

Powering Austin's Clean Energy Future

AUSTIN ENERGY RESOURCE, GENERATION
AND CLIMATE PROTECTION PLAN TO 2035





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AND CLIMATE PROTECTION PLAN TO 2035



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EXECUTIVE SUMMARY

The Resource, Generation and Climate Protection Plan to 2035 provides a flexible path to a clean energy future that incorporates our community's core values of reliability, affordability, environmental sustainability and energy equity while meeting new challenges and opportunities. Austin Energy developed this plan at the direction of the Austin City Council and in partnership with wide-ranging voices in our community as well as third-party industry experts. The 2035 Plan allows us to address the immediate risks affecting our community and adjust strategies to solve ever-changing conditions. Specifically, the 2035 Plan gives the community:

- ✓ Continued progress and clear commitment to an industry-leading goal of 100% carbon-free energy by 2035.
- ✓ New and innovative customer energy solutions.
- ✓ Improved reliability, affordability and environmental sustainability.
- ✓ An energy equity approach that protects the most vulnerable customers.
- ✓ Resiliency in the face of extreme weather and associated financial risk.
- ✓ Flexibility and innovation to tackle current and future challenges.
- ✓ A path that was guided by their input, values and priorities.

CURRENT RISKS

Austin Energy is facing a changing energy landscape. The best way to plan for the future is to identify the changes we're seeing and address the risks currently affecting our customers and operations.

- **Growth in population and energy consumption** — With rapidly growing demand across the state, as well as in our service area, Austin Energy must ensure we can reliably serve our customers.
- **Increases in extreme weather and climate risk** — With climate change causing more extreme weather, Austin Energy must be operationally and financially resilient to provide the level of service our customers expect in these conditions.
- **Financial risk** — Austin Energy must employ strategies to minimize liquidity risk and maintain the health of the utility.
- **ERCOT market changes and increasing costs** — Austin Energy needs flexibility to find the best resources and strategies in a changing ERCOT market.
- **Transmission congestion and volatile pricing to import energy** — Austin Energy needs to reduce local transmission congestion costs and significant price swings to support reliability and protect customers from increased power costs.
- **Local reliability issues resulting from power plant retirements** — Following the retirement of the Decker Steam Units (fully accomplished in 2022), Austin Energy must maintain sufficient voltage support so we can reliably deliver power to customers and avoid local outages.
- **Local Air Quality and Non-Attainment** — Travis County is at risk of exceeding local air quality standards set by the U.S. Environmental Protection Agency — specifically for ozone. Exceeding this standard may put the county in “non-attainment.”

- **Emissions from Fayette Power Project (FPP)** — With FPP creating about 70% of the emissions in Austin Energy’s generation portfolio, we must have replacement power to exit coal and protect customers from energy shortfalls and additional energy market risks.

CORE VALUES FOR THE 2035 PLAN

We partnered with our community and incorporated their values into the 2035 Plan as a guide to a reliable, affordable and environmentally sustainable future that benefits everyone in our community.

Reliability

Providing consistent and predictable electric service that will power our community as it continues to grow.

Affordability

Assessing the impacts and promoting fairness of costs for customers while continuing to provide the public-power benefits that enhance our community’s quality of life.

Environmental Sustainability

Maintaining flexibility in support of clean and innovative technologies and programs while taking a holistic assessment of the community and environmental impacts.

Energy Equity

Evaluating and expanding access to the services Austin Energy provides so they can reach those who need them most while reducing any negative impact of our operations on the community.

KEY ACTIONS

Guided by these core values and a thorough analysis that modeled tradeoffs in potential futures, the 2035 Plan puts forward key actions to meet our community’s priorities and reduce the risks we face in the energy landscape.

Prioritize customer energy solutions in resource planning, reducing the need for additional generation and transmission in support of reliability.

- **Lead with Energy Efficiency** — Austin Energy will lead with energy efficiency as the first priority to reduce customer energy use during peak times, sustain customer comfort and reduce electric bills. Austin Energy plans to save 975 MW by 2027 and will shift to tracking avoided greenhouse gas for our energy efficiency programs. We will continue to report the megawatt and megawatt hour reductions from these programs. Austin Energy also commits to remain an industry leader on energy building codes and green building development, as well as maintaining the local thermal storage goal of 40 MW by 2030.
- **Lead with Demand Response** — In combination with our energy efficiency efforts, Austin Energy will expand our demand response offerings, planning to reach at least 270 MW and strive for 470 MW of achieved summer reductions by 2035 if economically feasible, including at least 78 MW and strive for 102 MW by 2027 if economically feasible. This includes additional technologies such as customer-sited batteries and managed electric vehicle charging.
- **Move from Megawatt Reduction to Greenhouse Gas Avoidance** — Austin Energy will transition to focus on greenhouse gas avoidance as a primary goal for many of our demand-side management programs, in support of decarbonization.
- **Promote Beneficial Electrification** — As we see more technologies shift to electricity for their functions, like gas to electric water heaters, Austin Energy will support beneficial electrification, assisting that conversion while minimizing the impacts on the grid and environment.

- **Incentivize Customer-Sited Batteries** — Austin Energy will develop and provide incentives for customer-sited battery storage to maximize benefits to customers and the electric grid, including the adoption of a program that allows all customers to provide the utility access to customer-sited batteries.
- **Promote Innovative Local Solar Solutions** — Austin Energy will continue building local solar solutions and expanding local solar access for all customers. Austin Energy will plan to reach for at least 205 MWs of local solar energy by the end of 2027 and reach 405 MW of installed local solar capacity by 2035 — including 160 MW of existing capacity.
- **Improve Customer Interconnection Experience** — Austin Energy will improve the customer experience and reduce barriers for installing customer-sited solutions like batteries, rooftop solar and personal generators.

Develop local solutions to ensure there are enough energy resources in our service area to manage reliability and affordability.

- **Prioritize Customer Energy Solutions** — Austin Energy will maximize these efforts to reduce the need for additional generation and transmission in support of reliability, reduce congestion costs and affordability. Austin Energy will continue to take the lead with other City departments to maximize DSM and load shifting opportunities within City of Austin operations. The City of Austin commits to exploring how to maximize the siting of solar generation and battery storage on City-owned land and properties where it makes environmental and economic sense.
- **Increase Transmission Import Capacity** — As part of a holistic resource approach, Austin Energy will work on projects that increase local transmission capacity to increase reliability, reduce congestion costs and bring more power into our service area.
- **Promote Local Utility-Scale Solar** — Austin Energy will search for new opportunities to expand local utility-scale solar as we continue to invest in renewable resources and support our local power supply.
- **Include Local Utility-Scale Batteries** — Leveraging our experience from Austin SHINES, Austin Energy will incorporate utility-scale batteries to provide another local, dispatchable power solution. Austin Energy commits to installing 125 MW of battery storage, if economically feasible, by the end of 2027 and will study the feasibility of installing 300 MW of battery storage by the end of 2030, within the Austin Energy Load Zone. Austin Energy will perform all necessary action to install 100-150 MW of battery storage within the Austin Energy Load Zone as soon as practicable.
- **Avoid Retiring Local Generation Prematurely (Sand Hill and Decker)** — If needed, Austin Energy will maintain our existing generation capacity at Sand Hill and Decker while seeking opportunities to increase efficiencies, reduce emissions, reduce costs for customers and replace these resources with clean energy resources.
- **Additional, More Efficient, Natural Gas Peaker Units** — In support of reliability and affordability, the 2035 Plan allows Austin Energy to consider adding natural gas generation, only as that relates to more efficient, local peaker units. As part of the implementation process, City Council approval is required before any new utility-scale resource could be developed. This process has four phases — feasibility, pre-development, development and construction. These phases will incorporate regular updates to City Council, gathering their feedback, and incorporating community input, prior to bringing a project forward for approval.
- **Develop a Request for Proposal on All Energy Resources** — Before investing in resources that produce local air pollution, such as peakers, Austin Energy will issue an all-resource RFP to meet the energy and risk mitigation needs identified by Austin Energy.

- **Develop Emissions Guardrails for All Peakers** — Once additional peaker units are placed in service, we will develop emissions limits for all peakers to reduce our environmental impact.
- **A Commitment to Workers** — When developing the standards for programs and the installation of additional generation necessary to achieve the goals set forth in this plan, Austin Energy will prioritize, to the extent allowed by law, the utilization of unionized laborers and advance fair labor practices. Austin Energy will also provide just transition options for its workers whose jobs are impacted by the transition to clean energy.
- **Incorporate Equity into Siting Considerations** — When considering site locations for any future local generation solutions, Austin Energy will explore the feasibility of sites across our service area. Site selection will aim to avoid historically impacted communities, and any future local solutions will involve collaboration with our community.
- **Protect Local Air Quality** — Austin Energy will continue to assess emerging pollution control technologies to further reduce local emissions and look for innovative partnerships and opportunities.
- **Focus Customer Programs to Support Neighborhoods** — Austin Energy will focus on improving communities that host generating facilities through innovative customer programs and partnerships.
- **Maintain Black Start Utility Status** — Austin Energy will maintain black start capabilities in our generation portfolio to be part of the solution in a statewide grid blackout emergency.

Continue our commitment to decarbonization that paves the way for an equitable, clean energy transition.

- **Carbon Free as a Percentage of Load** — Austin Energy reaffirms the 2030 Plan’s goal of 100% carbon-free by 2035 and sets a goal of serving 70% of our load with renewable energy by 2030.
- **Carbon Intensity Guardrails** — Austin Energy will set annual carbon intensity guardrails for its generation resources. Carbon intensity is measured in pounds of carbon per megawatt-hour of energy generated. CO2 makes up nearly 99% of the greenhouse gases emitted when generating electricity. Based on Austin Energy’s current generation mix, these carbon intensity guardrails serve as appropriate upper boundaries to ensure all emissions, including NOx, are trending downward.
- **Reducing Emissions** — When the utility is able to capture data on customer’s emissions separate from their electricity use, such as gas heating, cooking, and/or transportation, the utility should propose moving to goals that seek to reduce total net emissions through tools like beneficial electrification programs.
- **Exit Coal and Reaffirm REACH** — Austin Energy will continue our efforts to move away from coal power generation at the Fayette Power Project (FPP) by shutting down Austin Energy’s portion of FPP or converting it to run on a carbon-free and emissions-free energy source.
- **Wind and Solar Outside of Austin Energy’s Service Area** — Austin Energy will continue to use remote renewable wind and solar projects to support reaching 100% carbon-free by 2035 as a percentage of load.
- **Geothermal, Nuclear and Other Carbon-Free Technologies** — Austin Energy will seek to add diversity to our carbon-free generation mix through emerging and evolving technologies.

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Further our culture of innovation so Austin Energy can stay at the forefront of technology advancements that support our community.

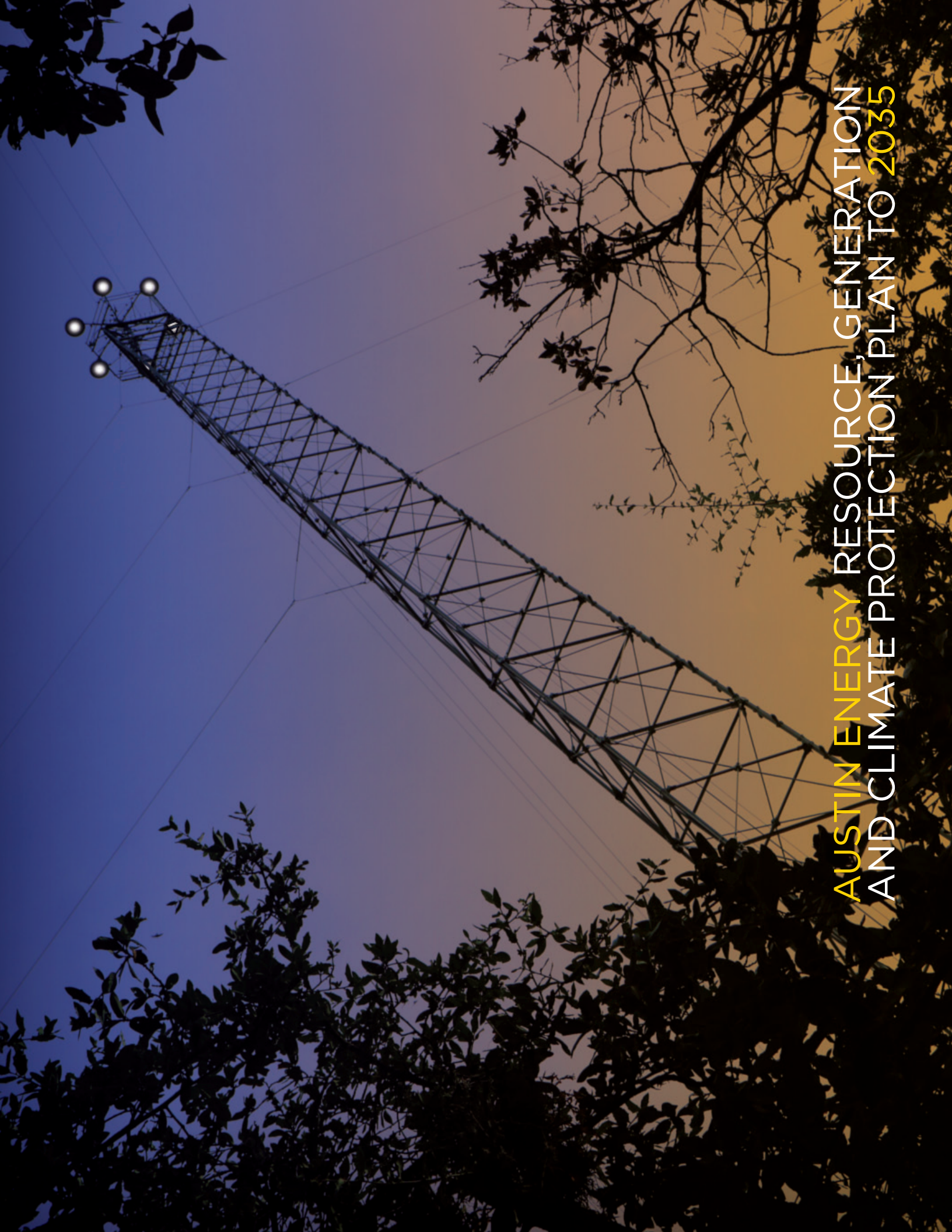
- **Research and Development Partnerships** — Austin Energy will continue our leadership in an evolving industry by fostering research and development partnerships that explore emerging technologies.
- **Grant and Other Funding Opportunities** — Austin Energy will continue pursuing federal, state and private funding opportunities in support of City of Austin goals.
- **Solar for All** — This is an emerging partnership between the City of Austin and 10 coalition partners across Texas that leverages federal funding to promote equitable access to clean energy solutions. Solar for All will allow Austin Energy to fund solar and battery installations to benefit low-income customers.
- **Solar Standard Offer** — A flagship program for Austin Energy, Solar Standard Offer provides a new rate so it's easier for renewable developers to lease a commercial customer's rooftop space and host solar for our Community Solar program — rooftops that traditionally might not be incentivized to host local solar.
- **Pilot Geothermal Generation** — Austin Energy seeks to support the development of geothermal electricity generation in Texas, starting with an agreement for a 5 MW project in East Texas.
- **Enhance “Virtual Power Plant” Programs and Set Up a Distributed Energy Resource Management System** — Austin Energy will work to increase community participation in virtual power plant programs and develop requirements for a Distributed Energy Resource Management System to optimize distributed resources.
- **Support Vehicle-to-X Opportunities** — Austin Energy will play an active role in Vehicle-to-X opportunities by supporting necessary infrastructure, standards placement, regulatory changes and technological integration. Vehicle-to-X refers to a variety of technologies that allow electric vehicles to play a more active role in the electric system.
- **Explore Advanced Nuclear Technologies** — Austin Energy will monitor the progress of advanced nuclear reactors and engage directly with those who have expertise in this area.
- **Emerging Carbon Capture Technologies** — Austin Energy will monitor the progress of various carbon capture technologies and applications over the next decade.

