

Should You Buy a Standby Generator?

The wrath of Hurricane Sandy made the fragile state of our nation's power grid hit home. A standby generator can energize a house for days after a blackout, but these are costly, complicated machines. Here's how to know if a standby generator is a good investment.

BY DAVID AGRELL

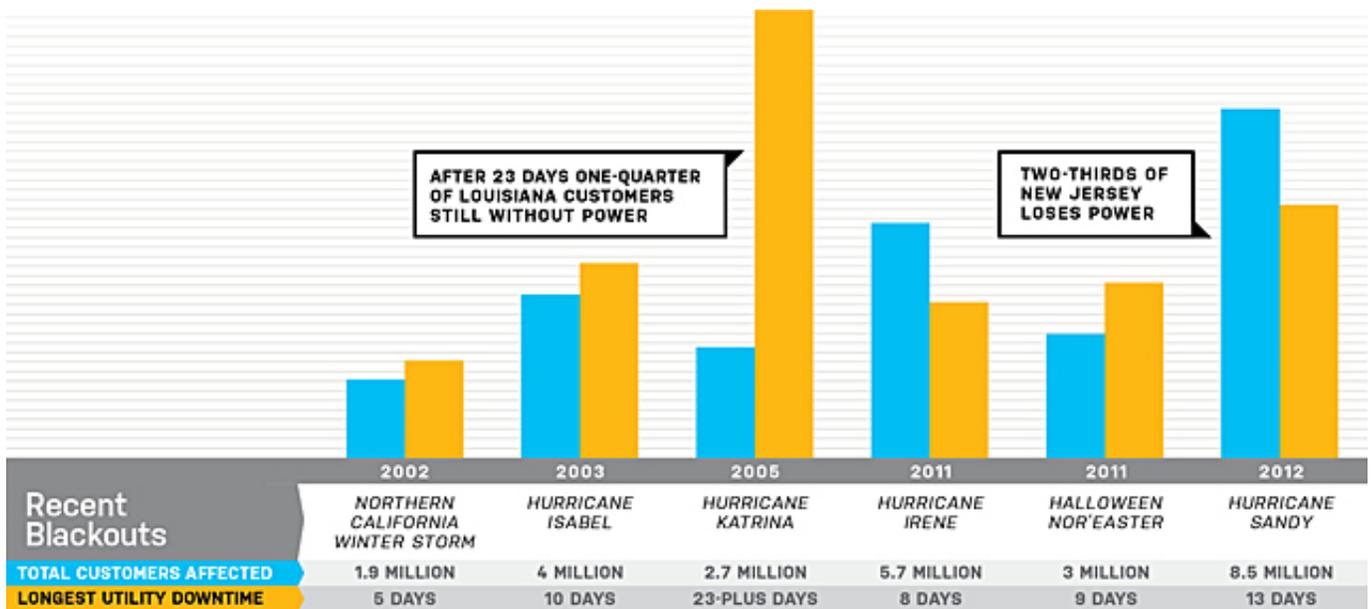


Getty Images

Blackouts are nothing new, but major storms over the past two years have hammered home the importance of electrical power. Last fall Hurricane Sandy pummeled the Northeast, disrupting power for more than 8 million customers and leaving families homeless as temperatures dropped. Sandy blew in just 12 months after a historically destructive snowstorm hit the same region. In fact, 2011 was among the nation's worst years on record for grid-disabling natural disasters, with power interruptions longer than 24 hours affecting 21 million customers. Sadly, Sandy promised a second consecutive year of dire power-outage numbers.

While big-box stores quickly sold out of portable gasoline-powered generators after the storm, Generac, Briggs & Stratton, and Kohler announced that they would ramp up production of standby generators, which can energize a home nonstop for days. But these

sophisticated machines also can cost more than \$20,000 installed, and some are the size of a Fiat 500. Here are six points to help you decide whether they're worth the investment.



