



SUMMARY

# 2022 DTE Electric Integrated Resource Plan

**Clean, reliable solutions to power Michigan's future**



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## Our clean energy transformation

Across the country, and right here in Michigan, the energy landscape is changing rapidly and fundamentally. For DTE Electric, that means the way we plan for, produce and deliver electricity is changing, too.

Climate change is the defining public policy issue of our time, and as an environmental leader and one of the largest electric energy companies in the country, we know DTE Electric can help address this challenge in a meaningful way. Our 2022 Integrated Resource Plan calls for drastically reducing carbon emissions by accelerating coal plant retirements, investing billions of dollars in clean, Michigan-made renewable energy, and prioritizing reliability and affordability as we transition to cleaner generation resources.

Our 2.3 million customers – families, small and large businesses, schools, hospitals, global manufacturers and more – all depend on us to power their lives. That’s why listening to them and our other stakeholders was so important to the development of this plan. The opinions they shared with us through open houses, workshops, surveys and other outreach, allowed us to craft a proposal that will help us navigate the changes ahead, and provide clean, reliable, affordable electricity for generations to come.

Sincerely,

Jerry Norcia  
President and Chief Executive Officer  
DTE Energy

Trevor Lauer  
President and Chief Operating Officer  
DTE Electric

# Introduction

DTE Electric is investing in a cleaner energy future that our customers can depend on 24/7. We are committed to doing our part to improve and protect the environment, and ensuring that the energy we generate is cleaner, reliable and affordable.

In 2017, DTE Electric was the first energy company in Michigan and one of the first in the country to set carbon reduction goals. In 2019, believing we could do more, we updated those goals and later that year, we announced our plans to reach net zero carbon emissions by 2050. With our 2022 Integrated Resource Plan (IRP), we're going even further, proposing an acceleration of our interim decarbonization goals through a balanced and diversified approach to transition our generation fleet to cleaner energy.

The proposed plan, requiring regulatory approval, increases investment in solar and wind energy, accelerates the retirement of coal plants, and includes the development of new energy storage – all reinforcing DTE Electric's environmental leadership. Over the next 10 years, it will drive a \$9 billion investment into our state's economy, supporting more than 25,000 jobs in communities across Michigan. This plan also projects \$1.4 billion in future cost reductions that will result in long-term customer value.

Based on many months of comprehensive analysis, our IRP builds on the work we've accomplished since we filed our last plan in 2019 and reflects insights shared by our customers and other stakeholders. We believe our proposal is transformational and will result in an affordable, diversified energy mix that our customers can rely on and a cleaner environment for Michigan families, communities and businesses.

## What is an Integrated Resource Plan (IRP)?

An IRP is a comprehensive plan to meet the electricity needs of a power company's customers 5, 10 and 15 years into the future. It details the planned resources that a power company will use to generate reliable, affordable electric supply to its customers.

Although Michigan requires electric power companies to provide a 15-year view, our 2022 IRP covers a 20-year period (2023-2042).

## Summary



**15,400 MW**  
of renewables and



**1,810 MW**  
of storage by 2042

Transforms DTE Electric's generation fleet, resulting in a total of 18,400 MW of renewables and a total of 2,900 MW of storage by 2042



**1,300 MW**  
coal to natural gas

Repurposes existing infrastructure at the Belle River Power Plant by converting its fuel source from coal to natural gas



**- 4,100 MW**  
coal plant retirements

Ends the use of coal in 2035 with a responsible, phased retirement schedule that protects customer affordability and reliability



**1.5%**  
energy waste reduction

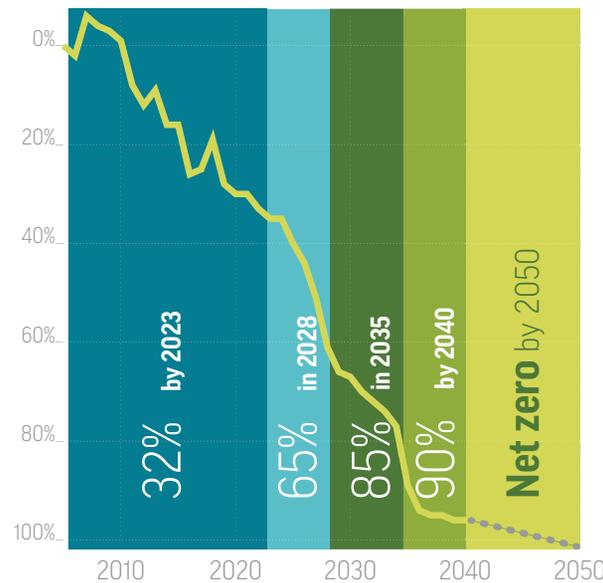
Continues to focus on customer programs by targeting an average of 1.5% energy waste reduction savings per year over the study period (maximum amount of achievable potential)

# The 2022 Integrated Resource Plan

## Brings transformational change to Michigan's energy landscape

- Transforms DTE Electric's generation fleet by adding 15,400 MW of renewables and 1,810 MW of storage by 2042, including:
  - 5,400 MW of solar and wind, and 760 MW of storage, developed 2023-2032.
  - 10,000 MW of solar and wind, and 1,050 MW of storage, developed 2033-2042.
- Adds to the 3,000 MW of existing and approved solar and wind and the 1,120 MW Ludington pumped hydro storage plant, totaling 18,400 MW of renewables and 2,900 MW of storage by 2042.
- Redirects \$2.4 billion that previously would have been spent on coal to cleaner sources of energy compared to the base plan, representing a long-term value to our customers through cleaner, more affordable forms of energy.
- Ends the use of coal in 2035 with a responsible, phased retirement schedule that protects customer affordability and reliability.
  - Moves the retirement of coal as a fuel source at our Belle River Power Plant from 2028 to 2026.
  - Starts the phased retirement of our Monroe Power Plant nearly 12 years ahead of our original plan (2039).
- Accelerates our previously announced CO<sub>2</sub> reduction goals, targeting a 65% reduction in 2028, 85% in 2035, 90% by 2040 and net zero emissions by 2050. (This compares to our earlier reduction goals of 50% by 2028 and 80% by 2040, with a baseline set in 2005.)

### CO<sub>2</sub> Reductions



DTE Electric's carbon related goals are for CO<sub>2</sub> emissions from its electric generating units

- Drives a nearly a 100% reduction in sulfur dioxide and mercury emissions, 92% reduction in carbon monoxide emissions, 95% reduction in nitrogen oxide emissions, 72% reduction in particulate matter and 66% volatile organic compound emissions by 2042 (from 2023 baseline).
- Supports Michigan's economy-wide greenhouse gas (GHG) emissions reductions interim goals of 28% by 2025 and 52% by 2030 from the 2005 baseline by targeting CO<sub>2</sub> reductions that surpass the MI Healthy Climate Plan timelines.
- Engages communities who host our coal plants to establish a close partnership in advance of and through this transition.

- Plans to maintain the Company's no-layoff commitment through several initiatives with employees (represented and non-represented) and collaboration with union leadership to make sure all employees have the opportunity to continue their careers with DTE Energy.

## Prioritizes generation reliability while preparing for increased electrification and extreme weather

- Accelerates our decarbonization goals while finding a path forward that is rooted in reliability and affordability.
- Supports the thousands of megawatts of renewables being added onto the grid and protects customer affordability by leveraging our existing infrastructure at the Belle River Power Plant through a coal to natural gas conversion.
  - The Belle River peaking resource will operate when customers need it the most, like during periods of high customer demand.
  - This economic approach will be a fraction of the cost of building a brand-new natural gas plant, reduce emissions 90%-95% from current coal operations, and protect electric reliability during extreme weather.
- Works in tandem with our program to rebuild and modernize our electric distribution system.
  - As outlined in our 2021 Distribution Grid Plan, we're investing more than \$1 billion a year to upgrade infrastructure, enhance our tree-trimming program, and install leading-edge equipment to improve safety, and better detect, prevent and manage customer outages.

## Creates long-term value for our customers

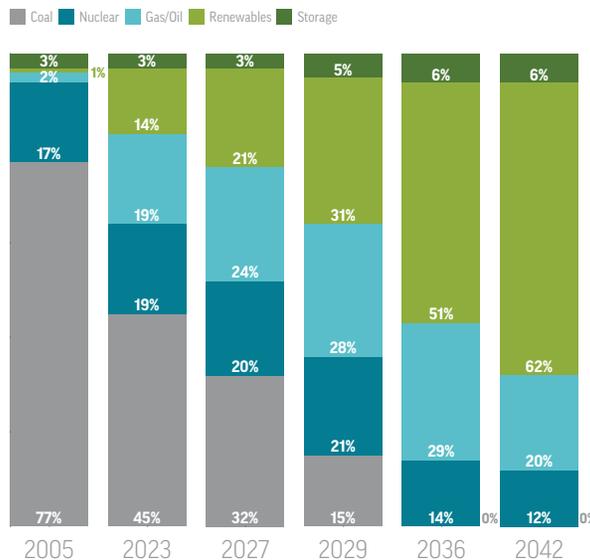
- Projects \$1.4 billion in future cost reductions over our 2019 plan, supporting further generation investments to prepare Michigan for the demands of the 21st century, like transportation electrification, increasingly severe weather, and the continuing social and economic needs of the communities we're proud to serve.
- Recognizes the responsibility to serve our customers by working to keep bills as low as possible.
- Positions DTE Electric to leverage the Inflation Reduction Act to benefit our customers.
- Incorporates stakeholder feedback.
- Drives Michigan-based investment in clean energy, supporting local economies and creating Michigan jobs.
- Keeps an eye on future technologies.
  - While the first half of the 20-year proposal relies on known, commercially available technologies, we know that costs and commercially available technologies will change.
  - Our proposal is flexible and allows us to continue to support the advancement of emerging technologies such as long-duration storage, small modular nuclear reactors, hydrogen, and carbon capture and sequestration and evaluate how these technologies might fit our customers' future needs.

**Reduces future costs**

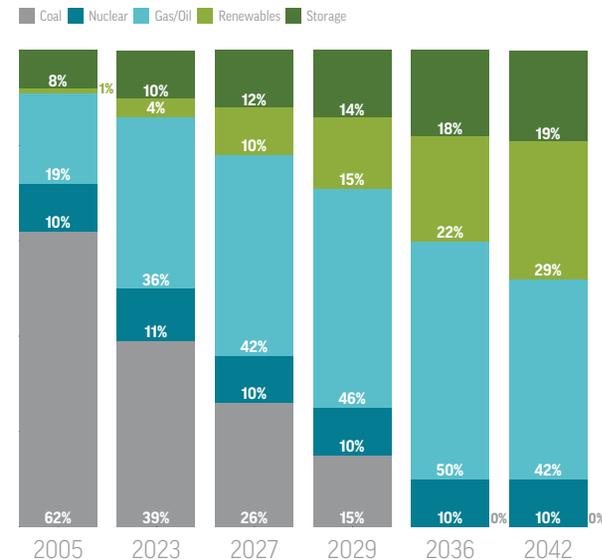
\$1.4 billion

**compared to our 2019 plan**

### Proposed generation mix (2005-2042, MWh%)



### Proposed capacity mix (2005-2042, MW%, UCAP or Firm capacity)



## Key milestones – years 5, 10 and 20

DTE Electric's 2022 IRP builds on the foundation of our 2019 plan. Covering a 20-year period, 2023 through 2042, it continues the growth and acceleration of cleaner generation resources and our commitment to energy waste reduction (EWR).

