OUR ENERGY ROADMAP

AUSTIN ENERGY

Our Energy Roadmap

Austin Energy
Community-Owned since 1895

OUR ENERGY ROADMAP

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Austin Energy's diverse fuel portfolio and comprehensive energy efficiency programs have traditionally kept customer electric bills on average lower than other utilities in Texas and the country.

OUR ENERGY ROADMAP

INTRODUCTION

In the rolling terrain of far eastern Travis County, where a lignite coal plant had once been planned, arrays of solar panels glisten in the sun, supplying Austin with clean, renewable energy.

Austin Energy's customers determined long ago that delivering electricity from sources that don't pollute and reducing electricity use through energy efficiency is the course their municipally owned utility should follow.

Prompted by the energy crisis of the mid-1970s, Congress passed laws requiring large electric utilities nationwide to offer energy audits to residential and commercial customers. As a result, Austin Energy embarked on an ambitious effort to develop a "conservation power plant" rather than construct another major fossil-fuel plant.

Beginning in 1982, Austin Energy has offered a host of programs, including rebates for installing new air conditioners and low-interest loans to finance improvements to help electric customers reduce their energy use and delay the utility's need to build another power plant.

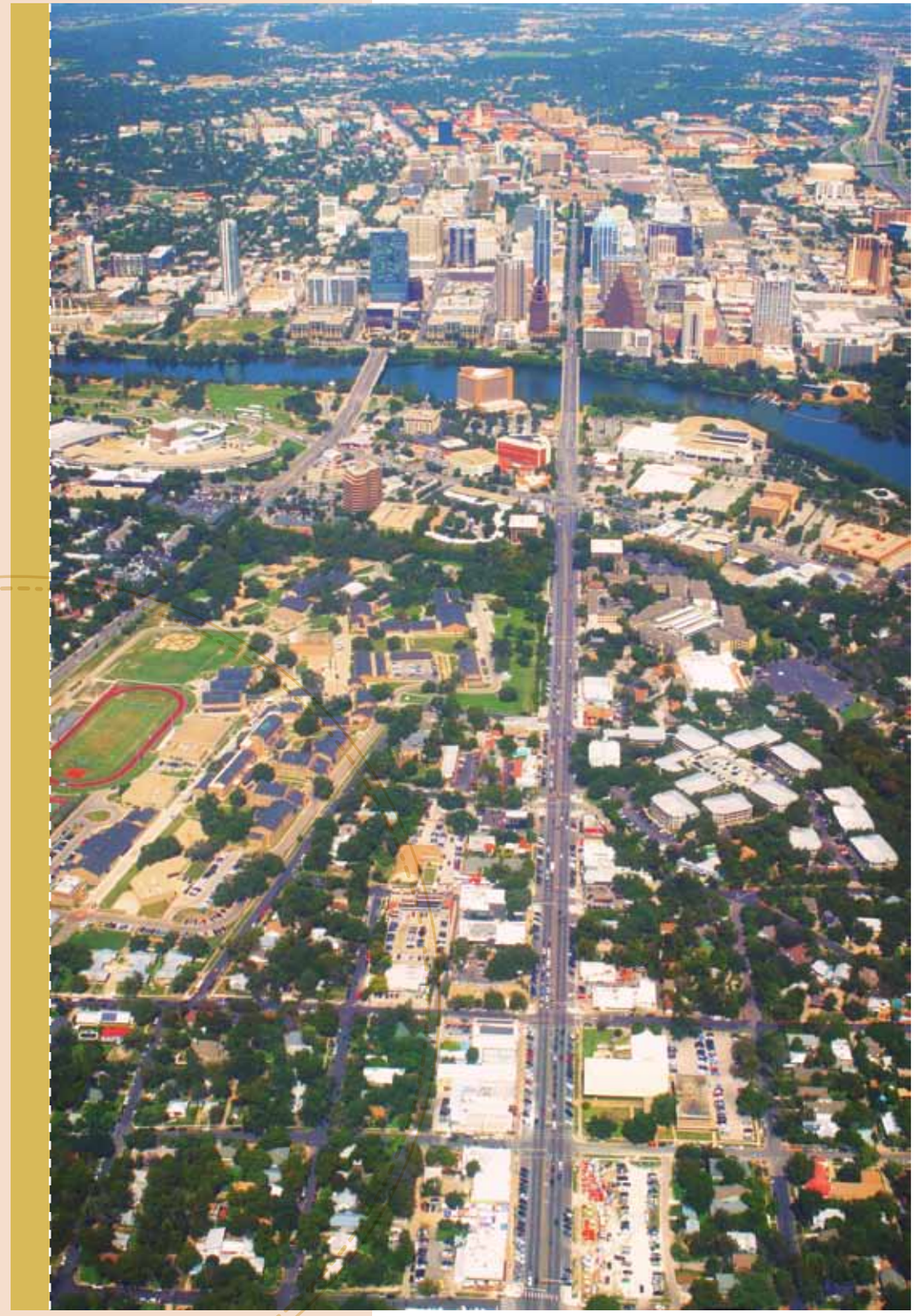
Already owning a diverse generation mix including nuclear power, coal, and natural gas plants, Austin Energy began its renewable energy program, GreenChoice,® in 2001 to reduce emissions and to provide customers with a hedge against the volatile price of fossil fuels.

Customers are reaping the rewards of the utility's generation strategy that provides flexibility in the marketplace and comprehensive energy efficiency programs. Austin Energy electric bills have consistently ranked among the lowest in Texas for average residential users and lower than the national averages. While a few utilities in Texas have lower rates, Austin Energy customers use less electricity than customers of the other utilities because of this community's emphasis on energy efficiency and protecting the environment.

In 2006, Austin Energy completed the conservation power plant by offsetting the equivalent of 700 megawatts (MW) of generation through energy efficiency programs. *In 2007, the Austin City Council passed the citywide Austin Climate Protection Plan* directing Austin Energy to repeat the accomplishment, this time in fewer years. The Austin Climate Protection Plan set goals for the utility's overall renewable energy portfolio and established separate goals for solar energy.

The Council also decided to send a clear message on Earth Day 2010, the 40th anniversary of that historic event. On that symbolic and special day, the Council adopted Austin Energy's Resource, Generation and Climate Protection Plan through 2020 by increasing the goals established in the Austin Climate Protection Plan. The Council set some of the most ambitious goals not just in Texas but in the entire country. *Austin Energy was directed to supply 35 percent of its electricity from renewable energy, offset 800 MW of peak demand generation through energy efficiency and achieve 200 MW of solar power, all by 2020.* The Council also signaled its desire for Austin Energy to develop a strategy to lessen or end its use of coal to produce electricity.

The roadmap has been charted. Austin Energy has led all of Texas up and down the Interstate 35 corridor from the Red River to the Rio Grande and all points east and west. Utilities across the nation are following Austin Energy's lead. A new future is on the horizon.



GENERATION PLAN CHARTS OUR COURSE

The Resource, Generation and Climate Protection Plan defines the goals to help customers make long-lasting, energy efficiency improvements that lower their consumption and protect the environment by reducing emissions from power plants. As an outgrowth of the goals in the plan, the City Council adopted a multi-tiered rate structure presented by Austin Energy to reward customers with lower rates for lower usage. The five-tiered rates also send pricing signals to customers by helping them see on their bill how they can stay on a lower tier and pay lower prices by reducing usage.

When customers lower their electricity use, Austin Energy also benefits because it reduces the amount of electricity the utility needs to produce and delays the need to buy more power or build more power plants. Lower usage by customers also helps Austin Energy meet the goals in the plan to reduce carbon dioxide emissions to 20 percent below levels from 2005 when the population and demand for electricity were not as great as they are today.