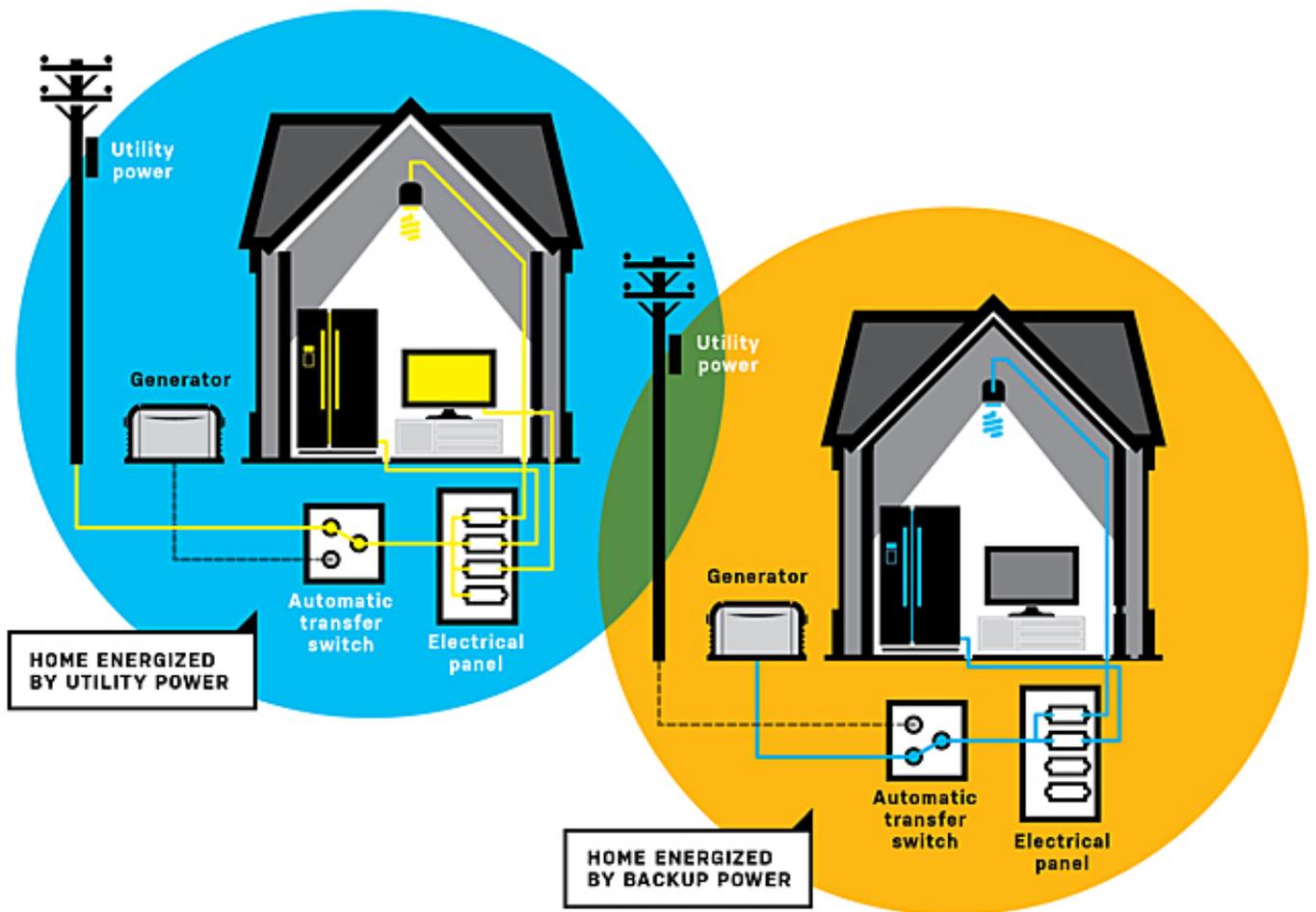
1. What They Are

Standby generators offer a steadfast solution to extended outages. Unlike portable generators, they're installed permanently on a concrete pad in your yard and will provide uninterrupted backup for days. That's because they're connected directly to your home's electrical panel and powered by an external fuel supply, such as natural gas, liquid propane, or diesel. Smaller, air-cooled essential-circuit units (below) are slightly larger than portable generators and can energize just a few circuits at a time. Larger, liquid-cooled whole-house systems will do just as their name suggests—they'll comfortably power an entire home.

2. How They Work

The brains behind the operation is an automatic transfer switch that disconnects you from your utility after detecting an interruption in service. Once your home is safely off the grid, the switch starts up the generator before transferring its power to the home's electrical panel. At the heart of the system is an internal combustion engine, which is usually fueled by the local natural gas supply. Where natural gas isn't available, liquid propane or diesel stored in a large tank nearby can be used. Keep in mind these systems rely on a finite amount of fuel that could run dry if storm damage prevents delivery or increased demand hampers supply.

When municipal power resumes, the switch shuts down the generator and reconnects your house to the grid. This seamless operation makes standby generators ideal for families with small children, as well as those needing uninterrupted use of electric-powered medical equipment. They're also crucial for anyone running a home business. The transfer switch acts as a safety mechanism too: It prevents back-feeding electricity to the grid, a potentially lethal practice that can start fires and harm utility workers attempting to restore your neighborhood's power.