Based on extensive analysis, our vision for the future shows we can accelerate the development of renewable energy and battery storage, repurpose our Belle River Power Plant to run on natural gas, and with the retirement of 4,100 MW of coal in 2035, end coal-fired generation at DTE Electric while maintaining electric reliability and customer affordability.

The proposed course of action (PCA) is the most reasonable and prudent option to meet the Company's energy and capacity needs at a reasonable cost compared to other alternatives and is aligned with the Company's planning objectives.

**Accelerates  
renewables,  
maintains  
reliability and  
affordability**

**Results  
in 60%  
renewables  
by 2042**



## First 10 years

The first half of our proposal relies on commercially available technologies like solar, wind, storage and natural gas. Our plan lays out the development of supply resources sufficient to meet our customers' needs reliably as we move toward large-scale coal plant retirements. This includes building solar and storage resources prior to the retirement of the first two units of Monroe in 2028 and the proposed conversion of the Belle River Power Plant from a coal plant to a natural gas peaking resource. The addition of 5,400 MW of solar and wind, and 760 MW of storage by 2032 will provide enough renewable energy to power 1.5 million residential homes.

Our proposal continues our energy efficiency and demand response customer programs as well as our voluntary MIGreenPower renewable energy program. These programs provide customers options to join us in reducing carbon emissions in ways that work best for their homes, businesses and budgets.

**5,400 MW  
of solar and wind  
and 760 MW of  
storage**

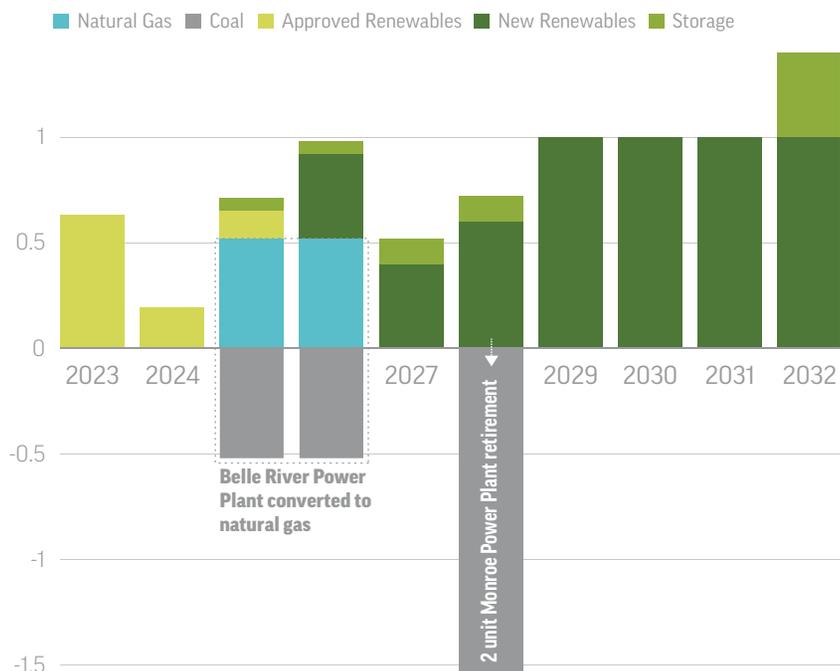
## First 5 years (2023-2027)

- Adds 800 MW of solar.
- Adds 240 MW of battery storage.
- Retires Belle River Power Plant on coal and converts it from a baseload coal plant to a natural gas peaking resource. Unit 1 will be converted in 2025 and Unit 2 in 2026 (approximately 1,300 MW).
- Makes additional investment in conservation voltage reduction/volt-var optimization (CVR/VVO), innovative technologies that reduces energy waste in the combined cycle system, saving an incremental 15 MW of demand.
- Provides 2% annual energy waste reduction savings in 2023, then an average of 1.5% annual savings, consistent with the maximum amount of achievable potential as identified in the 2021 Michigan EWR Statewide Potential Study. (Statewide Potential Study)

## Second 5 years (2028-2032)

- Adds:
  - 3,600 MW of solar.
  - 1,000 MW of wind.
  - 520 MW of battery storage.
- Retires Units 3 and 4 at Monroe Power Plant in 2028 (1,500 MW).
- Averages 1.2% annual energy efficiency savings, consistent with the maximum amount of achievable potential as identified in the Statewide Potential Study.
- Saves an incremental 23 MW of demand through CVR/VVO programs.

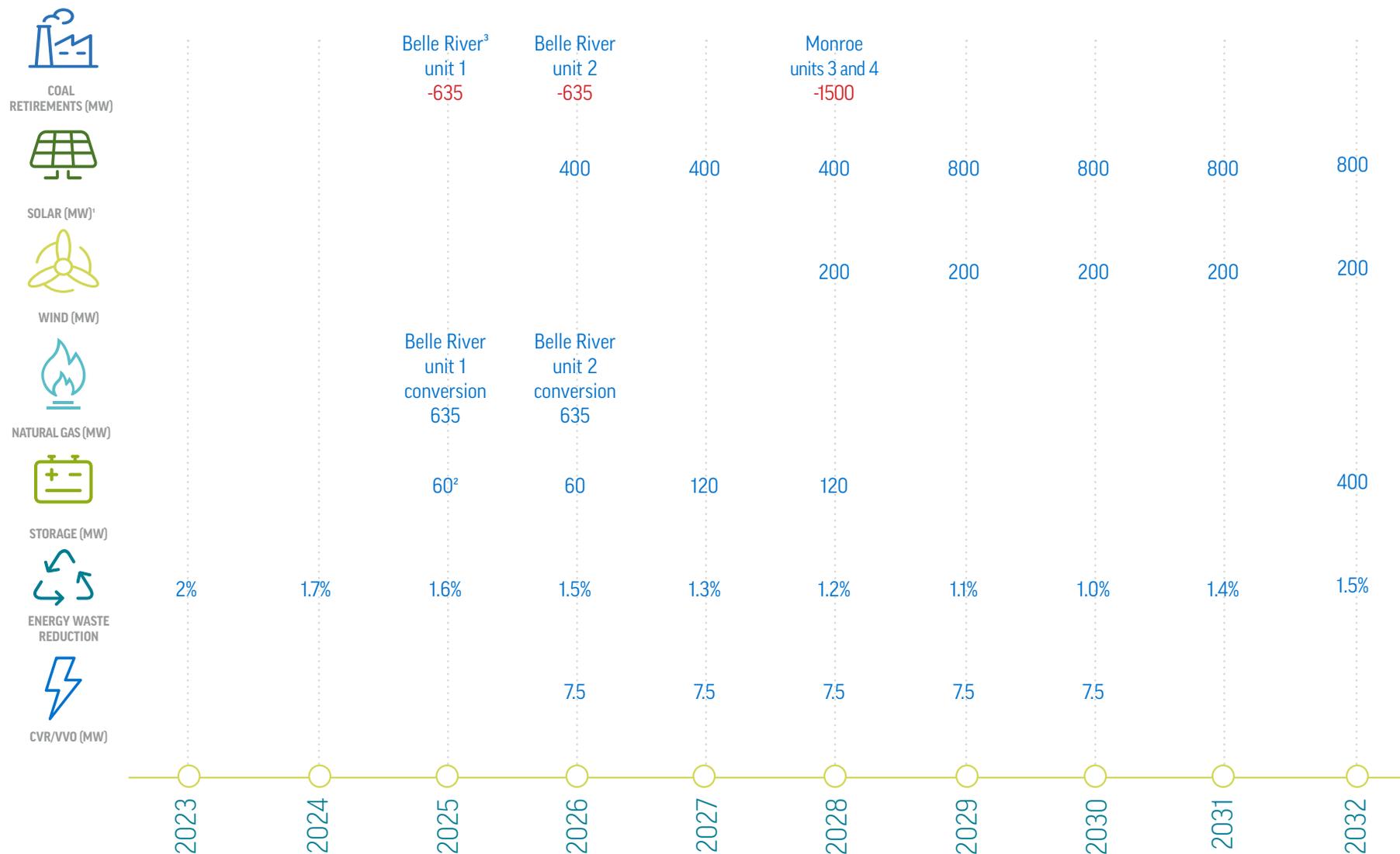
**Proposed generation portfolio changes  
2023-2032, GW of capacity**



### What are demand response programs?

Demand response programs provide customers with options to reduce their energy costs by shifting *when* they use electricity. DTE Electric offers several demand response programs that help customers save money by using energy at times of the day and week when demand for electricity is lower and less expensive. Additional information on DTE Electric demand response programs can be found on page 30 of the Executive Summary appendix.

## Implementation timeline for the first 10 years (capacity MW)



1 Does not include ~950 MW of currently approved projects at the time of IRP filing which is already included in planned renewable build.

2 Includes 14 MW Slocum battery project with an expected in service date in 2024.

3 Total capacity shown - owned by both DTE Electric (81.39%) and Michigan Public Power Agency (18.61%)

## Last 10 years (2032-2042)

The second half of our proposal, 2032-2042, includes the retirements of the last two coal-fired units at Monroe Power Plant in 2035 and the retirement of the Belle River natural gas peaking resource by 2040. Our plan also calls for the development of an additional 10,000 MW of renewables and 1,050 MW of storage, and a low or zero carbon dispatchable resource in 2035 to support the final exit of coal.

- Adds:
  - 2,100 MW of solar.
  - 7,900 MW of wind.
  - 1,050 MW of battery storage.
- Retires Units 1 and 2 at Monroe Power Plant in 2035 (1,500 MW).
- Averages 1.6% annual energy efficiency savings, consistent with the maximum amount of achievable potential as identified in the Statewide Potential Study.
- Develops a 950 MW clean, 24/7 resource in 2035, currently identified as a natural gas combined cycle gas turbine with carbon capture and sequestration as a proxy – allowing time for further developments of low and zero carbon emerging technologies and evaluation of options to fill this critical need in future IRPs.
- Retires Belle River natural gas peaking resource by 2040 (1,300 MW).