The 2035 Plan replaces all previous resource generation plans. The objectives, goals and recommendations laid out here supersede any prior versions or related resolutions.

These actions and strategies are designed as outcome-based standards, rather than prescriptive mandates. As recognized by industry-leaders, this approach provides us the flexibility to address immediate and future challenges while meeting our community's values.

Austin Energy did not develop this plan on our own. We would like to thank our community stakeholders for their input and perspectives, the Electric Utility Commission (EUC) for joining us in the development of this plan, and the Austin City Council for their time, dedication and consideration of the 2035 Plan.

With the 2035 Plan in place, Austin Energy can continue to deliver on our mission to safely deliver clean, affordable, reliable energy and excellent customer service.



AUSTIN ENERGY RESOURCE, GENERATION
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INTRODUCTION

Austin Energy has served the residents of Central Texas for almost 130 years. We are a municipally owned electric utility that spans 437 square miles with more than 575,000 customers both inside and outside the Austin city limits.

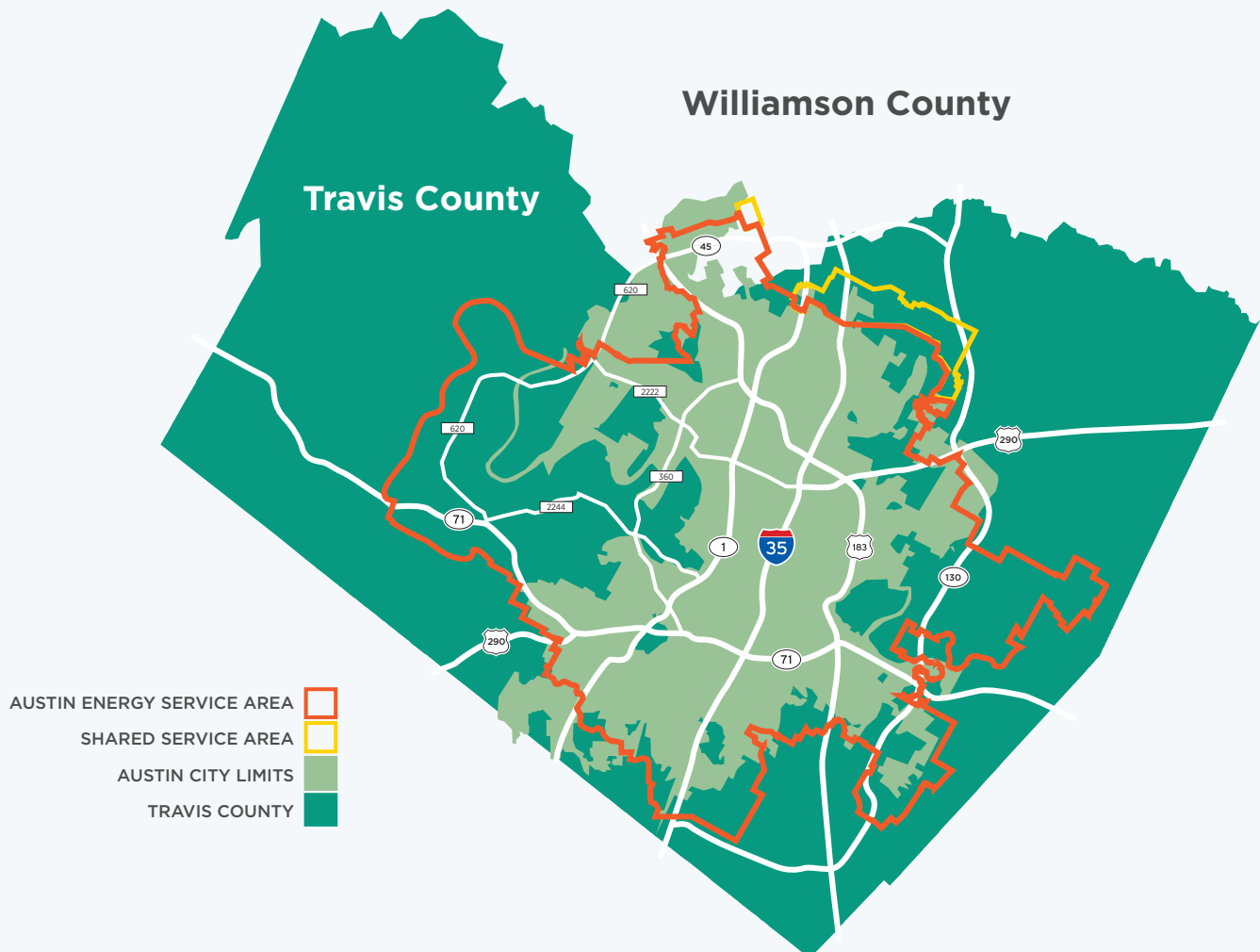
Mission: To safely deliver clean, affordable, reliable energy and excellent customer service.

Vision: Powering a cleaner, brighter future with customer-driven, community-focused solutions.

Austin Energy generates, distributes and sells power to customers, but as a public power utility, our connection with the community goes beyond electric service. We support the Central Texas community and the region's livability through numerous customer assistance programs and energy efficiency programs, rebates and incentives.

Austin Energy Service Area

50% City of Austin • 50% Outside of Austin



Because of that connection, we incorporate the community's values into the work we do, and, in doing so, we are a nationally recognized utility. Since the 1980s, our partnership with the community has earned us a reputation as one of the most conservation-focused, cleanest utilities in the nation. We look to continue that leadership even beyond what we have already achieved.

Since the adoption of our [previous Resource, Generation and Climate Protection Plan in 2020](#), the electric industry has seen drastic changes. Costs in the Texas electric market have increased, there is significant growth in electric demand throughout the state and in our service area, and frequent extreme weather events strain the statewide electric grid.

Resource generation plans are long-term guides for a utility to meet future energy goals. They analyze risks, costs, technologies and opportunities around future power supply and demand possibilities so a utility can meet energy needs and priorities.

Many of our current challenges did not exist during the previous resource generation planning periods. Others have intensified. Though our direction and commitment to carbon-free energy remains the same, it is time to adapt to evolving challenges and adjust our path forward with this Resource, Generation and Climate Protection Plan to 2035 (the 2035 Plan).



UNDERSTANDING CURRENT AND FUTURE ENERGY LANDSCAPES

AUSTIN ENERGY MUST PLAN FOR RISKS, CHALLENGES AND OPPORTUNITIES

Austin Energy must adapt to a changing energy landscape. A completed transmission study showed reliability and cost risks on our system as we retire power generation in our service area. Increasing extreme weather events, from prolonged heat to bitterly cold winter storms, continue to test the resiliency of electric systems and finances. And we've seen costs rise in the ERCOT market as it adapts to new energy investments and evolving risks.

The EUC, City Council and Austin Energy collectively recognized these challenges and risks. On Dec. 1, 2022, Council passed Resolution 20221201-040 to update Austin Energy's 2020 resource plan and address these issues.

This kicked off the development of the 2035 Plan.

RISKS AUSTIN ENERGY FACES

The best way to plan for the future is to identify the changes we're seeing and address the risks currently affecting Austin Energy's customers and operations. Here's what we found:

- **Growth in population and energy consumption** — With rapidly growing demand across the state, as well as in our service area, Austin Energy must ensure it can reliably serve our customers.
- **Increases in extreme weather and climate risk** — With climate change causing more extreme weather, Austin Energy must be operationally and financially resilient to provide the level of service our customers expect in these conditions.
- **Financial risk** — Austin Energy must employ strategies to minimize liquidity risk and maintain the health of the utility.
- **ERCOT market changes and increasing costs** — Austin Energy needs flexibility to find the best resources and strategies in a changing ERCOT market.
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- **Emissions from Fayette Power Project (FPP)** — With FPP creating about 70% of the emissions in Austin Energy's generation portfolio, we must have replacement power to exit coal and protect customers from energy shortfalls and additional energy market risks.

In developing the Austin Energy Resource, Generation and Climate Protection Plan to 2035, we took a detailed look at the current and future electric landscapes so we could develop effective strategies that reduce these risks. Here is that detailed look.







AUSTIN ENERGY RESOURCE, GENERATION
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THE ERCOT ENERGY LANDSCAPE

The Electric Reliability Council of Texas (ERCOT) operates the statewide electric grid, balancing the flow of electric power to more than 27 million Texas customers — or about 90% of the state’s electric use. ERCOT ensures that all energy demand is met by balancing power supply with demand.

By law, Austin Energy participates in the ERCOT wholesale electric market. That means all the power we generate must be sold into the market and statewide grid, and we buy all the power needed for our customers from the same market and grid.

The ERCOT Market

While ERCOT directs the flow of power across Texas, it also manages the marketplace where generators and utilities buy and sell electricity. The ERCOT market is a detailed system with thousands of price nodes that help determine the cost of power and the best path for it to travel. This type of system provides:

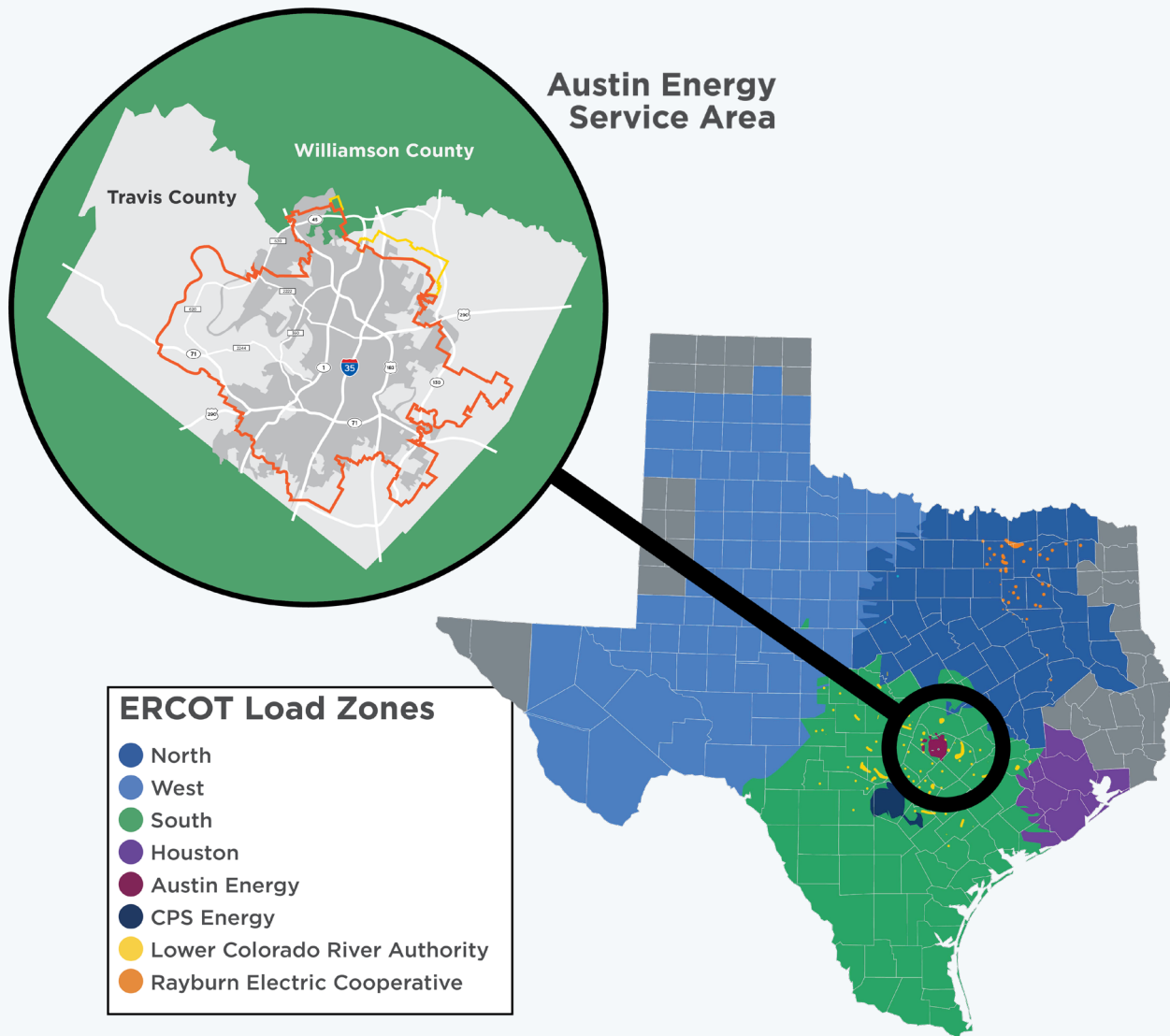
- Meaningful, local price signals for power.
- Optimized power flows to meet demand.
- Better information on local transmission congestion — when transmission lines become overloaded when moving power.

As part of the balance between supply and demand, ERCOT also makes sure power reaches people at the lowest possible system cost while managing all transmission constraints.

Prices can change significantly, spiking at times when electricity is scarce. For utilities like Austin Energy, which operate generation and transmission and provide retail electric service, having power sources helps manage costs to customers by being on both sides of the supply-demand equation. When those power sources are far from where the customers are, though, price differences can complicate cost management.

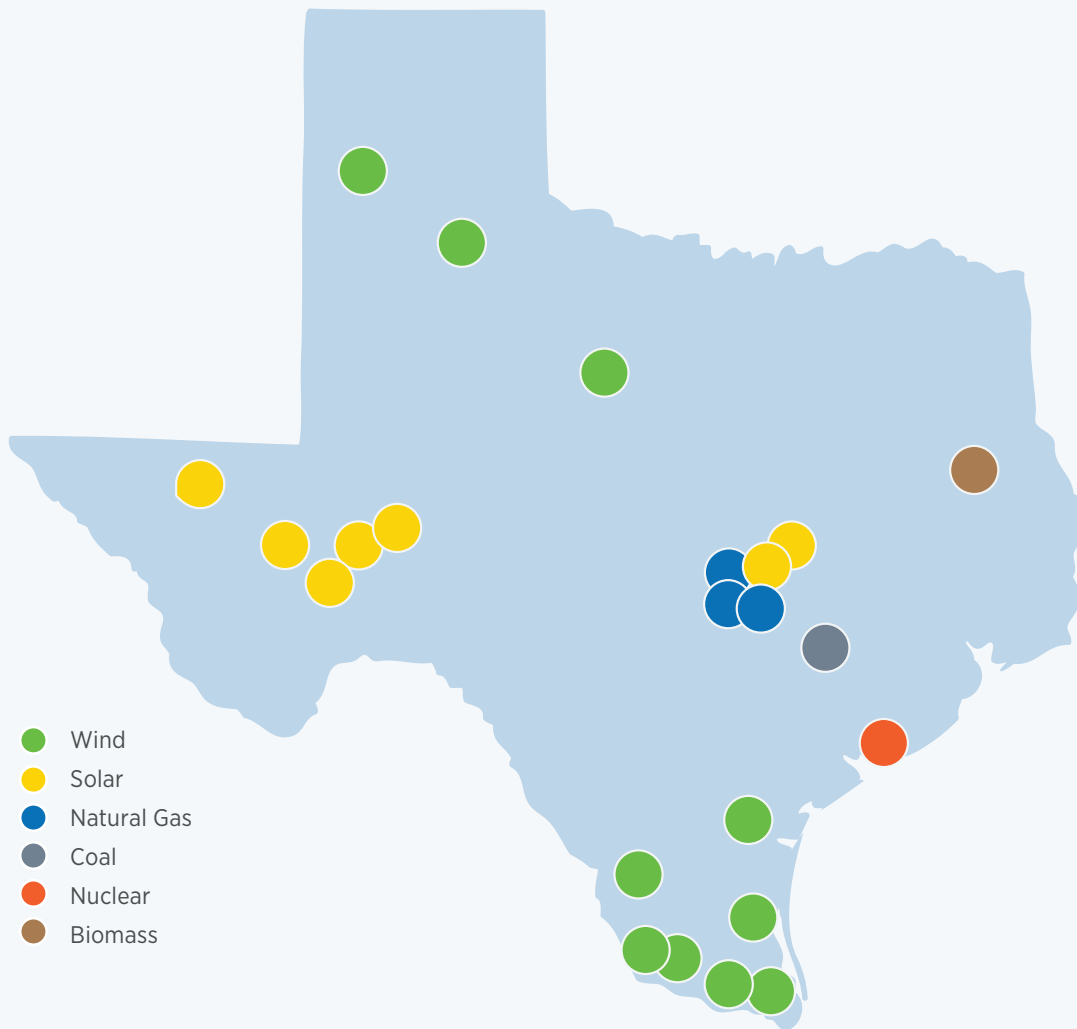


ERCOT Load Zones with Highlight of Austin Energy Load Zone



Owning and operating diverse generation resources — in both type and location — provides savings to our customers. Austin Energy uses those generation resources as tools to protect customers from high market prices, support our community’s goals, promote reliable service and maintain stable rates. Here’s one example: Looking at the 12 months ending June 2024, simply purchasing power from ERCOT to serve Austin Energy’s customers would have cost \$1.1 billion. After factoring in Austin Energy’s generation revenues and costs, our power purchase agreements and market activity known as trading and hedging, the actual cost of energy to customers was cut in half — to \$0.56 billion, or \$560 million. Without Austin Energy owning and operating generation resources, our customers would have seen significantly higher costs.