3. Installation Drawbacks

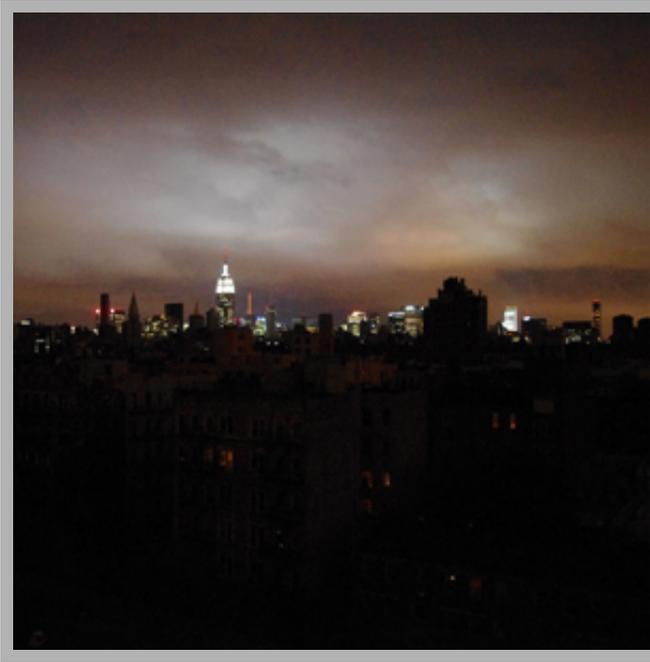
Cities often have noise ordinances restricting the installation of generators. A machine may be rated at 62 decibels, but that's often measured at 25 feet. What does that sound like? Imagine a neighbor idling a Harley—tolerable in a rural environment but unacceptable in a tight city lot. Additionally, most building codes require generators to be at least 5 feet from a house opening and 5 feet from flammable materials, making urban installations tricky. Fuel-tank placement is almost always restricted, especially near parking lots and schools.

4. They're Not For Rookies

Hire a professional to assess not only your load needs (see No. 5), but also the logistics of installing a generator in your home. If you're planning on connecting to your local natural gas system, you'll need a high-pressure, high-volume line. Most generators require gas supplied at 5 to 7 inches of water-column pressure, which isn't available in some towns. If it is, you'll probably have to pay your utility a fee to access it.

"If the pressure is not high enough, you risk damaging the unit or the supply itself," installer Pat Porzio of East Hanover, N.J., says. "Only your gas company can give you more gas pressure."

Installing a standby generator is no DIY project, either. It requires advanced electrical and plumbing skills, as well as knowledge of local building codes. You'll also need permits before you



David Shankbone/Flickr

start and inspections when you're done. Because of these complexities, professional installations can sometimes triple the cost of a generator.

5. They're Big and Costly

The higher the generator's capacity, the more circuits it can power at once. However, the size of your generator should be determined by your needs in an emergency, temporary situation—you're not looking to power each and every appliance and gadget during desperate times. The chart below will give you some idea of how much electrical capacity you'll need, though you should consult a professional for an accurate load analysis. He or she will calculate the combined load of the devices you intend to run simultaneously while also considering the

starting wattages of motor-driven appliances such as refrigerators and AC units.

Many homeowners choose a generator based on what they can afford, and with good reason. A quality essential-circuit system starts at around \$3000, and that's not including installation. Then there's the price of fuel: A fully loaded 7-kw unit consumes around 140 cubic feet of natural gas per hour. Based on average rates nationwide this summer, that's \$2.23 per hour. Expect at least double that with a 22-kw unit. Keep in mind that large, whole-house systems can add significant value to a home.

TYPE OF LOAD	WATTAGE	GENERATOR SIZE		
		7 KW	17 KW	48 KW
TWO LIGHTING CIRCUITS	200 W	●		
FOUR LIGHTING CIRCUITS	400 W		●	
10 LIGHTING CIRCUITS	1000 W			●
REFRIGERATOR	1200 W	●	●	●
SUMP PUMP	1000 W	●	●	●
WELL PUMP	1000 W	●	●	●
FURNACE FAN	500 W	●	●	●
GARAGE-DOOR OPENER	875 W	●	●	●
MICROWAVE OVEN	1000 W	●	●	●
ELECTRIC OVEN	2000 W		●	●
RADIO	50 W	●	●	●
TELEVISION	300 W		●	●
LAPTOP	45 W		●	●
DESKTOP COMPUTER	200 W		●	●
4-TON CENTRAL AC	8500 W		●	●
COFFEEMAKER	900 W			●
WASHING MACHINE	1200 W			●
ELECTRIC CLOTHES DRYER	6750 W			●
PS3 SLIM	100 W			●
JACUZZI BATHTUB	1500 W			●

Essential Circuits

SIZE 7 KW TO 12 KW
COST \$3000 TO \$5000

About the size of a large trash can, it can energize up to 16 critical loads, though not all at once.



Creature Comforts

SIZE 12 KW TO 20 KW
COST \$3000 TO \$8000

Midsized generators often have load-shedding devices that shut down nonessential appliances when powering up high-priority circuits.



Whole House

SIZE 20 KW TO 48 KW
COST \$5000 TO \$20,000

Comparable to a mini power station crammed into a 2-ton dumpster, a high-capacity, liquid-cooled generator can energize an entire home.



6. They Need A Lot of Upkeep

Like cars, standby generators run nonstop for many hours, so they have to be maintained as if they were, well, cars. Generally, bigger units require more care.

"After 24 to 48 hours of continuous use, get it serviced," installer Pat Porzio says. "After around 10 days, have a professional change the oil and the filter."

Your generator will stay healthy through a lifetime of outages if you check the engine oil daily during use, run it at no more than 75 percent of its rated capacity, replace overworked or deformed motor brushes, and avoid starting or stopping it under load whenever possible.

<http://www.popularmechanics.com/home/improvement/electrical-plumbing/should-you-buy-a-standby-generator-14880060>