



ELECTRICAL GRID / POPULATION GROWTH ISSUES PUSH LEED BUILDING, NEW GENERATORS & SOLAR SYSTEMS

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Houston's pivot to energy-efficient building has my attention. Leadership in Energy and Environmental Design (LEED) is a globally recognized symbol of sustainability achievement and leadership. One Texas builder—[Coventry Homes](#)—clearly demonstrates green industry leadership with its [LEED certified homes](#) in Austin, Dallas and Fort Worth. They have instituted [Environments for Living](#) design in Houston. This building business trend will become more prominent as more people from environmentally-conscious California move to Texas.

Statistics show that almost 700,000 Californians have relocated to Texas since 2010. The top destination for all Californians moving to Texas is Harris County. [The Houston area was particularly popular among Los Angeles movers](#), who accounted for almost 40% of the Californians who moved to the city in 2019, joining nonnative Texans from throughout the United States.

"In the past two years, installed solar capacity in Houston has more than quadrupled, as new homeowners are going solar," according to Katie Watkins in a June 2021 blog on [Houston Public Media](#).

Loss of Power Revealed Vulnerable Electric Power Grid

Extreme weather nearly devastated Houston—as well as much of the entire Lone Star state—during the infamous ice storm of February 2021. [American Oversight](#), a watchdog website, explains the dire situation in its May 12, 2021 post:

The arctic blast hit Texas especially hard, triggering system-wide failures across the state's energy infrastructure that left roughly 4.4 million without power on the night of Feb. 15, with more than 500,000 Texans still lacking power days later. More than 100 people died, and disruptions to water services continued for days. Some of those spared power losses later found themselves facing exorbitant energy bills.

Texas is the only state to run an isolated electric grid, operated by the Electric Reliability Council of Texas (ERCOT). This system allows it to skirt federal regulations, but also makes it more difficult to import power from outside the system — and thus more vulnerable to the type of catastrophic failures that occurred in February. Lack of local weatherization regulation also left refineries and natural gas plants unprepared for cold temperatures, leading to disruptions along the energy supply chain.

Six Retail Energy Providers in the Upper Gulf Coast (Houston) area are CenterPoint, 4Change Energy, Payless Power, Gexa Energy, Green Mountain Energy, and Champion Energy. I advise that you check for the providers in your area.

Resilient Houston

To eliminate future power outage disasters, Houston Mayor Sylvester Turner, a former state legislator, has spearheaded "[Resilient Houston](#)," a multi-billion-dollar initiative to fight the effects of natural disasters and climate change. Mayor Turner said he is also collaborating on projects to protect essential services such as the power grid and water treatment facilities. In addition, he is considering construction of a power microgrid to provide backup electricity in case of a major outage in Houston. City officials are researching potential updates to building codes to ensure greater protection for homes and apartments.

Citing an example of recent environmental sustainability, Mayor Turner stated that renewable energy sources fully power all city facilities in Houston. However, he acknowledged some resistance from Houston's fossil fuel corporations for a move to greener, cleaner energy sources.

In a March 11, 2021, interview with the [Texas Tribune](#), Mayor Turner responded:

There's probably some nervousness on the part of companies, but...moving forward with diversification of power sources and energy transition is necessary for the wellbeing of all residents and companies. You can't talk about international, global trade and business investments without also being able to say to people around the country and around the globe that the city of Houston is genuinely focused on taking the necessary steps to build resilience and also to address climate change.

Generating Emergency Power with a Generator

Solar panels will not keep electricity working during a power outage. For safety reasons, solar panels actually do not send electricity to a house when the grid is shut down due to a storm or other power outage. In a February 8, 2022, posting, Catherine Lane, blog writer for [Solar Reviews](#), explains:

Grid-tied solar panels send electricity to utility lines, and if they aren't shut off during a power outage, they would continue to send electricity, posing a threat to utility workers fixing the lines. That means, in order to prevent any harm, your solar panels go out when the grid does. Solar panel inverters shut down during power outages, so homeowners need a backup power [generator or battery system] if they want to run their home without the utility.

Lane reported that gas generators are the most popular form of backup power and can be installed at a home with solar panels as long as the panels and generator are wired properly so that the two do not interfere with one another. A solar installer or a certified electrician is best equipped to create a back-up power system. Check with your city and local requirements to identify if a permit is required.