## Monroe Power Plant

**Located in Monroe County, the Monroe Power Plant represents around 30% of DTE Electric's current energy generation. It began operations in 1971, is the fourth largest plant in the US, and provides critical reliability support to the grid. It will be DTE Electric's last coal-fired plant and its planned retirement in 2035 will represent a significant milestone in the transition of our generation fleet.**

**The Monroe Power Plant's importance goes beyond the energy it has delivered to millions of our customers through the years. It has been part of the fabric of the community where it resides, providing jobs and contributing to the local and regional economy. As with other plant retirements, we are working with local officials and other community leaders to plan ahead for the retirement of Monroe, understand the potential impacts of the transition, and partner on economic development opportunities through the plant's phased retirement. We are also committed to supporting our affected employees through this transition, who will have the opportunity to continue their careers with our company.**

## Planning for emerging technologies

Emerging technologies, such as small modular nuclear, hydrogen, combustion gas turbine with carbon capture and sequestration, and forms of mid- to long-duration energy storage will play an important role as we work to support the transition toward net zero while maintaining reliability and affordability.

While the first half of our 20-year plan relies on known, commercially available technologies, such as renewable energy and lithium-ion batteries, we realize that costs and commercially available technologies will change. We also expect other factors that impact long-term planning, like electrification, grid and market conditions, and planning tools will evolve with time.

We expect public policies such as the Inflation Reduction Act of 2022, research and development funding, and technological advancements to spur the evolution of these technologies and their pace of development in supporting commercialized resources such as wind, solar and lithium-ion batteries.

We continue to support the advancement of emerging technologies and plan to remain flexible as we evaluate how to meet the future needs of our customers and replace the generation from the second two units of the Monroe Power Plant.

## Emerging Technologies

Description	Technology Readiness Level	Grid Scale Commercial Readiness
 <p><b>Carbon capture and sequestration</b></p>	<p>Capture 90%-98.5% of CO<sub>2</sub> from flue gas emissions of power plants (e.g., combined cycle gas turbine) using chemical or physical solvents, sorbent materials or other technologies; CO<sub>2</sub> can be utilized for other purposes or stored in geologic formations</p>	<p>First generation: 9 Second generation: 4-6</p>
 <p><b>Hydrogen (H<sub>2</sub>)</b></p>	<p>Low-carbon fuel that can serve as long-duration chemical energy storage using tanks or underground caverns; fuel produced through electrolysis using renewable resources (green) or other methods fueled by natural gas with carbon sequestration (blue) and nuclear (pink); H<sub>2</sub> used in fuel cells or blended with natural gas to create electricity</p>	<p>100% H<sub>2</sub> generation: 1-5 30% H<sub>2</sub> blend: 6-8</p>
 <p><b>Mid- to long-duration storage</b></p>	<p>Provide grid flexibility to augment intermittent resources using thermal, mechanical, chemical or electrochemical processes that provide mid-duration (4-12 hours) and long-duration (&gt;12 hours) storage. Storage materials include salt, sand, iron, zinc, water, and air. Examples include flow batteries, pumped hydro, and batteries using iron, zinc or sodium</p>	<p>Long-duration: 1-5 Mid-duration: 6-9</p>
 <p><b>Small modular nuclear (SMR)</b></p>	<p>Carbon-free nuclear power with reactors appropriately 1-300 MW using new technologies such as factory built modules and build in safety features; Gen III is more traditional light water cooled and Gen IV uses molten salt, liquid metal or high temperature gas cooled technology; 24/7 and load following capabilities</p>	<p>Gen III: 4-6 Gen IV: 1-5</p>

Technology readiness levels are a measurement system to assess the maturity level of a technology. There are 9 levels, 1-9, with 1 furthest from commercialization. Scale: 1-3 basic research, 4-5 technology development, 6 technology demonstration, 7-8 system commissioning, and 9 commercialized.

## Listening to our customers and stakeholders

We developed our IRP through an extensive, year-long analysis process involving complex modeling that considered over 100 potential outcomes based on a range of different inputs. In addition to comprehensive modeling and analytical studies, we spent many months listening to and learning from our customers and other stakeholders.

We sought input from a wide range of individuals and organizations who expressed interest in having input into our planning, were involved with our regulatory filings in the past, or who might be impacted by our plan. They included our residential, business and industrial customers, community representatives and technical experts. Our intent was to discuss the IRP process, listen to their concerns, interests and suggestions, encourage meaningful and informed dialogue on generation planning and gather feedback to consider in our analysis and decision-making.

### Technical stakeholder workshops

DTE Electric held six technical workshops for individuals with a deep understanding of the technical aspects of an IRP, organizations that are often active participants in DTE Electric's regulatory proceedings, and those who expressed an interest in participating. In addition, the Company held a two-day technical collaborative to evaluate and identify alternative modeling software for use in developing integrated resource plans. We invited more than 40 organizations to attend the workshops, including representatives from the Michigan Public Service Commission (MPSC) and the Michigan Department of Environment, Great Lakes, and Energy (EGLE), environmental organizations, ITC Transmission, Midcontinent Independent System Operator (MISO), consumer advocates and trade groups.



“It is encouraging to know [DTE] wants to hear from customers and is interested in what we’re thinking.”

– *Thumb-area residential customer*

The technical workshops covered topics including modeling assumptions, scenarios and sensitivities, grid and resource reliability modeling, battery storage modeling and progress on the IRP process. Each workshop was comprised of a presentation and question-and-answer segment led by various subject matter experts from across DTE Electric, including the IRP team, as well as industry experts. In between the workshops, we encouraged participants to email comments and questions to DTE Electric via the IRP email address.

Common themes heard from technical stakeholders included questions around storage and resource adequacy modeling, input on the modeling assumptions for energy waste reduction, renewable energy, load forecasting, and modeling assumptions based on the Inflation Reduction Act.

## Public open houses

DTE Electric hosted eight virtual public open house events between January and April 2022. The objectives of these events were to inform participants on the IRP process and our generation transformation, and to provide an opportunity for the public to ask questions and provide feedback. Open house topics included an overview of the IRP process and planning objectives, renewables, emerging technology, customer demand-side management and renewable energy programs, coal plant retirements and transitions, and grid modernization.

To provide inclusivity for all individuals wishing to access and engage in our open houses, we incorporated a number of protocols, including: recording all meetings, requiring speakers to use headsets or microphones, making transcripts available online and using closed captioning. All presentations, event recordings, transcripts, and translations of transcripts in multiple languages were posted online for those who were not able to attend the live events.

## Public outreach

In addition to the public open houses, we developed a dedicated IRP section on our [www.dtecleanenergy.com](http://www.dtecleanenergy.com) website, created an online comment submission form and IRP email address, and conducted customer research. Public submissions spanned a variety of topics and included general requests for more information. Ultimately, we identified several key themes from the public comments received, including interest in DTE Electric progressing its decarbonization goals; support for clean energy like renewables, storage and energy waste reduction; and support for a just transition of employees and communities.

DTE Electric also engaged an outside research firm with long-term experience in both the energy and public utility sectors among other industries to conduct a multi-phase, iterative research program to gain a deeper understanding of customer viewpoints on decarbonization, energy generation sources and achieving net zero carbon emissions by 2050. The firm's research included:

- Twenty-eight one-on-one in-depth interviews with commercial and industrial customers and community representatives, providing a broad cross-section of perspectives.



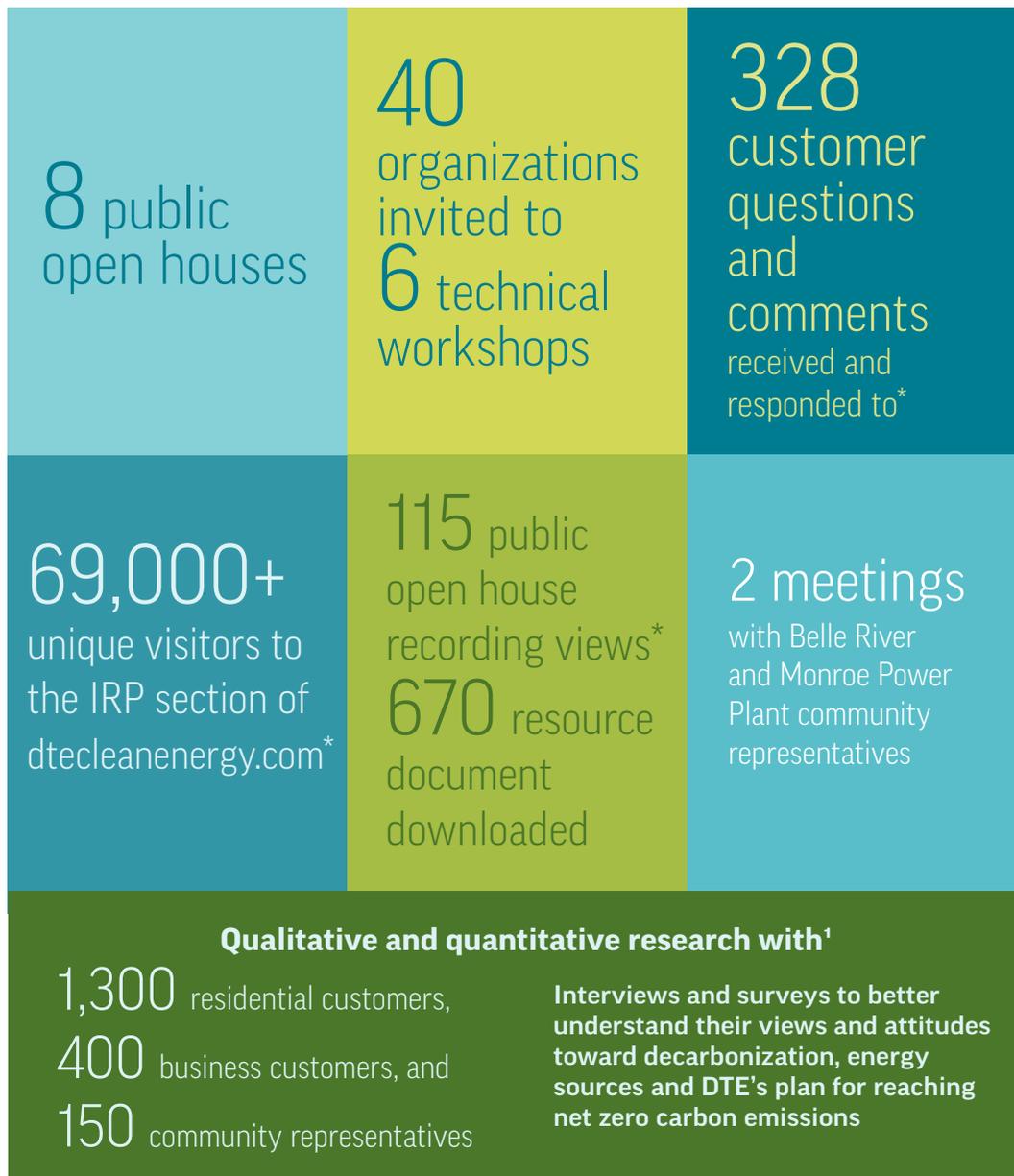
## Supporting our impacted employees and communities

**DTE Electric is committed to partnering with the communities and employees affected by the retirements of our coal-fired plants. These facilities have provided jobs and been an important part of local economies for many years and we understand the impact these retirements can have. Because we believe it's important that these transitions happen thoughtfully and with dignity, we established a vision and are developing a process to support our employees and communities in this transition.**

**For our employees, it means creating opportunities to continue their careers at DTE Energy. As with our other plant retirements, we intend to maintain our no layoff commitment and will work with employees and union leadership to provide employees with support that includes reskilling, retraining and redeployment to other roles in the company.**

**We also have been working with local elected officials and community representatives in the communities that future transitions of the Belle River and Monroe Power Plants would affect to share information, answer questions, hear feedback and identify economic development opportunities. Because the potential transition of the Belle River Power Plant could occur within the first five years of the study period, DTE Electric worked with an economic development consulting firm to conduct a socioeconomic impact assessment on a 2028 retirement and a conversion to a natural gas peaking resource.**

## Stakeholder engagement metrics



<sup>1</sup> represents approximate numbers \*Data from January 1, 2022 to September 15, 2022

- Seven focus groups with 26 residential customers from a wide range of backgrounds across our service territory.
- A comprehensive survey of 1,293 residential customers, 407 commercial and small business customers and 128 community representatives, conducted online and via telephone.