To reduce emissions while at the same time supplying enough electricity to meet the needs of the Austin area, Austin Energy buys power from clean energy sources, such as wind power. Recent wind purchases will help Austin Energy achieve its goal to deliver 35 percent of its electricity by 2020 from renewable energy by 2016. Achieving this goal places Austin Energy at the top among both public power and investor-owned utilities.

While continuing to be a nationwide leader in both energy efficiency and renewable energy, Austin Energy is committed to implementing its plan with affordability in mind. Its goal is to not increase rates by more than 2 percent a year and to keep the average bill in the lowest 50 percent of all utilities in Texas.

Achieving the Resource, Generation and Climate Protection Plan's goals while remaining affordable requires Austin Energy to increase energy savings and further reduce emissions by continuing and enhancing many of the same efforts.

Can the already successful energy efficiency programs be restructured to ensure more energy savings? Can more residents and businesses participate in the programs to help Austin Energy meet its goals? Can cleaner energy sources, such as natural gas, wind and solar power, begin to replace higher pollution emitting sources, such as coal?

Austin Energy's answer is a resounding "yes."

Becoming the utility of the future requires an open mind and a willingness to listen to the needs of the customers. Working together, the goals can be achieved.

CITIZENS LEAD THE WAY

Blessed with the Colorado River that meanders through the heart of the city and helps shape the Austin area's landscape and lifestyle, residents have a long history of protecting their natural resources and promoting a clean and healthy community. The river and associated lakes and creeks carving the verdant hills promote an outdoor and active populace. This attracts educated and talented people to the city as well as businesses wanting skilled employees to help them innovate and prosper.

The community's emphasis on a clean environment and an innovative economy fosters engaged residents who are active in civic affairs and influence how their government and municipally owned electric utility set policy.

This community dialogue determines how Austin Energy defines its future.

© Kimberly Davis

Residents have a long history of civic engagement, helping to determine how their government and electric utility are run.

AN ATTRACTIVE AND EFFICIENT DOWNTOWN

Austin Energy deploys several strategies to reduce electricity use at peak and delay the need to build new power plants or avoid purchasing expensive power on the market. At 56-stories high and 850,000 square-feet of space, The Austonian, Austin's tallest building downtown, provides air conditioning to its tenants by tying in to Austin Energy's district cooling system. Austin Energy pumps chilled water through a network of underground pipes to more than two dozen downtown customer buildings, representing 8 million square feet of commercial space. Condominiums, hotels, hi-tech companies and retail businesses, which contribute to the Austin area's image as a creative and innovative place to both live and work, air condition their buildings with the chilled water.

Although it does not participate in the deregulated retail electric market in Texas, Austin Energy has carved a competitive niche with some of its largest commercial customers by offering a choice to provide air conditioning to their customers.

As much as 76 megawatt-hours (MWh) is shifted from the hottest part of the day to night and early morning hours by turning water into ice at two Austin Energy chiller plants downtown. By operating the energy-intensive chilling process at night, Austin Energy reduces electricity demand on the system during the day when power is needed the most. Property owners benefit by saving expensive real estate space downtown for other uses and by not incurring the upfront and long-term capital costs to install unsightly condensers, chillers, heat pumps and other air conditioning equipment.

Austin Energy's commercial customers are committed to reducing electricity use during the hottest part of the day and contributing to an attractive, vibrant downtown. District cooling is the right choice for them.

Two district cooling plants downtown help shift energy use away from the hottest summer daytime hours by chilling water at night. The chilled water is pumped through pipes to air condition downtown buildings, avoiding the installation of unsightly air conditioning equipment and saving valuable downtown space for other purposes. As an example of how district cooling works to keep downtown attractive, the facade on one of the plants is a public art project depicting cool, blue ice.

A HEALTHY RELATIONSHIP WITH ENERGY

The Dell Children's Medical Center in Austin is the first hospital in the world to receive Leadership in Energy & Environmental Design (LEED) Platinum Certification from the U.S. Green Building Council for the environmental and energy conservation features in its facilities. The hospital receives all of its electricity, chilled water for cooling and steam for hot water from Austin Energy's nearby Mueller Energy Center. The combined heat and power plant includes a 4.3 MW natural gas turbine that powers the hospital, a heat recovery steam generator, providing steam both for hot water and an absorption chiller delivering chilled water for air conditioning.

This design achieves fuel use that is significantly lower than traditional methods for providing electricity, heating and cooling. Emissions from the Mueller Energy Center are far below those of conventional generation. Carbon dioxide emissions from the plant are less than half those produced from traditional power plants and gas boilers. And the plant produces almost no emissions of nitrogen oxide and sulfer dioxide.

The relationship between the hospital and the energy center demonstrates how energy and the health and well-being of our customers intersect.

SERVING THE NEEDS OF THE SUBURBS

Totaling more than 4 million square feet of space, businesses and multifamily properties in North Austin's The Domain retail and lifestyle development receive chilled water for air conditioning from a nearby chilled water plant owned by Austin Energy. A new 2.4 million gallon storage tank enables Austin Energy to chill and store the water at night and then turn the chillers off in the daytime to offset 23 MWh during the hottest parts of the summer.

The utility extends out its services and energy efficiency programs for commercial customers to the suburbs for new growth, which helps keep the Central Texas economy strong.

As the population and community grow, Austin Energy delivers services to help commercial customers use energy more efficiently to better serve our residents.

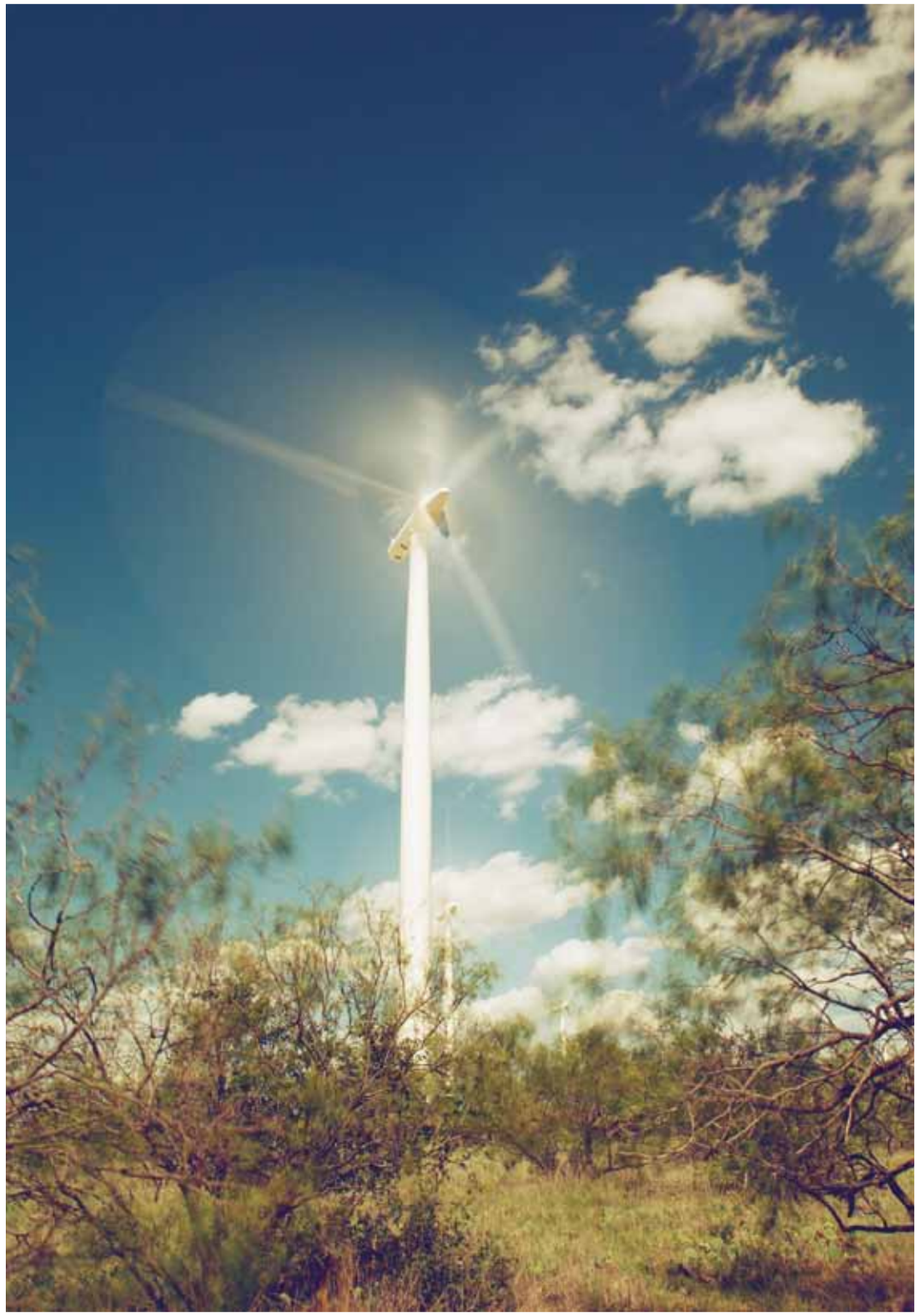
SOLAR PROGRAM GROWS THE CLEAN ENERGY INDUSTRY