Austin Energy Generation Across Texas



Because Austin Energy participates in the ERCOT market, it's critical for us to recognize and adapt to changes and trends in this system. Right now, we're seeing a dramatic change to ERCOT's power supply mix. Significant growth in wind, solar and battery energy storage; energy demand increases; transmission issues; and retirements of coal and gas generation are leading to fluctuating prices and significant changes in the way power is balanced to meet Texas' energy needs.

ERCOT Demand Growth

There are two key factors in the energy landscape — supply and demand. Supply must meet demand, so predicting future demand is crucial for planning resources.

ERCOT expects power demand to increase going forward. According to ERCOT's 2023 forecast numbers, which we incorporated into our modeling, peak energy use increases from 83 gigawatts (GW) in 2025 to 99 GW in 2035.

Predicting future demand helps ERCOT plan how to meet the growing needs of the system. For Austin Energy, this helps us better understand the market while we outline future resource strategies to meet our customer and system needs.

New Generation and Retirements in ERCOT

On the supply side of the energy equation is generation. ERCOT expects significant growth in this area as well. Following the national trend, many of these proposed new generation projects in ERCOT are renewable energy sources. While these sources provide clean energy, their weather-dependent nature has led to growing operational and reliability risks.

Meanwhile, a significant portion of older power plants in the ERCOT market are nearing the end of their operational life. ERCOT also manages retirements to ensure grid reliability, potentially intervening to keep critical plants online when absolutely necessary.

As ERCOT works to balance supply and demand on the statewide system, it's important for Austin Energy to factor that information into our resource planning. The 2035 Plan incorporates the most up-to-date, official information related to announced plant additions and retirements from ERCOT. This gives us one look to the future for the modeling process.

ERCOT and Transmission Congestion

Because many new generation sources are located far from the end users, ERCOT is seeing a significant increase in transmission congestion. When transmission lines need to transport more power than they can carry, they can become overloaded, causing congestion.

ERCOT creates Generic Transmission Constraints (GTC) to manage the flow of power over a group of transmission lines or equipment. Normally, transmission constraints are based on the safe operating temperature of transmission lines, as more power flowing through equipment increases heat. Overloading could break the equipment or cause it to fail.

There are 23 GTCs in ERCOT's system. Though GTCs help prevent equipment failure, they also limit the amount of power that can be transported. That limit can cause prices to increase, making power more expensive.

When planning future resources and their locations, Austin Energy must consider all these details to protect customers from market costs and an evolving system.

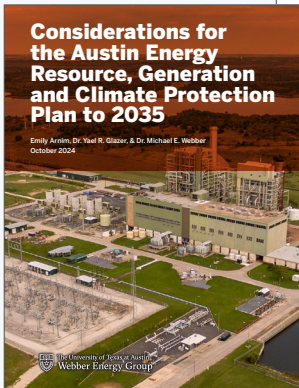


WEBBER ENERGY GROUP'S VIEW OF THE ENERGY LANDSCAPE

Finding other knowledgeable perspectives and insights helps focus the picture of the challenges we need to address in resource planning. To expand our scope and knowledge, Austin Energy partnered with the Webber Energy Group to give us its analysis of trends in the energy industry.

The Webber Energy Group is an energy research team out of the University of Texas at Austin. They focus on bringing scientific methodology and technical expertise to issues around energy and the environment, all to help reach a more sustainable path.

For the 2035 Plan, the Webber Energy Group looked at the drivers of increasing power demand, the need for more power generation because of that increase and the challenges of decarbonization while addressing those needs. **Here's a summary of their considerations:**



Executive Summary

This report examines how Austin Energy (AE) can manage increasing electricity demand through 2040 while ensuring clean, reliable, and affordable power. With AE peak demand projected to reach up to 7,800 MW by 2040 under a high load growth scenario—from about 3,000 MW in 2023—the utility faces the multi-pronged challenge of expanding and decarbonizing its energy supply while operating in a warming world.

AE must address the expiration of renewable power purchase agreements (PPAs) and rising power demand driven by four main factors: population and economic growth; electrification of home heating and cooking; large load growth (e.g., data center growth); and electric vehicle (EV) adoption.

Our analysis identifies unmanaged EV charging as the most significant driver of peak demand growth. If EV charging remains unmanaged, it could account for nearly half of the total peak load. Smart-charging technologies will be a crucial component of AE's resource plan, with the potential to shave 3,600 MW off of peak demand. Data centers could also emerge as drivers of peak demand growth, though their individual power requirements are uncertain. Data center expansion will therefore necessitate careful monitoring and adaptable strategies from AE.

To effectively meet future demand, AE must evaluate options through the lens of trade-offs, considering a diverse range of supply and demand solutions that ensure resource adequacy and reliability while minimizing pollution and mitigating exposure to price volatility and transmission congestion fees.

Key strategies might include: enhancing energy efficiency; expanding renewable energy sources; deploying distributed solutions such as solar, energy storage, and demand response; and installing dispatchable power sources in the AE service area—with a preference for carbon-free options. In addition, short-term solutions might need to be incorporated as part of the plan to ensure resource adequacy despite import capacity limitations and the retirement of local generation.

Additionally, addressing equity and environmental concerns, such as reducing fenceline pollution and outages that disproportionately affect marginalized communities, will also play a vital role in optimizing overall system performance and achieving AE's sustainability goals. With technologies available today and on the near-term horizon, a balanced mix of carbon-neutral and carbon-free solutions often proves cheaper, faster, and more equitable to implement than solely zero-carbon options.

Policymakers reviewing AE's resource generation plan should recognize the need to balance affordability, reliability, and environmental goals. Effective policies will avoid prescriptive mandates and instead set outcome-based standards, allowing AE flexibility to meet targets while accommodating the potential to integrate innovative solutions in the future. This approach enables AE to pursue emissions reductions and reliability improvements while managing costs, creating an adaptable path forward that minimizes unintended consequences—like cost spikes or reliability concerns—that rigid mandates might cause. Standards-based policies thus support AE's ability to innovate in its resource planning, meeting community and environmental goals amid shifting energy demands and technologies.

AUSTIN ENERGY'S ENERGY LANDSCAPE

As we're looking at the broader system and industry, it's just as important to map our local energy landscape.

Demand Growth

Just as demand for electricity is growing across the state, Austin Energy has seen local demand increase as well. In the summer of 2024, Austin Energy hit a new peak demand of 3,135 MW. It's not just summer demand we have to plan for anymore. Our winter peak continues to rise. In January 2024, Austin Energy's winter peak topped out at 2,708 MW. Three years ago, we had a similar summer peak, around 2,663 MW.

Going forward, because of weather predictions, population increases and electrification, we expect demand to grow year over year. To meet that growth, Austin Energy must build out and upgrade our electric system to handle more people and more power, and we have to make sure we can generate or purchase all the power customers need.

Planning for those types of differences helps protect our customers during any season.

Reliability

Reliability is a core value of the community and a key tenet of Austin Energy's mission. We work 24/7 to provide reliable power to our customers.

When the power goes out, there is a reliability issue somewhere. This could be due to distribution or generation issues. Distribution reliability risk relates to impacts to the actual wires and equipment that carry power directly to customers' homes. The 2035 Plan addresses generation reliability risk, which focuses on having enough power and voltage support to meet customer needs.

From a statewide perspective, during Winter Storm Uri in 2021, there wasn't enough power generated on the ERCOT grid for everyone who needed it. ERCOT had to call for customer outages all across the state in order to prevent a total black out. This weather event also had significant financial impacts for utilities in Texas, adding a financial component to reliably providing power and serving customers. There are more details on the financial impact of extreme weather below.

From a local perspective, a critical part of generating and transporting power is voltage, and there has to be enough voltage support to push that power across the system to where the customers are. Not having enough voltage support results in local power outages. With recent generation retirements in our service area, Austin Energy needs additional tools to make sure we have enough voltage support to send that power across our system, especially as customer needs continue to grow. There are more details on generation retirements and voltage support below.

Generation resource planning doesn't address every aspect of reliability. The 2035 Plan

addresses generation reliability risks and can protect customers by providing us the ability to add the resources we need to address voltage support, extreme weather and market risk. This way, our community is better protected from local outages and future weather events. It would be irresponsible for us not to plan and prepare for these risks.

Local Air Quality and Non-Attainment

Travis County is close to exceeding local air quality standards set by the U.S. Environmental Protection Agency (EPA) — specifically for ozone. Some generation resources — like those burning natural gas — produce pollutants such as NOx. According to 2021 data from Air Central Texas, about 54% of NOx emissions come from vehicles, 26% from industrial facilities, and the remaining 19% come from a variety of smaller sources in the area. Exceeding the ozone standard may put the county in “non-attainment,” requiring state and local governments to develop a plan to reduce levels. That plan would include strategies aimed at reducing emissions from major NOx sources like vehicles, industrial facilities, and generation resources.

NOx limits are built into the air permits for all existing and new generation. These are Federal Clean Air Act requirements enforced by the Texas Commission on Environmental Quality. To meet those limits, Austin Energy’s existing generators at Sand Hill and Decker have NOx emissions controls. For example, the Sand Hill peakers have selective catalytic reduction (SCR) technology to reduce those emissions by 80% to 95%. Also, support of electric vehicle adoption helps reduce the region’s largest source of NOx.

As Austin Energy looks to address the community’s energy needs, the utility will continue to factor air quality and risk of non-attainment into its operations and path forward.

Generation Retirements

In support of our clean energy and environmental efforts, Austin Energy evaluates our carbon-generating resources for need and efficiency. In the previous resource plan, we committed to retiring our two steam generators at Decker Creek Power Station. These were old units from the 1970’s. They weren’t as efficient, and maintenance was an increasing challenge. Like a vintage car, parts weren’t always available, and repairs were expensive. It was time for these units to retire. Air quality also factored into these retirement decisions. By taking the Decker steam units offline, Austin Energy removed its highest-emitting local sources of pollution from the area.

Decker Steam Unit 1 was 300 MW and retired in September 2020. Decker Steam Unit 2 was 425 MW and retired in March 2022. Around this time, transmission congestion across ERCOT was on the rise. In the summer of 2022, Austin Energy’s service area saw a significant increase in load zone price separation, leading to congestion costs exceeding \$135 million. In 2023, congestion costs exceeded \$150 million. Those costs are three times higher than what we saw before 2022. (There’s more on congestion and load zone price separation in the section below).

Austin Energy must address these issues as we continue to analyze our local resources and community needs.

Austin Energy is also a partial owner with the Lower Colorado River Authority of the Fayette Power Project coal plant. We know the biggest barrier to our clean energy goals comes from this resource. Though we planned to retire our share of FPP by 2022, we were unable to reach a workable and affordable agreement with our partner. As we continue to work toward that goal, we must also consider how ceasing operations adds new financial and market risks and make a plan to mitigate those risks and consider the economic value of avoiding additional greenhouse gas emissions.

Environmental Leadership

Austin Energy has a long history of clean energy and environmental investments. In 1995, we purchased power from the first commercial wind farm in Texas, and in 2011, we did the same with the first utility-scale solar farm in Texas. Essentially, our commitment to clean energy helped start the wind and solar power industry in the state. In addition, we help our customers take their own environmental actions through numerous energy efficiency, demand response, local solar, green energy and electric transportation programs.

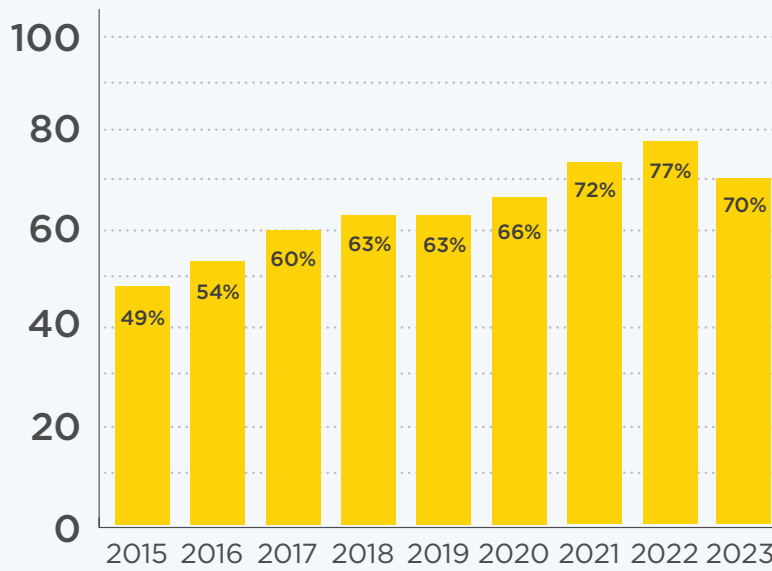
These efforts and more have made Austin Energy an industry leader in conservation and clean energy while helping reach the City of Austin’s goals in the Climate Equity Plan.

Today, 70% of the power we produce and contract for is carbon-free energy as a percentage of load, and we have more than 2,800 MW of renewable power in our generation mix.

