

# Cover Letter from EUC Resource Planning Working Group

February 1, 2024

## Process

In December 2022, [Austin City Council Resolution 20221201-040](#) directed Austin Energy to collaborate with the Electric Utility Commission to update the “[Resource, Generation and Climate Protection Plan to 2030](#) (2030 Plan),” adopted by the Austin City Council in December of 2020.

The 2030 Plan committed Austin Energy to continue safely delivering clean, affordable, and reliable energy sufficient to meet customer demands while pursuing the City of Austin's climate protection and sustainability goals. In August 2023, the Electric Utility Commission (EUC) created the Resource Planning Working Group (Working Group) to provide leadership and guidance to Austin Energy and the Austin City Council on technical and market issues to meet environmental, efficiency and affordability goals established by the Austin City Council. The 16-member Working Group<sup>1</sup> included members of the EUC, members of the Resource Management Commission and several others who represented different elements of the Austin community. Members brought expertise on a variety of energy topics to this effort. The working met on 14 occasions between September 2023 and January 2024. The Working Group created a [website](#) for meeting notes, presentations, and materials.

The Working Group examined the initial presentation by Austin Energy, the 11 resource portfolios modeled by Austin Energy, technology assessments from Austin Energy, staff responses to questions from the Working Group, and the results of four additional resource portfolios constructed by the Working Group and modeled by Austin Energy. Austin Energy presented those four additional scenarios on January 10, 2024. In addition, the Working Group received information and presentations on many of the technologies and issues relevant to the Plan, including batteries with various energy storage durations, hydrogen technology, geothermal energy, energy efficiency and demand response, renewable resources, the Fayette coal plant, transmission, regulatory changes, and new funding resources and tax incentives available under the federal Inflation Reduction Act.

## A Changing Landscape

As Austin Energy has noted, many market conditions, opportunities and challenges have changed since the 2030 Plan was adopted by the Austin City Council in 2020.

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<sup>1</sup> One of the 16 working group members had to leave in early January because of a new job.

First, the costs of electricity have risen. Austin increased electricity base rates in 2022, particularly for residential customers, and has increased the Power Supply Adjustment (PSA) rate three times since the fall of 2022.<sup>2</sup> Several times, the wholesale costs of electricity and the cost of ancillary services have outstripped Austin Energy's revenues from the sale of electricity and ancillary services to the market. This has been caused partly by price separation - where the cost of purchasing energy in Austin Energy's load zone is significantly more than in other parts of the state during some hours of the year, particularly when demand is high. Because many of Austin Energy's contracted resources are located outside its load zone, revenues earned in those areas are often less than the cost of purchasing energy locally. Several factors have led to this price separation, including transmission congestion throughout ERCOT, the lack of available resources in the load zone, and the failure to invest in local transmission. ERCOT reports that in 2023, higher temperatures, higher demand and insufficient resources in North and West led to a high-risk transmission limitation in Central Texas.

Additionally, ERCOT has significantly increased its budget by 40% in 2024 compared to 2023, and the volume and cost of ancillary services have increased since 2021, raising costs to all load-serving entities, including Austin Energy. As an example, the administrative fee was raised for all customers by approximately 13%, while ancillary service costs doubled in 2023 compared to 2022.<sup>3</sup>

Second, one of the major goal pillars of the previous Austin Energy Resource, Generation and Climate Protection Plan was to negotiate the closure of Austin Energy's share of the Fayette coal plant by the end of 2022. Austin Energy's share of the Fayette power plant represents 77% of the carbon produced by Austin Energy. This closure has not yet occurred because Austin Energy and the City Council did not agree to the terms offered by the Lower Colorado River Authority. Austin Energy has not yet identified a clear path to achieve this goal.

Third, several factors have reduced the reliability and affordability of the ERCOT grid. These factors include:

- Increasing climate-induced extreme weather events (including polar vortex storms and sustained higher summer temperatures and heat waves);
- Unprecedented high electricity demand growth statewide and failure to invest in weatherization of energy infrastructure;
- Slow investments in new transmission and distribution assets and improvements, and

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<sup>2</sup> Oct 2022, Aug 2023, and Oct 2023

<sup>3</sup> see page 14, <https://www.ercot.com/files/docs/2024/01/19/ERCOT-Monthly-Operational-Overview-December-2023.pdf>

- Very low investments in energy efficiency and demand response to reduce and manage demand and costs and protect Texas residential customers.

Together, these events have led to catastrophic grid failure during winter Storm Uri, widespread central Texas distribution outages during Winter Storm Mara, and growing peak loads and net peak period emergency conservation calls during the summer of 2023 and winter of 2024. A series of policy decisions by the Legislature and the Public Utility Commission of Texas (PUCT) have increased the ERCOT market costs and placed more regulatory burdens and costs on Load Serving Entities such as Austin Energy. This includes more robust ancillary service obligations and the potential for implementation of a Performance Credit Mechanism (PCM) - essentially an additional payment, capped at \$1 billion annual cost, for resources that are dispatchable during certain periods of high demand - and expected reliability requirements on load serving entities.<sup>4</sup> These changes and other potential market changes and cost adders may not be resolved until 2025 or later, increasing uncertainty and risk for Austin Energy and its customers.

Fourth, the passage of the Infrastructure Investment and Jobs Act in 2021 and the Inflation Reduction Act in 2022 have made billions of dollars in federal funds and tax incentives available for deploying transmission solutions, solar, wind, batteries, and energy efficiency at lower-end user costs. These tax incentives, favorable tax treatment, and loans and grants are available for a variety of utility-scale and distributed resources and transmission solutions. These incentives will make these already cost-effective clean energy solutions even more affordable. These federal incentives create an economical option for Austin Energy to own renewable resources directly rather than rely solely on power purchase agreements with third parties. Particular incentives apply to utility-scale renewable and battery resources located in “energy communities” - areas where fossil fuel plants are retiring, or there is a preponderance of workers dependent upon fossil fuel extraction and use – or projects located in economically disadvantaged areas. Many areas around Austin meet these requirements, including the community near the Fayette Power Project if the plant were decommissioned.

Texas is also eligible for substantial federal funding from the Inflation Reduction Act (IRA) for consumer energy efficiency and electrification rebates if and when Texas accepts the funds and develops an implementation program. These rebates can help supplement existing Austin Energy programs.

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<sup>4</sup> The new provisions are authorized by the passage of SB 3 in the 87th Legislative Session and HB 1500 in the 88th Legislative Session. Most of the measures will be implemented over the next two to three years through rulemaking, so the exact impact on Austin Energy customers is still unknown.

## Limitations

The Working Group benefited from the Austin Energy staff's information in response to our many questions. However, a more collaborative process that allowed for direct conversation throughout would have been more effective and efficient. Some assumptions about technology readiness and costs that played a key role in the portfolio and scenario modeling could have been improved by collaborating with the working group.