Before Austin Energy started its Solar Rebate Program in 2004, there were only four solar installation companies in the area. Now there are more than 40. Austin Energy has worked closely with the community and solar advocates, helping to proliferate the solar industry in the area and the drive toward a clean energy economy.

The utility helped develop the market by offering incentives at a high enough level to encourage customers to make investments they otherwise might not make. As the market has grown and the cost of solar panels has steadily declined, Austin Energy has lowered its rebates, which makes funding available to a greater number of participants.

Austin Energy also developed the innovative Value of Solar credit to replace net metering. Initially the Value of Solar initiative credited all residential customers 12.8 cents for every kilowatt-hour of electricity their solar system (up to 20 kilowatts in size) produced monthly. Value of Solar takes into account the benefits of solar energy to the community, such as lower emissions, lower peak demand and growth of the clean energy job sector. The Solar Electric Power Association selected Austin Energy as the 2012 Public Power Utility of the Year citing the Value of Solar initiative as an innovation advancing the clean energy industry.

Austin Energy's Solar Rebate Program has helped spur the development of the clean energy industry in Austin and diversify the area's economy.



Recent wind power purchases enable Austin Energy to achieve its renewable energy goal four years ahead of schedule.

RIDING A NEW WAVE OF WIND

Wind power from the Gulf Coast began blowing into Austin in late 2012 from new contracts from onshore wind developers.

The wind from South Texas has changed Austin Energy's direction from West Texas where it has traditionally bought its wind power. The new wind projects are near the Texas coast and produce strong output during peak electricity demand times in the afternoon throughout the year when generation is needed most. In comparison, West Texas wind blows primarily during evening hours in the spring and winter. The location of the new wind projects is also in an area with sufficient transmission infrastructure, and Austin Energy does not foresee transmission congestion issues similar to wind power from West Texas.

The price for the power is fixed over the contract period and comparable to the price for power from natural gas generation. These prices reflect a significant drop in power prices in general and in wind since 2008. The prices are indicative of the declining natural gas prices due to increases in shale gas supplies.

Austin Energy is one of the few utilities in Texas currently buying significant wind power generation. With new purchases set to come online in 2014 and 2016, Austin Energy is four years ahead of schedule to meet its goal of 35 percent renewable energy by 2020. When Austin Energy achieves its target, it will send a clear message to Texas and the rest of the country about the utility's commitment to renewable energy.

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GREEN POWER SALES TRENDSETTER

Austin Energy has been a nationwide leader in green power sales in the voluntary market. For nine years in a row, Austin Energy led the country in sales of renewable energy by a utility-sponsored program, according to rankings by the U.S. Department of Energy's National Renewable Energy Laboratory. In fact, no other electric utility in Texas has ever been ranked in the top 10 for sales in the voluntary market while Austin Energy has led the nation.

Along the way, Austin Energy has set several national milestones through its green power program. The Austin Independent School District (AISD), for example, was the first to lead large school districts in the country for purchases of renewable energy, and Concordia University was the first college in the country to subscribe to 100% renewable energy.

GreenChoice subscribers AISD, Round Rock ISD and Lake Travis ISD also routinely rank near the top nationwide for green power purchases by K-12 schools, according to the U.S. Environmental Protection Agency's (EPA) Green Power Partnership rankings. For several years, Austin Energy also had the most businesses subscribing to 100 percent green power and listed in the EPA's rankings.

Austin Energy helped Texas become the nationwide leader in wind power by purchasing renewable energy from new sources developed in the state. GreenChoice is Green-e Energy® certified, a third-party verification that confirms the renewable energy is from new sources built for the voluntary market and is not required by state or federal mandates. The certification also gives Austin Energy customers confidence they are receiving environmental benefits from their green power purchases.

By continuing to be the national trendsetters for renewable energy, Austin Energy customers have given GreenChoice their stamp of approval.

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Every City-owned building in Austin gets its electricity through GreenChoice, making Austin's local government the first large city in America to subscribe to a 100 percent renewable energy electricity supply.

MUNICIPAL BUILDINGS POWERED 100% GREEN

Every time customers or City of Austin employees walk into a City library, recreation center or any City-owned building, they are entering buildings run completely with renewable energy. The City of Austin was the first large municipal government in the U.S. to power all of its City-owned facilities 100 percent with renewable energy from Austin Energy's GreenChoice program.

The City government achieved an ambitious goal in the Austin Climate Protection Plan adopted by the Austin City Council to require all of its facilities to be powered by renewable energy by 2012. While the City of Houston – which is several times larger than the City of Austin – subscribes to more kilowatt-hours of renewable energy than City of Austin facilities, it accounts for only about half of the electricity used by its buildings.

No other large city in Texas powers its facilities with green power at the level of the City of Austin.

As calls for reduction of carbon emissions continue to be a part of the national agenda, Austin Energy is ready with renewable energy from the largest biomass plant in the country.

TURNING WASTE INTO ENERGY

In Sacul, Texas, about 10 miles northwest of Nacogdoches, the largest biomass plant in the country at 100 MW can produce renewable energy for the Austin area around the clock. The plant creates carbon-neutral electricity by burning wood waste that otherwise would decompose and emit carbon compounds contributing to climate change.

Austin Energy is purchasing all of the power produced by the plant over 20 years to help meet climate change goals. The Austin City Council has set a goal for Austin Energy to reduce carbon dioxide emissions from power plants to 20 percent lower than 2005 levels by 2020.

Buying power from the biomass plant over 20 years positions Austin Energy to be ready if carbon reduction legislation becomes part of the national agenda in Washington. As the world's economies grow, demand for energy also will grow and calls for carbon reduction will return to the forefront of public debate. Austin Energy is ready.

Austin Energy has constructed only small natural gas plants since the 1980s by managing growth and its peak demand use for electricity through energy efficiency programs and purchases of renewable energy.

MANAGING POWER PLANT NEEDS

Austin Energy has not built or participated in the construction of a major power plant since the 1980s when it began its focus on avoiding or delaying the need for more power plants by promoting energy efficiency instead. The utility has spread the construction of small natural gas turbines and a combined cycle plant at the Sand Hill Energy Center over a decade. This supplements efforts for reducing electricity use and adding renewable energy supplies to serve the community while the population and economy grows.