Power Supply Portfolio in Megawatts Generation Supply Capacity

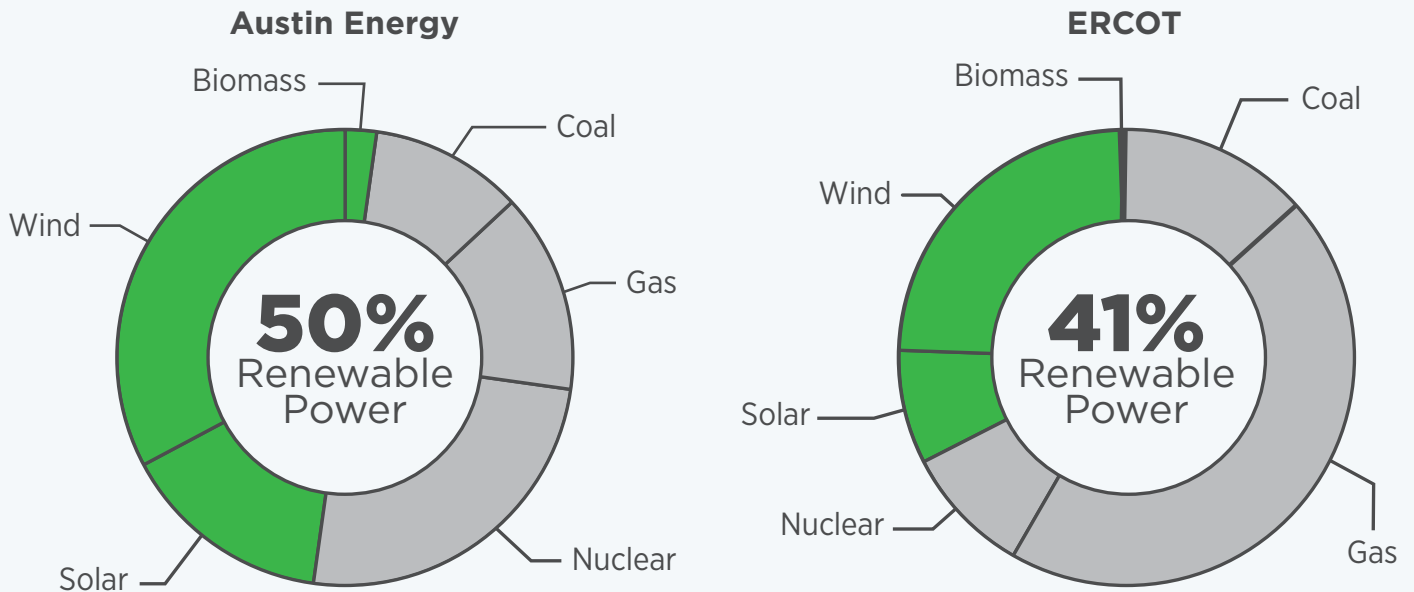


Austin Energy's Carbon-Free Energy as a Percentage of Load



Much of this progress comes from our power agreements with renewable resources far from our service area. Here's how our investments compare to the overall ERCOT generation mix.

Highlight of Renewable Power Generated by Austin Energy and ERCOT in 2023



As renewable resources continue to increase in the ERCOT system, we're seeing new operational challenges. One example is curtailment for these resources when too much power is produced and the system can't handle it. This makes that resource less valuable to our customers.

Local renewable energy, energy storage, energy efficiency and demand response investments avoid these challenges and will be especially important going forward.

Austin Energy will continue our leadership in this area, finding creative ways to reduce our contribution to climate change and provide an equitable clean energy transition.

Transmission Congestion and Load Zone Price Separation

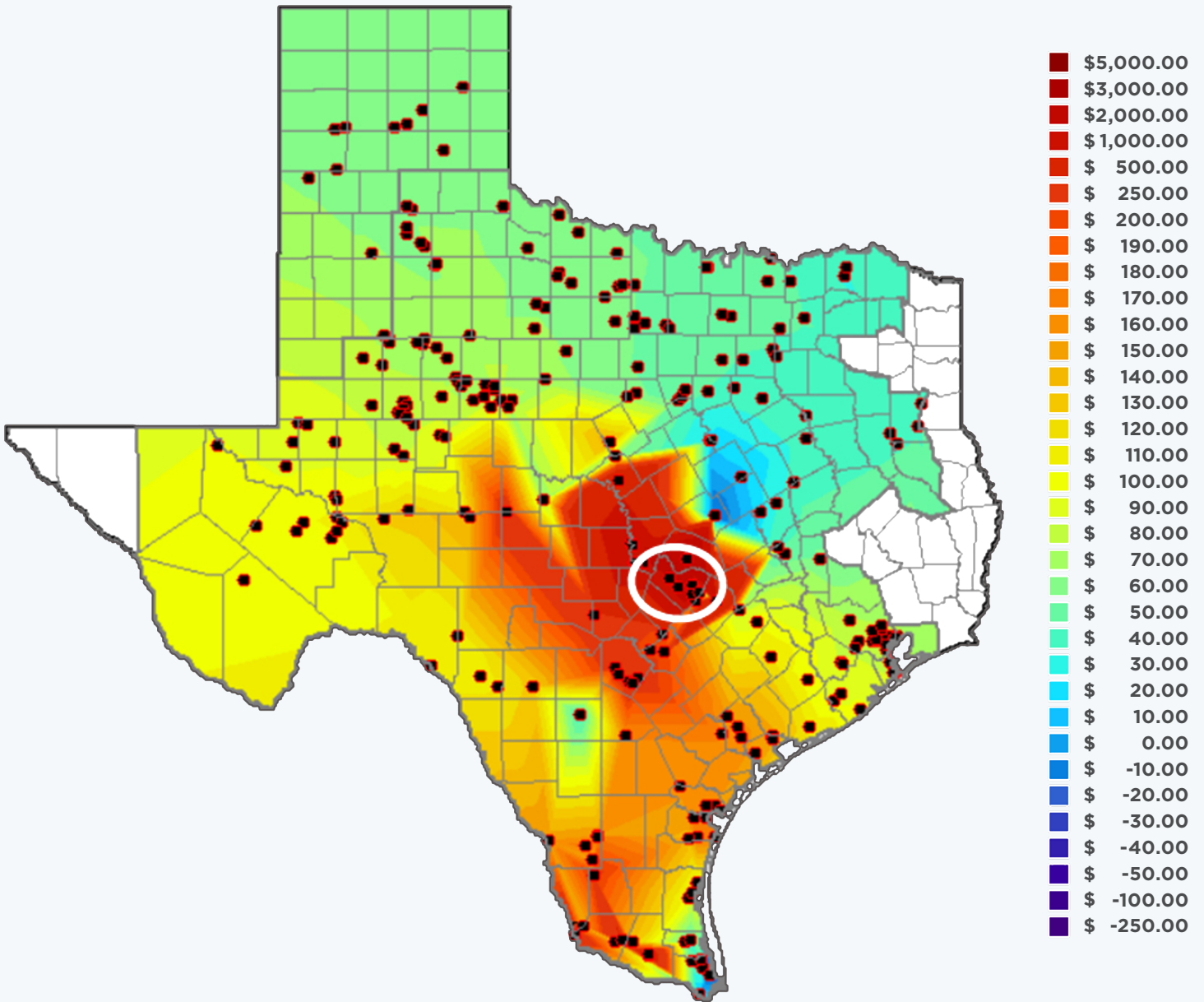
As demand grows, Austin Energy has to make sure we can serve our customers. We can do this by having local sources of supply or by bringing in more power. However, there are limitations on the transmission system that imports power into Austin Energy’s service area — or load zone — in extreme conditions. If you think of transmission lines like straws, there’s only so much electricity that can flow through. If the need for power is greater than what can be provided locally plus what we can bring in, it causes load zone price separation and could lead to local outages.

Load zone price separation is when we pay more for the power serving our area than we get generating power in other areas of Texas. There are several causes behind load zone price separation, including congestion, too little local power, transmission outages and even generation and transmission events outside our service area.



ERCOT Real-Time Pricing Heat Map

5:35 p.m. — Aug. 21, 2024



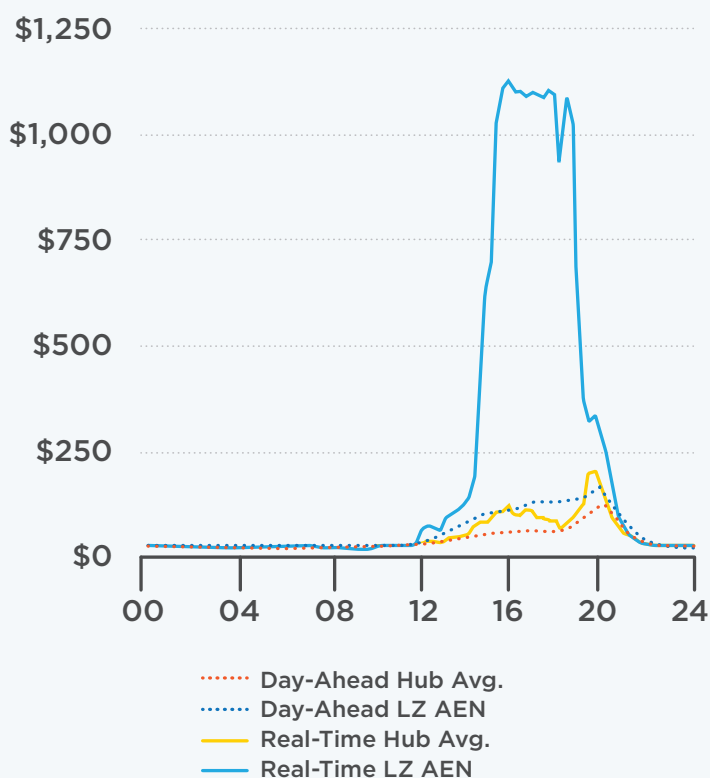
This map from ERCOT’s website shows real-time electricity prices at different nodes across the market on the afternoon of Aug. 21, 2024. The bright red spot over Travis County shows an example of load zone price separation, as the local prices were much higher than much of the rest of the state.

When there is high demand in the Austin area, transmission lines bringing power in can reach their limit. The ERCOT market recognizes this issue and raises the price of electricity in the Austin Energy service area — signaling that more nearby generation is needed.

Depending on the severity and number of price separation events, Austin Energy can end up paying hundreds of millions of dollars more per year to buy power for the Austin area than we earn selling power into the ERCOT market. These events can have significant impacts on customer costs.

ERCOT System-Wide Prices

Aug. 21, 2024



Also from ERCOT’s website, the graph above shows the real-time electricity prices over the course of the day on Aug. 21, 2024. This graph shows load zone price separation for several hours when the blue line (Austin Energy’s load zone) was approximately \$1,000 per megawatt-hour (MWh) higher than the yellow line (ERCOT’s average price). Simply stated, Austin Energy was paying about \$1,100 per MWh to serve its customers locally, but it was receiving, on average, about \$100 per MWh to generate electricity across the state to sell into the ERCOT market. The difference results in significant costs to Austin Energy customers. Load zone price separation creates an affordability risk, and it’s a sign of significant outage risk — all issues we must address.

Austin Energy's Transmission

Transmission system changes are also an important factor in resource planning, especially when local congestion and load zone price separation are growing concerns.

1898 & Co. Transmission Study

With direction from the previous resource plan, Austin Energy hired 1898 & Co. to conduct a transmission study that analyzed what would happen to our transmission system if we retired our local natural gas resources at Sand Hill and Decker in 2029. Their results showed that without enough local generation, significant overloading and voltage stability issues occur when those plants shut down. An electric grid with these issues is unreliable and must be addressed to ensure we can get power to customers. There's more on voltage stability in a section below. The next piece of the study looked at potential projects to address those issues. While the study reviewed eight solutions, no single transmission project studied fully solved the issues.

In the end, the study showed that retiring all local power plants in 2029 would create significant reliability issues, putting the community and electric grid at risk. The completion of this transmission study kicked off the 2035 Plan effort.

Moving Forward with Transmission

Though there wasn't a single remedy out of 1898 & Co.'s study, Austin Energy found benefits in moving forward with several projects. These are multi-year projects to increase reliability and import capacity, and we have incorporated them into our current Capital Improvement Plan.

The timeline for transmission projects can be complicated, though. Some of these projects, depending on the total cost and location, go beyond Austin Energy's control. They require reviews through the ERCOT Regional Planning Group and potentially require a Certificate of Convenience and Necessity through the Public Utility Commission of Texas. Reviews alone could add two years to a project's timeline.



That's in addition to other timing challenges like industry-wide supply chain issues for transmission equipment and outage approvals and scheduling with ERCOT.

Again, Austin Energy is already moving forward on several transmission projects, including adding new lines and substations and upgrading transformers and existing lines. We also continue to assess new projects and system needs through our annual transmission planning assessments, which include the latest forecasts and information from ERCOT. Though transmission projects alone won't solve all the challenges we're seeing in our energy landscape, we know they are an important piece of this puzzle and include them in our resource modeling.

Voltage Support

As we bring power into the Austin area, voltage support is critical in providing reliable service to customers. Think of it like water pressure. It "pushes" the power through the lines, and higher "pressures" push that power farther. Once power gets to Austin Energy's service area, we have to take it and push it across our area to customers. When power demand in our service area swings significantly or there are issues with getting power into our area from the ERCOT system, there can be voltage concerns. Without enough voltage support, this could lead to local outages and equipment damage.

Austin Energy must continuously manage voltage on the local transmission and distribution systems to ensure reliable power. There are several ways to do this. One of the main ways Austin Energy does this is with our local power resources at Sand Hill and Decker. Those are considered spinning generators because they rotate a turbine to produce power. When it comes to voltage support, local spinning generation can increase or lower voltage and provide overall stability through the machinery. There are other potential sources of voltage support, including batteries and synchronous condensers, which Austin Energy may use to replace existing generators. Existing generation has the additional benefit of providing power, and batteries and synchronous condensers are emissions free.

As more people move to Austin, Austin Energy must ensure that we have the equipment and system to reliably provide them with power.

Financial Impact of Extreme Weather

We're experiencing more extreme weather events. According to the National Oceanic and Atmospheric Administration's website, [climate.gov](https://www.climate.gov), Texas has had some of the greatest total financial impacts from billion-dollar extreme weather events since 1980. In 2023 alone, the state had at least four such events.

Along with the physical damage extreme weather causes, liquidity is another significant risk. Liquidity refers to the cash on hand that organizations need to pay their obligations. As a part of ERCOT, Austin Energy is required to have enough cash for its market operations and market exposure. When Austin Energy purchases power from the ERCOT market, payment

is due within seven days. But it can be months before we can replenish those reserves from customer payments. That gap is a liquidity risk.

An extreme example of this risk is February 2021 and Winter Storm Uri. After that storm, Brazos Electric Cooperative could not make their required payments to ERCOT. Due to the market conditions and the composition of its generation portfolio at that time, Brazos incurred \$1.8 billion in ERCOT costs in just a few days. Brazos was unable to pay that amount, and the utility declared bankruptcy. Brazos was restructured by its stakeholders, and it no longer generates power in the ERCOT market. For Austin Energy, wholesale power costs soared to \$1.7 billion during the six days from Feb. 14 to Feb. 19, 2023. That's roughly equivalent to four years of total load cost under normal conditions for us. Our generation revenue, though, more than offset these costs, leaving roughly \$100 million in net revenue that we gave back to our customers. Without that generation, Austin Energy would have had to pay a very high cost for that power in a very short amount of time.

If we can't pay our obligations, it could hurt our financial agreements with all of our suppliers, lower our bond rating and affect the City's ability to own and operate a municipal utility.

More extreme weather makes this a bigger concern. Austin Energy must account for these events in our planning so we can remain financially stable and contribute to the reliability of the ERCOT system.

Understanding risks in our energy landscapes tells us what we need to address to protect our customers and community. The path forward starts here.







AUSTIN ENERGY RESOURCE, GENERATION
AND CLIMATE PROTECTION PLAN TO 2035

GUIDING LIGHT

AUSTIN ENERGY REFLECTS THE VALUES OF ITS COMMUNITY

Incorporating the community’s values into our work and operations is the essence of a public power utility. In developing the 2035 Plan, it was crucial for Austin Energy to collaborate with our community and stakeholders. We worked together with a broad range of community members and listened to diverse voices to gather insights, values and priorities. Our collaboration efforts included formal City of Austin commissions as well as facilitated community workshops.

The community we serve is the heart of Austin Energy. Their needs and expectations guide our operations. By building the 2035 Plan together, we ensure those values are reflected and our risks reduced in our path to the future.

COLLABORATION

Public Involvement — Community engagement for this project started in August 2023, focusing on gathering the public’s high-level priorities. We held four public meetings and heard from a wide range of customers, including residential, small businesses, mid-sized businesses and large industrial customers. We also created a webpage and reached out to customers through emails, traditional media and social media to tell them about the opportunity to help shape this plan. In addition, we distributed a survey to gather all of this valuable input.