Even with a stand-by generator, a house's solar panels will stay off during a power outage.

To keep the panels on requires installation of a solar inverter-

compatible battery. “You can install... a battery [inverter] with your solar panels if you want to maximize the amount of backup power available to you,” states Lane in her [Solar Reviews](#) post. The battery system must have an electrical contactor, which is programmed to disconnect from the grid while the battery charges from the solar panels. The contactor is programmed to reconnect with the grid when the battery is completely depleted late at night.

Choosing a home generator depends mainly on the size of one’s dwelling and what is needed to be powered, according to [Popular Mechanics](#). The average house requires at least 5,000 to 7,500 watts to run only the most critical equipment, such as a refrigerator, furnace, and hot-water heater. However, there are also systems that

are equipped to power an entire house. Full power requires at least a 20,000-watt generator.

Stand-by generators are permanently installed with a transfer switch. Portable generators, sometimes called back-up generators, are used to provide temporary power. “Portable is a relative term; some are more portable than others,” explains [Popular Mechanics](#). “While the smallest models can be picked up and carried, most have wheels and a handle to make transport easier.”

Some inexpensive generators in the chart below are recommended by [The Spruce](#) in a February 2021 post titled, “The 7 Best Generators to Have if There is An Outage.”

RATING	MODEL	PRICE
Best Overall	Generac Guardian 24000-Watt (LP) /21000-Watt (NG) Standby Generator	\$5,747.00
Best Budget	Generac PowerPact 7500-Watt (LP) / 6000-Watt (NG) Standby Generator with Automatic Transfer Switch	\$1,999.00
Best for Small Homes	Cummins QuietConnect Home Standby Generator 13KW - 13kW, LP/NG, 120/240 Volts, Single Phase, Model# RS13A Warm	\$3,367.00
Best Standby	Champion 12.5-kW Home Standby Generator with 100-Amp Outdoor-Rated Automatic Transfer Switch	Not Available
Best Portable	Wen GN6000-Watt RV-Ready Portable Generator with Wheel Kit, CARB Compliant, Black	\$ 460.02
Best Battery	Goal Zero Yeti 1500X Portable Power Station at Amazon Emergency Power Station, 2000W, Portable AC Inverter Generator, Outdoor Portable Generator, Portable Solar Generator for Solar Panels	\$1,999.95
Best Backup	Generac Guardian 10KW Home Backup Generator WiFi Enabled	\$3,217.00

To ensure the safety of use and installation, here are the National Electric Codes adopted by Texas and which apply to the safety of solar systems and generators:

- [NEC Article 690 - Solar Electric Systems](#)
- [National Electrical Code Tips: Article 705, Interconnected Electric Power Production Sources](#)

Solar Becomes More Popular

Wally Calaway, a retired scientist, selected solar to power his house. In fact, he installed 25 solar panels on his roof. “I’m concerned about the environment,” he told [Houston Public Media](#) reporter Katie Watkins. “I can hardly force the Texas grid to go any faster than it’s going to solar, renewable energy, but I can change my household.” Then, Calaway admitted another motive – an economic one: “I haven’t paid a bill. I’ve just been collecting a credit since they were turned on.”

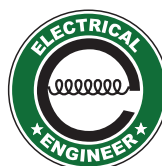
Installed solar capacity in Houston increased from 9.5 megawatts at the end of 2017 to 42.5 megawatts at the end of 2019 – enough to power about 8,400 homes, according to [Environment Texas](#), which has been analyzing solar advancement in Texas cities for almost 10 years.

“For the first several years, growth of solar and Houston was pretty slow, but in the last several years, it’s really skyrocketed,” said Luke Metzger, Executive Director of Environment Texas. Even during 2020, in the midst of the pandemic, Houston’s permitting office says it saw the number of solar permits more than double compared to the year before.

Increasing solar power from local rooftops and community projects is one of the goals of the city’s [Climate Action Plan](#), which outlines a

series of recommendations for Houston to become carbon neutral by 2050. The city aims to generate 5 million megawatt-hours from local solar projects per year by 2050.

As Houston goes green, the city’s businesses and residents will need the services of a LEED-accredited, and licensed professional electrical engineer.



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