Adding units to Sand Hill in stages only when needed allowed Austin Energy to pay cash for the units rather than finance construction of a large power plant and pass costs on to consumers through rate hikes. Austin Energy did not increase base rates to pay operations and maintenance costs for 18 years largely because its emphasis on energy efficiency and renewable energy alleviated the need to construct a large power plant.

In 2001, the Sand Hill Energy Center was opened with four 45-MW peaking units. In 2007, a 300-MW combined cycle plant was added. And, in 2010, two additional peaking units were added at 50 MW each. This strategy has been effective as peak demand grew by 14 percent from 2,383 MW to 2,714 MW during that time.

As part of its generation plan through 2020, Austin Energy projects adding another 200 MW of natural gas capacity at Sand Hill, and perhaps buying or building another natural gas plant while fuel prices are low, to replace older generation units and help meet its carbon reduction goals. These additions will position Austin Energy for the future.

ENERGY INVESTMENTS FOR BUSINESSES

Data center services company Data Foundry (Texas 1) received $61,180 in rebates for installing high-efficiency lighting, variable frequency drives, chillers, cooling towers and other energy efficiency equipment, helping the company save more than 2.1 million kilowatt-hours (kWh) of electricity per year and lower peak demand by 272 kilowatts (kW).

Dell, the Central Texas-headquartered computer company, received $122,000 in Austin Energy rebates to consolidate 600 of its own servers to about 50 at its North Austin facilities. The consolidation helps the company save 2.5 million kWh of electricity, the equivalent of powering 208 average-size homes in Austin year-round. Austin Energy was the first utility in Texas and the first outside of California to offer rebates for data center virtualization and ended the rebate when virtualization became a best practice.

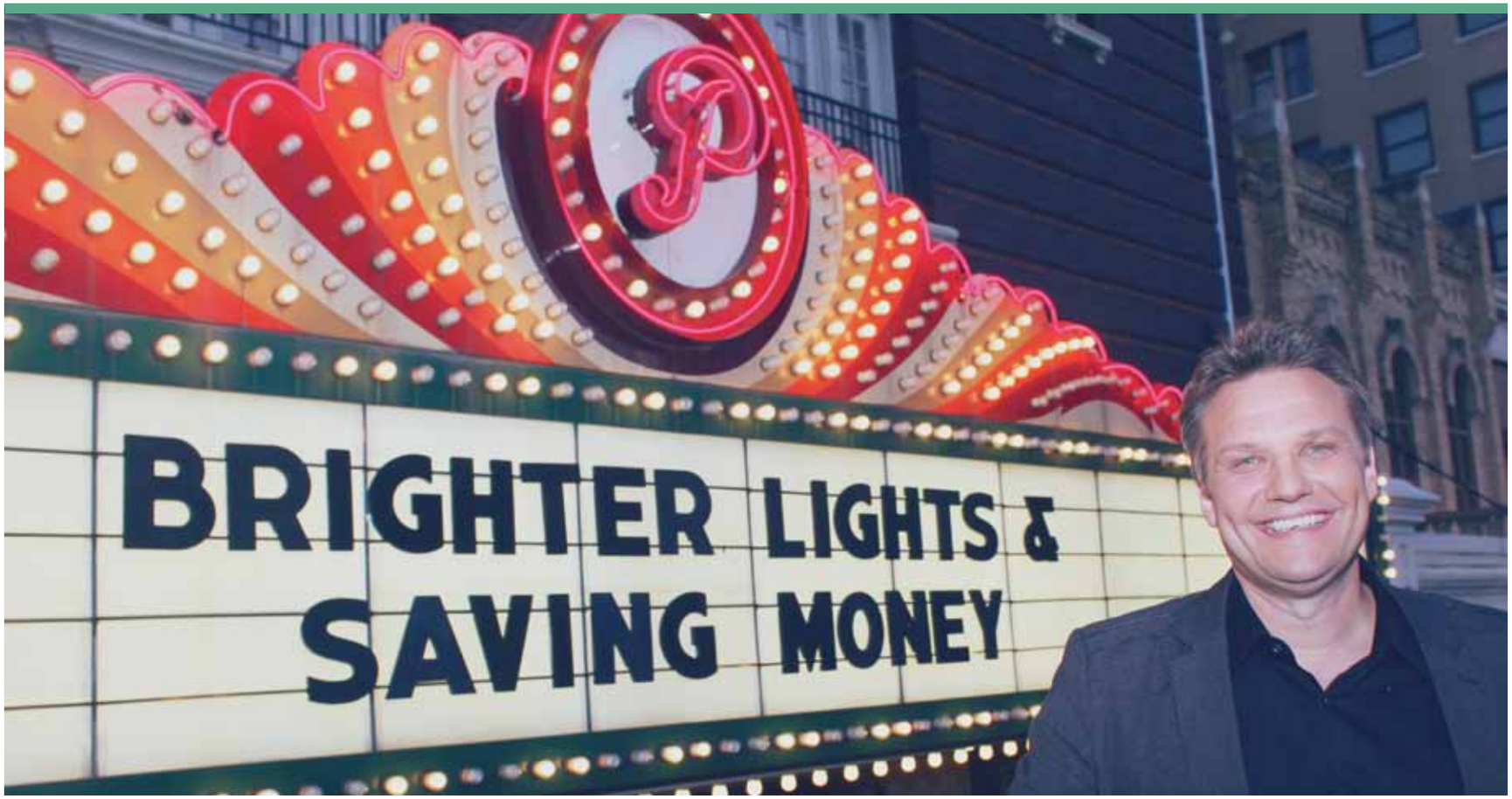
All commercial customers are eligible to receive up to $200,000 annually in rebates from Austin Energy to make improvements to reduce energy. This includes rebates for new HVAC equipment, chillers, windows and window tints, variable frequency drives and reflective roof coatings.

More than 600 businesses receive commercial rebates annually saving a combined $6 million in electricity costs each year. The rebates enable businesses to make long-term investments to their properties that help reduce operating costs, save energy, protect the environment and make the companies more competitive.

Courtesy of Dell Inc. (2 top left photos)

Courtesy of IBM Corp.

Mid- and large-size commercial customers can receive up to $200,000 in rebates from Austin Energy to make energy efficiency investments such as installing new HVAC equipment, reflective roofs, motors and variable frequency drives, and other improvements that help them lower their energy bills.



© Kimberly Davis

The Small Business Lighting Program provides a discount of up to 80 percent to help small business owners, houses of worship and small nonprofits to change out inefficient lighting with new efficient lighting that helps them reduce their electricity costs.

HELPING SMALL BUSINESSES PROSPER

The owner of a small business is often the same person running the cash register, cleaning tables, managing employees, paying bills and making sure the payroll is met. They often don't have the time to call contractors and get estimates on how their business can reduce energy costs. They also don't have the upfront capital to finance needed improvements. Austin Energy's Small Business Lighting Program makes it easy for them. The program offers up to an 80 percent discount on the cost of installing new, efficient lighting with paybacks from energy savings averaging less than one year. The program is offered to businesses totaling less than 100 kW of demand, as well as nonprofit organizations and houses of worship.

An Austin Energy representative visits the business or organization and exams the lighting fixtures. The representative also researches the customer's electricity account to determine usage and provides them with information about the lighting program. The customer contacts an Austin Energy participating contractor made available to perform the work in this convenient, turn-key project. The Austin Energy representative also provides the customer with information about other incentives and programs that can help reduce energy, natural gas and water use.

Austin Energy recognizes the value of small businesses and nonprofits to the area's economy and provides special offers and individualized attention to not only help them save energy but also to help them grow and prosper.

BUSINESSES LEND A HAND

When summer afternoons get very hot in Texas, Austin Energy asks area businesses in more than 130 locations if they will voluntarily reduce their energy use for a few hours to help the utility lower the demand for power. By reducing the demand when customers are using the most electricity, Austin Energy lowers the amount of energy and emissions produced at its power plants and also can avoid purchasing power on the market when it is most expensive.