Key Results from Resource Generation Survey

PARTICIPANTS

7,512

SURVEY DATES

8/22-9/29/2023

PUBLIC MEETINGS

4

Customer Type:

6,355

Customer Type: Residential

175

Customer Type: Business

24

Customer Type: Other Interest (not an Austin Energy customer)

22

Customer Type: Nonprofit/Government

Top three ranked values:

% of respondents who ranked each item as #1

38%

Reliability: Power is generated from resilient sources that can operate in a variety of conditions.

28%

***Affordability:** Power costs are kept as low as possible for customers.

28%

Environmental Sustainability: Power is generated with a reduced carbon footprint.

*Although Affordability and Environmental Sustainability tied in #1 rankings, Affordability received more overall votes.

Themes identified from comments related to Resource Generation Planning

910

Comments on Reliability: Diversify supply and use energy sources that are most reliable during extreme weather, coal, gas, nuclear, less renewables, build more power plants.

468

Comments on Environmental Sustainability: No coal, close Fayette, more renewables, more solar, more wind, no nuclear, environment is a priority, reduce fossil fuels.

394

Comments on Affordability: Keep costs low, prioritize affordability.

Stakeholder Workshops — Austin Energy partnered with public involvement and community relations firm Rifeline to get a deeper understanding of our community and their values. Through five stakeholder workshops held from June to November 2024, more than 40 participants from diverse backgrounds representing thousands of Austinites provided their perspectives on values, challenges and objectives for the 2035 Plan.

Logos of the Various Groups that Participated in the Stakeholder Workshops



Here are high-level summaries for each of the workshops:

• Workshop #1 — Community Values

The first stakeholder workshop explored the community’s values and priorities as part of the 2035 Plan. As a baseline, this workshop covered the basics around Austin Energy’s mission, how the utility works as a public power electric provider, the Texas energy market and what a resource plan covers. With that introduction, the stakeholders broke into small groups to discuss how their values could be reflected in the 2035 Plan. Here are some highlights of the top themes:

- » **Equity** — Ensuring services to those who need them most.
- » **Collaboration** — It is important to collect community feedback and foster coordination with local organizations and groups.
- » **Transparency** — Information should be easily accessible.
- » **Sustainability and Innovation** — Flexibility should be prioritized over specificity, and the 2035 Plan should consider a holistic view of resources when it comes to sustainability.

- » **Affordability** — Stakeholders continued to talk about equity in their affordability discussions. The concept of energy burden should be considered when looking at affordability.
- » **Reliability** — Predictability is just as important as reliability, especially with the understanding that perfect power isn't attainable. Though 100% reliability may not be possible, there are those for whom energy supply is critically important, like those with medical needs.

• **Workshop #2 — Building Foundational Understanding**

The second stakeholder workshop had two main goals: to provide an introduction to the ERCOT market and have Dr. Michael Webber with the University of Texas at Austin provide his expert insight into energy market trends, resource options and potential risks and tradeoffs.

Some top themes from the ERCOT 101 presentation included:

- » By law, Austin Energy is bound to the ERCOT market and its rules.
- » The ERCOT market, like any market, has benefits and risks. Decisions made in the marketplace have tradeoffs.
- » Decisions in the 2035 Plan will affect what tools are available to maximize benefits and minimize risks in the ERCOT market.

Some top themes from Dr. Webber's presentation included:

- » Electric utilities, Austin Energy included, need to prepare for an era of unprecedented electricity consumption.
- » “Do your best, clean up the rest” — through a combination of efficiency, electrification and carbon management.
- » The key lens through which energy options should be considered: trade-offs.

The group was able to ask presenters questions and dive deeper into the topics.

• **Workshop #3 — Input on Values and Objectives**

The main focus of the third stakeholder workshop was the Resource Planning Trade-offs Exercise. This exercise allowed participants to highlight the trade-offs they were comfortable making around the values of reliability, affordability and environmental sustainability. Participants prioritized the three values with scores ranging from 5 to 10, with 10 being the highest priority. After prioritizing the values, participants held group discussions to hear from each other. Then, they reallocated their priorities if they wanted. The score range shows the lowest and highest ranking a value received. Here are the results of the exercise:

| Value | Original Allocation | Reallocation | Score Range |
|------------------------------|---------------------|--------------|-------------|
| Reliability | 9.08 | 9.21 | 8 to 10 |
| Affordability | 7.91 | 7.91 | 7 to 10 |
| Environmental Sustainability | 7.95 | 7.82 | 6 to 10 |

The exercise showed that, across the board, reliability was the community's top priority.

The discussion around objectives also started in Workshop #3. Participants filled out a survey where they circled or wrote in the objective statement that best aligned with their perspectives on the values of reliability, affordability and environmental sustainability. The results of this survey were explored further in the fourth work shop. In addition, the group saw a presentation on the Texas Energy Poverty Research Institute's (TEPRI) Community Voices in Energy Survey (CVES). Austin Energy summarized its take-aways around energy equity and also shared information about our low-income customer programs.

• **Workshop #4 — Final Value and Objective Input; Introduction to Modeling**

At the fourth stakeholder workshop, participants went over the results from the Resource Planning Tradeoff Exercise and reviewed key takeaways. They discussed and provided feedback on the value and objective statements for reliability, affordability and environmental sustainability. They also heard how the values drive the objectives and how in turn, objectives drive actions. The last topic in this presentation introduced the modeling framework Austin Energy used to study resources and strategies to meet community values.

At the end of the meeting, the group shared their biggest takeaways from the workshops, what they learned along the way and what they'd like Austin City Council to know as the 2035 Plan developed.

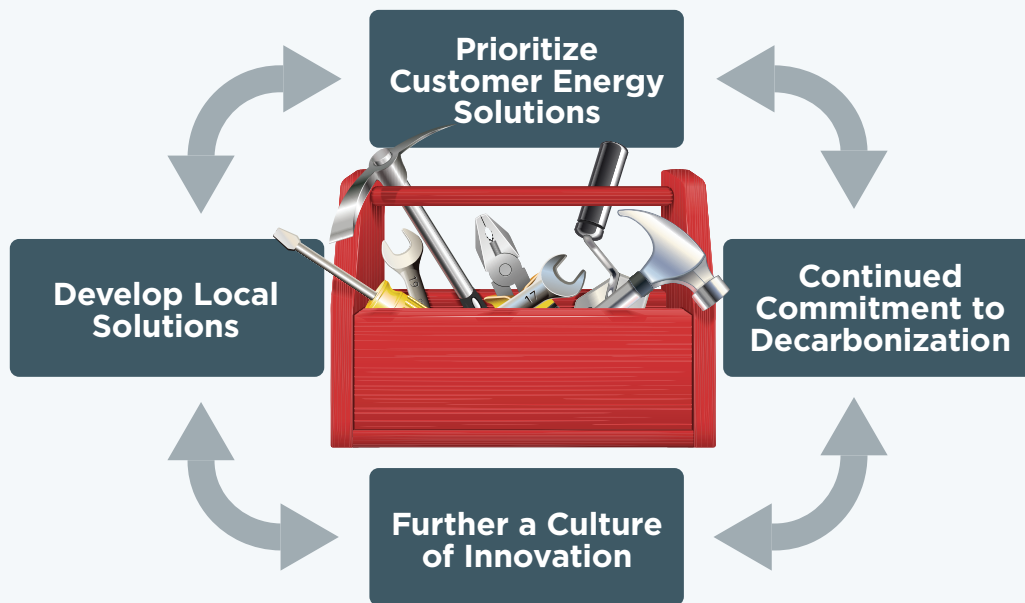
Other key takeaways from the meeting include:

- » Stakeholders thought Austin Energy was moving in the right direction with the value and objective statements.
- » Stakeholders liked the idea that Austin Energy is looking at multiple options around objectives and actions to reflect community values.

• **Workshop #5 — Final Value and Objective Statements; Resource Generation Plan Toolkit**

At the fifth and final workshop, participants took a final look at their value and objective statements and made no additional changes. After that, Austin Energy staff walked them through initial categories and working examples of key actions for the 2035 Plan. These categories and examples were informed by key insights and trade-offs that came from the modeling process and community engagement.

Managing Our “Toolkit”



Participants had questions and comments on:

- » Transmission line upgrades.
- » Battery storage.
- » Natural gas peaker units.
- » Previous Decker Steam Unit operating costs.
- » Emphasizing cost predictability.
- » The difference between congestion costs now and years past.
- » Affordability targets as it relates to business and commercial entities.

At the end of the meeting, participants heard about opportunities for continued partnership. They were also invited to the Nov. 19 Austin Energy Utility Oversight Committee meeting so their time, effort and dedication to helping develop the 2035 Plan could be recognized.



The Electric Utility Commission — The Electric Utility Commission is an advisory board made up of 11 members appointed by the City Council. The group reviews Austin Energy’s policies and procedures and provides recommendations to City Council. This partnership is one of the ways our community has a voice in how we serve them.

In this resource planning process, the EUC actively participated in shaping the 2035 Plan. When Austin Energy first worked to update the previous resource generation plan, the EUC formed a working group to specifically evaluate the issues we are facing. Their efforts produced recommendations, and Austin Energy used their work to guide principles and measures in the 2035 Plan.

Continuing that promise of collaboration, Austin Energy met with EUC members — in various formats — more than 50 times over 10 months. These interactions helped all of us work through thoughts, options and paths forward. During their monthly meetings, the EUC received updates from other partners in the process, including the Webber Energy Group and Rifeline, and they actively participated in the modeling for the 2035 Plan. EUC members provided valuable input during this process, including weighing in on the inputs and assumptions and designing their own portfolios of resources to include in evaluations.

CORE VALUES FOR THE 2035 PLAN

Community collaboration fosters transparency. Building a better understanding of the complexities around Austin Energy, the electric industry and our community helped us come together to create the value statements that define this plan. Here are the values we collectively established as the foundation of the 2035 Plan:

- **Reliability** — Providing consistent and predictable electric service that will power our community as it continues to grow.
- **Affordability** — Assessing the impacts and promoting fairness of costs for customers while continuing to provide the public-power benefits that enhance our community’s quality of life.
- **Environmental Sustainability** — Maintaining flexibility in support of clean and innovative technologies and programs while taking a holistic assessment of the community and environmental impacts.
- **Energy Equity** — Evaluating and expanding access to the services Austin Energy provides so they can reach those who need them most while reducing any negative impact of our operations on the community.

COMMUNITY OBJECTIVES FOR THE 2035 PLAN

In addition to setting the collective values for the 2035 Plan, we also developed objectives with our community stakeholders. Our values give us direction. These objectives highlight how the community feels we should head in this direction — to meet our values and thrive in the future. An equity component is incorporated into each objective.

- **Reliability** — Prioritize reliability and resilience. Mitigate the risk of long-duration statewide and localized system outage events and provide timely communications. Limit the exposure of vulnerable populations to outages.

- **Affordability** — Limit the impact of bill increases to the most vulnerable customers while allowing acceptable and predictable increases of greater than 2% for other customers in support of reliability and environmental sustainability.
- **Environmental Sustainability** — Reduce emissions and other environmental impacts as much as possible. Mitigate any remaining emissions, while supporting affordability and reliability.

THE POWER OF ENERGY EQUITY

Austin Energy strives to incorporate energy equity in all of our operations and services. We manage a multitude of programs that support low-income customers through bill discounts, education, weatherization, emergency financial assistance and more. We have a program to help medically vulnerable customers prepare for unexpected outages. In addition, Austin Energy has programs dedicated to providing clean energy access with a goal of reaching all customer types, including renters and low- to moderate-income (LMI) customers.

Our community stakeholders told us how critical energy equity was to them — how important it is to take care of the most vulnerable in the community. For our stakeholders, this is a broad group, including low-income customers, specific neighborhoods, the medically vulnerable, renters and small businesses.

Though energy equity isn't a new topic for Austin Energy, we heard our community and worked to incorporate this value into the 2035 Plan.

Energy Equity in Central Texas

With the community's equity value in mind, Austin Energy examined information from the Texas Energy Poverty Research Institute (TEPRI) to get a better understanding of energy equity in and around our area. Specifically, we looked at the [Community Voices in Energy Survey \(CVES\)](#).

One of the objectives of the CVES is to provide “data-driven insights to inform stakeholders such as utilities, government agencies, policymakers, and community-based organizations in developing solutions to improve energy access for Texans.” The CVES surveyed more than 6,500 households, mostly low- to moderate-income, across Texas on four key electric-related issues: affordability, sustainability, reliability and resiliency.

Here are some of the key insights we gathered for Central Texas (Region 7):

- Affordability and resiliency were the top two concerns for LMI households.
- Despite the economic prosperity of Region 7, nearly 50% of respondents reported that their energy bills were not affordable.
- Across Region 7, the average LMI household experiences a 6.9% energy burden compared to an average of 3.69% for all households. An energy burden above 6% is considered unaffordable.
- 92% of respondents in Region 7 expressed at least some concern about weather-related outages, with consistent results for owners and renters.
- Survey results reported that 10% of respondents in Region 7 are currently enrolled in clean energy programs, mirroring the statewide participation average of 10%.

This information shows how important energy equity is when considering future programs and energy resource investments.

Incorporating Energy Equity into the 2035 Plan

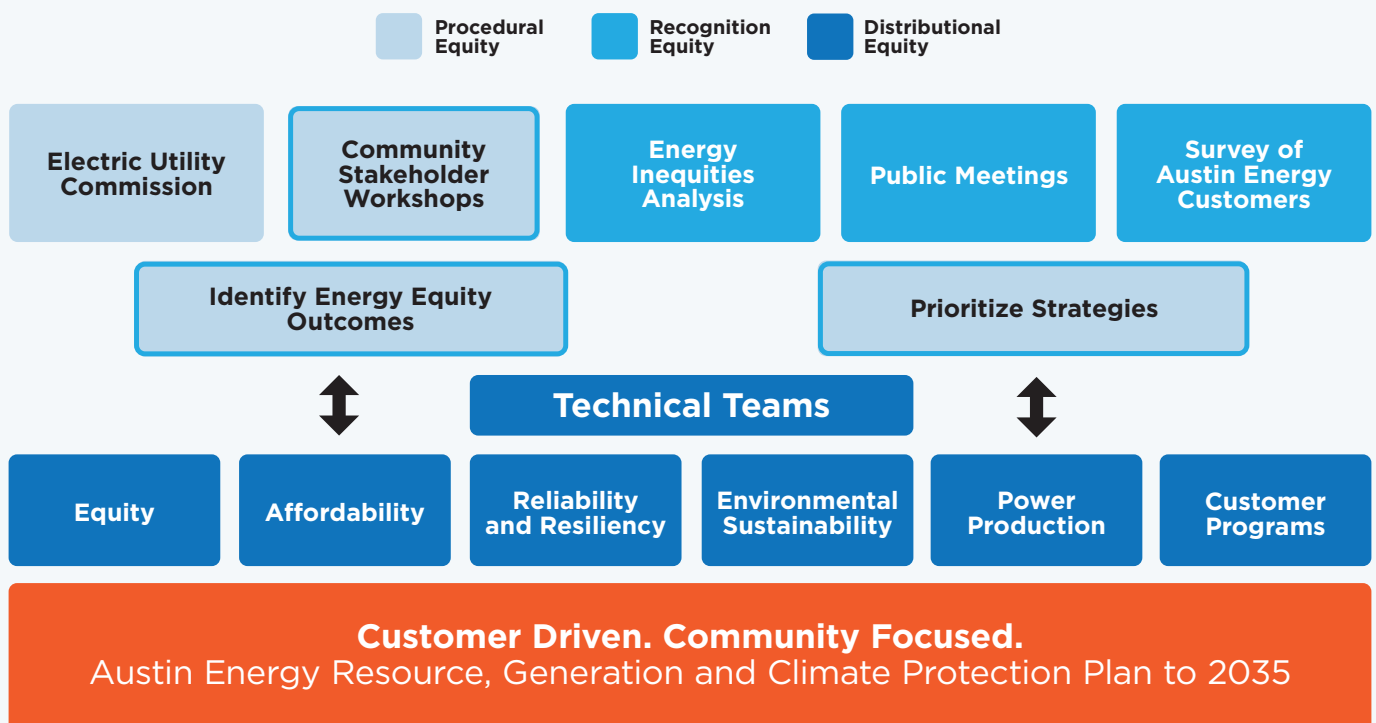
Progress in energy equity doesn't happen by chance. It requires intention. Though no approach is perfect, we wanted to improve equity in participation and outcomes in the resource planning process and the 2035 Plan. When we talk about energy equity, we see it framed into three aspects:

- **Procedural Equity** focuses on ensuring fair, inclusive participation in the decision-making process.
- **Recognition Equity** aims to understand and address past and present energy inequities.
- **Distributional Equity** focuses on the just and equitable distribution of benefits and impacts in Austin's clean energy transition.