The research taught us a great deal about our customers' expectations. We were encouraged to find that this IRP aligns with those expectations in many ways. Additionally, many of our customers who participated in the interviews and focus groups expressed appreciation for the dialogue and the opportunity to contribute to our overall planning, and indicated they'd like to learn more about what our company is considering in the way of future clean electricity generation.

The research demonstrated that our customers understand and support the goal of achieving net zero carbon emissions and the goals that DTE Electric is setting. They also believe Michigan's utilities have a role to play in addressing climate change.

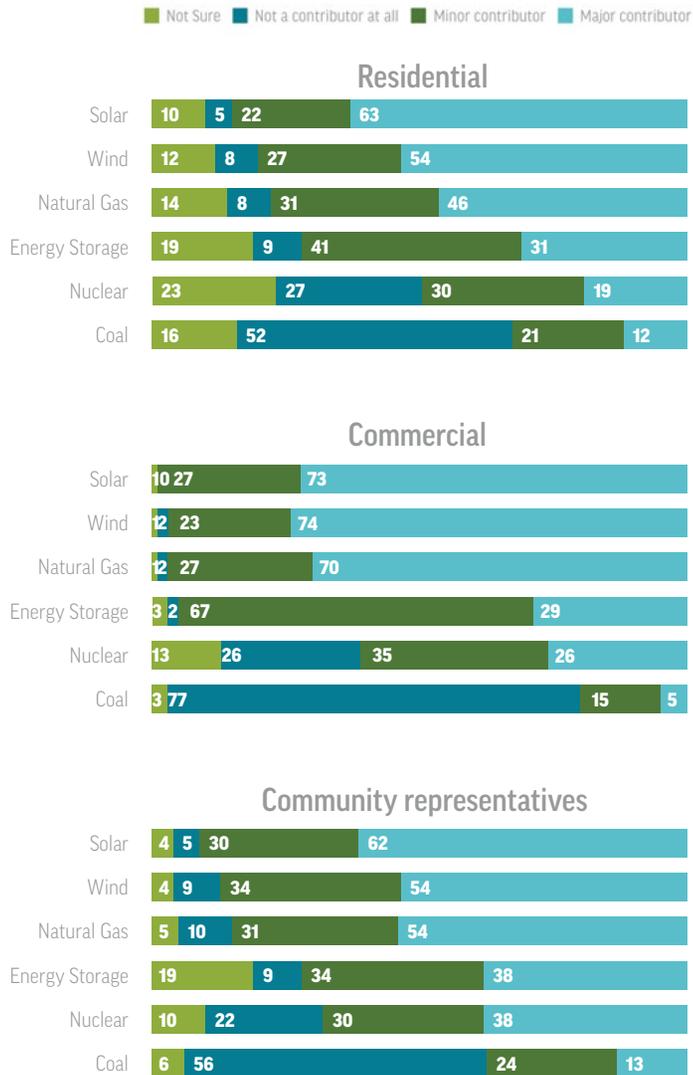
According to the research, our customers want a diverse mix of energy generation sources going forward, with renewable energy leading the way, and natural gas supporting reliability. They also want to see solutions including energy storage play a contributing role in the future energy mix, all of which aligns with our proposal.

Affordability is top of mind for customers, especially given recent inflationary pressures. However, they are mindful this transition could impact their bills, and many assume at least a small increase may result from this transition. While concerns about a potential increase exist, the majority of all stakeholder groups - from residential and commercial customers to community representatives - say they would be willing to pay at least a small percentage more annually to support the transition to cleaner sources of energy.

We are hopeful that this IRP filing will provide the opportunity for even greater discussion around Michigan's energy future with our customers. We realize that many customers and other stakeholders are not yet fully aware of our plans, and we look forward to the chance to engage with them and hear more of their feedback about our generation transformation plans.

## When given a choice, stakeholders gravitate toward a diversified mix of generation sources.

Imagine you were in charge of deciding which sources DTE Electric will be using in 2040 to generate electricity for customers. Indicate whether you would like each of the following to be a major or minor contributor for generating electricity for customers, or not a contributor at all.

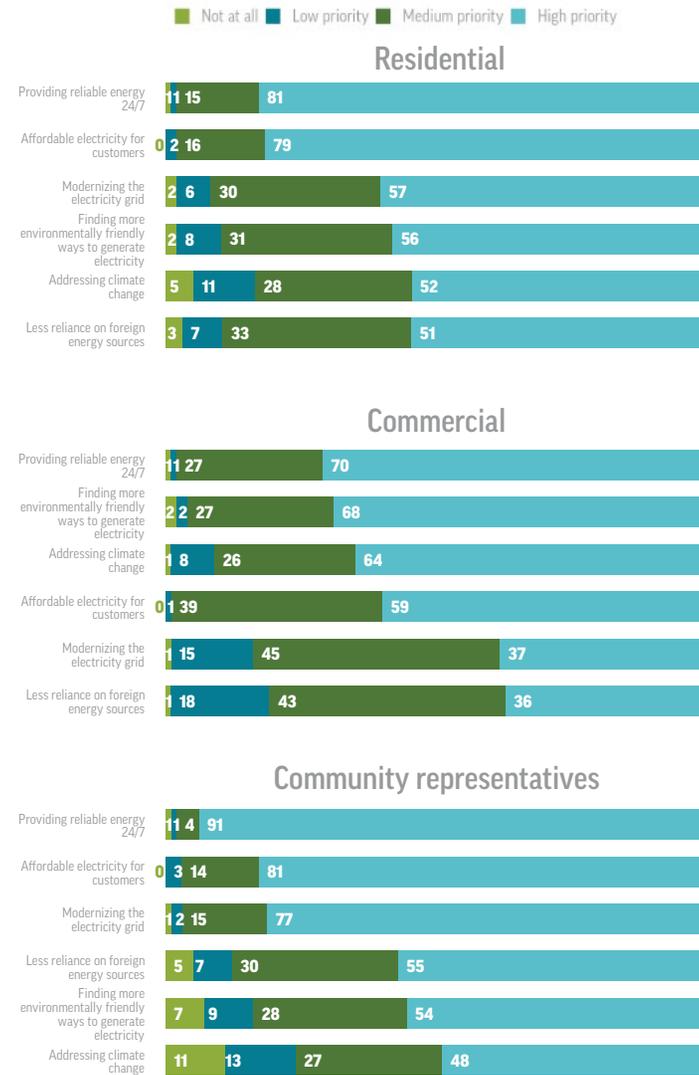


Numbers may not add up to 100% due to rounding

## Stakeholders rank reliability and affordability as top priorities

There is strong appetite for environmentally-friendly energy generation, just not at the expense of reliability or affordability.

Indicate whether you personally consider the following issues to be a high, medium, or low priority to address, or not a priority at all.



Numbers may not add up to 100% due to rounding

# Responding to the changing energy landscape

When we filed our last IRP in 2019, we set – and achieved – some ambitious plans for transitioning our generation fleet reliably and affordably and making progress on our carbon reductions goals. Since then, we have worked with our customers, communities and employees to bring about important changes in our business. These include:

- We achieved Michigan's Renewable Portfolio Standard (RPS) of 15% by 2021. In addition to RPS renewable development, DTE Electric has also advanced renewable projects to support MIGreenPower, now one of the country's largest voluntary renewable energy programs. This program enables customers to reduce their carbon footprints by attributing up to 85% of their energy use to renewable energy from our wind and solar resources. Since 2021, we have added two solar projects and three new wind parks, with an additional wind park scheduled to come online by the end of 2022.
- Our new state-of-the-art natural gas power plant, Blue Water Energy Center, went into operation on time and on budget in 2022 to help keep the electric grid stable as we retire coal generation.
- Our energy efficiency and demand response programs continue to help customers reduce their energy costs by cutting energy waste in their homes and businesses and shifting when they use electricity. We achieved 2% annual savings in energy efficiency in 2021 and are on track for 2% savings in 2022. Our demand response programs achieved 834 MW in 2021 and we expect to reach 929 MW in 2022.
- Conservation Voltage Reduction and Volt-VAR Optimization (CVR/VVO), innovative technologies used to reduce energy waste, were deployed on our distribution system, resulting in important learnings that will allow us to scale up this technology.

Our IRP builds on the work we started with our 2019 plan and is shaped by the rapidly changing world around us. We took into account climate and environmental policy

developments, regional planning efforts, and programs like MI Power Grid<sup>1</sup> in the development of our proposal. We also considered other important factors, including electric reliability, supply chain constraints, stakeholder feedback and investor sentiment.

## State and federal policy developments

In 2020, Governor Gretchen Whitmer signed Executive Directive 2020-10, committing Michigan to a goal of achieving economy-wide carbon neutrality and setting economy-wide emissions reductions goals for the state. Pursuant to this commitment, the Michigan Department of Environment, Great Lakes, and Energy (EGLE) developed the MI Healthy Climate Plan. The plan outlines goals for a statewide greenhouse gas (GHG) emissions reduction of 28% below 2005 levels by 2025, 52% below 2005 levels by 2030, and achieving carbon neutrality by 2050. The interim timelines in DTE Electric's proposal surpass those in the MI Healthy Climate Plan and will help support Michigan's economy-wide GHG emissions reductions interim goals.

At the federal level, the Biden administration is calling for a 50-52% reduction from 2005 levels in economy-wide net GHG pollution by 2030. The Inflation Reduction Act (IRA), enacted in August 2022, includes unprecedented incentives for energy storage, renewable energy, electric vehicles, and charging infrastructure, energy efficiency, hydrogen, carbon sequestration, nuclear and other clean energy investments. We expect that the IRA may provide opportunities to further enhance the affordability of our plan.

Although all the IRA provisions were not fully implemented at the time of our filing, we took steps during the development of our proposal to analyze its potential benefits for our customers. Specifically, we analyzed a new scenario to assess the impacts of the IRA's tax credit provisions and updated our proposed plan to include additional clean energy.