Austin area Target retail stores, for example, pitch in to help by answering the call to conserve. Target turns sections of lights off in its stores and raises the temperature a few degrees on staggered schedules during summer peaks.

The businesses participating in Austin Energy's Load Cooperative Program receive a payment from the utility for the amount of electricity reduced. But the payment for these large businesses is not their incentive. Being good corporate citizens and expressing their commitment to the environment is the real reward.

Businesses in Austin continually express desire to participate in programs that protect the environment and quality of life to help draw skilled employees and companies to the community. Austin Energy is expanding its Load Cooperative Program to partner with businesses in as many as 500 facilities to reduce energy use during peak times by more than 50 MW by 2020.

© Patrick Wong

Courtesy of Target

Courtesy of Walmart

Businesses demonstrate their good corporate citizenship and commitment to the environment by reducing or curtailing energy use during the hottest part of the summer when supplies for electricity in the state run low.

OUR CUSTOMERS PITCH IN

On the hottest afternoons in the summer, Austin Energy transmits a radio signal cycling off the air conditioners of up to 90,000 residents and businesses. The customers voluntarily agreed to have their air conditioners cycled for up to 15 minutes at a time from 3 p.m. to 7 p.m. as needed to help reduce electricity use during the times of highest demand in Texas. It was the largest free thermostat program in the nation.

In 2011, during one of the hottest summers ever on record in Texas, when Austin experienced 90 days of triple-digit temperatures, Austin Energy averaged a peak reduction of 36 MW by cycling air conditioners. This included reducing 39 MW on August 2, 2011, when it was 106 degrees in Austin. The Electric Reliability Council of Texas (ERCOT), which manages the statewide electric grid, experienced its highest peak ever that day and was one step away from initiating rolling blackouts in the state because of high energy use.

The thermostat program, with no financial incentives for customers except receiving the free thermostat, has been a model for the state and nation. In fact, since Austin Energy accounts for 4 percent of ERCOT's generation, if all other utilities in ERCOT had a similar program, about 900 MW could be reduced at peak. This is more electricity than the reserves available in ERCOT when utilities were almost required to start turning off power to customers to prevent a statewide blackout.

In 2013, Austin Energy again took the lead by responding to rapid changes in technology by offering an $85 rebate to customers who install two-way communicating smart thermostats. Customers can program the thermostats remotely from their smartphones or any computer via the internet. Austin Energy raises the temperature settings a few degrees if needed during the summer months for customers who agree to voluntarily participate and receive the rebate.

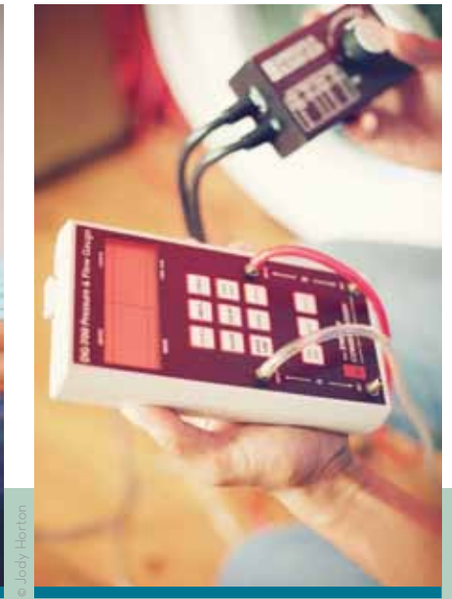
The new thermostats continue Austin Energy's strategy to enable customers to determine when and how often to use energy. The power is in their hands.

Since 2000, about 90,000 residential and commercial customers participated in the largest free thermostat program in the country to help reduce electricity use during the hottest part of the summer. Austin Energy's new thermostat program provides rebates to customers who install two-way communicating smart thermostats.

HELPING RESIDENTS SAVE

When a residential customer considers buying a new air conditioner, Austin Energy's participating installation companies encourage the property owner to look at the condition of the entire home and how it uses energy. If the home lacks sufficient insulation in the attic or if the duct system is leaking air conditioning and heating through cracks needing to be sealed, the new air conditioner will not run as efficiently as possible. Nor will the customer get the most energy and dollar savings if those energy inefficiencies are not fixed.

Austin Energy has emphasized this whole house approach since the early 1980s. Rebates averaging almost $2,000 and low-interest loans through an outside lender are offered to residents by Austin Energy to make the improvements. Residents who have participated in the program often see their cooling bills reduced by as much as 32 percent when they make all the necessary improvements. Through the years, more than 50,000 residents have participated in the programs, saving more than 140 million kWh of electricity and more than 115 MW of demand during the hot summers.



Austin Energy has been helping residents make energy efficiency improvements and reduce their energy costs since the early 1980s by offering rebates and low-interest loans through outside lenders.

© Jody Horton (top 2 photos)

© Jody Horton

Residents are encouraged to recycle their old, inefficient refrigerators and freezers that can use three times as much electricity as newer appliances by receiving a rebate from Austin Energy.

REWARDING CUSTOMERS FOR RECYCLING

Old refrigerators and freezers can keep running for years and are often placed in garages to keep sodas, ice cream and meat cold when a new appliance is purchased for the home. But those old refrigerators and freezers run inefficiently and can use three times the electricity used by a newer appliance.

Austin Energy has offered customers a $50 rebate since 2005 to recycle refrigerators or freezers and keep old appliances out of the landfill. An Austin Energy contractor picks up the appliance and begins the process of recycling 98 percent of the parts and materials, as well as capturing the ozone-depleting refrigerants in a safe and environmentally friendly way.

In the first seven years, Austin Energy recycled more than 22,000 of the appliances, diverted more than 2,100 tons of metals from the landfills and captured more than 8,000 pounds of refrigerants. The utility also reduced peak energy demand during the hottest part of the summer by more than 5 MW, or the equivalent energy used by 2,500 homes at peak, by taking inefficient appliances off the electric grid.

The program was the first of its kind by an electric utility in the state.

GREEN BUILDING – AN AUSTIN ORIGINAL

When Austin Energy Green Building began rating homes for energy efficiency and sustainable building practices, green building was often seen as a niche in the custom home market. Now, green building has become part of the mainstream, not only in the housing industry, but also in commercial and multifamily development.

As much as one-third of all the single-family homes and apartments built in Austin each year are green-rated homes. Since the program's founding in 1991 through early 2012, Austin Energy Green Building rated more than 10,000 single-family homes. Additionally, most of the new commercial and multifamily buildings downtown and in large scale developments are green building-rated.

Austin Energy Green Building was the first program of its kind in the United States and was the impetus for the creation of the U.S. Green Building Council and Leadership in Energy and Environmental Design (LEED) ratings. Austin Energy leads not only the country, but also the world, in green building innovation. It has twice won awards from the United Nations, including the Scroll of Honour, considered the most prestigious human settlements development award in the world.

Courtesy of LiveSTRONG

Austin Energy Green Building was the first green building program in the nation and has often led the country and the world for sustainable building practices including twice winning awards from the United Nations.

© Thomas McConnell (all photos)

Austin Energy Green Building rates buildings based on the features incorporated into the design and construction including features that save energy and water and the use of construction materials made from recycled products.

APARTMENT ENERGY DISCLOSURES FIRST IN NATION

When a prospective renter is looking to rent an apartment in Austin, the apartment manager is required to disclose the estimated monthly electric bill for the apartment. If the apartment uses 50 percent or more electricity than similar apartments in Austin, the manager also must disclose the unit is a high energy-use apartment and a similar apartment using less electricity can be found in Austin.