The modeling results are a reflection of the assumptions made by Austin Energy. Overly optimistic assumptions about the future availability and cost of green hydrogen, paired with overly conservative assumptions about the availability and cost of clean energy technologies, can result in inaccurate modeling results. The working group has concerns about the assumptions made on green hydrogen cost and availability, hydrogen-capable combined cycle power plant cost, energy efficiency and demand response costs, battery storage cost, distributed energy management systems availability and cost, and managed charging and local solar costs.

Modeling does not exactly predict the future. Many variables can change outcomes in the years to come, including technological advancements, regulatory changes, and ERCOT market changes. The Working Group utilized the modeling results but viewed them as one of several important sources of information.

## Hydrogen

Austin Energy has recommended building one or more “hydrogen-capable combined cycle” plants that would run on natural gas and possibly switch to green hydrogen in the future. Austin Energy points out that as it ends the use of coal and phases out the future use of existing gas plants at Decker Creek and Sand Hill, the utility will need dispatchable local resources that do not produce carbon. However, as a practical matter, it is unlikely that Austin can access green hydrogen (the cleanest and lowest-carbon form of hydrogen) at a reasonable cost and quantity within the coming decade,<sup>5</sup> which means that new hydrogen-capable gas plants will primarily be natural gas-fueled plants that do not meet the City's decarbonization goals.

Several factors make hydrogen-fueled power generation unrealistic over the 2030-2035 plan horizon:

- Although Texas hosts active efforts to develop hydrogen production capabilities, there is no available, affordable green hydrogen (created from zero-emissions sources) supply within the state today.

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<sup>5</sup> Information Technology & Innovation Foundation. Jan 16, 2024.  
<https://itif.org/publications/2024/01/16/new-report-warns-against-clean-hydrogen-hype/>

- Once green hydrogen production is underway, it will take years to build pipeline infrastructure from production sources to Austin and other hydrogen users. Hydrogen pipeline costs are higher than for natural gas pipelines and safety hazards are also higher.
- Only green hydrogen would qualify to meet Austin's climate and decarbonization goals. Green hydrogen definitions and rules are not yet finalized, and it will take several years before the anticipated matching of zero-carbon renewable energy powering green hydrogen production (electrolyzers) can be implemented.
- While the combustion of 100% green hydrogen is carbon-free, it produces other harmful local pollution, including nitrogen oxides (NOx), at a higher rate than combusting natural gas. Thus, a hydrogen-capable combined cycle gas plant would increase local pollution in both the near-term (carbon and other pollutants from gas) and long-term (higher NOx) and exacerbate local ozone levels, which already exceed health-based standards set by the Environmental Protection Agency. Any hydrogen development should not reduce air quality levels in Austin.

While continued analysis and investigation of green hydrogen fuel cell technology that doesn't rely on combustion are merited, current information indicates that green hydrogen is best suited for other sectors that are more difficult to decarbonize rather than the large-scale electric power generation sector.

### **Revising Affordability Goal**

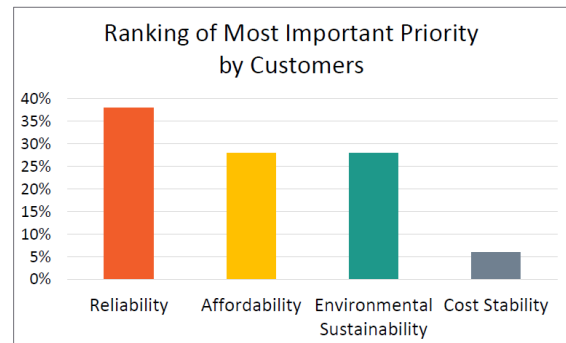
The affordability goal approved by City Council is currently composed of two metrics: a) control all-in (base, fuel, riders, etc.) rate increases to residential, commercial and industrial customers to 2% or less per year; and b) maintain AE's current all-in competitive rate in the lower 50% of all Texas rates.

Because customers pay bills and not rates and Austin Energy's average residential consumption is significantly lower than the state average, the Working Group recommends that the goal be changed to: "a) control all-in (base, fuel, riders, etc.) bill increases to residential, commercial and industrial customers to 2% or less per year; and b) maintain AE's current all-in competitive bills for the residential class, and to the extent measurable, the commercial and industrial classes, in the lower 50% of all Texas all-in electric bills."

Changing the affordability goal to focus on total electric bills instead of rates will better align with Austin's focus on improving building energy efficiency through building code updates, incentives for energy efficiency retrofits in existing buildings, and encouraging more modest and affordable homes.

## Balancing Affordability and Sustainability

The Working Group strived to balance affordability and sustainability in our recommendations. Sustainability and affordability ranked as equal priorities in the survey Austin Energy conducted at the start of this process. And 66% of residential survey respondents indicated they would be willing to pay more on their bill for carbon-free generation.



Residential customer respondent willingness to pay more per month for increase in percentage of carbon-free generation:



The Working Group took into account customer priorities, concerns about cost assumptions, and the appropriateness of the current affordability goals when reviewing the modeling results. Some of the clean energy portfolios that were coded as “unaffordable” in Austin Energy’s presentations were revealed to be very close to the affordability threshold when the annual cost and affordability projections were examined.<sup>6</sup> Consideration of costs that are external to Austin Energy, such as health costs from local air pollution, climate change impacts, and additional regulations that will be triggered if Austin is designated as a nonattainment area for ground-level ozone by the EPA<sup>7</sup>, also weighed into the Working Group’s recommendations. Additionally, some of the capital costs assumed in the model could be lessened through the appropriate use of federal incentives, grants and loans. For example, by locating renewable and

<sup>6</sup> Austin Energy portfolio modeling results expanded. Pg 6.  
<https://austineucresourceplanningwgorg.files.wordpress.com/2024/01/2024-01-26-austin-energy-response-to-euc-resource-planning-wg-questions-batch-9.pdf>

<sup>7</sup> CAPCOG. “The Potential Costs of an Ozone Nonattainment Designation to Central Texas.” Sep 2025.  
<https://www.capcog.org/wp-content/uploads/2021/07/Possible-Costs-of-a-Nonattainment-Designation-9-22-15.pdf>

storage projects in so-called “energy zones” and environmental justice communities, these projects could receive an additional 20% in tax incentives (paid out as cash to entities that do not pay taxes). Federal funding could also help defray the costs to achieve aggressive energy efficiency and local solar goals.

### **Recommendation**

The Working Group recommends the adoption and implementation of the attached Austin Energy Resource, Generation and Climate Protection Plan to 2035. This new iteration of the Plan is intended to build on the previous plan and align with the greenhouse gas reduction goals in the Austin Climate Equity Plan while prioritizing reliability and affordability. It identifies a robust suite of clean and carbon-free energy resources that can replace existing fossil fuel resources and avoid any future fossil fuel investments by Austin Energy.

