



# 2018 INTEGRATED RESOURCE PLAN

## 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 Integrated Resource Plan (IRP) details our proposed strategy to meet customers' long-term energy needs for years to come.

We developed our IRP 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.

The plan we've proposed aligns with our Triple Bottom Line strategy (people, planet, prosperity) and a new set of Clean Energy Breakthrough Goals announced in February 2018.

If approved and implemented, the IRP would place us on a path to achieve these overarching clean energy goals by 2040 in an affordable and reliable manner:

- Zero coal use to generate electricity.
- 80 percent carbon emissions reduction from 2005 levels.

This is a pivotal moment in our company's long, proud history. And this IRP 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.



Solar Gardens power plant at Grand Valley State University.

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## THE IRP PROCESS

We developed the IRP 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, demand response, energy efficiency).

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.

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 the energy issues and the IRP process.

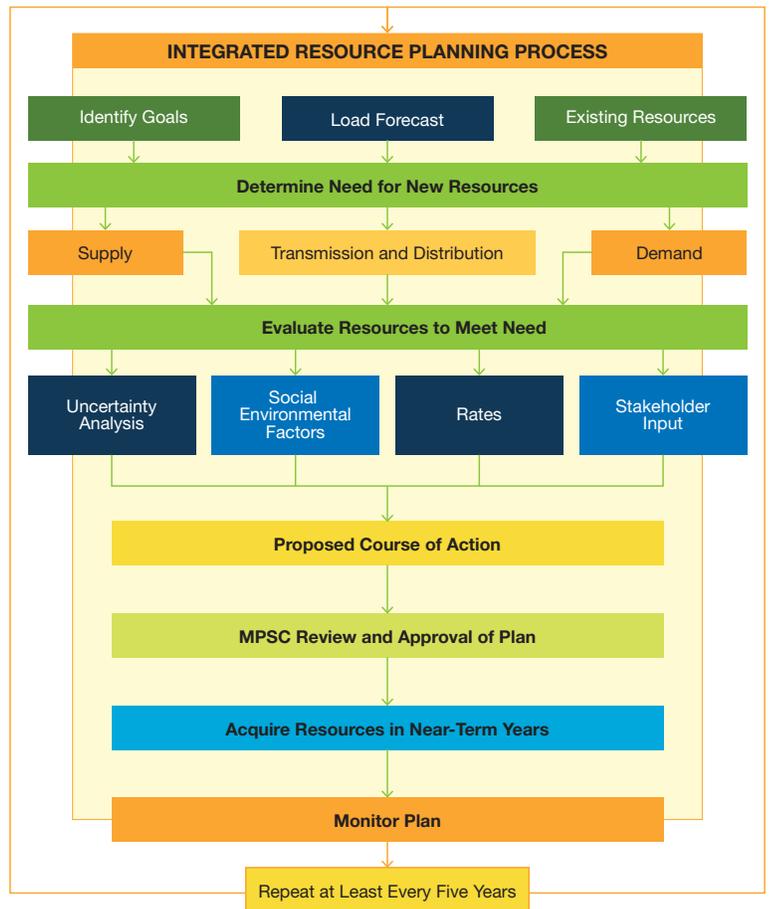
Prior to filing, we engaged closely with key stakeholders from government, customer groups, environmental groups and non-utility energy providers with a variety of positions, opinions and energy-related goals.

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

We spent significant time and effort listening to our customers and key stakeholders during the process. In many ways, this IRP is a response to businesses and residential customers concerned with affordable, competitive energy costs, and those who care deeply about how we handle environmental issues such as air quality, water management and greenhouse gas emissions.

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Figure 1.1: Consumers Energy’s IRP planning process



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.

## What's in the IRP?

### TRANSITION TO ZERO COAL

We propose retiring the Karn 1 and 2 coal-fired generating units in 2023.

The 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).

Campbell 3, the youngest unit in our fleet and equipped with state-of-the-art air quality control systems, would continue to serve customers until 2040.

Ending coal use by 2040 provides an opportunity to leverage demand-side options and transform our supply portfolio toward renewable energy, enabling us to achieve our Clean Energy Goal.

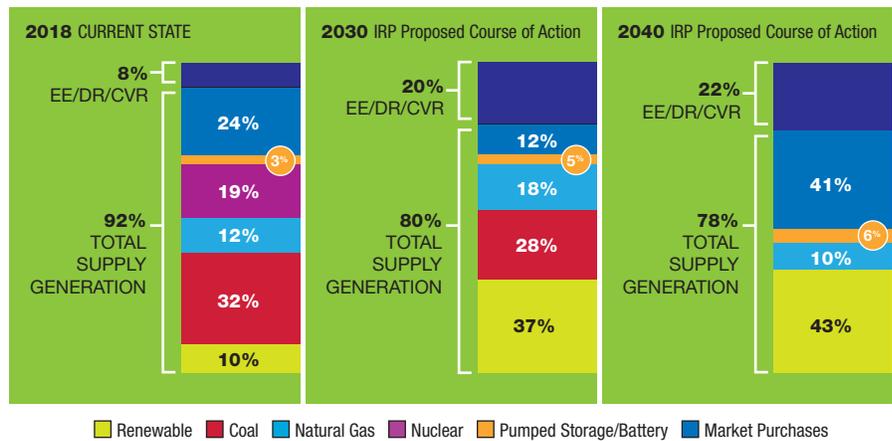
### MORE DEMAND REDUCTION

Demand response, more energy efficiency, 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.