Those aspects formed the energy equity lens that was applied to the 2035 Plan. From the make-up of our community stakeholder group to the TEPRI survey takeaways to the public meetings and survey, we realized that energy equity touches every part of the work we are doing. When boxes are outlined with a different color than their shading, multiple aspects apply to that piece.

Community-Informed Process for the 2035 Plan

Through this energy equity lens, we were able to gather information to help make decisions, consider the impact of our operations on vulnerable populations of our community and make sure our energy equity efforts are adaptive and ongoing. In the end, it helps us better serve individual and community needs.



Specifically, here are some examples of how energy equity shaped the resource planning process and the 2035 Plan.

- **Community Stakeholder Workshops (Procedural Equity)** — As we started this resource planning process, Austin Energy knew we needed a diverse and inclusive representation of our community to help develop the 2035 Plan. We gathered that broad range of voices and experiences to give us better insight into the issues we face and the effects on those we serve. They are essential perspectives to have in this process.
- **Electricity Burden Output (Recognition Equity)** — We included electricity burden as a primary output in the modeling analysis. This builds the principle of equity into the technical process so that it can be measured alongside the other metrics and outputs when weighing decisions. Electricity burden is the percentage of a household’s monthly income that goes to their electric bill.
- **Solar for All (Distributional Equity)** — We are dedicated to creating programs that help the most vulnerable in our community and open up access to new technologies. One example is the federal Solar for All grant, which allows Austin Energy to fund solar and battery installations to benefit low-income customers.

With these values and objectives established, the 2035 Plan has a guiding light for the path to an equitable, clean energy future for our community.



EXPLORING FUTURE ENERGY OPTIONS

MODELING HIGHLIGHTS TRADE-OFFS IN RESOURCES AND TECHNOLOGIES

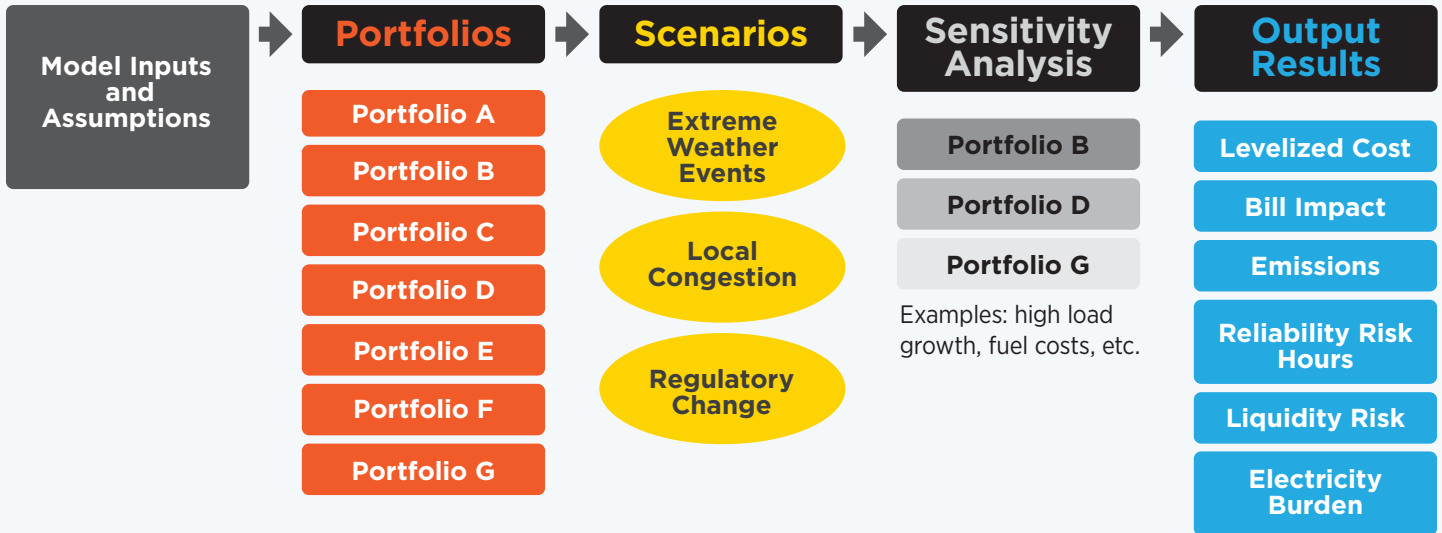
In developing the 2035 Plan, modeling allows Austin Energy to test how resource strategies could meet our collective values and objectives while reducing our risks in the electric landscape. This testing considers normal and various extreme conditions.

When it comes to modeling, a mix of resource options is called a portfolio, and the modeled world it performs in is called a scenario. With this information, we worked together with the EUC to develop different portfolios and establish scenario inputs so we could see how each option performed. This was how we came to the actions outlined in the 2035 Plan.

Modeling and portfolios don't give answers. They give information and highlight trade-offs. There are hundreds of variables that make up a model, and it can't predict the future with 100% accuracy. This process helps us shape strategies for the risks we currently face and build flexibility to address whatever the future may hold.

The graphic below shows, in general, the flow of the modeling process to come up with outputs. In the rest of this section, we cover these pieces and how they build on one another.

Modeling Flow

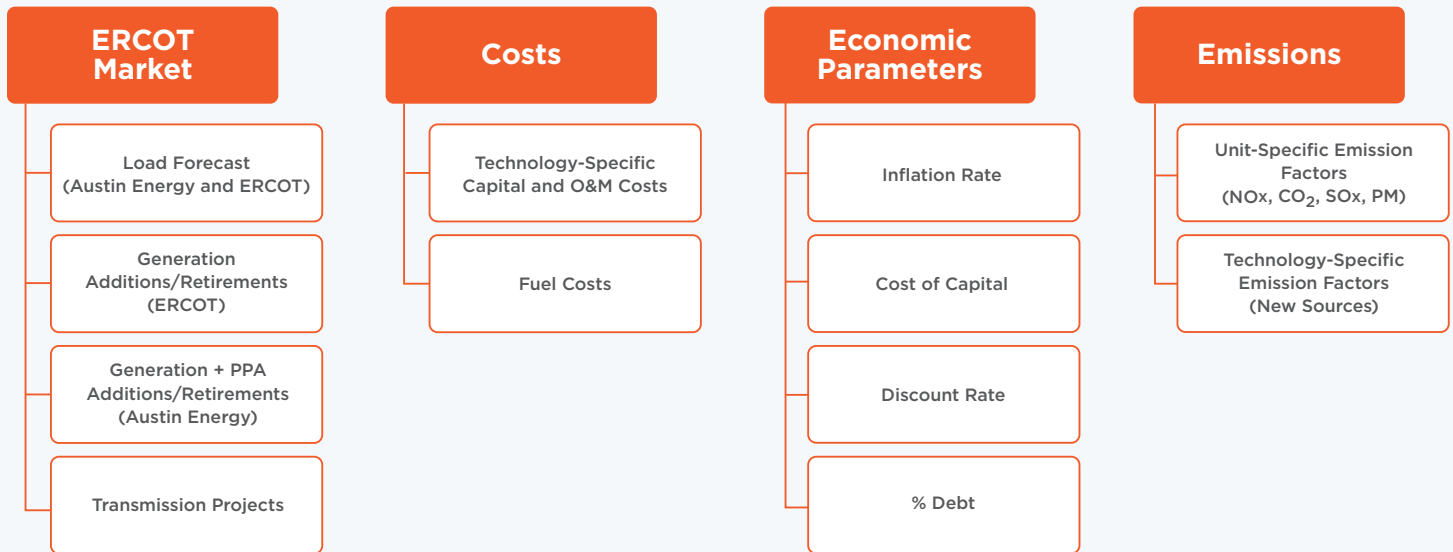


FORMING THE FOUNDATION — INPUTS

Inputs are how the model defines what's going on in the electric world now and into the future. If you look at it like a board game, inputs are the rules around how the game works. The boards for chess and checkers may be the same, but the way you're supposed to play those games is very different. Inputs are those rules that lay out how the model will work.

Setting these inputs is a foundational step, and they are outlined below:

Modeling Inputs



Diving Deeper with the DNV Market Potential Study

Forecasting how much energy customers will use is essential in resource planning. Getting a deeper understanding of how demand-side management (DSM) programs and technologies can change customer demand is key to a clearer view of the electric landscape.

There are many technologies and programs that give customers more control of their energy and energy use. From home energy efficiency improvements to demand response programs to rooftop solar and residential batteries, how people use energy is changing. Austin Energy has an entire business unit — Customer Energy Solutions — dedicated to exploring, developing and sharing DSM programs and technologies with customers.

DSM programs can reduce the amount of power we need to serve customers or the timing of when we need to provide that power. Because these programs change how customers use energy, we need to factor that into our model and planning.

Austin Energy has made huge strides in DSM, and for the 2035 Plan, we wanted to see how much further those programs could go. We selected DNV Energy Insights USA Inc. (DNV) to do a market potential study on that topic so we would have a better idea of the energy savings we could get out of these technologies. DNV has an in-depth understanding of Austin's DSM market. Prior to their work with the 2035 Plan, they provided studies and benchmarking on this resource for Austin Energy in 2012, 2015 and 2021.

For the 2035 Plan, DNV analyzed demand response, energy efficiency, electrification and local solar and batteries to determine the maximum technical and economic potential for those programs.

In the 2035 Plan model, we added DNV's numbers to the existing expectations for our programs so we could compare tradeoffs while maximizing DSM technologies in our resource mixes.

PROJECTING THE FUTURE — SCENARIOS

It's one thing to plan for the current conditions, but Austin Energy also wants a plan that will provide guidance for what the future may hold. That's where the scenario portion of modeling comes into play. Resource planners often consider scenarios to be future worlds, and they want to see how different portfolios perform in those worlds. It helps us analyze some "what if" situations.

If inputs are the rules for the board game, scenarios are the paths to follow on the board. Scenarios are where those inputs are applied to make a potential future. This shows how portfolios would perform in furthering our values and reducing risk. It's kind of like Chutes and Ladders™. There are multiple ways to move through the board, and scenarios are different paths to a future. The path you follow depends on how your piece progresses on the board.

Since we don't know exactly how the future will look, the model has multiple scenarios. That way, we gain more information on how resources perform in uncertain futures and where flexibility is needed to meet our needs and values. For the 2035 Plan, the model used four different scenarios to represent potential futures.

- **Normal Conditions**

The normal conditions scenario is built around the inputs we believe are most likely to happen. It includes current and future market and grid data from ERCOT as well as expected retirements for Austin Energy power plants and purchase power agreements. For Austin Energy demand, the scenario accounts for continued significant growth to reflect the historical trend.

- **Extreme Weather**

This scenario tests the effects of extreme weather and uncertainty in supply and demand. We call these high-impact, low-frequency events. This scenario matches ERCOT's projections for these kinds of situations — adjusting summer conditions to be more severe than what the Texas grid saw during 2011, Texas' hottest summer on record. For winter conditions, adjustments are based on the 2021 winter peak because of Winter Storm Uri.



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- **Local Congestion**

This scenario tests the effects of local transmission congestion on Austin Energy’s system and the community. In recent years, Austin Energy has experienced a significant increase in costs because of local transmission congestion, and if it isn’t addressed in certain cases, it can lead to controlled outages within our service area.

- **Regulatory Changes**

This scenario considers the impact of potential regulatory changes from the legislature and the Public Utility Commission of Texas. Specifically, this scenario maps changes in how ERCOT forms market prices for dispatchable capacity and how costs are assigned to electric utilities serving customers. With this, we can estimate the net cost to our customers if this future world comes to be.

The future is unpredictable, and Austin Energy wants to further account for that uncertainty. In modeling, we turn to sensitivities to test those extremes.

TESTING THE EXTREMES — SENSITIVITIES

Even with the best predictions for the future, there are still extreme events that can cause significant disruption to the community and electric operations. Scenarios are those potential futures we want to be ready for, but we also want to know how our portfolios will perform when faced with specific extremes in key variables. Sensitivities test those extremes.

Going back to the board game analogy, sensitivities are like action or chance cards. Think of Monopoly™, and a chance card that said “Advance to go (collect \$200).” Cards like this change how to move across the board and can change the result.

Sensitivity analyses are similar to scenarios and modeled in the same way as the scenarios discussed above, but with a narrower focus on the impact of changes to just one key input parameter. Sensitivities give us a structured framework to analyze how these extreme conditions could affect the utility and the community. Understanding these effects gives us more information to find the path that best aligns with needs and priorities.

We included three sensitivities:

- **Demand** — Significantly increases Austin Energy demand growth from additional population, data centers, home electrification and EV adoption.
- **Fuel Prices** — Increases the price of natural gas throughout the ERCOT market.
- **Energy Import and Export Capacity** — Adjusts energy import and export capacity constraints to limit how freely electricity flows between Austin Energy’s load zone and the ERCOT grid.



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South Texas Project / Nuclear

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MEASURING DIFFERENT MIXES — PORTFOLIOS

So far in the modeling board game analogy, we have:

- **Rules** — inputs.
- **Different paths to take** — scenarios.
- **Action cards** — sensitivities.

Now we just need the player characters. In modeling, those are the energy resource portfolios. In chess, the various pieces move and behave in different ways. Portfolios are similar, each one having different characteristics that make its progression through the model unique.

A portfolio is a mix of solar, wind, batteries, energy efficiency, demand response, thermal generation and other energy technologies. Each portfolio has a different mix of resource technologies, locations (like West Texas wind vs. South Texas wind) and years for construction of facilities. These differences give the portfolios various characteristics in how they perform in the model.