Austin is the first city in the nation to require apartment properties to disclose and post the results of an energy audit to renters and prospective residents. Owners of apartment communities 10 years old or older are required to perform an energy audit of their buildings. High energy-use properties using 50 percent or more electricity than similar properties are required by a city ordinance to undertake energy efficiency improvements to reduce energy consumption by at least 20 percent.

Austin Energy works cooperatively with apartment communities to make energy efficiency improvements and combines incentives, such as rebates and low-interest loans from outside lenders, to help the properties finance improvements. Because Austin is a city with several colleges and universities and many young people, more than 50 percent of Austin's population lives in multifamily housing. There are more than 1,200 apartment communities housing an estimated 255,000 residents.

The owners of the apartment communities know an energy-efficient apartment is more marketable and attractive to prospective residents. By working with Austin Energy to increase energy efficiency, one of the area's most important housing options is helping reduce energy use and emissions and lowering electricity bills for their residents.

Apartment communities in Austin were the first in the nation required to disclose and post energy audit results to renters and prospective residents.

Owners of mid- to large-size commercial buildings in Austin receive free training from Austin Energy to help them conduct energy audits that help save energy and increase the value of their properties.

ENERGY RATINGS INCREASE VALUE OF BUILDINGS

Austin is one of the top-ranked cities in the U.S. for the number of ENERGY STAR® rated buildings. ENERGY STAR buildings are more energy efficient than 75 percent of similar buildings in the country. In fact, all new buildings constructed in downtown Austin must apply for and receive a Green Building rating from Austin Energy. As part of a City ordinance, all mid- to large-size commercial buildings must submit an energy rating to Austin Energy annually.

Austin Energy staff makes it easy for owners of commercial buildings to comply with the ordinance by sponsoring free workshops on how to use the free web-based Portfolio Manager tool by ENERGY STAR. The tool provides a rating on a scale of 1 to 100 that allows property owners and managers to compare their buildings with similar buildings nationwide on how efficiently they use energy and water. The tool also helps determine the cost-effectiveness of making improvements against energy costs and the savings that can be realized.

By working with property owners and managers to improve the efficiency of their buildings, Austin Energy helps businesses become more competitive by reducing costs while increasing the value of their properties.

AUDITS RAISE AWARENESS OF HOME ENERGY USE

More than two-thirds of all the buildings in Austin today will be here in 2020. With that in mind, a community task force that helped develop Austin's Energy Conservation and Audit Disclosure ordinance sought to raise awareness about the amount of energy wasted by inefficient buildings. The ordinance, passed by the Austin City Council in 2008 as a result of the 2007 Austin Climate Protection Plan, requires all single-family homes 10 years or older to undergo an energy audit before they are sold. The results of the audit must be disclosed to the potential homebuyer during the option period.

The ordinance does not require homeowners to make energy efficiency improvements based on the results of the audit. But it helps to bring energy efficiency into the discussion of buying a home the same as when potential buyers ask questions about carpets and tile. The energy audit checks for duct leakage, the age and efficiency of the air conditioner, the amount of insulation in the attic, the number of windows that receive one hour or more of direct sunlight and other measures.

The goal is that the free market will determine between the buyer and seller whether energy efficiency improvements should be made as part of the sale.

Our homes are where discussions about energy use and its effect on climate change can begin.

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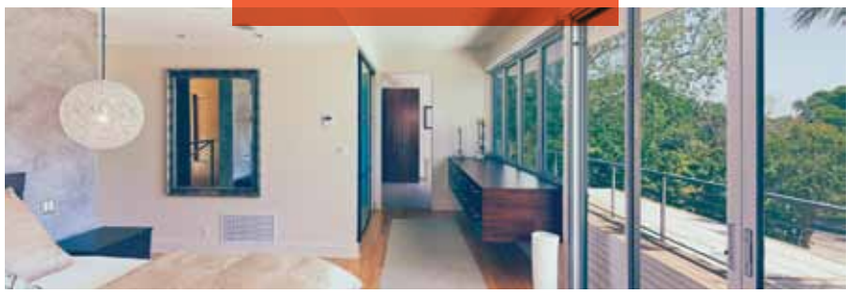

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Required audits of single-family homes for sale in Austin that are 10 years or older help raise awareness about energy efficiency when residents are buying and selling homes.

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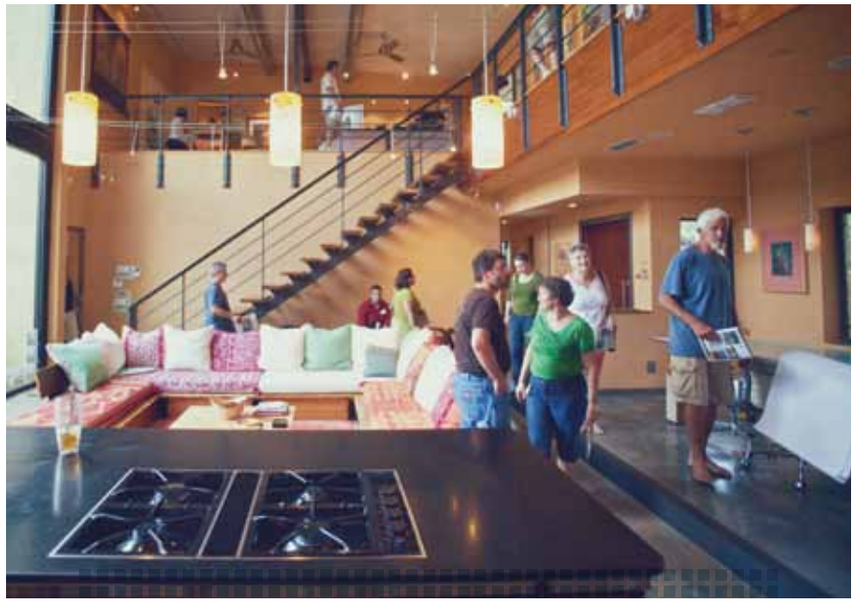


Single-family homes built in Austin by 2015 will be zero energy-capable, meaning the amount of energy the home uses and the amount it produces with a renewable energy source, such as solar panels, can net out to zero because of increased energy efficiency gained through Austin's building codes.

MAKING "ZERO-ENERGY" HOMES POSSIBLE

Every time a new single-family home is purchased in Austin, regardless of the price, developer or part of town, it is one of the most energy-efficient single-family homes in the country. As part of the Austin Climate Protection Plan, all new single-family homes built by 2015 must be 65 percent more efficient than when the ordinance was passed. The homes must also be energy efficient enough so that it is cost-effective to add a renewable energy source, such as solar panels, to make the homes zero-energy capable. This means the amount of electricity the solar panels produce and the amount of electricity consumed by the home will net zero annually.