### **Working Group Member Signatures**

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# **Austin Energy Resource, Generation and Climate Protection Plan to 2035**

Recommended by the Electric Utility Commission Resource Planning Working Group

February 1, 2024



## Executive Summary

The City of Austin has determined that Austin Energy's priorities should maintain reliable and affordable energy service to its customers while supporting the City's climate protection and sustainability goals. As stated in the Austin Climate Equity Plan, these priorities should also advance equity among Austin's citizens.

The 2035 Austin Energy Resource, Generation and Climate Protection Plan builds on the previous 2030 Plan and attempts to align with the greenhouse gas reduction goals in the Austin Climate Equity Plan. The 2035 Plan commits Austin Energy to reduce carbon emissions to zero by no later than 2035 by ratcheting down carbon emissions through phasing out the use of its coal and gas resources while investing in new resources, including energy efficiency and demand response programs, distributed energy resources, both short and long-duration storage resources, thermal storage, local solar and utility-scale renewable energy. The 2035 Plan reinforces the need to invest in local transmission upgrades and study several additional measures that could contribute to Austin Energy's affordable, zero-carbon clean energy future, including studies on additional transmission needs, reactive power and voltage support needs, winter peak reduction programs, emissions-free flexible resources such as geothermal energy, and new programs to encourage Austinites to shift their use of energy to times when energy resources are plentiful and affordable.

All of the strategies in this plan are intended to be used in combination to enhance system operational flexibility and reliability, lower capital, operating and energy costs, increase system reliability and resilience, reduce carbon and other pollutant emissions, and enhance environmental and economic equity for and among all Austin and area residents and Austin Energy customers. Specific goals in the 2035 Plan include:

- End Austin Energy's use of coal as soon as possible while minimizing use of and new investments in the Fayette Power Plant.
- Retire all of Austin Energy's natural gas generators by 2035, with specific targets to reduce greenhouse gas emissions at those facilities by 33% by 2027, 66% by 2030 and 100% by 2035. Limit purchases of energy from sources that emit greenhouse gas emissions during operation.
- Build Austin's renewable portfolio from roughly 50% renewable energy today to at least 65% by 2027, 76% by 2030, and 80% by 2035. Pair wind and solar resources with batteries to facilitate load-matching and reduce clean-energy curtailments.

- Expand local solar programs to achieve 350 MW by 2027, 500 MW by 2030, and 700 MW by 2035, using combinations of customer-owned behind-the-meter solar, community solar, standard-offer and third-party-owned distributed solar.
- Ramp up energy efficiency investments and prioritize reducing winter peak demand. Austin Energy should achieve 20% winter and 28% summer peak reductions by 2035, with interim goals along the way, and prioritize delivering energy efficiency to low- and middle-income and rental customers.
- Expand demand response programs to achieve peak reduction of 75 MW by 2027, 200 MW by 2030, and 300 MW by 2035.
- Make further investments in local thermal energy storage to achieve 50 MW of thermal storage by 2035.
- Invest in both short-duration and long-duration energy storage to achieve 150 MW of storage by 2027, 400 MW by 2030, and 500 MW, including at least 100 MW of long-duration storage by 2035. Use these as dispatchable resources to improve system capacity and flexibility.
- Expand electrification of transportation by assuring that EVs can be a solution and not a hindrance to the zero-carbon future.
- Develop a Distributed Energy Resource Management system to aggregate and operate carbon-free assets owned by the utility, customers and others.
- Expand community outreach and equity efforts with greater community participation.
- Expand the transmission system to improve clean energy imports and local voltage stability.
- Modify the GreenChoice program.
- Conduct specified technical studies.

The goals and programs outlined in the 2035 plan will move Austin Energy toward a zero-carbon future. Still, this plan must be updated continually with rapid population growth, increasing climate-induced extreme weather events, and technological and regulatory changes. The 2035 plan includes several required studies to inform the next update.

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## Vision Statement

This 2035 Plan commits Austin Energy to continue to provide sustainable, affordable, dependable, and safe electricity service to residents and businesses.

## Climate Protection

In response to the urgent state of the changing climate and resolutions passed by the Austin City Council, including the Climate Emergency Resolution and the Fossil Fuel Nonproliferation Treaty, near-term emissions reductions will align with the goals of the Austin Climate Equity Plan and build on the emissions reductions targets established in the [Resource, Generation and Climate Protection Plan to 2030](#).

The City of Austin's established climate protection goals are a driving force for this plan. The goal adopted by the Austin City Council in the Austin Climate Equity Plan (ACEP) is to achieve net-zero community-wide greenhouse gas emissions by 2040, with approximately 75% of those reductions to be achieved by 2030 with minimal use of carbon offsets only for the most difficult to decarbonize sectors. The ACEP also establishes equity as a core priority when considering environmental impacts.

Numerous recent studies, including the International Panel on Climate Change's "Climate Change 2022: Impacts, Adaptation and Vulnerability,"<sup>1</sup> U.S. Department of Agriculture's "Fifth National Climate Assessment"<sup>2</sup> and the World Meteorological Organization's "Greenhouse Gas Bulletin No.19"<sup>3</sup> indicate that the global climate crisis is worsening, and that much more rapid reductions of greenhouse gas emissions are needed immediately to avoid catastrophic climate change.

The scientific facts about climate change and existing City of Austin climate goals underpin the commitments in this plan to reduce and eliminate greenhouse gas emissions from Austin Energy operations.

## Greenhouse Gas Reduction Goals

This plan commits to reaching zero carbon emissions from Austin Energy power supplies by 2035, with reductions leading to that goal. Building on the success of Austin Energy's efforts to reduce emissions from the Fayette coal plant over the last few years through REACH, Austin Energy will begin using a similar strategy with its gas plants to reduce greenhouse gas emissions by one-third by 2027 and two-thirds by 2030. By eliminating coal and its emissions

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<sup>1</sup> IPCC. March 2023. <https://www.ipcc.ch/report/ar6/wg2/>.

<sup>2</sup> U.S. Department of Agriculture. Nov 2023. <https://nca2023.globalchange.gov/>

<sup>3</sup> World Meteorological Organization. Nov 2023. <https://wmo.int/publication-series/wmo-greenhouse-gas-bulletin-no-19>

and then phasing out the use of gas by 2035, Austin Energy will be a leader in creating a zero-emissions future.

