how our decisions impact people, the planet and our state's prosperity.

At a time of unprecedented change in the energy industry, we're uniquely positioned to act as a driving force for good and take the lead on what it means to run a clean and lean energy company.

This Clean Energy Plan, filed under Michigan's Integrated Resource Plan law, details our proposed strategy to meet customers' long-term energy needs for years to come.

We developed our plan by gathering input from a diverse group of key stakeholders to build a deeper understanding of our shared goals and modeling a variety of future scenarios.

Our Clean Energy Plan aligns with our Triple Bottom Line strategy (people, planet, prosperity). By 2040, we plan to:

- End coal use to generate electricity.
- Reduce carbon emissions by 90 percent from 2005 levels.
- Meet customers' needs with 90 percent clean energy resources.

## The Process

We developed the Clean Energy Plan for 2019–2040 considering people, the planet and Michigan’s prosperity by modeling a variety of assumptions, such as market prices, energy demand and levels of clean energy resources (wind, solar, batteries and energy waste reduction).

As part of the filing process, we implemented a comprehensive stakeholder engagement plan that included a series of widely promoted public forums to give stakeholders an opportunity to provide input.

*We spent significant time and effort listening to our customers and key stakeholders during the process.*

Forums were open to the general public and designed as basic informational sessions with the chance to ask wide-ranging questions about topics such as renewable energy, energy efficiency and emerging technology.

Technical conferences hosted at our corporate headquarters in Jackson were tailored

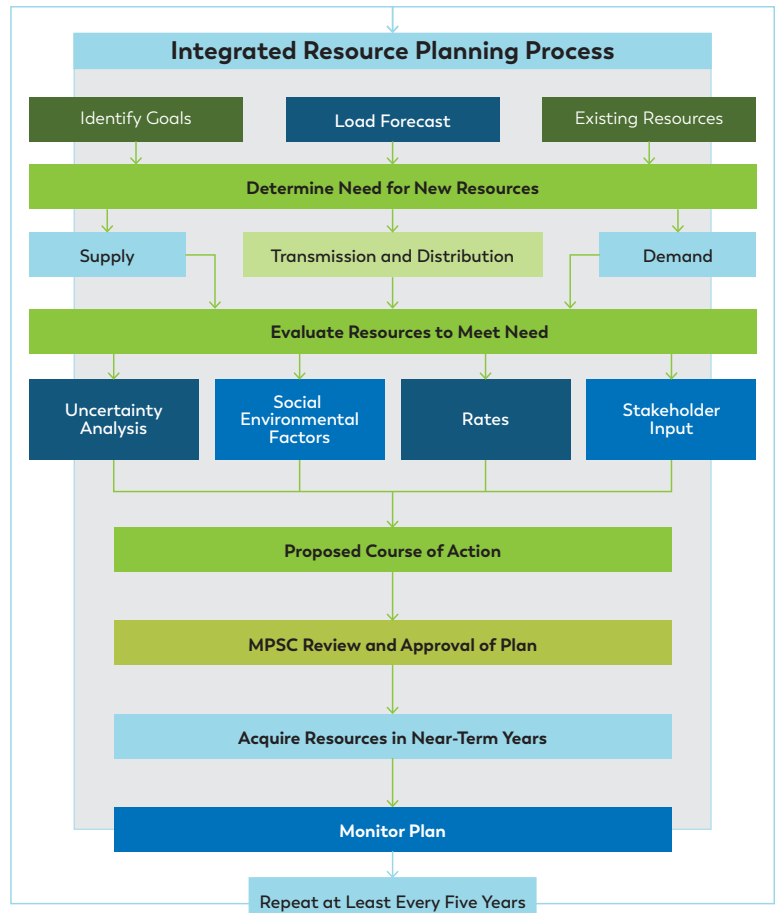
to meet the needs of stakeholder groups with deeper knowledge of energy issues and the planning process.