Figure 1.2: Future generation supply



The IRP would meet about 65 percent of Michigan's energy needs with renewable energy, energy efficiency and demand response by 2040.

### MORE RENEWABLE ENERGY

We plan to add 550 megawatts of wind to help us reach Michigan's 15 percent renewable energy standard by 2021.

We plan to add capacity on incremental basis, allowing flexibility in planning and resource type to adapt to changing conditions. We're proposing 5,000 megawatts of solar energy with a ramp-up throughout the 2020s to prepare for the retirement of the Campbell units and the Karn 3 and 4 peaker units, as well as the end of our power purchase agreement with the Midland Cogeneration Venture. The additional solar capacity may be a mix of owned and purchased.

The plan forecasts renewable energy levels of:

- 25 percent by 2025.
- 37 percent by 2030.
- 43 percent by 2040.

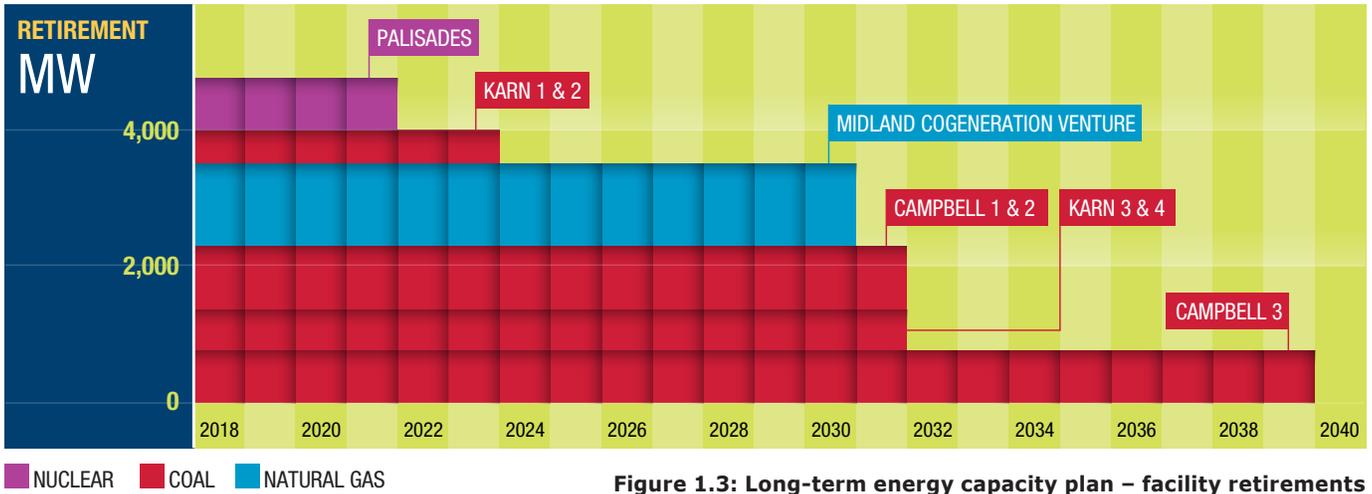
This would help the company achieve our Clean Energy Breakthrough Goal to reduce carbon emissions by 80 percent from 2005 levels by 2040.

## What's not in the IRP?

### CONSTRUCTION OF A NEW FOSSIL FUEL POWER PLANT

The coal-fired units at Campbell and the natural gas-fired Jackson and Zeeland generating stations would continue to help serve our customers. We also would purchase additional electricity from the Filer City plant, a facility in the process of converting from coal to natural gas.