- 2027: between 7.6 and 84.5% reduction, depending on whether or not Fayette is retired
- 2030: 92.1% reduction, assuming Fayette is retired
- 2035: 100% reduction

## Air and Water Pollution

The Austin region has worsening air quality and has exceeded health-based limits on ground-level ozone three times in 2023, putting it at risk of being designated as a non-attainment region by the Environmental Protection Agency. Such a designation would be costly for the local economy. While all energy sources have some impact on the environment, there are now affordable energy options that reduce air and water pollution by avoiding the combustion of fuels. Austin Energy will only invest in new energy resources that result in the least air and water pollution possible and have no air pollution emissions during operation.

Austin Energy will not invest in any additional resources whose operation directly contributes to local air or water pollution and will retire all resources that directly contribute to local air or water pollution by 2035. Any source that requires an air or water emission permit from the Texas Commission on Environmental Quality is considered to have an air or water pollution impact. This does not prohibit AE from short-term<sup>4</sup> purchases of electricity from ERCOT market sources.

## Fossil Fuel Generation

This 2035 plan builds on past progress to decarbonize Austin Energy's portfolio. All of Austin Energy's owned, operated, or contracted generation resources will be carbon-free by 2035 at the latest while reducing emissions in the meantime. Specifically:

- As of 2022, Austin Energy's portion of the coal-burning Fayette Power Project accounts for almost 77% of Austin Energy's greenhouse gas emissions, is a large source of air pollution for the region, and uses over 2.3 billion gallons of water per year.<sup>5</sup> Thus, retiring Austin Energy's portion of Fayette as soon as possible is a top priority and will be an active area of work and discussion with the Austin City Council and will be a part of regular updates at Austin Energy

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<sup>4</sup> Short-term does not include power purchase agreements.

<sup>5</sup> "LCRA Water Use Summary 2022". <https://www.lcra.org/download/2022-water-use-summary/?wpdmdl=29951>

Utility Oversight Committee meetings (in executive session when needed) until this goal is achieved. In order to make progress on this goal:

- Austin Energy will cease supporting new capital improvement projects for the Fayette plant, excluding minor investments needed for immediate health, safety or regulatory compliance.
- Austin Energy will increase its use of the “Reduce Emissions Affordably for Climate Health” (REACH)<sup>6</sup> strategy in order to run Austin’s portion of the plant no higher than 150 MW, the lowest level allowable by contract with LCRA, except during emergency conditions.
- Find a way to spread the cost of Fayette closure over 25 years.
- Austin Energy will issue a Request for Information for a portfolio of resources to replace Fayette's energy, capacity and other operational services.
- Pursue new federal loan and grant funding for closing dirty coal plants and mines and replacing them with clean energy assets, perhaps near Fayette, to create market pressure for the plant to shut down. Potential funding sources include Energy Infrastructure Reinvestment Financing from the DOE and extra tax incentives (10% additional incentives) available under the Infrastructure Reinvestment Act for former coal mines and coal plant areas.
- Austin Energy’s gas-burning generation will be retired by 2035. Austin Energy will begin using the REACH strategy to reduce emissions from its gas-burning generation fleet. Emissions will be reduced from a 2022 baseline as follows:
  - 2027: 33% reduction
  - 2030: 66% reduction

Austin Energy will obtain new resources that are flexible and can respond to price signals on both the generation and demand side to achieve its carbon reduction goals. To facilitate retiring these fossil fuel units, Austin Energy must begin the upgrades to transmission and other solutions to deal with voltage support and the loss of reactive power supplies. Potential solutions include utilizing synthetic inertia, converting one or more existing fossil plants to synchronous condensers, implementing grid-enhancing transmission technologies to expand transmission throughput, and expanding and leveraging utility-scale batteries, distributed virtual power plants and demand response.

Austin Energy will no longer purchase, contract, or build generation or storage resources that emit greenhouse gas emissions or other air pollution during operation.

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<sup>6</sup> The “Reduce Emissions Affordably for Climate Health” (REACH) strategy incorporates a cost of carbon in the generation dispatch price, allowing Austin Energy to reduce generation output during low-margin periods, while keeping the resources available for high-margin periods.

The use of fossil fuel-burning “Resilience as a Service” (RAAS) resources will be limited to emergency conditions or times when local prices are at or above \$1,500 per MWh.

## Renewable Energy

In 2023, Austin Energy served approximately 50 percent of its load with renewable energy. Decarbonized zero-emission renewable energy offers the greatest net benefit to the Austin community. Numerous studies have established that the financial and human costs of climate change, air pollution and water pollution far outweigh any benefits from continued use of fossil fuel energy sources.<sup>7</sup> Wind and solar resources are the lowest-cost sources of electricity available in Texas and batteries are now cost-competitive and being rapidly deployed in the ERCOT market. When deployed in combination with investments in energy efficiency, demand response and energy storage, renewable energy can affordably and reliably meet Austin Energy customer needs while allowing the utility to decarbonize fully.

### Zero-Emissions Renewable Energy Goals<sup>8</sup>

- 2027: 65%
- 2030: 76%
- 2035: 80%<sup>9</sup>

New renewable energy resources will be paired with batteries where appropriate to improve their value and dispatchability.

Austin Energy will prioritize load-matching as much as possible when procuring new renewable energy resources.

Geothermal energy, while still a nascent technology in Texas, has the potential to be a valuable dispatchable renewable energy resource. Several local entities in South Texas are piloting new geothermal technologies. Fervo Energy recently demonstrated the first successful pilot of enhanced geothermal (a generation source that does not need the specialized geological conditions of traditional geothermal). Austin Energy will study the

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<sup>7</sup> RMI. “The Hidden Health Costs of Gas-Fired Power Plants.” Oct 2022. <https://rmi.org/hidden-health-costs-of-gas-fired-power-plants>.

<sup>8</sup> Renewable energy goals are as a percentage of load and a percentage of Austin Energy-controlled generation. Local and customer-sited solar are included in the renewable energy goals.

<sup>9</sup> 80% is an estimate of the percentage that excludes Austin Energy’s generation from the existing South Texas Nuclear Project capacity. By 2035, 100% of Austin Energy’s electric generation to serve 100% of Austin Energy load will come from emissions-free renewable energy and the South Texas Nuclear Project.

potential for a pilot project in geothermal as a first step toward wider adoption and issue an RFI for enhanced geothermal.

## Local Solar

Local solar – solar photovoltaic (PV) technology that is located within Austin Energy’s service territory – has been identified as a key local generation resource that can be leveraged to realize many benefits for Austin, including avoiding transmission constraints, reducing local load zone costs, avoiding transmission fees, improving equity, zero emissions, and improving community resilience. While some potential for additional small local solar farms exists, these opportunities are limited due to high land values in the Austin area. Yet, Austin has an estimated rooftop solar potential of approximately 2,400 MW.<sup>10</sup>

Austin Energy has already grown local solar resources with effective solar programs and policies. Austin Energy is on track to meet its past local solar goals early and intends to deploy more local solar by leveraging new federal incentives from the Inflation Reduction Act and Austin Energy’s own Standard Offer for Distributed Solar program. Continuing its history of innovation and collaboration with stakeholders will allow Austin Energy to achieve environmental and affordability goals.