As part of the modeling process, we started with 13 portfolios to run through the model to test how they perform and gain initial information. The first five were intended for reference purposes.

| Portfolio | Description |
|----------------------|--|
| Portfolio #1 | A bare-minimum reference case. Nothing new was added over the next 10 years, and it kept existing DSM commitments. |
| Portfolio #2 | A reference case that studied achieving the 2030 Plan, including 100% carbon-free by 2035 and 65% renewable energy by 2027. It retired existing local natural gas generation in 2034 and procured new wind and solar power purchase agreements (PPAs). |
| Portfolio #3 | An edge case for reference, aiming for the highest level of reliability. This portfolio included the maximum DSM predictions, a mix of local storage and natural gas generation, and kept existing local natural gas generation running. |
| Portfolio #4 | An edge case for reference, reaching for the most affordable outcome. This portfolio included the lowest cost resources and a mix of DSM, as well as new and existing local natural gas generation. |
| Portfolio #5 | An edge case for reference, aiming for the lowest emissions. This portfolio purchased remote wind and solar resources and retired all existing local natural gas generation. |
| Portfolio #6 | This portfolio studied a future with increased DSM projections beyond maximum levels, local storage and new wind and solar PPAs to replace those that are expiring in the next 10 years. |
| Portfolio #7 | This portfolio matched #6 but increased new wind and solar PPAs to reach 65% renewable energy by 2027 and beyond. |
| Portfolio #8 | This portfolio studied a future with local peaker units that can run on carbon-free fuel alternatives. It also increased new wind and solar PPAs to reach 65% renewable energy by 2027 and beyond. |
| Portfolio #9 | This portfolio matched #8 but replaced half of the local peakers with local storage of various durations. |
| Portfolio #10 | This portfolio was similar to #9 except it kept existing local natural gas generation running through 2035 instead of adding generation that can run on carbon-free fuel alternatives. |
| Portfolio #11 | This portfolio studied a future where FPP continues running through 2028 and is then replaced with local natural gas generation. All other portfolios have FPP retiring at the end of 2024. |
| Portfolio #12 | Designed by the EUC and based on recommendations from the EUC Working Group, this portfolio increases DSM, local storage and remote wind and solar PPAs beyond any other portfolio in this initial run. Existing local natural gas generation retired by 2035. The levels for both DSM and local storage were significantly higher than what is considered feasible based on market analysis and research. |
| Portfolio #13 | Designed by the EUC, this portfolio was similar to #12 but with DSM values returning to maximum projections and increased local storage levels. |

Broadening the Picture with Ascend Analytics' Portfolios

Along with Austin Energy's model and analysis, we also contracted with Ascend Analytics to get additional portfolios and broader insights. They use a different type of model, which gives different outputs. With our approach, the resource mixes are human designed while in Ascend's approach, those mixes are computer designed. For example, we can tell Ascend's model that we want a portfolio that achieves carbon-free by 2035, hits a 65% renewable energy target by 2027 and has sufficient local resources to minimize the risk of load zone price separation. The model uses this information to forecast a lowest-cost solution within those parameters. We are then able to compare the outputs from Ascend's modeling to our results and use the combined information to find better resource mixes.

Another advantage with Ascend is the ability to generate a range of expected outcomes instead of a single data point. They do this by running their portfolios through 100 future situations to generate a range of outcomes. This range includes the average outcome as well as the 5th and 95th percentiles to represent the outer edge possibilities. This is helpful in understanding uncertainty and the significance of variability in events.

Refining the Information and Portfolios

With all the scenarios and sensitivities in the modeling analysis, we are able to study dozens of approaches to meeting the community's energy needs. Based on that analysis, Austin Energy worked with the EUC to fine-tune four additional portfolios. We wanted to maximize strengths and resolve issues.

For example, we talked with the EUC about the number we used for transmission import capacity. As a baseline in the model, we included ERCOT's information on future transmission projects and upgrades. This includes all known projects for Austin Energy as well as every other transmission provider in ERCOT. This information, though, only goes out five years. We know we'll still add in projects and upgrades beyond that window. In discussion with the EUC, we decided to add more import capacity as we enhance the modeling to account for that continued work.

These are the refined portfolios:

| Portfolio | Description |
|---------------|---|
| Portfolio #14 | This portfolio maxed out DSM projections and then added in just enough local storage and natural gas peaker units to reach near-term local reliability. It included increased transmission capacity. |
| Portfolio #15 | This portfolio was similar to #12 except with increased transmission capacity, DSM and local storage. The levels for both DSM and local storage were significantly higher than what is considered feasible based on market analysis and research. |
| Portfolio #16 | This portfolio was similar to #15 but studied a different mix of DSM and local storage while keeping local natural gas generation through 2035. The levels for both DSM and local storage were significantly higher than what is considered feasible based on market analysis and research. |
| Portfolio #17 | This matched #12 except it kept local natural gas generation through 2035. The levels for both DSM and local storage were significantly higher than what is considered feasible based on market analysis and research. |

Using a broad set of portfolios gave us and our community partners a better understanding of how all the pieces work together — and how we might best reach our values.

ASSESSING PERFORMANCE — KEY INSIGHTS AND TRADE-OFFS

Modeling shows us how these different resources and portfolios potentially meet our collective values. This is how we assess where there must be trade-offs.

Think of this like the results at the end of the board game. For resource planning, though, modeling is not about winning. It's about gathering the information that will help us find the strategies that best shield our community from risks while supporting the values they expressed.

Key Insights and Tradeoffs

With all the approaches we analyzed, we worked with Ascend Analytics and the EUC and found these key insights and trade-offs from the information:

- Austin Energy has immediate needs and challenges we must address to provide clean, affordable and reliable energy. Doing nothing is not an option, and investment is needed.
- The maximum levels of DSM (energy efficiency, demand response and local solar) from the DNV study are not enough to reduce reliability risk. Additional local solutions are necessary.
- Modeling additional transmission import capacity — beyond what is currently accounted for — significantly reduces reliability risks and net costs. These projects have extensive regulatory requirements and take more time to complete than other resources.
- Retaining existing local natural gas generation from Sand Hill and Decker significantly decreases reliability and liquidity risks especially in the later years of the planning timeframe.
- High levels of new DSM and battery storage only manage reliability and liquidity risks when we keep existing local natural gas generation and when those new resources are brought on at a pace beyond what the DNV study found feasible.
- Utility-scale battery storage provides the lowest emissions for dispatchable resources, but it comes at the highest cost. Battery storage supports reliability but only for events that last no longer than a few hours.
- Larger natural gas combined cycle units are a low-cost, dispatchable resource that support reliability but produce more emissions than other generation resources we studied because they run more often. They support reliability and affordability especially for longer duration events.
- Natural gas peaker units are a lower-cost dispatchable resource and they produce fewer emissions than combined cycle units because they only run when absolutely needed. Peakers support reliability and affordability especially for longer duration events.
- DSM, transmission, local solar, battery storage and additional natural gas peaker units manage reliability and liquidity risks while maintaining low overall use of the peakers. All peakers ran less than 12% of the time.

These insights lead us to a “tools in the toolkit” approach that provides the most flexibility in meeting the community’s values and priorities while also addressing multiple current-day risks and future uncertainties. Now we can lay out the strategies to reach our clean energy future.



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POWERING AUSTIN'S CLEAN ENERGY FUTURE

AUSTIN ENERGY'S RESOURCE, GENERATION AND CLIMATE PROTECTION PLAN TO 2035

Austin Energy faces a complicated and evolving energy landscape. Those changes increase our immediate risks, but they also open up opportunities. With the community's values and objectives as the guide, the 2035 Plan gives us a flexible path to a reliable, affordable and environmentally sustainable future that benefits everyone in our community.

To reach this future, the 2035 Plan:

- Prioritizes customer energy solutions first in resource planning, reducing the need for additional generation and transmission in support of reliability.
- Explores local solutions to ensure there are enough power generation resources in our service area to manage reliability and affordability.
- Solidifies our commitment to environmental leadership, paving the way for decarbonization and an equitable, clean energy transition.
- Outlines a culture of innovation so we can stay at the forefront of technology advancements that support our community.

This outlines what we want to do to make that future a reality. The key actions detail how we will do it.

KEY ACTIONS

Prioritize Customer Energy Solutions

• Lead with Energy Efficiency

Austin Energy will lead with energy efficiency as the first priority to reduce energy needs during peak times. With more than 40 years of industry-leading experience, we will continue to expand award-winning programs and promote energy efficiency that lowers customer energy use, sustains customer comfort and reduces electric bills. Austin Energy plans to save 975 MW by 2027, moving a previous goal forward by three years. In 2027, we will shift to tracking avoided greenhouse gas for our energy efficiency programs. Austin Energy will continue to report on the MW and megawatt hours reduced from energy efficiency programs in all sectors. Greenhouse gas avoidance is a more holistic measure, allowing us to broaden our reach and capture the value of beneficial electrification.

Austin Energy commits it will remain an industry leader on energy building codes and green building development, including facilitating adoption of the 2024 International Energy Conservation Code, as well as specific solar-ready, EV-ready, electric building-ready and net-zero requirements for commercial and residential construction, in current and future codes.

Austin Energy commits to maintaining the current goal of 40 MW of local thermal storage by 2030.

• Lead with Demand Response

An equally important priority is leveraging demand response programs to shift electricity use away from high-demand times. With decades of experience creating and promoting innovative demand response programs, Austin Energy will expand our offerings, planning to reach at least 270 MW and strive for 470 MW of achieved summer reductions by 2035 if economically feasible, including at least 78 MW and strive for 102 MW by 2027 if economically feasible. This includes customer-sited batteries and managed electric vehicle charging. Looking ahead, Austin Energy will analyze our winter energy use and develop a demand response goal for that season as well.

- **Move from Megawatt Reduction to Greenhouse Gas Avoidance**

For decades, earlier than much of the U.S., Austin Energy developed and managed cost-effective energy efficiency and high-efficiency building code programs. Progress toward megawatt reduction goals is harder with less return for each effort. To open up new opportunities and measures, Austin Energy will transition to tracking avoided greenhouse gases as the primary goal for many of our DSM programs. This change will support our decarbonization and beneficial electrification progress. For example, shifting from natural gas heating in a home to electric heat pumps would increase electricity use. If we track avoided greenhouse gases instead, we will be able to measure how that same shift reduces pollution and supports the clean energy transition.

- **Promote Beneficial Electrification**

Beneficial electrification replaces fossil fuel use with electricity to reduce greenhouse gas emissions and energy costs overall. Focusing on electrification could increase peak electric use, customer bills and distribution system costs. Beneficial electrification means increasing electric energy consumption while minimizing the impacts on the grid and environment. An example would be replacing a gas water heater with a demand response-enabled heat pump water heater. The ability to control the electricity use is what minimizes the power impact and promotes environmental sustainability. Austin Energy will expand our offerings that support beneficial electrification for residential and commercial customers. We will track performance and establish a full suite of beneficial electrification incentives by 2027.

- **Incentivize Customer-Sited Batteries**

Recognizing the community’s desires for increased resiliency, Austin Energy will enhance its demand response program by including customer-sited batteries. Austin Energy will develop and provide incentives for customer-sited battery storage to maximize benefits to customers and the electric grid, including adoption of a program that allows all customers to provide the utility access to customer-sited batteries.

- **Promote Innovative Local Solar Solutions**

Leveraging our 20 years of industry-leading and innovative solar solutions, Austin Energy is working to expand clean energy access for all customers through programs like Solar for All and Standard Solar Offer. Producing solar locally, where it is used, reduces congestion on the transmission grid and lowers prices. To better capture this benefit, the 2035 Plan defines local solar as any solar located within Austin Energy’s load zone. This helps us prioritize resources that will reduce local reliability risk and load zone price separation. Austin Energy will plan to reach for at least 205 MW of local solar energy by the end of 2027 and reach 405 MW of installed local solar capacity by 2035 – including 160 MW of existing capacity.



Local solar on the Palmer Events Center.

- **Improve Customer Interconnection Experience**

For Austin Energy to truly prioritize customer energy solutions, we must have a streamlined process for customers who wish to install customer-sited solutions like batteries, rooftop solar and personal generators. Austin Energy will assess and put quality measures in place to improve the customer experience and reduce barriers to installation and interconnection. This includes continued partnerships with other City departments to develop broad solutions.

Develop Local Solutions

- **Prioritize Customer Energy Solutions**

A holistic approach to addressing the need for local solutions begins with reducing or managing demand. As a public power utility, we are uniquely positioned to manage all sides of the supply and demand equation. Austin Energy exists to serve the community, and part of that service is making the most of DSM opportunities and benefits. Continuing from the previous resource generation plan, Austin Energy will continue to take the lead with other City departments to maximize DSM and load shifting opportunities within City of Austin operations. The City of Austin commits to exploring how to maximize the siting of solar generation and battery storage on City-owned land and properties where it makes environmental and economic sense.

- **Increase Transmission Import Capacity**

In addition to local resources, Austin Energy also brings in power from outside our service area to serve customers. This strategy has made us an environmental and renewable energy leader because it allowed us to invest in large amounts of clean energy across the state. There are constraints, though, on how much power we can bring in, creating reliability and cost risks to our customers. Austin Energy doesn't have full control over transmission projects, but we will promote local transmission work that increases the amount of power we can bring into our area.

- **Promote Local Utility-Scale Solar**

Austin Energy will search for new opportunities to expand local utility-scale solar as we continue to invest in renewable resources and support our local power supply. This resource can help us meet the growing energy demand we have in our area with clean energy and lower market costs from load zone price separation. A current example is the Webberville Solar Project, a 30 MW installation within our load zone. While we consider local utility-scale solar options, siting considerations may be a significant challenge.

- **Include Local Utility-Scale Batteries**

With our experience from Austin SHINES, Austin Energy will incorporate utility-scale batteries to provide another type of local, dispatchable resource. Batteries offer flexibility and are currently well-suited to solve short duration events — two to four hours. Longer duration batteries are also being developed, which may be a useful tool in the future. Today, battery prices are higher than other local solutions, but as with most evolving technology, battery prices are expected to decrease over time. Within the bounds of affordability, Austin Energy will build or contract for local utility-scale batteries to supply energy during solar ramp down, provide ancillary services, supplement existing local generation and help fill the gaps from weather-dependent power production. Austin Energy commits to installing 125 MW of battery storage by the end of 2027, if economically feasible, and will study the feasibility of installing 300 MW of battery storage by the end of 2030, within the Austin Energy Load Zone. Austin Energy will perform all necessary action to install 100-150 MW of battery storage within the Austin Energy Load Zone as soon as practicable.

- **Avoid Retiring Local Generation Prematurely**

Following through on a commitment reaffirmed in the 2030 Plan, Austin Energy successfully retired two older, gas-powered steam generators at Decker. Decker Steam Unit 1 (300 MW) retired in September 2020, and Decker Steam Unit 2 (425 MW) retired in March 2022, reducing local energy supply by 725 MW. In summer 2022, Austin's service area saw load-zone price separation significantly increase, leading to congestion costs exceeding \$135 million for the year. In 2023, congestion costs exceeded \$150 million. The combination of retiring a significant amount of local generation without local replacements, market

changes in the aftermath of Winter Storm Uri and transmission constraints across Texas and into the Austin Energy service area, creates significant reliability and affordability risks for the Austin community. To avoid increasing the risks, Austin Energy will not prematurely retire existing generation capacity at Sand Hill and Decker while seeking opportunities to increase efficiencies, reduce emissions and reduce costs for customers. Decker has four peakers, and Sand Hill has six peakers and a combined cycle unit. As the energy landscape evolves, Austin Energy will regularly assess our generation needs and will seek to replace these polluting resources with clean energy resources by 2035.

- **Additional, More Efficient, Natural Gas Peaker Units**

The resource planning analysis shows the local solutions listed above are not enough to solve the local reliability risks and load zone price separation we currently experience, especially for events lasting longer than a few hours. Peakers are smaller, modular power units that only run to meet peak electricity needs.

This type of generation has become more and more efficient over time. When compared to Austin Energy's peakers at Decker — installed in the 1980s — a newer peaking unit is approximately twice as efficient. That means it would use about half as much natural gas to produce the same amount of power, thus the emissions would be half as much per MWh produced.

Austin Energy will continue to support utility industry organizations working to develop best practices to prevent methane and hydrocarbon leaks in natural gas fields and in pipelines, and support implementation of the adopted EPA 2023 methane rule intended to reduce methane emissions by more than 80 percent from oil and gas infrastructure.

In support of reliability and affordability, the 2035 Plan allows Austin Energy to consider adding natural gas generation, only as that relates to more efficient, local peaker units. As part of the implementation process, City Council approval is required before any new utility-scale resource could be developed. This process has four phases — feasibility, pre-development, development and construction. These phases will incorporate regular updates to City Council, with a report to the City Council following the feasibility phase prior to moving forward to the pre-development phase, and subsequently gathering Council feedback, and incorporating community input, prior to bringing a project forward for approval. Further, should Austin Energy seek Council approval for any peaker units, we will show any analysis performed demonstrating why a carbon-free alternative was not available and how the requested action will impact the utility's ability to reach the goal of 100% carbon-free by 2035.