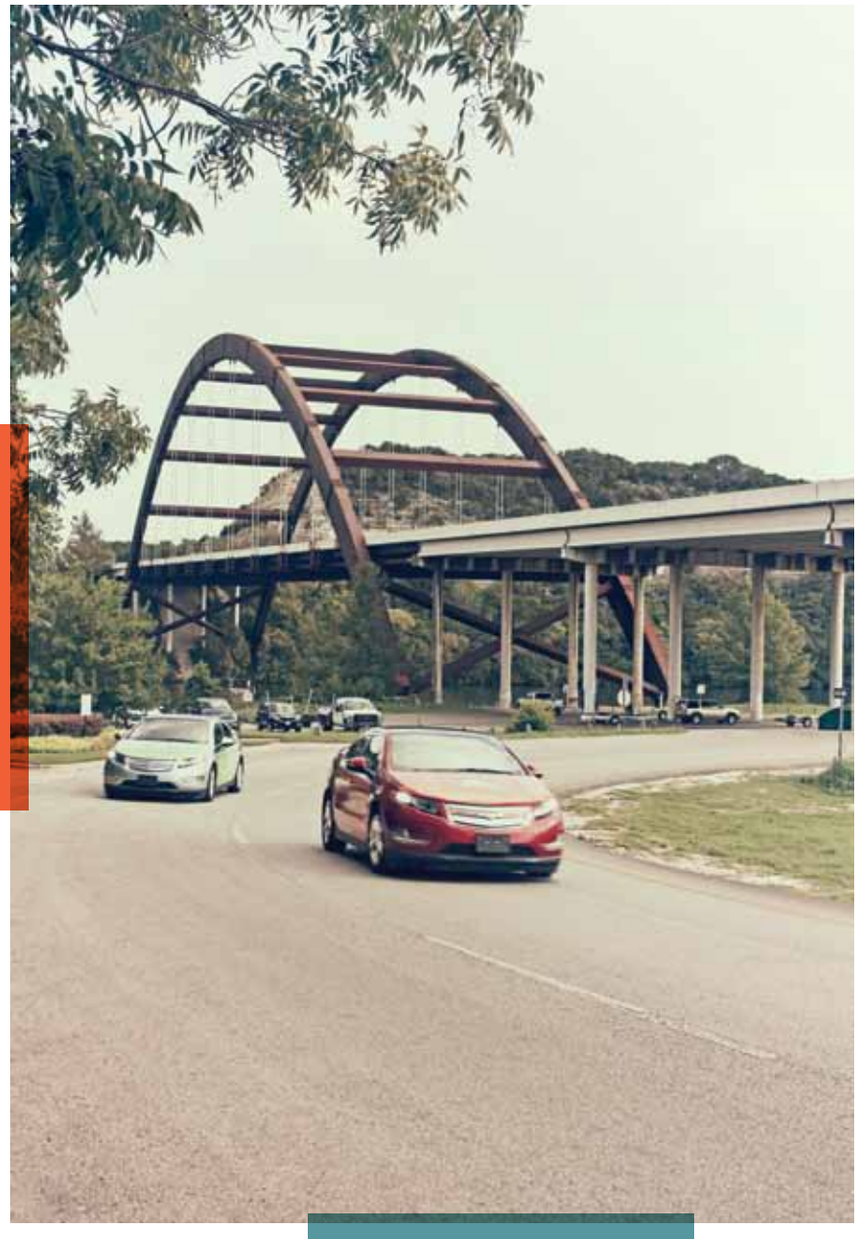
Austin Energy Green Building develops a series of energy code amendments every three years to accommodate changes in construction and energy efficiency of materials, as well as policy direction by the Austin City Council. Every new single-family home in the city of Austin has radiant barrier in the attic and lighting efficiency requirements of more than 90 percent, achieved by ENERGY STAR-rated compact fluorescent light bulbs, light emitting diode (LED) technologies, indirect lighting and other efficient lighting practices to replace incandescent bulbs.

As more homes are built and more people move into the area, less energy will be needed by new homes as they become more and more efficient. And when less energy is used, everyone saves.

PROMOTING ENERGY INDEPENDENCE

Back in 2005, before there was a Chevy Volt or a Nissan LEAF, Austin Energy started the Plug-In Partners campaign to convince automakers that a consumer market exists in the United States for electric vehicles. The campaign was started amid a worldwide energy crisis and growing national security concerns about our country's dependence on foreign oil. A mounting body of scientific evidence also linked automobile emissions with contributing to climate change.

Austin Energy led the country by promoting electric vehicles as the road toward energy independence for our nation. More than 500 partners, including 49 of the nation's largest cities, 28 counties and local governments, and almost 300 businesses and public utilities responded by signing petitions pledging to buy 8,300 plug-in electric vehicles for their fleets if automakers would manufacture the vehicles. In late 2006, several automakers unveiled plans to begin manufacturing electric vehicles.



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Austin Energy has been the nationwide leader among utilities promoting the electrification of the transportation sector and researching the effect of electric vehicles on the grid.

Courtesy of General Motors

Courtesy of General Motors

Austin Energy helped convince automakers that there is a market for electric vehicles in this country.

PLUGGING INTO THE FUTURE

When a plug-in electric vehicle pulls up to one of Austin Energy's 170-plus public charging stations, the driver charges his vehicle with the country's first charging network powered 100 percent with clean, renewable energy. Austin Energy's Plug-In EVerywhere™ network is available at more than 60 locations in the Austin area, including public libraries, parks, recreation centers, retail stores, hotels, restaurants, college campuses and large employers.

Austin was one of only nine regions in the U.S. selected to receive the free charging stations as part of the federally funded ChargePoint America program designed to create a public charging infrastructure in this country. Austin Energy partnered with businesses and nonprofit organizations to install the charging stations at geographically diverse locations and make them available to the public. Austin Energy also offers a $25 subscription swipe card to provide drivers with unlimited charging for six months at any of the public charging locations.

Austin Energy is working with other utilities and partners in Central Texas on an initiative called the Texas River Cities Plan to support the increased adoption of electric vehicles.

Both public and private partners helped Austin Energy create the Plug-In EVerywhere network, the first electric vehicle charging station network in America to be powered 100 percent by renewable energy.

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Courtesy of General Motors

Owners of electric vehicles can receive a rebate of up to $1,500 from Austin Energy to install a home charging station.

SMART CHARGING STARTS AT HOME

As consumers begin buying electric vehicles, about 80 percent of all their charging will be done at home. Austin Energy in partnership with the University of Texas at Austin and others is studying how charging electric vehicles at home can affect demand on the grid and how equipment, such as transformers that serve homes, can handle the addition of an electric vehicle.

Austin Energy offers customers a rebate to help pay for a home charging station's installation. In return, customers agree to share information about their charging habits with Austin Energy so the utility can determine how it may need to make changes to electric equipment in the future. The information also helps Austin Energy develop "smart charging" strategies, such as scheduling vehicle charges at night and during early morning hours when demand for electricity is not as high, or synchronizing major appliances, such as an air conditioner, so when one turns off, the electric vehicle charging begins.

By taking a leadership role in researching how electric vehicles may someday reshape electric utility operations, Austin Energy invites residents to take an active part in redefining the electric utility of the future.