## Local Solar Goals

- 2027: 350 MW, with at least 150 MW behind-the-meter<sup>11</sup>
- 2030: 500 MW, with at least 200 MW behind-the-meter
- 2035: 700 MW, with at least 250 MW behind-the-meter

## Standard Offer for Distributed Solar

The Standard Offer for Distributed Solar program will allow more rapid deployment of rooftop solar without relying on investments by customers. Austin Energy will establish standard power purchase agreement rates (based on installation capacity) that will pay for local solar energy produced on the utility side of the meter. This will allow solar developers, as opposed to building owners, to finance the deployment of local

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<sup>10</sup> 2019 Google Project Sunroof study says Austin rooftop solar potential is about 4,800 MW, but the 2016 NREL “Rooftop Solar Photovoltaic Technical Potential in the United States: A Detailed Assessment” is more detailed and identifies approximately 50% of the potential that Project Sunroof estimates for Texas. Thus the assumption is that Austin’s real potential is approximately 50% of what Project Sunroof estimates. <https://sunroof.withgoogle.com/data-explorer/place/ChIJLwPMoJm1RIYRetVp1EtGm10/> and <https://www.nrel.gov/docs/fy16osti/65298.pdf>.

<sup>11</sup> “Behind-the-meter” refers to solar installations that are connected on the customer’s side of the electric meter and therefore earn Value of Solar credits. Customer-sited solar that is installed on the utility’s side of the electric meter will count toward the local solar goal, but not the behind-the-meter goal.



distributed solar. Building owners will incur no cost and will be compensated by the developer for the use of their rooftop or other space.

Utilizing rooftop space further reduces environmental impact by eliminating the need to use more land for energy production. This program can also enable more equitable distribution of the financial benefits of electric generation. This program will be structured to compensate larger and smaller installations on residential rooftops fairly. Small and medium installations have the greatest total potential capacity in Austin, so utilizing those resources is important for maximizing clean local generation. Foundation Communities has already demonstrated the effectiveness of deploying relatively small installations and now has 2 MW of solar installed at 15 different properties.

### **Community Solar**

Austin Energy's Community Solar program has remained popular since its creation. Even after adding two additional solar projects, the program is fully subscribed with a waiting list despite little promotion. Half of the program capacity is allocated to customers who wish to pay a premium to support community solar, while half of the program capacity is reserved for low-income customers at a reduced rate. This contributes to more equitable participation in local solar.

Two strategies are being pursued that will greatly expand the program's capacity. Austin Energy is part of a broad consortium of Texas communities that have applied for EPA Solar for All grant funds to build community and rooftop solar for low-income customers. Additionally, the energy procured from the Standard Offer for Distributed Solar Program will feed into the Community Solar Program. Austin Energy will develop a Community Solar + Battery program that will be open to all customers, including commercial and industrial customers. The program will be accelerated and promoted.

### **Third-Party Solar and Storage Leases by Customers**

While there have been consumer protection issues with third-party solar leases for residential customers, allowing third-party leasing for commercial and industrial customers would be helpful. These customers are generally more sophisticated and able to negotiate beneficial contracts - and they are often looking for options to avoid up-front capital expenses.

### **Demand-Side Resources are the First Priority**

Over the past decade, Texas has experienced significant load growth without proportional energy efficiency or load management. Electricity peak demand growth has outpaced net supply growth with the result that ERCOT is experiencing more periods of

scarcity, emergency risk and high wholesale prices.<sup>12</sup> These situations are exacerbated by climate change, which is raising ambient temperatures, intensifying and extending heat waves, and enabling more polar vortex and severe winter storm events. Austin Energy often buys electricity to serve its customers at prices that exceed what it earns for sales into ERCOT.

Given these factors, lessening Austin’s power requirements by reducing and managing summer, winter and overall demand is the first and best option to keep costs down for all customers large and small, improve reliability, and achieve environmental goals. Although Austin Energy has been ahead of most Texas utilities in its commitment to energy efficiency – particularly for new construction – there is still a vast opportunity to adopt additional, high-impact energy efficiency and demand response<sup>13</sup> for Austin’s customers. Energy efficiency and demand response measures cost less than all available supply-side resources, protect customers in the event that distribution or bulk system resources fail, and reduce and stabilize costs and operational risks for the utility and ERCOT as a whole. Therefore, Austin’s first priority for meeting customer’s energy needs must be energy efficiency and demand response. Austin Energy should maximize the use of cost-effective demand-side and behind-the-meter resources, including energy efficiency and smart management of demand response and customer-sited solar and batteries. Austin should reduce overall and targeted energy use, especially in hours of high use in the summer and winter, develop specific programs to shift peak use through demand response, use time-managed charging of electric vehicles, and install and operate local batteries and microgrids. These solutions can help avoid unnecessary costs, reduce the need for additional generation and resource purchases, and reduce Austin zone price separation phenomenon while helping customers lower their electric bills.

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<sup>12</sup>Overall total energy use in 2023 rose by 3.4 percent compared to 2022 according to ERCOT’s, Energy and Demand Report, 2023. However, while new supplies did grow by even more because of new solar and battery growth, peak demand outpaced this supply available at peak times as ERCOT peaks grew by some 11,000 MWs in September of 2023 compared to September of 2022. ERCOT’s all time record set in August of 2023 was some 7,000 MWs higher than the previous record. See <https://www.ercot.com/static-assets/data/news/Content/a-peak-demand/2023/all-time-records.htm> for information about peak demand growth.

<sup>13</sup> Energy efficiency achieves the same result, like heating or cooling a building, using less energy. Energy efficiency measures commonly involve weatherization, insulation, and installation of appliances that use less energy. Energy efficiency can also be achieved through sustainable or green building design. Demand response refers to strategies that allow customers to manually or automatically adjust their electricity usage, often shifting consumption of energy from times when demand or prices are high to times when demand or prices are lower. Customers that participate in DR programs are compensated for reducing their demand during periods of grid stress. Demand response measures include building energy management services, smart thermostats and electric vehicle charging management controls.

## Energy Efficiency Goals

Energy efficiency investments will be targeted to reduce peak demand in the summer and winter, but Austin Energy will also report annual energy savings. Austin Energy should continue to report on how much energy use is decreased as a result of its programs, but should also report on greenhouse gas reductions, water savings and other pollutant reductions that result from these programs. While traditionally Austin Energy has sought to meet a cumulative demand reduction goal - the current goal is 1,200 MW by 2030, as measured from 2007 - this goal is not the most useful or relevant metric today. Instead, Austin Energy should use specific percentage reduction goals relative to current and future peak demand levels since peak and net peak conditions often pose the greatest stress and cost to ERCOT and Austin Energy.