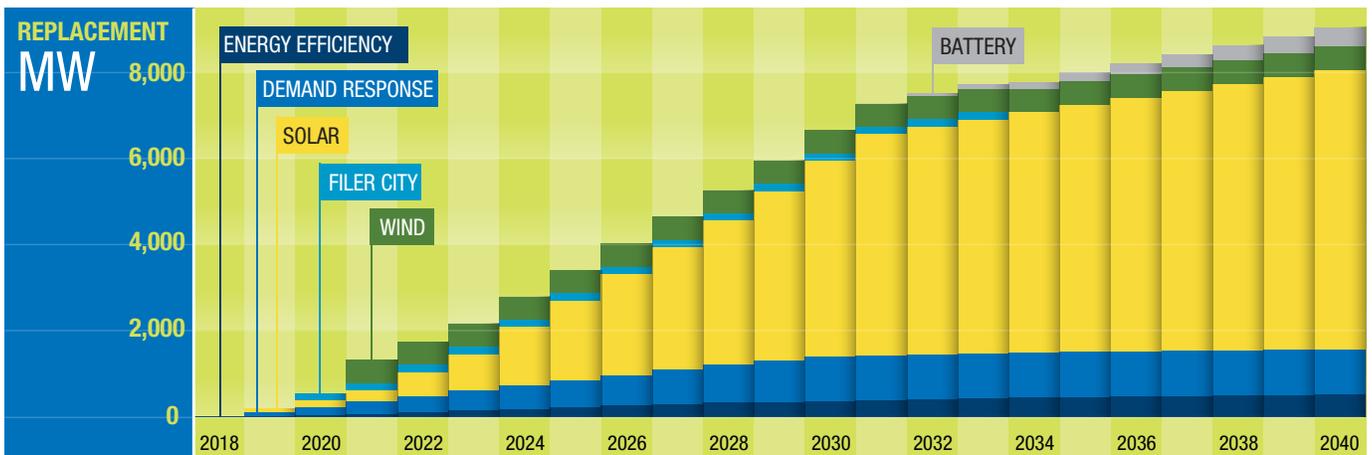
# ENDING AN ERA



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 tools such as energy efficiency and demand response, 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 BREAKTHROUGH GOALS

In February, our company announced plans to stop using coal to generate electricity and to cut carbon emissions by 80 percent from 2005 levels by 2040. 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 IRP is our proposed strategic road map for reaching our clean energy goals 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.
- We emitted nearly 22 million tons of carbon dioxide. That's compared to just over 14 million tons in 2017.

**Figure 1.5: Breakthrough goal — coal generation percentage**

The retirement of Karn 1 and 2 in 2023 would be 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.

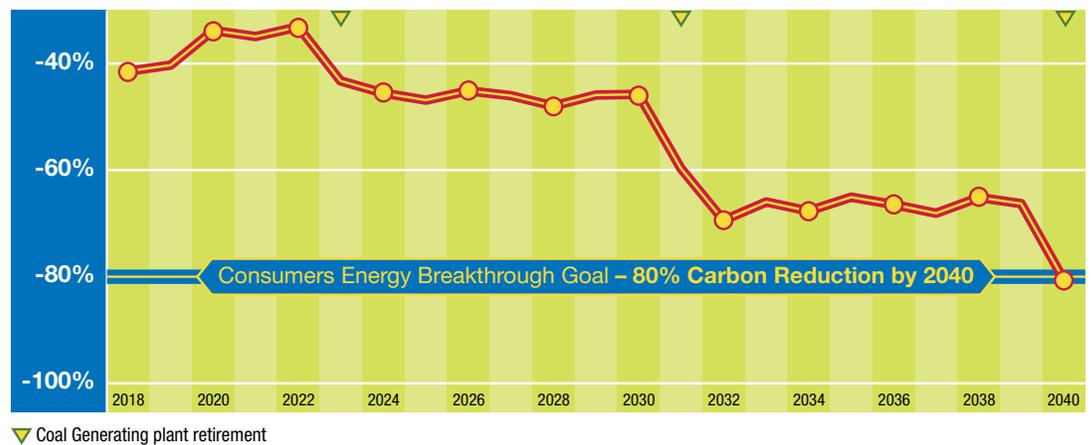
### COAL GENERATION PERCENTAGE



**Figure 1.6: 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



**Figure 1.7: Renewable energy percentage**

Our plan would add 5,000 megawatts of solar energy during a ramp-up throughout the 2020s. By 2040, about 43 percent of the energy we supply to customers would come from renewable sources such as wind and solar.

### PERCENT OF RENEWABLE ENERGY





## **CUSTOMER AFFORDABILITY**

Consumers Energy is committed to maintaining affordable, competitive energy costs for our residential and business customers. Accordingly, we are continually weighing the cost-benefit analysis of new energy investments to ensure our customers receive maximum value for their energy dollar.

That made the search for affordable solutions a top priority as we forecasted Michigan's future energy needs and how to meet them.

The proposed course of action in our IRP maintains affordability while providing customers with the energy they need to light their homes and power their businesses for decades to come.

### **Here are just a few ways our IRP will help ensure affordability:**

- Current residential electricity bills are about 9 percent below the national average. 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 efficiency and demand response 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 propose to 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 IRP modeling analysis shows with declining costs in renewables and obtaining higher potential levels of energy efficiency and demand response 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.

We plan to support Hampton Township and the Bay region as they reimagine the local economic landscape after the plant is retired. We would work 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.



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