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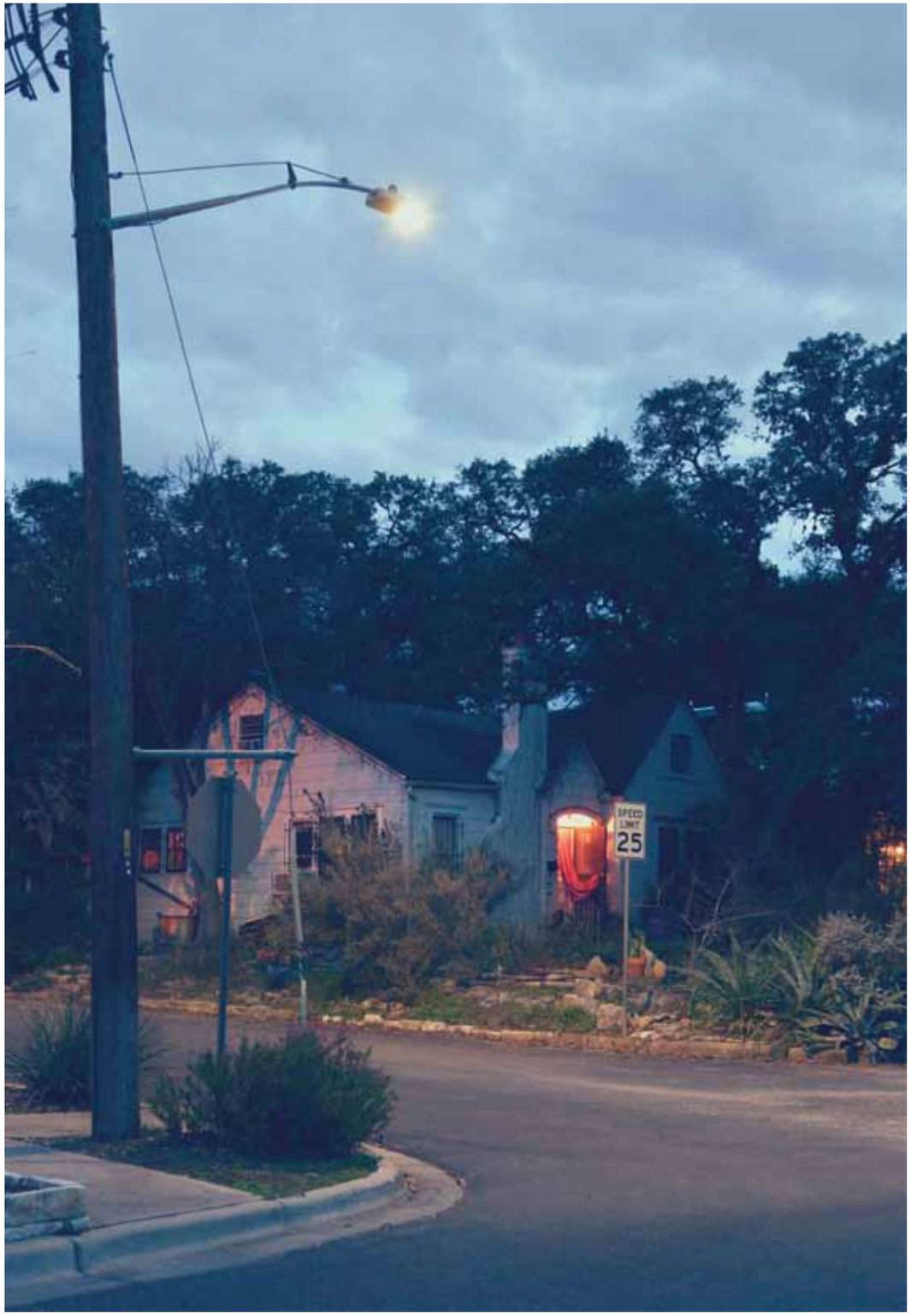
SHINING A LIGHT ON EFFICIENCY

Everyone knows electricity can be saved by turning off lights that are not needed. Austin Energy will save as much as $340,000 a year in electricity costs and reduce more than 200 tons of carbon dioxide emissions annually by automating an estimated 70,000 streetlights. The streetlights are being automated with photocells that communicate wirelessly every hour through a web-based system. With the information, Austin Energy knows when streetlights have stayed on during the day because of a malfunction and can turn the lights off remotely until a crew is dispatched to fix the problem.

Electricity also can be saved by remotely timing the lights so they don't come on too early at dusk or stay on too late at dawn. Every minute saved 365 days of the year translates into huge savings.

The project is being coordinated to make all the streetlights Dark Sky compliant as well. As Austin Energy crews and contractors install the new photocells to streetlights, they are also replacing old light fixtures with flat glass fixtures that shine down and don't cause light pollution.

Austin Energy's streetlights are both smart and protect the environment.



The estimated 70,000 streetlights in Austin Energy's system are being automated to save electricity via remote operation.

All of Austin Energy's electric meters transfer meter readings automatically.

COMMUNICATING WITH SMART METERS

All electric meters in Austin Energy's system are automated and position the utility to be on the forefront of developing a smart grid that enhances customer service and reduces operational costs. Austin Energy was one of the first electric utilities in the country to deploy an Advanced Metering Infrastructure that communicates meter reads at frequent intervals to track energy use.

With new software systems currently being put in place, the meters can send out a signal when they have lost power and when power is restored. Austin Energy also can "ping" the meters to double-check if electricity is back on. The data available to Austin Energy from its meters and communication software increases the speed of restoration and the volume of information available for the utility to communicate to customers about outages.

When more information is available about their energy use, customers can monitor their consumption and the amount of electricity used. This will help customers lower their electric bills and Austin Energy reduce the amount of electricity produced.

Now, that's smart.

A SELF-HEALING SMART GRID

In the neighborhoods and commercial areas of Oak Hill in southwest Austin, the power lines and equipment delivering electricity to customers can communicate with Austin Energy staff and respond to their commands. Automatic air switches installed on the power lines serving about 12,000 customers in that area send a signal when they detect an outage. Austin Energy can send a command to the switches to close the current back, restoring as much as 70 percent of the customers within 5 minutes. The switches that don't restore the power narrow the location of the outage so a crew can be dispatched to make prompt repairs.

Without this smart grid technology, all of the customers served by one of those power lines would not have electricity until a crew arrives to locate the problem and then make repairs, a process which can take close to an hour on average. The communication software for the system also can determine if the power lines are carrying too much electricity on days of high demand for energy in the winter and summer. Austin Energy can then shift load to other power lines not at capacity.

Austin Energy is only one of a handful of utilities in the country testing and deploying this technology systemwide. In Austin Energy's vision of the future, a smart grid with equipment and computer software communicating two-way and real-time will heal itself during a power disturbance. Austin Energy is working to make the vision reality.

A NEIGHBORHOOD MODEL OF EFFICIENCY

The former Robert Mueller Municipal Airport air traffic control tower serves as a beacon guiding Austin's premier new urban, green building development. Through its association with Mueller, Austin Energy is helping to lead one of the most innovative smart grid demonstration projects in the world and encouraging a new era for green living where customers can determine the best ways to use energy. The 700-acre site of the former airport, which closed in 1999, is being redeveloped into houses, apartments and businesses that will one day be home to more than 10,000 residents and 10,000 employees.

Up to 1,000 homes and 75 businesses in this sustainable, environmentally friendly community built with green building principles are participating in the demonstration project by Pecan Street Inc., the University of Texas, National Renewable Energy Laboratory, Environmental Defense Fund and Austin Energy. The Pecan Street Project, as it is known, serves in effect as the laboratory for many of the initiatives Austin Energy has helped to lead in the region, such as solar power, plug-in electric vehicles, smart thermostats, smart meters and a smart grid. Now the world is taking notice.

The smart grid and smart homes of the future are being tested in a living laboratory in one of Austin's neighborhoods by Austin Energy and partners from both the public and private sectors.

THE ROAD AHEAD PAVED WITH OPPORTUNITY

Although it is one of the most ambitious energy efficiency goals in the country, a report commissioned by Austin Energy concluded the utility is well on its way to achieving its second conservation power plant. The report analyzed the energy efficiency potential of the Austin Energy service area and determined there is still enough market penetration available for the utility to achieve its goal of offsetting 800 MW by 2020.

Newer and emerging technologies, such as Wi-Fi enabled hardware and apps for smart phones to remotely cycle off air conditioners and appliances, may need to replace some traditional energy efficiency measures that have saturated the market. The development and use of "Big Data" spurred by faster computer processing speeds will help the utility dive deeper into information and better measure the effectiveness of energy efficiency to achieve desired results.

Austin Energy also can achieve its goal of reducing carbon dioxide emissions to 20 percent below 2005 levels by 2020. An in-house report closely examining generation sources and future electricity needs by customers, determined Austin Energy can sell its share of the Fayette Power Project or reduce its use of the coal plant to achieve the emissions goal.

Lower natural gas prices due to discoveries of abundant shale gas afford Austin Energy the opportunity to replace or reduce the use of Fayette by building or purchasing natural gas-powered sources which emit half the CO_2 of coal plants.

Delivering 35 percent of its generation needs from renewable energy, building its second conservation power plant and eliminating or substantially reducing its coal emissions by 2020 are within the utility's reach. Austin Energy has already announced it will achieve the renewable energy goal four years ahead of schedule.

The finish line is just the beginning. Austin Energy is charting a new course for others to follow.

Austin Energy is a department
of the City of Austin.