<sup>1</sup> MI Power Grid is an initiative supported by Governor Whitmer and the MPSC to maximize the benefits of the transition to clean, distributed energy resources for Michigan residents and businesses.

## Regional reliability planning and markets

DTE Electric is a market participant in Midcontinent Independent System Operator (MISO), a Regional Transmission Organization (RTO) established to ensure reliability and grid stability across 15 U.S. states and Manitoba. The combination of dispatchable plant retirements and delays in bringing new renewable resources online have played a role in reducing reserve margins throughout the MISO footprint, and has increased the occurrence of emergency declarations, highlighting the need for careful resource adequacy planning.

In July 2022, the MISO board approved a long-range transmission plan that includes new transmission investments in Michigan. We continue to engage in MISO's stakeholder processes as updates are made to resource adequacy rules, long-term planning and market designs in order to support the evolving electric grid.

## Supply chain disruptions

Disruptions in supply chains and logistics, along with workforce issues that resulted from the COVID-19 pandemic, have impacted products and projects across the country. Specifically, the solar photovoltaic (PV) industry has faced disruptions on a global scale with supply chain constraints and international trade actions. This has affected the availability of imported solar panel modules, delaying some solar projects and creating uncertainty for energy companies and developers related to the pricing and availability of solar panels. We expect incentives for domestic production of clean energy technologies, including solar and batteries, in the new Inflation Reduction Act to diversify supply chains over time.

## Customer feedback

Our customers have told us through a variety of channels that they support DTE Electric's transition to a more diverse, balanced and cleaner generation portfolio. This includes an increased role for renewables and an acceleration of our decarbonization efforts. Input from customers and other stakeholders was an important part of our IRP development.

## Investor sentiment

The investor community has increased its focus on environmental, social and governance (ESG), given the risk of climate change facing certain industries. As the utility industry and energy companies continue to transform their generation portfolios, it's likely that utility investors' criteria will also evolve to focus on energy companies with a cleaner generation mix.

2019

**2019 IRP filed**

**DTE Charging Forward Program launched with rebates for EV charging infrastructure**

**MI Power Grid initiative launched to maximize benefits of clean, distributed energy resources**

**21-member Michigan Advisory Council for Environmental Justice formed**

2020

**2019 IRP approved**

**COVID-19 hits southeast Michigan in March**

**Executive orders 2020-10, 2020-182 set 2050 economy-wide carbon neutrality goal, establish Council on Climate Solutions**

2021

**River Rouge coal plant retired**

**Distribution Grid Plan issued as blueprint to modernize the grid and improve reliability**

**DTE Electric energy waste reduction program reached 2% electricity savings**

**Infrastructure Investment and Jobs Act enacted with new clean energy funding**

**Midwest utilities announced coal retirements in response to EPA's rules**

2022

**St. Clair and Trenton Channel coal plants retired**

**Blue Water Energy Center began operations to provide grid support and support coal retirements**

**Nearly 70,000 residential, business and industrial customers, representing 2.8 million megawatt hours, enrolled in our MIGreenPower program**

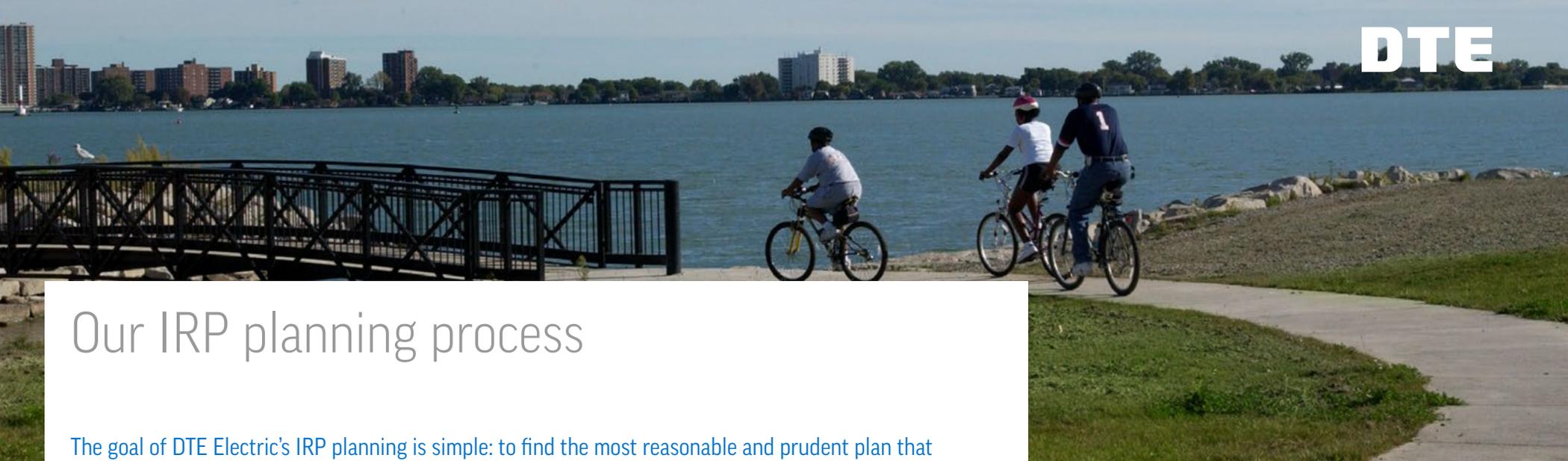
**Ford Motor Co. and DTE Electric announced largest renewable energy purchase from a utility in U.S. history**

**MI Healthy Climate Plan finalized**

**Inflation Reduction Act enacted with clean energy incentives**

**MISO approved \$10.3B plan for additional electric transmission**

**MISO issued warnings about resource adequacy in Midwest**



## Our IRP planning process

The goal of DTE Electric's IRP planning is simple: to find the most reasonable and prudent plan that provides our customers with reliable, affordable energy. However, the process for determining that plan is not so simple. Developing our 2022 IRP was a multi-step process involving highly complex modeling and analysis, consideration of many alternatives, stakeholder input and much more. Our process was guided by state law, our climate and clean energy goals and our planning objectives: safe, reliable and resilient, affordable, customer accessibility and community focus, and clean.

### MPSC requirements

The Michigan Public Service Commission requires regulated power companies to file an IRP at least every five years. Companies must include a 5-, 10- and 15-year projection of their customer demand plus a reserve, and a proposal to meet their obligations to safeguard generation reliability. Given the complexity and impact of our proposal, and the rapidly changing environment in which we operate, we're filing our IRP a year earlier than required by the MPSC. We believe now is the appropriate time to work with the Commission and other stakeholders to help ensure our planning process is comprehensive and transparent. Decisions made in the IRP case about our future electricity supplies will also provide greater certainty for our residential and business customers, communities and employees as we plan for the years ahead.

Based on the MPSC guidelines, our IRP includes:

- A long-term load forecast
- Plans for meeting energy and capacity needs with cost estimates for proposed construction and major investments
- Details on existing resources
- Plans for new generation, energy waste reduction, demand response and electric transmission options
- Compliance with environmental regulations
- Rate impact analysis

### What are scenarios and sensitivities?

A scenario is a view of the future based on broad market assumptions such as commodity prices, technology prices, load growth and environmental regulations. The MPSC requires specific scenarios as part of its IRP modeling requirements.

A sensitivity is a case that is designed to test one specific uncertainty or variable, such as varying levels of load forecast or capital costs. Modelers apply sensitivities to the scenarios.

## IRP modeling

Modeling is a critical component of our IRP planning and follows standards established by the MPSC. We also sought input from stakeholders to inform modeling inputs and utilized publicly available resources, when available, for this data for transparency.

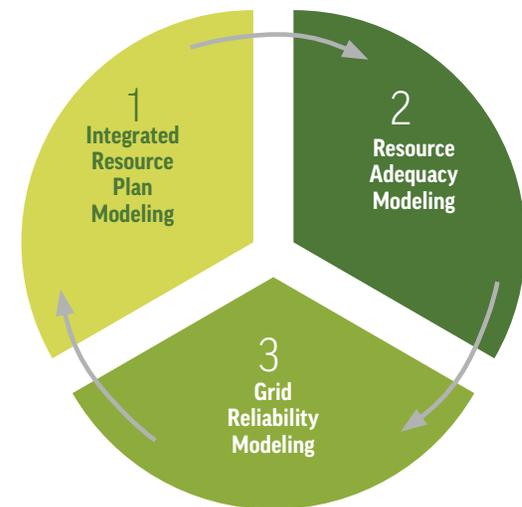
Our process reviews current customer electricity needs and how they may evolve over time. It then looks at our existing resources paired with new alternative resources to determine potential paths that meet those needs. Based on this analysis, we can see what alternative resources, if needed, to add to the remaining existing resources to make sure we can meet our customers' needs reliably and cost-effectively. Alternatives may include resources commercially available today like solar and wind, as well as emerging resources that may be expensive or not fully ready for deployment today, but may be available in five, 10 or 15 years. The results are then used to explore various scenarios and sensitivities using modeling software and other analytical tools.

Using this process, DTE Electric analyzed more than 100 modeling runs consisting of different combinations of scenarios and sensitivities to inform the plan's development and compare resource portfolios under a variety of assumptions. The scenarios included four required by the MPSC, three developed by DTE Electric and one suggested by our technical stakeholders. Sensitivities included customer load alternatives, energy waste reduction levels and costs, gas and carbon prices, lithium-ion battery benefits and several others.

DTE Electric also collaborated with industry experts to evaluate potential electric reliability impacts to ensure reliability, resource adequacy and diversity as we sought an affordable path to decarbonization. By incorporating learnings from resource adequacy and grid modeling into our IRP process, we reduce risks to customers by having sufficient, local and diverse resources and a reliable grid.

The output of this modeling provided an optimal or least-cost portfolio of resources for each scenario and sensitivity combination which could be compared to each other for cost, reliability and environmental impact.