Prior to filing, we engaged closely with key stakeholders from government, customer groups, environmental groups and non-utility energy providers with a variety of positions, opinions and energy-related goals.

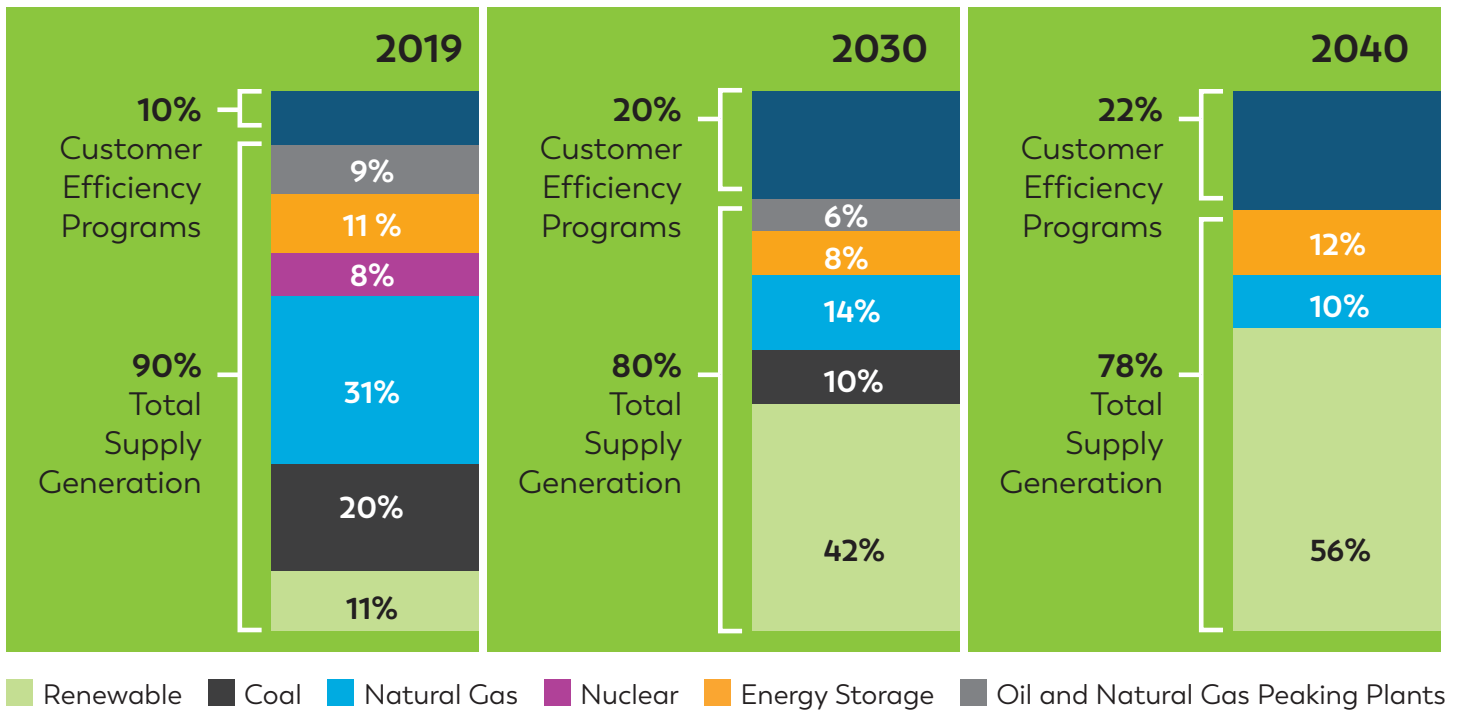
At those meetings, we sought to better understand what stakeholders believed would make the best plan for Michigan and communicated our desire to work collaboratively in the best interests of the state and our customers.

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Public forums in East Lansing and Grand Rapids provided the opportunity to share information, answer questions and gather input from customers and other key stakeholders throughout Michigan.