New peaker units will significantly reduce load zone price separation risk and provide voltage support for reliability. We would use these units only when needed, and we will run our most efficient (least emissions) units first. The older, existing peakers will be used as a last resort. Having peaker units acts like an insurance policy for events that would last beyond battery durations and aligns with the community's objective of prioritizing reliability and resiliency.

For when these additional units are placed in service, Austin Energy will develop and apply updated guardrails to the operations of all peaker units to reduce the negative effects on the environment. More on this below. These guardrails will be shared with the Council and EUC as updated.

- **Develop a Request for Proposal on All Energy Resources**

Before investing in resources that produce local air pollution, such as peakers, Austin Energy will issue an all-resource RFP to meet the energy and risk mitigation needs identified by Austin Energy. An all-resource RFP is intended to determine whether or not carbon-free and pollution-free resources can be used to effectively meet the utility's needs. In addition to traditional peakers, information on other resources like short and longer-duration storage, fuel cell technology, geothermal and other technologies should be solicited and assessed.

- **Develop Emissions Guardrails for All Peakers**

Because natural gas peaker units produce emissions, Austin Energy will apply guardrails to our units to reduce our environmental impact. Of all the resource types in the ERCOT market, natural gas peaker

units are typically the last to be used to meet power needs. Their main purpose is to fill in the gaps for unexpected circumstances like days with extremely high demand and when the weather reduces available generation on the ERCOT system. Using peakers in this way means they don't run very often, typically between 6% to 14% of the time.

To limit carbon emissions Austin Energy only uses peaker units to meet peak energy needs, and we run the most efficient (lower emissions) units first.

Once additional peaker units are placed in service, we will develop updated emissions limits for all peakers that will result in the strictest run time restrictions on the highest emitting units. With those limits established, Austin Energy will review and propose updated emissions limits in response to changing conditions, with a goal of strengthening them as cleaner resources become available to meet local needs.

- **A Commitment to Workers**

Austin is committed to properly valuing and protecting its workers. When developing the standards for programs and the installation of additional generation necessary to achieve the goals set forth in this plan, Austin Energy will prioritize, to the extent allowed by law, the utilization of unionized laborers and advance fair labor practices. Austin Energy will also provide just transition options for its workers whose jobs are impacted by the transition to clean energy.

- **Incorporate Equity into Siting Considerations**

When considering site locations for any future local generation solutions, Austin Energy will explore the feasibility of sites across our service territory. Site requirements vary for different resource types and include energy equity, land access, permitting restrictions and access to infrastructure — including transmission, water and fuel. Austin Energy is committed to applying the energy equity framework used in developing the 2035 Plan, which includes procedural, recognition and distributional equity. Site selection will aim to avoid historically impacted communities, and any future local solutions will involve collaboration with our community.

- **Protect Local Air Quality**

Austin Energy works to minimize emissions from our local generating units and improve local air quality. For example, our existing units at Decker and Sand Hill have NOx emissions controls — with the Sand Hill peakers using Selective Catalytic Reduction (SCR) technology to reduce those emissions by 80% to 95%. Austin Energy will also assess the use of other pollution control technologies including combustion controls and low NOx burners. Austin Energy will use SCR technology on any new peakers, and we will continue to assess emerging pollution control technologies to further reduce local emissions. In addition, Austin Energy's support of beneficial electrification and electric vehicle adoption will help further reduce NOx emissions. When taken together, these efforts have the possibility to create a net reduction in emissions while providing reliable and affordable power. We will also look for innovative partnerships and opportunities to support our progress in this area, including state and federal grant funding.

- **Focus Customer Programs to Support Neighborhoods**

An equitable clean energy transition requires prioritizing strategies that deliver real benefits to impacted communities. To support this transition and reduce negative effects from Austin Energy's generating units, we will focus the enrollment and marketing efforts of innovative customer programs to improve communities that host these facilities.

Further, Austin Energy will work with impacted communities to find creative ways to implement their energy and environmental priorities. For example, in District 1, the community is working to implement the vision of the Northeast Planning District. As we develop local generation resources, Austin Energy will include programs for direct investment and leverage local and regional partnerships to deliver innovative and sustainable solutions to the affected community.

- **Maintain Black Start Utility Status**

Concerns about black start in ERCOT have grown since the system came minutes away from a complete blackout during Winter Storm Uri in 2021. To help bring the grid back online in a blackout emergency, Austin needs black start resources. Black start is the process for restoring the electric grid after a full or partial blackout. It is a worst-case event — low probability but very high impact — that grid operators must plan for. There are strict requirements to be certified as a black start resource in ERCOT, and only certain units can meet these standards. Black start resources must be able to start without an external power source, and they must always be available and ready to start. Natural gas peaking units can meet these requirements. Batteries, on the other hand, have the potential to be partially or fully discharged at any time, preventing them from meeting ERCOT’s current availability requirements. Austin Energy will monitor developments at ERCOT if and when those requirements change such that batteries could provide this black start capability, Austin Energy will consider implementing batteries for that purpose if economically feasible. Austin Energy will maintain black start capabilities in its generation portfolio to be part of the solution in a statewide grid blackout emergency.

Continue our Commitment to Decarbonization

- **Carbon Free as a Percentage of Load**

Austin Energy reaffirms the 2030 Plan’s goal of 100% carbon-free generation as a percentage of load by 2035 while recognizing the need for technology evolution as an enabling factor. The intent is to have enough carbon-free energy generated to cover all of our customer load in 2035 and beyond. If barriers stand in our way, we will take the approach of “do your best and clean up the rest,” mitigating or offsetting any remaining carbon emissions starting in 2035. As a milestone along the way and recognizing that most carbon-free sources are renewable, Austin Energy sets a goal of 70% renewable energy as a percentage of load by 2030. This gives us the flexibility to convert the remaining 30% to carbon free by 2035 using a mix of nuclear (currently about 22%), renewable or other carbon-free sources that best meet community needs. Austin Energy will promote reliability and affordability in alignment with community values and priorities as we advance these environmental sustainability goals. We will be transparent and communicate proactively on developments in this area.

- **Carbon Intensity Guardrails**

Austin Energy will set an annual carbon intensity guardrail for its generation resources. Carbon intensity is measured in pounds of carbon per megawatt-hour of energy generated. CO₂ makes up nearly 99% of the greenhouse gases emitted when generating electricity. Based on Austin Energy’s current generation mix, this carbon intensity guardrail serves as an appropriate upper boundary to ensure all emissions, including NO_x, are trending downward.

Austin Energy has greatly reduced its carbon intensity over time through demand-side management, decades of investment in renewable resources and the retirement of legacy generators. In 2005, Austin Energy’s carbon intensity was 1,100 lbs CO₂/MWh. The average carbon intensity for its current generating portfolio from 2021 to 2023 was 508 lbs CO₂/MWh. For comparison, the 2023 carbon intensity from all generators in ERCOT was 855 lbs CO₂/MWh. That means if Austin Energy did not own and manage its own portfolio and just relied on ERCOT’s generation mix, the carbon intensity of electricity provided to Austin residents would be 1.7 times higher.

In 2025, Austin Energy will set an upper limit of 508 lbs CO₂/MWh as its portfolio carbon intensity guardrail as the utility continues to serve Austin’s rising energy needs. Further, Austin Energy will set an upper limit of 915 lbs CO₂/MWh as its local carbon intensity guardrail. This value reflects the average carbon intensity for its current local generating portfolio from 2021 to 2023.

Austin Energy will review and propose updated carbon intensity guardrails in response to changing conditions, such as successfully exiting coal at Fayette Power Project. The goal is to strengthen these guardrails as cleaner resources become available to meet customer needs. Further, if Austin Energy’s generation mix changes and a single carbon intensity guardrail isn’t sufficient, it will establish a similar NO_x intensity standard for the generation portfolio.

- **Reducing Emissions**

When the utility is able to capture data on customer's emissions separate from their electricity use, such as gas heating, cooking, and/or transportation, the utility should propose moving to goals that seek to reduce total net emissions through tools like beneficial electrification programs.

- **Exit Coal and Reaffirm REACH**

Austin Energy reaffirms our commitment to cease operation of our portion of the Fayette Power Project coal plant as soon as feasible. Austin Energy will continue using REACH to incorporate the cost of carbon into the coal plant's dispatch price. REACH stands for Reduce Emissions Affordably for Climate Health, and it refers to the market-based approach adopted in the 2030 Plan to accelerate the reduction of carbon emissions from FPP in the most economic manner available. REACH reduces generation output during low-demand periods but keeps the resource available for high-demand periods, when the grid needs it most. The 2035 Plan positions Austin Energy to be ready for the successful ceasing of coal plant operations. By adding local, dispatchable generation, we can protect customers from the energy shortfall and additional energy market risks that come from no longer having FPP in Austin Energy's portfolio.

- **Wind and Solar Outside of Austin Energy's Service Area**

Recognizing the role of remote wind and solar in achieving Austin Energy's goal of 100% carbon-free by 2035 as a percentage of load, we will continue to look to these types of projects to supplement our local portfolio. We will monitor the impact of oversupply and transmission congestion in the market and seek solutions that benefit our customers within the bounds of affordability. Austin Energy will use its annual Request for Proposal or equivalent process to seek the best available renewable energy and energy storage opportunities to add to Austin's generation portfolio and to assess market trends for future planning. With an eye toward flexibility, the 2035 Plan does not designate the components of Austin Energy's renewable energy portfolio. Austin Energy will plan for least net-cost and least-risk acquisition of renewable resources and energy storage as available in the ERCOT market to meet 2035 Plan goals.

- **Geothermal, Nuclear and Other Carbon-Free Technologies**

As described below, Austin Energy will seek to add more carbon-free generation options to our mix through emerging and evolving technologies such as geothermal, nuclear and other carbon-free opportunities.

Further our Culture of Innovation

- **Research and Development Partnerships**

Austin Energy has long been a leader in innovative programs and solutions that benefit our customers. We reaffirm our commitment to fostering research and development partnerships to explore emerging technologies. In doing so, we position Austin Energy to continue to be a leader in the evolving energy landscape.

- **Grant and Other Funding Opportunities**

Austin Energy will continue to actively pursue opportunities for federal, state and private funding in support of City of Austin goals.

- **Solar for All**

Solar for All is an example of an emerging partnership between City of Austin and 10 coalition partners across Texas that leverages federal funding to promote equitable access to clean energy solutions. Courtesy of an Environmental Protection Agency grant award, qualifying customers participate at no cost to install solar and batteries for Austin Energy's Community Solar program. In return for serving as a hosting location for these resources, low-to-moderate income participants receive 20% bill savings. Host customers also benefit from increased resiliency and gain ownership of the solar and battery after 15 years. We anticipate serving around 2,500 residential customers and 25 multifamily, nonprofit and community service facilities through this program.



- **Solar Standard Offer**

Solar Standard Offer is another flagship program demonstrating Austin Energy’s culture of innovation. Targeting rooftops that otherwise might not be incentivized to host local solar, this program provides a new rate so it’s easier for renewable developers to partner with commercial customers to lease their rooftop space and host solar for our Community Solar program. Austin Energy receives the power, and in exchange, developers receive compensation and share it with the commercial customers according to an agreement that works for both parties. Austin Energy is initiating this innovative program with commercial customers and plans to add residential offerings including options for renter participation by January 2026 once we have enough experience with the program.

- **Pilot Geothermal Generation**

Austin Energy seeks to support the development of geothermal electricity generation in Texas and gain a better understanding of the technology’s viability as we look to add more carbon-free power to our portfolio. We will begin with a PPA for a 5 MW project in East Texas, a small but manageable size given the maturity of the technology type. The successful development and completion of this project could lead to larger scale installations at a lower cost as it gains economies of scale.

- **Enhance “Virtual Power Plant” Programs and Set Up a Distributed Energy Resource Management System**

In support of our demand response goals, Austin Energy will research, develop and implement ways to enhance our “virtual power plant” programs. Virtual power plants refer to a range of connected technologies and programs. For example, Austin Energy’s robust thermostat program and our recently launched EV managed charging program fall under this category. Austin Energy will work to increase community participation in these programs. In addition, we will develop and build new virtual power plant programs, like offering incentives for batteries. This new battery program is targeted to launch in 2025 and is an essential part of meeting the demand response goals outlined above.

Adopting a Distributed Energy Resource Management System (DERMS) will help us make more progress on our virtual power plant programs. A DERMS optimizes the use of distributed resources like thermostats, electric vehicle chargers and batteries. Austin Energy is currently working with the Electric Power Research Institute to develop requirements for a DERMS, and then we expect to put out a proposal request.

- **Support Vehicle-to-X Opportunities**

Vehicle-to-X (V2X) refers to a variety of technologies that allow electric vehicles (EVs) to play a more active role in the electric system. This could allow EVs to support a wide range of applications such as demand response, grid balancing and outage support. Currently, Austin Energy's smart and connected EV chargers work as a demand response tool, but they hold the potential to turn EVs into mobile energy storage devices that can provide power to homes or the grid when needed. Austin Energy will work toward V2X by supporting necessary infrastructure, standards placement, regulatory changes and technological integration.

- **Explore Advanced Nuclear Technologies**

Austin Energy will monitor the progress of advanced nuclear reactors and engage directly with those who have expertise in this area. Given the evolving technology opportunities as well as funding incentives and grants, the 2035 Plan reestablishes our ability to engage in nuclear technologies if we find the right opportunity.

- **Emerging Carbon Capture Technologies**

To reach our carbon-free by 2035 goal, Austin Energy may need to rely on emerging emission control technologies. We will monitor the progress of various carbon capture technologies and applications over the next decade.

REPORTING FOR THE 2035 PLAN

As Austin Energy moves forward with implementing the 2035 Plan, we will provide a report annually to highlight the progress we've made, the changes we're seeing and the actions needed to continue forward on reliability, affordability and environmental sustainability.

Additionally, Austin Energy will report to the Council on at least a semiannual basis:

- The progress toward achieving the goals for demand response, energy efficiency, and local solar.
- Stack emissions of carbon-emitting generation sources.
- The progress towards ending the use of coal as a generation fuel source.
- The progress towards achieving the 2030 and 2035 carbon-free goals.



AUSTIN ENERGY RESOURCE, GENERATION
AND CLIMATE PROTECTION PLAN TO 2035

CONCLUSION

Energy markets and energy grids have seen rapid changes, leading to increased risks. At the same time, we are experiencing a climate emergency. A responsible approach to generation resource planning does not gamble on uncertainty at our community's expense.

We heard from the community that reliability is their top priority, and it is one of the significant risks Austin Energy faces. The 2035 Plan provides us the ability to add the resources we need to address voltage support, extreme weather and market risks. This way, our community is better protected from local outages and future weather events.

By creating a flexible path focused on innovation, the 2035 Plan helps us meet the community's values and our industry's changing needs while being as environmentally sustainable as possible, as quickly as possible. Though a 100% carbon-free energy future is not here yet, the 2035 Plan moves Austin Energy and the community closer to that world.

The 2035 Plan guides us to a clean energy future that has:

- ✓ Continued progress and clear commitment to an industry-leading goal of 100% carbon-free energy by 2035.
- ✓ New and innovative customer energy solutions.
- ✓ Improved reliability, affordability and environmental sustainability.
- ✓ An energy equity approach that protects the most vulnerable customers.
- ✓ Resiliency in the face of extreme weather and associated financial risk.
- ✓ Flexibility and innovation to tackle current and future challenges.

In partnership with our community, this is how we will continue to safely deliver clean, affordable, reliable energy and excellent customer service — now and into the future.



AUSTIN ENERGY RESOURCE, GENERATION
AND CLIMATE PROTECTION PLAN TO 2035



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