Energy efficiency goals to reduce summer and winter peak demand,<sup>14</sup> relative to forecasted peaks, are as follows:

- 2027: 10% Winter & 18% Summer Peak Reduction
- 2030: 15% Winter & 23% Summer Peak Reduction
- 2035: 20% Winter & 28% Summer Peak Reduction<sup>15</sup>

These goals include current programs and efforts and require significant expansion of Austin Energy's commercial, single family, and multifamily programs, which in their current form would only expect to reduce summer peaks by 18% by 2035 and winter peaks by some 5% by 2035. AE should research and develop new programs that specifically focus on the unique challenges posed by winter loads and extreme cold temperatures, building on Texas-specific recommendations from the [American Council for an Energy-Efficient Economy](#).

As Austin transportation and appliances continue to electrify, Austin Energy will track and report greenhouse gas reductions accounting for emissions from both electricity and natural gas usage. Due to electrification, Austin Energy will continue to monitor and plan for load growth.

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<sup>14</sup> Summer and winter peak reduction measures are to be counted separately, because summer and winter reliability pose different resource conditions and operational reliability challenges. Some energy efficiency measures, such as air conditioner replacements and pool pump management, offer summer peak savings only; and other measures, such as heat pumps, building weatherization, and insulation have differing winter versus summer impacts. Austin Energy will plan, measure, and track summer and winter load reduction separately and will install measures such as electric vehicle managed charging that can efficiently reduce both summer and winter peak loads. Annual summer and winter load reductions are not based exclusively on the MW added each year, but are based on the regression analysis of the whole portfolio that includes lifecycle attrition in these programs.

<sup>15</sup> Annual load impacts are based on a regression analysis of the whole portfolio that includes measure lifecycle attrition. Thus, these goals based on a percentage reduction represent the cumulative reduction of peak demand in the winter and summer compared to the winter and summer peaks that would have occurred absent these programs. Programs paid for with federal funds can count toward this goal.

## **Building Codes to Improve Energy Efficiency**

Given that the operations of buildings account for nearly one-third of global carbon emissions, it is crucial to continue to strive for more stringent building codes for both new construction and major rehabilitations.<sup>16</sup> Austin has been a leader in adopting and continually updating mandatory and voluntary building codes to improve energy efficiency, but further improvements to achieve zero-carbon buildings are needed. Building envelope improvements will reduce energy use, improve comfort and allow occupants to better survive future power outages. Ensuring the use of the most efficient types of equipment, such as heat pumps for space conditioning and water heating, will reduce peak energy needs and keep costs down. Building codes - especially mandatory building codes - raise the standard for all new buildings, ensuring more equitable living environments for all in the Austin community.

Austin Energy should continue to be a leader in adoption of the latest version of the International Energy Conservation Code, with local amendments. In addition, Austin Energy should continue to incorporate new technologies into its buildings by requiring solar-ready, EV-ready and electric-ready provisions. While state law<sup>17</sup> prevents Austin from requiring all buildings to be all-electric, Austin can ensure that buildings are constructed to make it easier and more affordable for buildings to convert to electricity. Starting with the upcoming Energy Conservation Code update, for buildings powered by electricity alone, resistance heating will be banned. In particular, heat pump water heaters should be required if electric water heating is selected. Austin's consistently high rate of new construction combined with recently passed land use reform will likely spur higher urban density in the coming years, creating an opportunity to maximize the climate and energy efficiency benefits of innovation in the building sector from Austin Energy.

## **Equity in Energy Efficiency**

Energy efficiency programs will be maintained and improved to ensure equitable participation among Austin Energy customers. Reducing energy use and energy burden for low-to-moderate-income residents is a top priority to protect Austin's affordability and overall equity. In addition to rate-funded energy efficiency programs, Austin Energy will also seek external grants, with a special focus on opportunities to benefit low-income and moderate-income residents.

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<sup>16</sup> <https://worldgbc.org/advancing-net-zero/embodied-carbon/>

<sup>17</sup> HB 17 from the 87th Legislative Session.

<https://capitol.texas.gov/Search/DocViewer.aspx?ID=87RHB000175B&QueryText=%22HB+17%22&DocType=B>

Austin Energy should prioritize providing equitable access to energy efficiency programs to renter households. Residential ratepayers pay monthly for those programs through rates but current program design and landlord indifference have shunted access to programs that may substantially reduce energy bills. The inequities experienced in housing affordability are shown on the City's website which states, "The majority (53.6%) of households making less than \$35,000 who rent are actually severely cost burdened meaning that they pay more than half of their incomes for rent." That leaves precious little in a household budget for other essentials including utility services, childcare, transportation, and food. Equitable access to energy efficiency programs that reduce consumption and thus address escalating shelter costs must be addressed as the highest priority for Austin Energy.

According to the 2018-2022 5-year American Community Survey, 55% of Austin's housing units were occupied by renters. At the same time, Austin's housing market is losing its base of affordable housing available for purchase by low and moderate income residents, which increases the need for affordable rental units. As the public utility of a service territory with a growing population of renters, Austin Energy must factor this problem into all of its policies and aggressively expand weatherization and energy efficiency programs with landlords, building owners and tenants at all income levels. The current lack of landlord participation in energy efficiency programs may be improved by increasing incentives and expanding marketing. Austin Energy will investigate measures to prevent unjust enrichment should a particular landlord opt to sell or demolish the rental units. To further combat price-hikes and displacement, AE should also consider greater incentives for community-based organizations and other non-profits creating affordable housing. Austin Energy will integrate data on gentrification and displacement into its decisions about how to allocate energy efficiency and weatherization investments, using tools such as the toolkit and maps from [The Uprooted Project](#).

Austin Energy should work with other city departments and community-based organizations to develop a one-stop shop for weatherizing and repairing low-income homes and apartments in a more seamless manner. Weatherization programs should be expanded to include free access to a variety of energy-efficiency and electrification measures, including, but not limited to: weatherstripping, solar shades, attic and wall insulation, ventilation, and Energy Star windows and Energy Star appliances.

Austin Energy will leverage expected federal IRA funds to target and pilot new outreach and incentives to replace electric resistance heating, including the installation and maintenance of heat pumps, hot water heat pumps, and mini-split heat pumps. These efforts should be focused specifically towards encouraging the owners of low-income multifamily housing communities to decarbonize. In further pursuit of decarbonization,

AE will create robust incentives for community and shared solar installations that can lower tenants' net utility bills.