## Iterative three-phased reliability study approach



### 1. Integrated Resource Plan Modeling

Generation build plan optimized for customer affordability given emission reduction targets

### 2. Resource Adequacy Modeling

Adequacy of electric supply within a planning region at all hours of the year

### 3. Grid Reliability Modeling

Transmission and distribution power flow reliability at the local and regional level

**Our proposed course of action has been validated through industry standard reliability studies**

### Inputs to the Model



## IRP Scenario Analysis

Name	Description	Assumptions	Source
<b>Reference (REF)</b>	Most closely aligns with DTE Electric's internal planning assumptions, forecasts and goals	<ul style="list-style-type: none"> <li>• Uses DTE Electric's gas forecast and incorporates its CO<sub>2</sub> goals and CO<sub>2</sub> price beginning in 2027 at \$5 per ton continuing up to \$11 per ton in 2040 (real 2020\$)</li> <li>• All technology costs from publicly available sources, consistent with MPSC-required scenarios</li> </ul>	DTE Electric
<b>High Electrification (HE)</b>	Higher rate of transportation and building electrification	<ul style="list-style-type: none"> <li>• EV sales consistent with MI Healthy Climate Plan goals (50% new vehicle sales by 2030)</li> </ul>	DTE Electric
<b>Reference Refresh (REFRESH)</b>	Studies impacts of Inflation Reduction Act and other changes	<ul style="list-style-type: none"> <li>• Updated tax credits for wind, solar, batteries, new nuclear, and carbon capture and sequestration based on Inflation Reduction Act</li> <li>• Updated electricity market prices and natural gas prices</li> <li>• Updated Belle River conversion costs</li> </ul>	DTE Electric
<b>Business As Usual (BAU)</b>	Studies future of electric supply landscape assuming status quo conditions continue throughout planning period	<ul style="list-style-type: none"> <li>• Assumes thermal and nuclear retirements driven by a maximum age assumption, public announcements, or economics</li> <li>• Demand and energy remain at low growth rates</li> <li>• Gas forecast based on 2021 EIA Annual Energy Outlook reference case (Henry Hub Spot Price: Reference Case)</li> <li>• No CO<sub>2</sub> emission cost adder</li> </ul>	MPSC Requirement
<b>Emerging Technology (ET)</b>	Analyzes the potential impact that could result from reduced costs for emerging technologies	<ul style="list-style-type: none"> <li>• Assumed 35% reduction in technology costs for EWR, battery, and solar. Retirements of all coal units considered</li> <li>• 2021 EIA reference gas forecast (same as BAU)</li> <li>• No CO<sub>2</sub> emission cost adder</li> </ul>	MPSC Requirement

Name	Description	Assumptions	Source
<b>Environmental Policy (EP)</b>	Studies carbon regulations, modeled by placing a hard cap on the amount of allowable carbon emissions through the 20-year horizon	<ul style="list-style-type: none"> <li>• Targets 30% CO<sub>2</sub> reduction by 2030</li> <li>• Coal units primarily retired based on carbon emissions, then economics</li> <li>• Wind and solar capital costs reduced by 35%; all other technologies' costs unchanged from the BAU scenario.</li> <li>• 2021 EIA gas reference forecast</li> <li>• No CO<sub>2</sub> emission cost adder</li> </ul>	MPSC Requirement
<b>Carbon Reduction (based on EP)</b>	Based upon EP scenario, analyzes varying carbon reductions at two distinct percentages	<ul style="list-style-type: none"> <li>• Based on the Environmental Policy scenario</li> <li>• Includes high load growth forecast</li> </ul>	MPSC Requirement
<b>Stakeholder Scenario (STAKE)</b>	Reflects draft MI Healthy Climate Plan and developed with suggestions from stakeholders	<ul style="list-style-type: none"> <li>• 2% EWR annually through 2042</li> <li>• 100% carbon neutrality by 2050 and approximately 80% CO<sub>2</sub> reduction by 2030 in Michigan</li> <li>• 50% Michigan Renewable Portfolio Standard (RPS) by 2030</li> <li>• All coal retired by 2035 for Eastern Interconnect</li> <li>• Retirement of Belle River Units 1 and 2 in 2025 and 2026, respectively</li> <li>• Retirement of Monroe by 2035 (Units 3 and 4 in December 2028 and Units 1 and 2 in December 2034)</li> <li>• DTE Electric resources (and rest of Zone 7): No new gas units, including RICE, CTs and CCGTs w/ CCS; green Hydrogen (H<sub>2</sub>) fueled peakers available</li> <li>• NREL advanced costs for renewables and batteries</li> <li>• Electrification: High EV demand including 50% of light-duty sales, 30% of medium duty sales, and 100% of bus sales electric by 2030 in Michigan</li> </ul>	DTE Electric with input from stakeholders

# Planning objectives are applied across our distribution and generation planning processes



Safe

Build, operate and maintain the distribution grid and generation fleet in a manner that ensures public and workforce safety, operational risk management, and appropriate fall-safe modes and is compliant with State and Federal requirements



Reliable and Resilient

Build and operate the power system within limits to withstand sudden disturbances or unanticipated failure of elements and maintain electric delivery within standards acceptable to customers. Ensure the grid and the diverse generation resources are integrated, with secure supply resources including fuel, and can quickly recover from high impact, low frequency events



Affordable

Provide efficient and cost-effective service along with diverse and flexible generation resources by optimizing the system and benefiting all customers



Customer Accessibility and Community Focus

Provide flexible and accessible technology and grid options, and information that empowers and engages customers. Provide effective and timely communication with customer and stakeholders. Favor plans that support diversity of Michigan communities, suppliers, and workforce



Clean

Build, operate, and maintain the resource fleet and grid platforms in an environmentally sustainable manner by achieving low carbon aspirations and clean energy goals. Provide a grid that facilitates a transition to a decarbonized economy

## Innovations in IRP modeling and analysis

Our modeling process has grown more extensive and sophisticated since we submitted our last IRP. It's now more comprehensive, includes additional considerations given the evolution of the electric grid, and employs new modeling tools.

### New IRP modeling tool: EnCompass

Modeling tool was selected through stakeholder process and provides enhanced functionality, transparency, and efficiency. Provides flexibility in modeling coal units (not designated as "must run"), solar-battery hybrid resources, and enhanced emission modeling capabilities.

### Integrated transmission and distribution analyses

Coordination with ITC (transmission owner) allowed for upfront consideration of transmission issues and costs associated with plant retirement options and interconnection of new generation to inform IRP decision making. DTE Electric's ongoing analysis of peaking generation includes distribution system impacts to support more holistic planning.

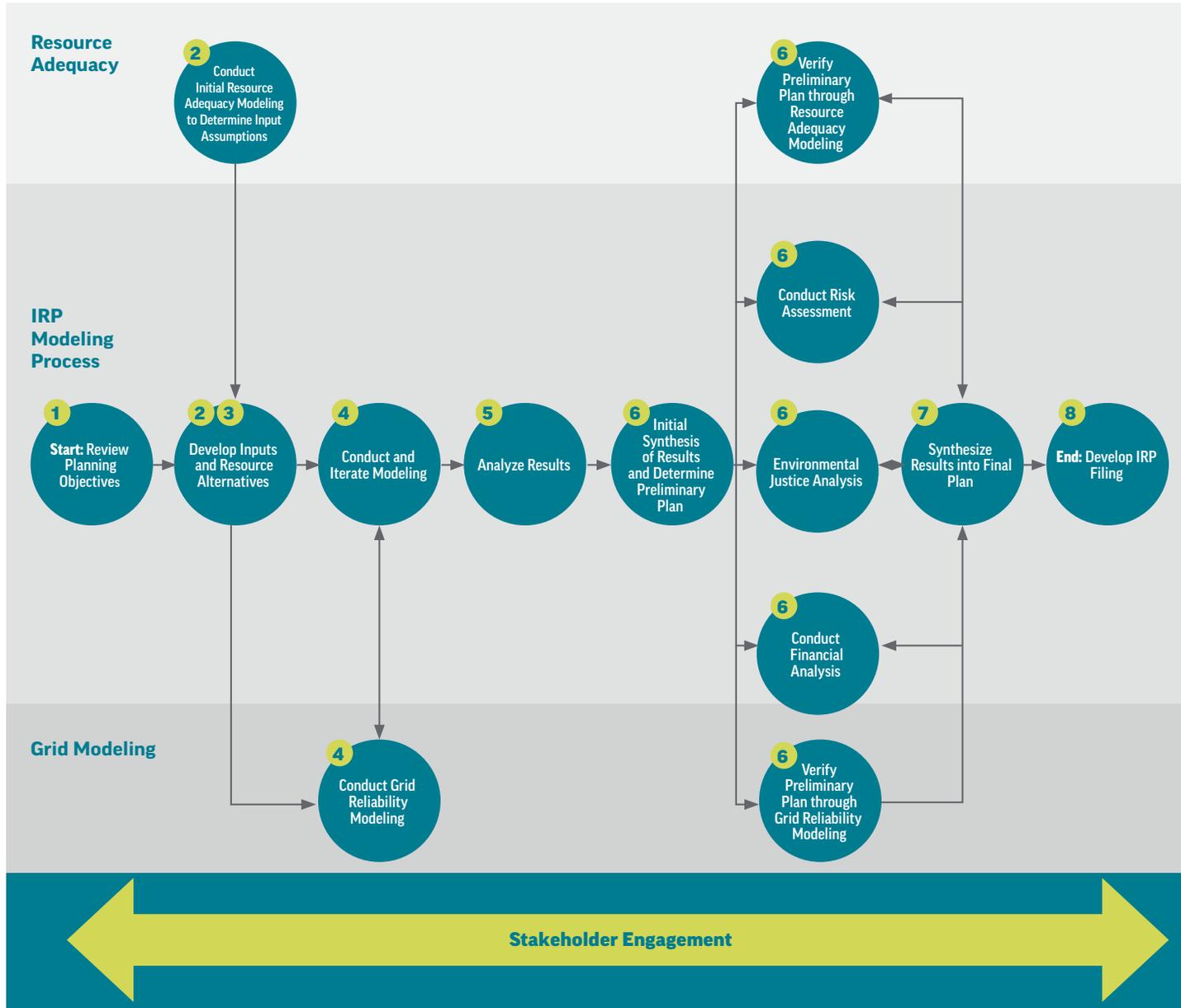
### More accurate capacity accreditation and resource adequacy review

Studied the effects on capacity values from increased levels of solar and battery storage, with tiered values representing the effective load carrying capability. In addition, third-party resource adequacy modeling was conducted to quantify the probability of not serving load due to lack of supply under different portfolios and conditions.

### Capturing flexibility benefits of energy storage

Modeling reflected additional value of battery storage in the form of certain ancillary services and flexibility benefits associated with batteries reducing renewable energy integration costs.

# DTE Electric's IRP planning process, step by step



**Step one:** Review the planning objectives.

**Steps two and three:** Develop scenarios, sensitivities and other inputs. Identify alternative resource options to meet customer demand and determine capacity outlook.

**Step four:** Conduct the modeling to generate portfolios that consist of different alternatives for each scenario and sensitivity.

**Step five:** Compare alternative portfolios and draw conclusions to help design the preliminary PCA. Analyze the modeling results.

**Step six:** Conduct the initial synthesis of results, which supports the determination of a preliminary plan. Further analyze the preliminary plan through a series of additional studies, including resource adequacy modeling, a risk assessment, environmental justice analysis and financial analysis. ITC, the local transmission owner, also provides verification of the preliminary plan through grid reliability modeling at this point.

**Step 7:** Synthesize results into what becomes the final plan.

**Step 8:** Develop the IRP filing, file an application and supporting testimony requesting the Michigan Public Service Commission's approval of the IRP. Participate in contested case proceedings.