## Clean Energy Plan Electric Capacity by Fuel Source (Megawatts)



## What's in the Clean Energy Plan?

### Transition to Zero Coal

We plan to retire the Karn 1 and 2 coal-fired generating units in 2023.

Two additional remaining coal-fired units, Campbell 1 and 2, would retire at the end of their design lives in 2031, along with Karn 3 and 4 (which run on natural gas and fuel oil and generally are used to meet peak demand).

A third coal-fired unit, Campbell 3, the youngest unit in our fleet and equipped with state-of-the-art air quality control systems, would be retired by 2040.

Ending coal use by 2040 provides an opportunity to leverage demand-side options and transform our supply portfolio toward renewable energy.

### More Demand Reduction

Energy waste reduction, battery storage and grid modernization tools will play an even more significant role in serving our customers' energy and capacity needs.

These virtual "power plants" will help us reduce energy demand and manage customer load efficiently and effectively. They also will help us keep residential

customers' costs low and benefit the environment by giving them the option to voluntarily reduce their energy use during a few peak times during the year.

These are typically hot summer days when high use by residential air conditioning competes for available power with commercial and industrial customers.

### More Renewable Energy

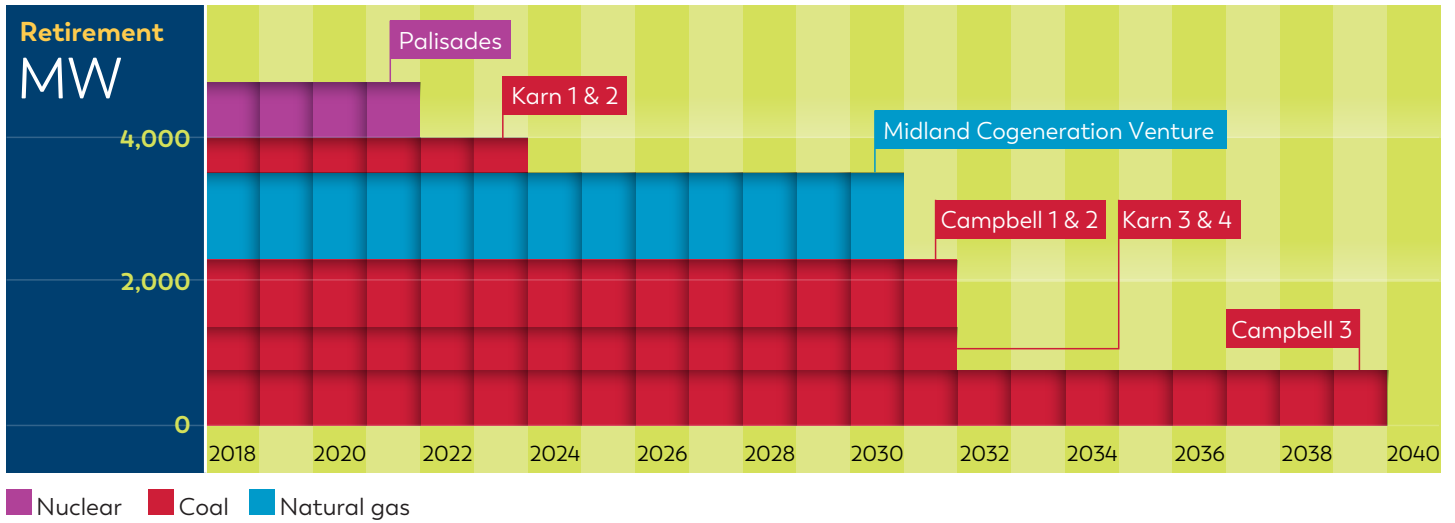
We plan to add capacity on incremental basis, allowing flexibility in planning and resource type to adapt to changing conditions. We're planning to add 550 megawatts of wind energy and proposing more than 6,000 megawatts of solar energy with a ramp-up throughout the 2020s to prepare for additional plant retirements and the expiration of power purchase agreements. The additional solar capacity will be a mix of owned and purchased.