Another crucial aspect to advancing equity in energy efficiency lies in fostering resiliency, particularly in low-income communities, where they tend to experience the worst effects of severe weather events and take longer to bounce back from their increasing intensity and frequency. Austin Energy will prioritize incentives and other programs for the installation of solar back-up batteries. Well-managed customer batteries can increase resiliency in the event of a power outage, lower peak demands, and save both owners and renters money by utilizing low-cost energy that has already been generated and stored, instead of drawing on high-cost peak demand energy.

### **Demand Response Goals**

Demand response strategies will be tailored to reduce peak demand and meet net peak load requirements in both the summer and winter. Demand response goals are to have the following capacity available to reduce both summer and winter peak demand without utilizing fossil fuel resources:

- 2027: 75 MW
- 2030: 200 MW
- 2035: 300 MW

Demand response is a valuable resource that can reduce load-serving entity resource requirements in peak and grid stress hours, increase electric operational flexibility, reduce wholesale market prices and reduce total utility resource and capital costs. Therefore, residential and commercial customers who provide demand response services should be appropriately compensated. As of 2023, Austin Energy estimates it has about 50 MWs of demand response available through its programs, so these goals will require more effort and funding. All Austin Energy DR programs will be structured to provide appropriate payment for actual participation, as opposed to signing up to potentially participate. Customers will be given up-front incentives and assistance to acquire and install specialized equipment such as smart thermostats, behind-the-meter batteries, programmable hot water heaters and pool pumps. Austin Energy will investigate the establishment of innovative rate structures that provide retail price signals that will be more effective in reflecting wholesale prices, grid emissions, and grid stress to influence customer consumption profiles. Given Austin's leadership in electric vehicle use, time-managed electric vehicle charging, including large fleets, is another valuable demand response resource that can save money for Austin Energy and its customers, and an optional electric vehicle time-of-use charging rate will be established to meet DR goals.

Demand response programs should be structured to provide flexibility for portfolio cost management, ancillary services provision, transmission and distribution balancing, and capital management.

### **Thermal Storage Goals**

Austin Energy has had success meeting and exceeding its thermal storage program, which uses chilling stations to lower energy use for commercial, institutional and industrial applications. Austin Energy will continue to invest in thermal storage, utilizing carbon-free electric generation.

- 2027: 30 MW
- 2030: 40 MW
- 3035: 50 MW

### **Electric Energy Storage**

In 2020, battery technology was nascent, and Austin Energy had only invested in one significant project, a 2 MW battery. Since then, battery technology within ERCOT has increased exponentially and there are some 4,500 MW of lithium-ion batteries operating within ERCOT today. ERCOT may likely have an additional 10,000 to 20,000 MW of battery capacity by 2027. Austin Energy will take advantage of federal tax incentives to invest in battery storage technology,<sup>18</sup> starting with lithium-ion batteries inside the Austin Energy load zone to provide capacity and ancillary services in grid stress periods, reduce transmission costs during system peaks, manage voltage, enhance community resilience, and optimize the availability of renewable energy output.

A local storage goal will help create a local dispatchable resource that can pre-position power during off-peak hours to avoid congestion and price separation and respond to local loads. Austin Energy will implement incentives and a tariff that encourage deployment of behind-the-meter batteries that the utility can utilize for demand response purposes. Austin Energy will co-locate batteries with its wind and solar assets to create low-carbon, low-cost dispatchable resources and leverage existing transmission assets and generation sites by placing longer-duration batteries on current power plant sites. Austin Energy will deploy multi-day battery technology that can discharge for at least 72 hours as it becomes more available.

### **Electric Energy Storage Goals**

- 2027: 150 MW, with at least 100 MW located in the Austin Energy load zone
- 2030: 400 MW, with at least 200 MW located in the Austin Energy load zone

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<sup>18</sup> Pursuing these technologies and tariffs is consistent with the Council Resolution 20221201-045 that directed Austin Energy to explore various tools for deploying energy storage.

- 2035: 500 MW, with at least 300 MW located in the Austin Energy load zone - including at least 100 MW of long-duration storage

While lithium-ion batteries are now well established, new types of battery technology are available today that can provide energy storage that can be discharged over multiple days. Austin Energy will investigate these technologies and report back to the City Council by September 2025 with updated recommendations.

## **Electric Vehicles**

Austin Energy has adopted several programs and incentives that have increased the number of electric vehicles in its service area. Both AISD and CapMetro have made important long-term commitments to electric vehicles.

Austin Energy will:

1. Deploy intelligent EV charging (also known as “V1G” for one-way flexible vehicle charging) to enable the vehicles to be valuable flexible loads;
2. Support or develop programs that allow electric vehicles to become resiliency resources for backup power to homes or businesses with V2H (Vehicle-to-Home) or V2B (Vehicle-to-Building);
3. Support the development of the EV infrastructure for the large batteries in local school districts and CapMetro electric bus fleets, such that they can be valuable sources of backup power in the future if the infrastructure is planned up-front; and
4. Enable the EVs to be distributed storage for the grid with V2G (vehicle-to-grid) as the technology develops.
5. Encourage deployment of signage and software to broaden the visibility of charging infrastructure across the service territory and assist EV owners with locating chargers.

## **Distributed Energy Resource Management (DERMs)**

Austin Energy will actively participate in the development of an aggregated carbon-free distributed energy resource management system to realize local benefits from reducing 4CP and other ERCOT costs and to support Austin Energy’s need for affordable energy and ancillary services from the ERCOT market and grid. The DERMs will facilitate and leverage the use of individual and aggregated utility, City and customer-owned distributed generation, storage and demand response assets and be compatible with the Public Utility Commission of Texas’ growing Aggregate Distributed Energy



Resources pilot.<sup>19</sup> Austin Energy will report periodically to the Electric Utility Commission and City Council on efforts to create such a system.

## Community Outreach and Equity

Austin Energy should increase its community outreach - including through trusted community organizations - to improve participation in the utility's energy efficiency, local solar, distributed energy storage, demand response, and electric vehicle programs. It should also increase utilization of available state and federal incentives.

Austin Energy will plan its new energy infrastructure with an effort to avoid disproportionately imposing new infrastructure on low-income and other communities that have historically borne the burdens of electricity asset developments. The utility will engage with potentially impacted communities far in advance of developing nearby energy infrastructure. Austin Energy has an opportunity to right historical wrongs and partner with marginalized groups to reap the economic benefits of the energy transition. This "just transition" is a core concept of the Austin Climate Equity Plan, and it should drive how Austin Energy engages with communities that reside near current and planned energy infrastructure. For example, the results of the transmission study presented to the Electric Utility Commission indicate that Austin Energy could develop transmission infrastructure in the next decade. Engagement with potentially impacted communities and stakeholders should begin immediately. Research and experience of project developers has shown that early engagement and participatory planning can help avoid unexpected development obstacles down the road.<sup>20</sup>

Particular care should be taken to ensure all voices are given the opportunity for access with minimal barriers and that participants' voices are captured. There should be multiple opportunities and methods to garner community feedback that take into account the daily lives and complexities of low-income individuals, people living with disabilities, those who speak little to no English, and other marginalized communities.