## Environmental justice

Our modeling process included an environmental justice analysis that looked at emissions projections as well as an analysis to identify, and qualitatively and quantitatively assess, the potential environmental and public health impacts of various alternative portfolios on vulnerable communities. The state of Michigan describes environmental justice as “the equitable treatment and meaningful involvement of all people, regardless of race, color, national origin, ability, or income and is critical to the development and application of laws, regulations, and policies that affect the environment, as well as the places people live, work, play, worship, and learn.”

This IRP is our first time formally considering environmental justice in the planning process. Analyzing environmental justice impacts of the generation transition will be an iterative process as analytical tools are refined, and as we engage communities and stakeholders and apply what we’ve learned to future IRPs.

A core component of environmental justice is meaningful involvement of all people. We recognize that there are barriers that may prevent customers who wish to engage from participating in the IRP process. To address those barriers, we used a variety of outreach methods to gather diverse input, ideas and perspectives from a broad range of stakeholders.

## Risk assessment

The proposed plan needs to be a reasonable plan in the face of an uncertain future, especially given the dynamic nature of the energy industry and emerging technologies. Risk assessments help to hedge the uncertainties by providing an evaluation of how different build plans would perform given a range of unexpected possible futures. As part of our IRP analysis, we conducted a risk assessment to review the feasibility of the proposed plan. DTE Electric’s risk assessment includes five methodologies: 1) stochastic, or probabilistic economic risk analysis; 2) stochastic reliability analysis; 3) evaluation of key inputs to the model; 4) portfolio metric evaluation; and 5) scenario and global sensitivity analysis. Based on the analysis, the proposed plan was determined to be a low-risk option compared to other alternatives studied.

## Carbon accounting

Our modeling includes calculating the CO<sub>2</sub> emissions associated with our purchases and sales of electricity. By using this approach, we are holding ourselves accountable for the impact to the environment from the energy that we provide to our customers, regardless of whether we produced or purchased that energy. Neither Michigan nor MISO currently requires this accounting, which may evolve over time. In our view, this method aligns with the intent of our IRP to take a more holistic approach to resource planning.

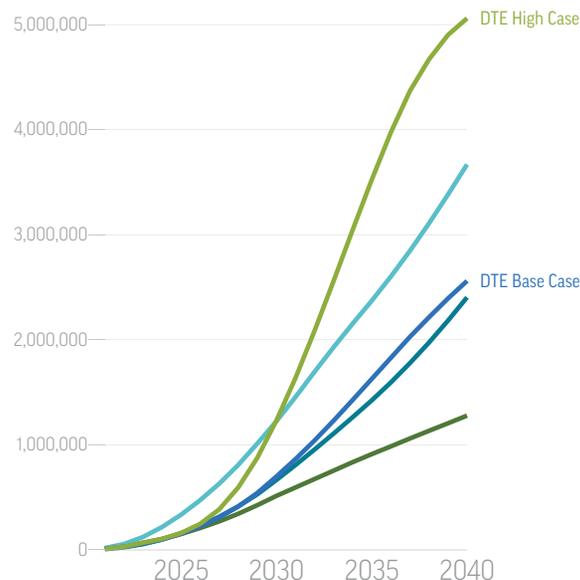
## Electric vehicles

Electric vehicle (EV) volumes are projected to grow in Michigan due to a combination of policy support, cost and performance improvements, new infrastructure and new model introductions from automakers. Outlooks for EVs vary greatly, so it was important to examine a range of EV forecasts and their impact on generation planning as part of the IRP process. We expect continued momentum in EV adoption, given recent announcements by automakers, federal and utility incentives, such as DTE's Charging Forward program, and collaborations to build out charging infrastructure.

By the numbers:

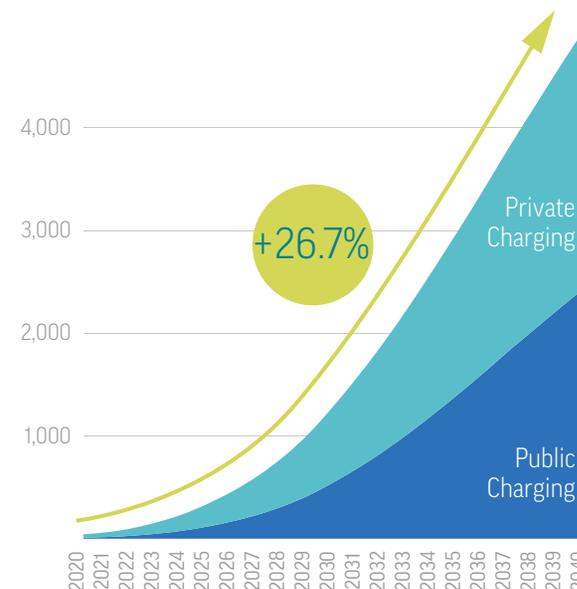
- In Michigan, 2021 EV sales more than tripled those from 2020.
- DTE Electric currently holds 70% of Michigan's EV stock, although we project that share will shrink to 50% by 2040.
- Today only 3% of new vehicle sales are electric; we project this will grow to 53% by 2040. Public policies could further accelerate adoption.
- We expect light-duty EV stock will grow nearly 20% annually on average from 2023 through 2042 in our service territory.

### Michigan EV Volume Forecast



The DTE Electric High Electrification scenario includes an electric vehicle adoption assumption of 50% of light-duty sales, 30% of medium duty sales, and 100% of bus sales are electric by 2030 in Michigan, consistent with the draft MI Healthy Climate Plan.

### Projected EV Load (Cumulative volumes, GWh)



### Charging Forward

DTE Electric's Charging Forward program, launched in 2019, brings the benefits of electric vehicles to residents, businesses and communities through education, infrastructure and customer incentives. The program supports customer adoption of electric vehicles through rebates on charging stations at homes, businesses and public locations. Our team also advises businesses, school districts and communities to transition fleet vehicles to electric.



## Next steps: MPSC and stakeholder review

This IRP marks the start of a formal process before the MPSC. We filed the IRP in November 2022 and it will be evaluated by the Commission according to Michigan law, rules and orders. The review process will include formal hearings and opportunities for interested parties to intervene.

The Commission approves a plan if it determines the plan represents the most reasonable and prudent means of meeting the utility's energy and capacity needs. Commissioners will make that decision based on these factors:

- Resource adequacy and capacity enough in quantity to serve anticipated peak electric load plus the applicable Planning Reserve Margin Requirement (PRMR) and Local Clearing Requirement (LCR).
- Compliance with applicable state and federal environmental regulations.
- Competitive pricing.
- Reliability.
- Commodity price risks.
- Diversity of generation supply.
- Whether the proposed levels of peak load reduction and energy waste reduction are reasonable and cost effective.

The MPSC issues its initial decision within 300 days, and its final decision within 360 days of the date of filing.

## Regulatory requests to support transition

The transition of generation has far-reaching impacts and requires a level of certainty to ensure we are able to plan for customer needs well in advance of implementation and that we serve our customers in an affordable and reliable manner. Due to the large-scale transformation proposed by DTE Electric in this IRP, we put forward three requests that are integral to the progression of the proposal:

- Pre-approval of the costs associated with the conversion of the Belle River Power Plant, and costs associated with certain demand response programs.
- An update to the Company's current financial compensation mechanism to support the generation transition as authorized by Michigan Law under MCL 460.6t(15).
- Accounting treatment for the net book value and decommissioning costs associated with Monroe Power Plant and the retiring coal handling assets at Belle River, as well as ongoing investments needed at Monroe to operate safely and reliably through retirement. This proposal is rate neutral to customers.

Approval of these requests as proposed would provide DTE Electric the assurances necessary to proceed with the implementation of the proposed generation transformation and progress our decarbonization plans affordably and reliably.



# Conclusion

The goal of our IRP process is to find the most reasonable and prudent path to accelerate decarbonization, while keeping the energy we provide reliable and affordable.

The plan we're proposing will reduce our carbon emissions through the addition of renewable energy sources and the phased retirement of our last two coal-fired power plants. It will strengthen the reliability of our electric generation system through a balanced, diverse energy mix, and over the next 10 years, it will drive an estimated \$9 billion investment into our state's economy, supporting over 25,000 jobs in communities across Michigan. The plan also projects to bring \$1.4 million in future cost savings and long-term customer value. The plan also positions us to leverage the Inflation Reduction Act for the benefit of our customers.

After many months of extensive research and analysis, we are confident that we found the right path. Our 2022 IRP will lead to a more reliable, affordable, diverse energy mix that our customers can depend on and a cleaner energy future for Michigan.

Certain information presented herein includes "forward-looking statements" within the meaning of the Private Securities Litigation Reform Act of 1995 with respect to the financial condition, results of operations, and businesses of DTE Energy (the "Company"). Forward-looking statements are not guarantees of future results and conditions, but rather are subject to numerous assumptions, risks, and uncertainties that may cause actual future results to be materially different from those contemplated, projected, estimated, or budgeted. In particular, among other statements, statements relating to the Company's climate-related policies, procedures, initiatives or goals (including, for the avoidance of doubt, net zero goals) and the Company's targets, aims and objectives in connection with those ambitions, and to the Company's expectations, targets and aims for capital expenditures, are subject to change, and are aspirational and not guarantees or promises that all targets, goals and objectives will be met. Statistics and metrics relating to ESG and climate-related matters are estimates and may be based on assumptions or developing standards. Actual results may differ materially from any forward-looking statements.

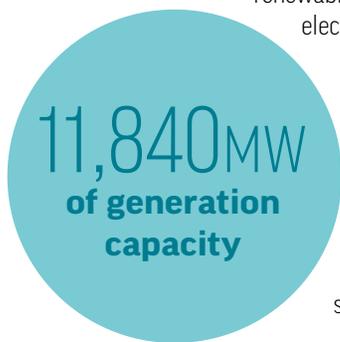
# Appendix

## DTE Electric's current generation portfolio

DTE Electric has powered homes and businesses in Southeastern Michigan for well over a century. A subsidiary of DTE Energy, DTE Electric is the largest electric utility in Michigan and one of the largest in the nation, generating and distributing electricity to 2.3 million residential, commercial and industrial customers.