The plan forecasts renewable energy capacity levels of:

- 42 percent by 2030.
- 56 percent by 2040.

This would help us reduce carbon emissions by 90 percent from 2005 levels by 2040.

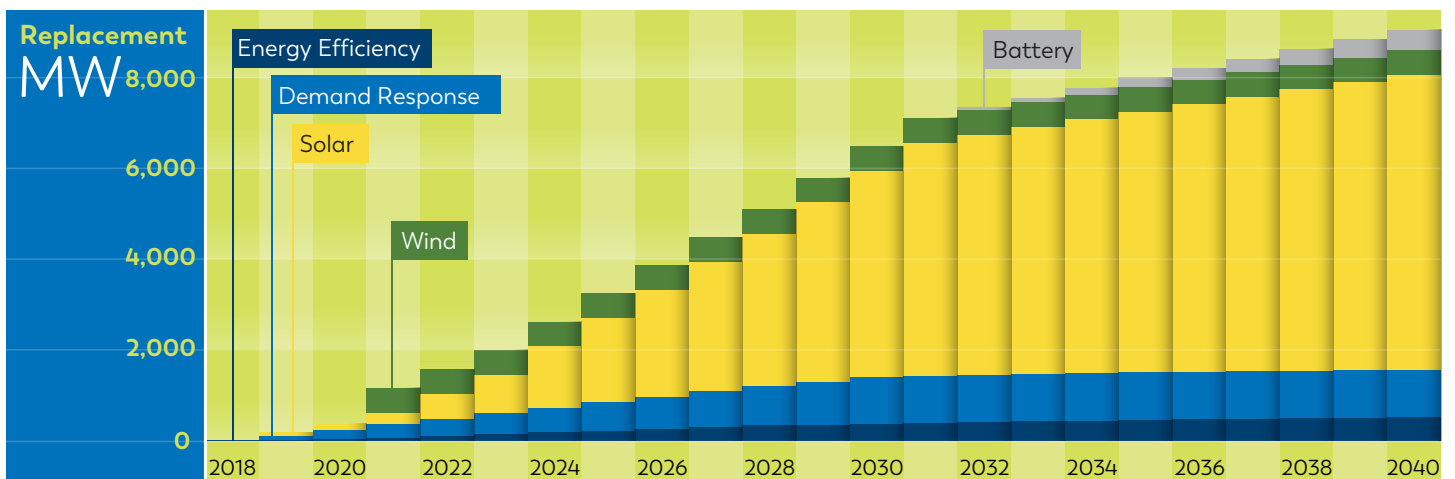
# Ending an Era



In the coming decades, more than 4,000 megawatts of electric capacity will come off our system due to plant retirements and expiring power purchase contracts.

We plan to replace that capacity by reducing demand for power with energy waste reduction tools and generating electricity from cleaner renewable sources such as solar and wind. The incremental nature of the plan allows flexibility to adapt to customer needs and changing conditions.

# Powering the Future



## Clean Energy

Consumers Energy is embracing a cleaner, leaner vision focused primarily on reducing energy use and adding additional renewable energy sources such as wind and solar. The Clean Energy Plan is a strategic road map for eliminating coal as a fuel source for electricity and cutting carbon emissions by 90 percent from 2005 levels by 2040 while maintaining affordability and reliability.