## Transmission Upgrades

While Austin Energy cannot entirely control the pace or extent of the buildout of needed transmission lines and congestion mitigation projects throughout ERCOT, it will upgrade and expand its local transmission system according to the priorities identified in the

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<sup>19</sup> See ERCOT's ADER details at <https://www.ercot.com/mktrules/pilots/ader>.

<sup>20</sup> Chapter <https://nap.nationalacademies.org/catalog/25931/accelerating-decarbonization-in-the-united-states-technology-policy-and-societal>

utility's 2022 Transmission Study. This work will be targeted for completion by 2030 in order to reduce local constraints that increase costs for the utility and its customers.

Austin Energy will also utilize local battery storage to complement and maximize efficiency of transmission expansion and provide local voltage regulation. Austin Energy will also consider grid-enhancing transmission technologies, such as dynamic line rating, sensors, smart meters and enhanced monitoring tools, and power flow control devices, to expand system capacity and throughput of existing transmission assets without major additional capital expenditures.

Any projects that may affect the community will include community notification and opportunities to provide input and feedback.

Austin Energy will conduct an additional study of transmission and renewable energy imports to inform the next update to this plan. This study will include examination of adding transmission to import renewable energy from the west and south of Austin. It will also include a deep analysis of how demand-side measures in this plan can modify future Austin Energy load and energy import needs.

## **GreenChoice Program**

Austin Energy's GreenChoice program, for voluntary customer purchases of wind energy at a specified fuel charge, was implemented in 2001. In its first decade, customer demand for GreenChoice energy pushed the utility to buy more renewable energy. However, now that Austin Energy's fuel mix includes more than 50% renewable energy, the GreenChoice program does not affect renewable purchases but serves customers only by offering them "certified" renewable (wind) power. The GreenChoice program will be reconsidered and repurposed to continue selling "certified" renewable energy for customers to meet their ESG goals and expand Austin's ability to acquire and integrate renewable energy (e.g., through broader renewable and energy storage purchases).

## **Nuclear Energy**

This plan maintains the commitment not to invest in any additional nuclear energy resources.

While nuclear energy may be a low-carbon source of electricity, it has environmental problems, including high- and low-level nuclear waste, radioactive airborne emissions, environmental harm from uranium mining, and operational and security incidents that

can potentially cause radiation leakage. Austin Energy will include a summary of these impacts from the South Texas Nuclear Project to the City Council annually, similar to how it reports on carbon emissions and reductions.

## Other Options Not Included

Biofuels, hydrogen, and carbon capture and sequestration (CCS) are not included as components of this ten-year resource plan. These fuels and resources, with their associated physical and institutional infrastructure (e.g., pipelines and delivery structures, vendors, standard contract terms and protections), are not yet commercially available at scale in Texas and therefore pose high cost and performance risk for early adopters.

Any future consideration of the use of biofuels, hydrogen (including “green hydrogen”), or carbon capture should be preceded by a robust study of life-cycle greenhouse gas emissions and other pollutants, potential health impacts, commercial feasibility, equity and environmental impacts, and costs. Austin Energy will invest in energy resources that have the least life-cycle environmental and health impacts.

## Studies

**Clean, Renewable, Flexible Energy:** Austin Energy will continue to assess new technologies that are carbon-free and flexible, including fuel cells, medium-duration and long-duration electric storage, and geothermal energy. Austin Energy will study the potential for a geothermal pilot project as a first step toward wider adoption and issue an RFI for enhanced geothermal. Austin Energy will report back to the Electric Utility Commission and City Council on the availability and costs of these technologies by the end of 2025.

**Winter Peak Load Reduction:** This plan includes ambitious goals to reduce summer and winter peaks. While the majority of Austin Energy’s programs and funding have been focused on saving energy in the summertime, and Austin Energy has a strong track record, recent events in ERCOT and Austin have revealed the need to also focus on programs that reduce winter load. Austin Energy will hire a third party to make recommendations for new or refined programs that will achieve winter peak demand savings through energy efficiency, peak shifting, and demand response before the end of 2025. Based on the study, the ambitious goals could be adjusted as appropriate through a future update.

**Electrification:** As the electric power system continues to replace natural gas for heating and industrial processes and liquid hydrocarbons for transportation, the demand for electricity - including the winter and summer peaks - will increase. Austin Energy will conduct a thorough study of different electrification scenarios out to 2050 and evaluate needed reinforcements of the transmission and distribution system.

**Billing System:** Austin Energy will evaluate what upgrades to its billing and other IT systems are needed to enable new rates and tariffs that support achieving the goals of this plan.

**Transmission:** Austin Energy will conduct an additional study of transmission and renewable energy imports to inform the next update to this plan. This study will include examination of adding transmission to import renewable energy from the west and south of Austin. It will also include a deep analysis of how demand-side measures in this plan can modify future Austin Energy load and energy import needs and how grid-enhancing technologies can be used to make Austin's transmission and local assets more capacity-efficient.

**Reactive Power:** When the Decker steam turbines were retired, the utility lost a valuable source of reactive power that supported Austin-area voltage. Austin Energy has addressed this voltage stability problem by acquiring more reactive power, raising wholesale power costs. Austin Energy will continue to study its current and anticipated voltage challenges and reactive power requirements and develop a plan to address and resolve those challenges. That plan will consider use of a) demand-side measures, including targeted energy efficiency and demand response to reduce reactive power needs; b) distributed solar and storage that can produce reactive power; c) transmission options, including new transmission, power electronics, and grid-enhancing technologies, and d) generation solutions.

## Affordability Goal

Because customers pay bills and not rates and Austin Energy's residential consumption is profoundly lower than the state average, the Austin Energy affordability goal will reflect the benefits of energy efficiency investments. The goal is to "a) control all-in (base, fuel, riders, etc.) bill average increases to residential, commercial and industrial customers to 2% or less per year; and b) maintain AE's current all-in competitive bills for the residential class, and to the extent measurable, the commercial and industrial classes, in the lower 50% of all Texas' all-in electric bills."

By focusing on bills, Austin Energy will have more flexibility to invest in a long-term zero-carbon plan even if costs might increase more than 2 percent in some years.

## **Future Updates to This Plan**

Updates to this plan will occur at least every three years to keep pace with technological and electric market changes. Austin Energy commits to transparently soliciting and integrating feedback from robust community engagement throughout the entire update process. In addition to the 10-year operational plan, Austin will include a longer 25-year outlook. The next update will have the benefit of all the above studies.