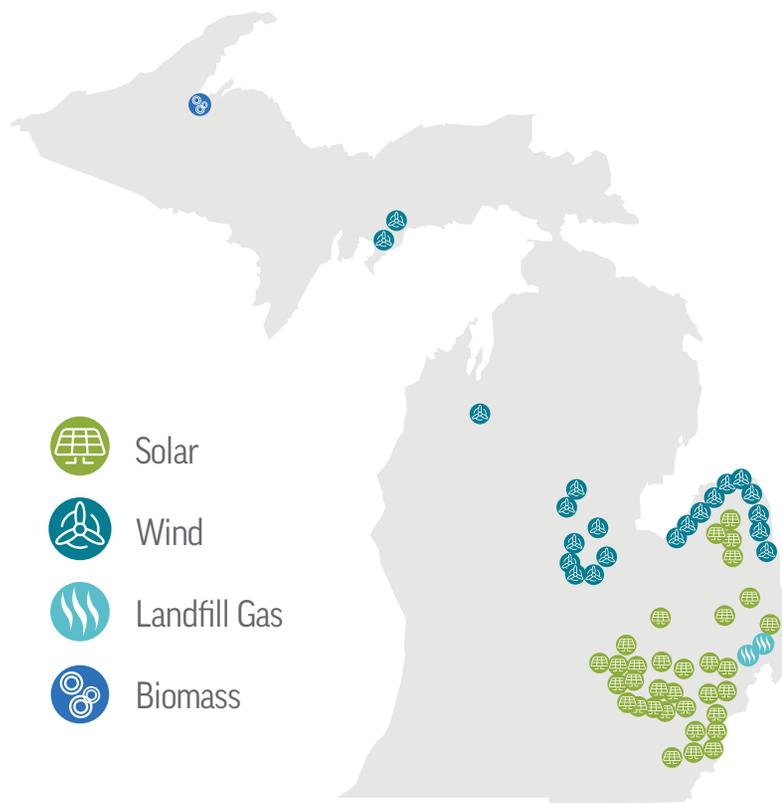


With an 11,840 megawatt system capacity, we use coal, nuclear fuel, natural gas, hydroelectric pumped storage and renewable sources to generate electrical output.



DTE Electric owns and operates approximately 31,000 miles of overhead distribution lines and 16,000 miles of underground distribution lines. Our service territory spans 7,600 square miles.

## Renewables projects



### Renewables

DTE Electric is Michigan's largest renewable energy provider. Since 2009, we've driven investment of nearly \$4 billion in renewable energy. These investments have supported Michigan communities through added tax revenues and job creation. By 2025, we plan to invest an additional \$1.5 billion in renewable energy assets.

DTE Electric's renewable energy portfolio includes 32 solar projects, all located in Michigan. In August 2022, we announced partnering with Ford Motor Company on the largest renewable energy purchase through a utility in the country. Through MIGreenPower, we will add 650 MW of new solar for Ford, increasing the total amount of installed solar capacity in Michigan by 70%.

DTE Electric owns 12 wind parks, located mainly in Michigan's Thumb region and in the middle of the state. Meridian, which is scheduled to come online in late 2022, will be our largest wind park.

In addition to owned resources, DTE Electric has entered into various power purchase agreements (PPAs) that have been approved by the MPSC under Public Act (PA) 2/PURPA and PA 295/342. The Company currently has nine PA 2/PURPA contracts and eleven PA 295/342 contracts for both energy and capacity.

### Coal

At one time, DTE Electric had one of the largest fleets of coal-fired power plants in the Midwest. In 2005, our energy mix was 77% coal, with power coming from six plants. These plants provided reliable, affordable electricity for Michigan homes and businesses for decades. In order to reach our decarbonization goals and replace aging infrastructure, we've retired four of those plants since 2005, and as outlined in this IRP, we plan to phase out coal-fired operations at the two remaining coal-fired power plants, Belle River and Monroe.

### Nuclear

At 1,141 megawatts of carbon-free energy, our Fermi 2 nuclear power plant accounts for about 20% of the electricity generated by DTE Electric. As our only source of carbon-free baseload or 24/7 generation, it will continue to be an important part of our balanced energy mix. Located in Monroe County, the plant produces enough electricity to serve a city of nearly one million people.

### Gas/oil

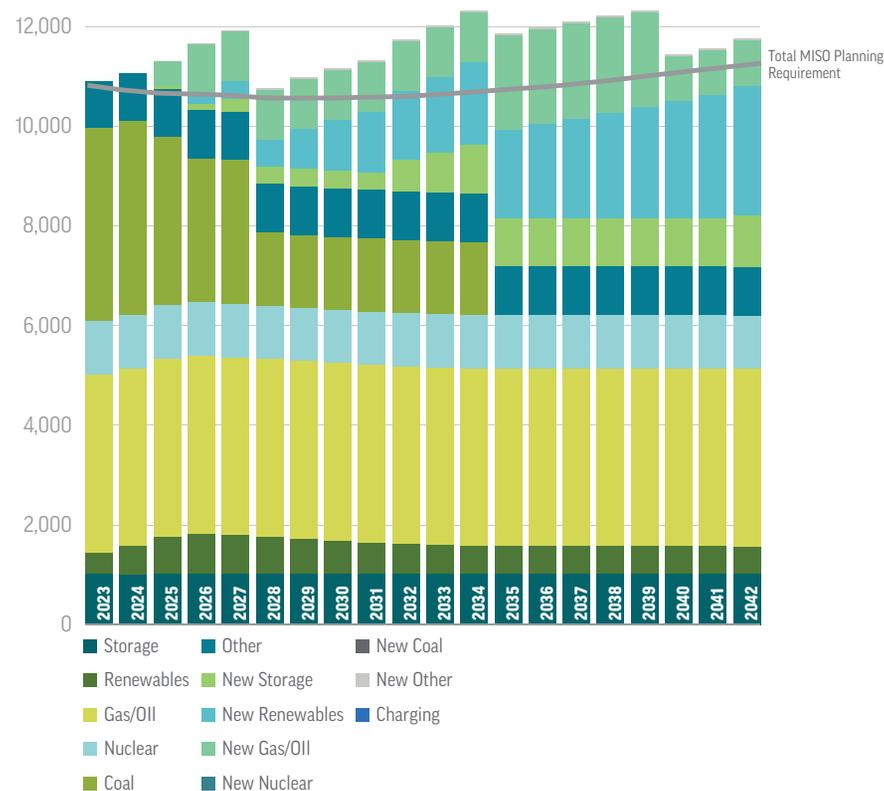
DTE Electric owns both oil- and gas-fired generating units, including one natural gas-fired combined cycle power plant (Blue Water Energy Center), one natural gas-fired steam power plant (Greenwood), one natural gas-fired combined heat and power plant (Dearborn CHP), and is also the owner and operator of 82 gas and oil-fueled peaker units located in the lower peninsula of Michigan.

Our Blue Water Energy Center (BWEC), located in East China Township, is a state-of-the-art 1,127 MW natural gas combined-cycle plant that provides an always-available source of energy. It came online in 2022 and is one of the most efficient plants in the country. BWEC supported the retirement of three coal-fired power plants without impacting system reliability and sharply reducing carbon emissions.

### Long-duration storage

The Ludington Pumped Storage Plant, which DTE Electric co-owns with Consumers Energy, is a hydroelectric, long-duration storage plant located on the shores of Lake Michigan in Mason County. Consisting of a man-made reservoir located above six 300-ton turbines, it works hand-in-hand with renewable energy. Its reversible turbines work as pumps when energy is plentiful and low-cost – like when the sun is shining and the wind is blowing – and as power generators when demand is higher and renewable sources are less abundant. It has a generating capacity of approximately 2,290 megawatts—enough to support a community of 1.4 million people in minutes. As the second largest facility of its type in the country, Ludington plays a critical role meeting demand at peak times and balancing output of renewable energy.

## Annual Capacity Balance 2023-2042 (MW)

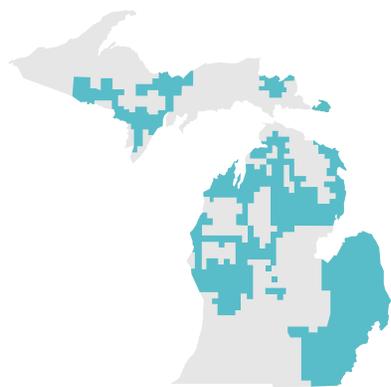
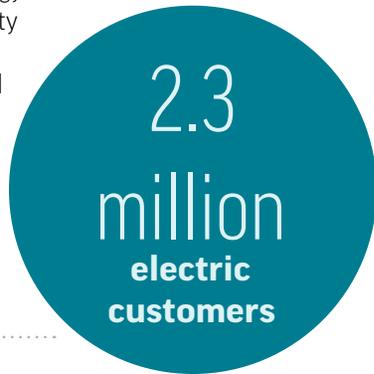


## DTE Energy corporate biography

DTE Energy (NYSE: DTE) is a Detroit-based diversified energy company involved in the development and management of energy-related businesses and services nationwide. Its operating units include an electric company serving 2.3 million customers in Southeast Michigan and a natural gas company serving 1.3 million customers in Michigan. The DTE portfolio also includes non-utility businesses focused on industrial energy services, renewable natural gas, and energy marketing and trading.

As one of Michigan's leading corporate citizens, DTE Energy is a force for growth and prosperity in the 450 Michigan communities it serves in a variety of ways, including philanthropy, volunteerism and economic progress. Information about DTE Energy is available at [dteenergy.com](http://dteenergy.com), and on Twitter and Facebook.

DTE Energy has more than 10,000 employees in utility and non-utility subsidiaries involved in a wide range of energy-related businesses. The company's growing non-utility businesses are built around the strengths, skills and assets of DTE Energy's electric and gas utilities.



7,600 square mile service territory

## Demand response programs

Demand Response Program	Description
Interruptible Space Conditioning Rate (D1.1)	A separately metered service where the A/C Condenser or heat pump is cycled through connected Load Control Device.
Dynamic Peak Pricing Rate (D1.8)	A whole-home rate where the customer receives a discounted rate during certain hours of the day and week in exchange for paying a higher rate for energy used during Critical Peak Pricing (CPP) event hours.
Interruptible General Service Rate (D3.3)	Commercial secondary customers can elect to have separately metered service that is subject to interruption or establish a portion of their load as firm through the product protection feature.
Interruptible Water Heating Rate (D5)	Available to customers using hot water for sanitary purposes or other uses subject to the approval of the Company. A timer or other monitoring device controls the daily use of all controlled water heating service.
Interruptible Supply Base Service Rate (D8)	Primary voltage customers who desire separately metered service for a specified quantity of demonstrated interruptible load of not less than 50 kW at a single location can take service under this rate.
Alternative Electric Metal Melting Rider (Rider 1.1)	Customers who operate electric furnaces for the reduction of metallic ores and/or electric use consumed in holding operations who provide special circuits can have that load separately metered, making it subject to interruption.
Electric Process Heat Rider (Rider 1.2)	Customers who use electric heat as an integral part of a manufacturing process, or electricity as an integral part of anodizing, plating, or a coating process and who provide special circuits can have that load separately metered, making it subject to interruption.
Interruptible Supply Rider (Rider 10)	Available to customers on primary voltage who contract for a specified quantity of interruptible load of not less than 50,000 kilowatts at a single location
Capacity Release Rider (Rider 12)	Customers are provided a capacity release payment by subscribing at least 100 kW of load per site location for interruption
Smart Savers (Bring-Your-Own-Device)	Customers who have a Wi-Fi enabled smart thermostat installed can opt to have the Company adjust the thermostat up to four (4) degrees during an event in exchange for an annual incentive.

**DTE**



For more information about your Integrated Resources Plan please visit: [dtecleanenergy.com](https://dtecleanenergy.com)