## 2005: Different time, different company

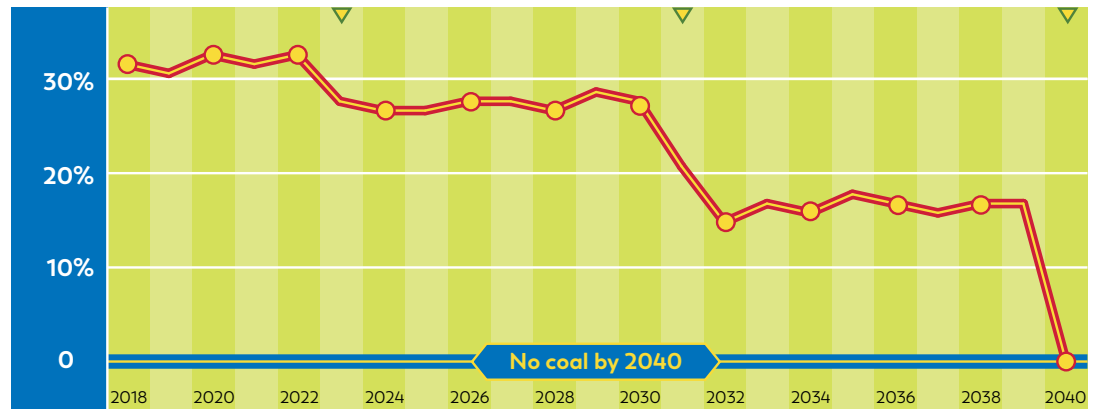
The world has changed dramatically since 2005 and so has Consumers Energy. At that time:

- Just 2 percent of the energy we supplied to customers came from renewable sources.
- More than 70 percent of the electricity we generated was fueled by coal.

### Breakthrough goal — coal generation percentage

The retirement of Karn 1 and 2 in 2023 is the next major step in moving away from coal, followed by the scheduled phaseout of our remaining three coal-fired units at the Campbell generating complex.

## Coal Generation Percentage

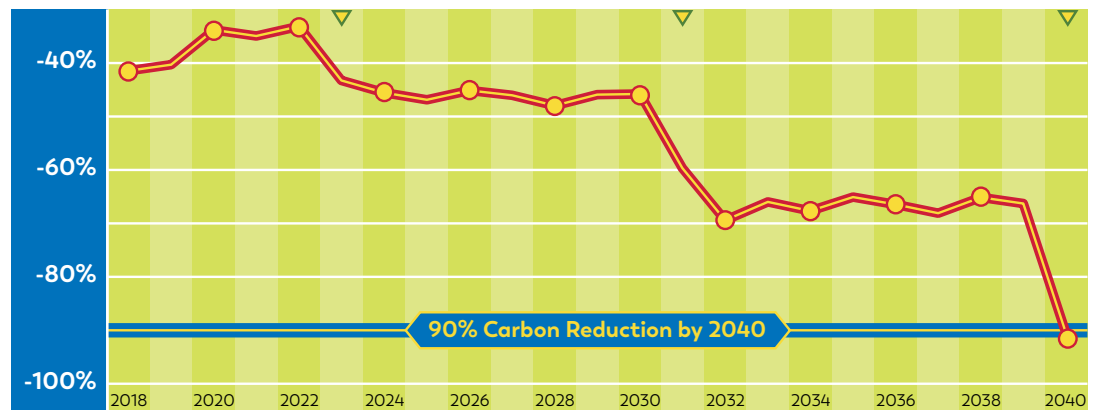


▼ Coal Generating plant retirement

### Breakthrough goal — carbon emissions reduction percentage

Consumers Energy already has reduced carbon emissions by 38 percent. Transitioning to cleaner, renewable fuel sources and retiring coal plants will dramatically reduce our carbon emissions in the coming decades.

## Carbon Emissions Reduction

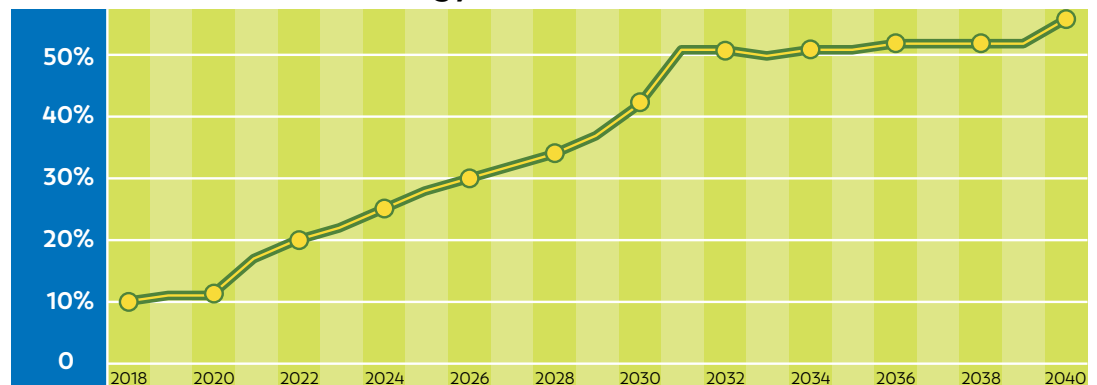


▼ Coal Generating plant retirement

### Renewable energy percentage

Our plan would add 6,000 megawatts of solar energy during a ramp-up throughout the 2020s. By 2040, about 56 percent of our electric capacity from renewable sources such as wind and solar.

## Percent of Renewable Energy





## Customers as Partners

In many ways, the Clean Energy Plan is a response to customers who've told us they care deeply about how we handle issues such as air quality, water management and greenhouse gas emissions.

Customers can help us fully realize the plan's potential for Michigan.

The main way customers can work as Clean Energy partners is to participate in the energy waste reduction and renewable energy plans that will help eliminate coal and cut emissions by 90 percent by 2040. From using more efficient light bulbs and appliances to powering your air conditioner at the optimal time or subscribing to a community solar program, there are many ways to help create a new energy future for Michigan.

## Affordability

The projected annual rate increases in this plan through 2040 are well below the projected rate of inflation over that same time period, meaning our electric rates should continue to remain affordable.

The increased use of demand management tools such as energy waste reduction programs will give customers more control over their monthly energy bills, equipping them to save energy and money over the long term.

Relying more heavily on renewable energy is increasingly affordable. Studies show the cost of renewable energy sources such as wind and solar have dropped significantly over the last decade. That means we can continue to tap renewable fuels to serve customers.

Our incremental and flexible strategy allows us to adapt to needs and changes in the energy landscape.

We competitively bid new electric generation supply to ensure the best value for our customers.

## Proposed retirement of Karn 1 and 2 Details

Karn units 1 and 2, located in Hampton Township near Bay City, came online in 1959 and 1961, respectively, and are capable of generating 515 megawatts of electricity.

We're grateful for the power these plants have provided for Michigan over the decades and proud of the employees who've operated and maintained them so faithfully.

Our in-depth modeling analysis shows with declining costs in renewables and obtaining higher potential levels of energy waste reduction programs, the best strategy to meet our customers' energy needs is with more energy efficiency, demand response programs and renewable energy.

The retirement of Karn 1 and 2 would continue a move away from coal as a generation fuel source that began in April 2016 with retirement of our "Classic Seven" units located at the Whiting, Cobb and Weadock sites.

*The retirement of Karn 1 and 2 continues a move away from coal as a generation fuel source that began in April 2016 with retirement of our "Classic Seven" units located at the Whiting, Cobb and Weadock sites.*

We plan to support Hampton Township and the Bay region as they re-imagine the local economic landscape after the plant is retired, working closely with stakeholders to identify and meet challenges related to the plant closure through the economic transition.

About 300 people work at or directly support Karn 1 – 4. About half of those employees are operating, maintenance and construction (OM&C)

workers and members of the Utility Workers Union of America. Their union contract contains provisions to determine how, where and in what role the impacted employees would be placed within the company.

Company human resources policies will determine how, where and in what role exempt employees would be placed within the company.

We plan to continue operating Karn units 3 and 4, which run on natural gas and fuel oil and are generally used to meet peak demand, through their design lives of 2031.

We plan to evaluate redevelopment options for the site to care for the Michigan communities we serve.



Karn units 1 and 2, located near Bay City, came online in 1959 and 1961. Karn units 3 and 4 run on natural gas and fuel oil and are generally used to meet peak demand.

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