



# THE ULTIMATE GUIDE TO STANDBY POWER GENERATION

A PATH TO MORE RESILIENT  
HOMES AND BUILDINGS





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# MORE RESILIENT HOMES AND BUILDINGS

**Constructing a home or designing a building today requires a leap of faith. How can we trust our built environments to last under the threat of storms, natural disasters, aging infrastructure, and even man-made hazards?**

**Resilient design provides a path forward, offering strategies for constructing more efficient, durable homes and buildings that can help protect people from weather events and extended losses of power or fuel.**

### THE ROLE OF STANDBY POWER

A reliable propane standby generator is a key part of resilient design. When the power is knocked out, standby power keeps heating and cooling, lighting, refrigeration, and other critical building amenities in operation.

### THINK ABOUT WHAT A RESILIENT HOME OR BUILDING PROTECTED BY STANDBY POWER CAN DO:

- Resist hazards brought on by major disasters, such as damage to electronics, spoiled food, loss of heat or air conditioning, and more.
- Continue providing the primary function of a home — protecting your family — after a disaster, and keep a business's employees engaged and productive during what would otherwise be downtime.
- Reduce the magnitude or duration of a disruptive event to a property.

### PROPANE FOR POWER GENERATION

Why choose propane? The same propane that will power a home's generator can also power the other major appliances that make life less stressful during a power outage. A standby generator powered by propane offers advantages that other fuel sources simply can't match:

- Permanently installed and supplied by an above- or belowground tank, it starts automatically the moment the power goes down.
- Supplies supplemental electricity in as little as 10 seconds after an outage.
- Propane doesn't degrade over time, unlike diesel or gasoline, making it an ideal standby power fuel.

### A DIFFERENTIATOR FOR BUILDING PROS

The fact that you've taken the step to download this ebook shows that you realize the importance of protecting your projects with standby power. By empowering your customers to overcome the fear, stress, and potential financial losses posed by outages, you'll build your authority as a trusted partner for your clients.


We're here to show you how to make the most of the new generator technologies and products available on the market and incorporate them into your business.

In the chapters that follow, we'll provide guidance and advice from pros designing cutting-edge applications that combine standby power with renewable resources like solar power and waste heat — both on and off the grid. And we'll show examples of some of the savviest projects using propane to run more reliably and more efficiently. With these strategies, your next project won't require a leap of faith — just a step toward a more resilient future.

**GET ACCESS TO EXCLUSIVE RESEARCH ABOUT YOUR CUSTOMERS' GREATEST POWER OUTAGE CONCERNS.**

**DOWNLOAD THE RESIDENTIAL OR COMMERCIAL BROCHURE AT: [PROPANE.COM/GENERATORS](https://PROPANE.COM/GENERATORS)**





“On Thanksgiving, an electric stove with all four burners and oven on will pull half the capacity of a 20-kW generator just by itself,” says generator installer Bob Camper. “In my own house, I’m going from electric to a gas cook stove.”

# BUNDLE PROPANE GENERATORS AND APPLIANCES FOR MORE AFFORDABLE PROTECTION

Make standby generators an easier sell by using propane, rather than power-hungry electricity, for critical systems.

Until recently, homeowners hoping to protect their homes against blackouts had to choose a few select applications that would remain running during a power disruption. The refrigerator and heat, for instance, might keep running, but the rest of the house would be powerless in an outage.

Today, however, several factors are combining to make whole-house standby protection a realistic possibility for most U.S. households. Recent improvements in generator load-monitoring technology have made it possible to keep power flowing throughout the whole house, even as demand surges and shifts. Now, if a generator gets to the point of overloading, it can automatically shut off non-essential appliances and bring them back on when demand subsides. As a result, many homeowners who initially hopped on the generator train with portable models are retrofitting their homes for whole-house standby units.

Likewise, these propane generator features make it easier for commercial buildings to achieve more comprehensive protection without having to go through the fuel storage, maintenance, reliability, and emissions challenges of diesel-fueled generators.

“If you had asked me four years ago, I would say we were doing mostly partial-house installations,” says Bob Camper, owner of AllInstall LLC, a Virginia-based installer of Generac standby generators. “We’d put in a subpanel with critical systems wired into the panel: heat, water pump, and refrigerator. Now, every machine we install can do load monitoring.”

“These generators have a load monitoring switch with four levels of priority,” Camper explains. “If a generator overloads, it immediately will drop off the four biggest electric draws, then reapply them one at a time to make sure it doesn’t overload. For example, a 20-kW generator, which normally puts out 82 amps, can bump to as much as 125 amps to start an air conditioner, although it can’t sustain that. If more than 80 amps are drawn for more than three seconds, then we’ll automatically drop what we’ve selected to protect the generator.”

**“WHEN CRITICAL SYSTEMS SUCH AS SPACE HEATING AND WATER HEATING ARE FUELED BY PROPANE OR NATURAL GAS, THE STANDBY GENERATOR CAN TYPICALLY BE DOWNSIZED — AND MADE MORE AFFORDABLE”**



## COMPLEMENTARY PROPANE SYSTEMS

Builders and remodelers can also combine a propane generator with a suite of propane appliances to provide residential and commercial clients with whole-building standby protection at an affordable price. When critical systems such as space heating and water heating are fueled by propane or natural gas, the standby generator can typically be downsized — and made more affordable — because it isn't running power-hungry electrical heating appliances.

Customers can save as much as \$2,000 on the generator, according to Dave Dawson, CEO of Smart Homes of Virginia, a generator installer based in Charlottesville.

"On a typical electric indoor air-handler, the emergency heat strips will take as much as 10 kW or even more if the emergency heat kicks on," Dawson says. "So it takes a big generator — or they have to do without that heat or risk shutting the generator down." Alternatively, if the furnace runs on propane or natural gas, it uses minimal electrical power, he explains. "Not only does the heat come on when they want, but also instead of a 20-kW [generator], they might get away with a 14-kW, which will allow them to save \$1,500, even \$2,000 or more on a generator."

## BUNDLING FOR SAVINGS

As installers do the energy-consumption audit needed to properly size a generator and pipe the house for propane, remodelers can offer homeowners the opportunity to convert other major systems to propane or natural gas to maximize energy efficiency and cost savings.

"It does make a big difference if they have at least one or two gas appliances," Camper says. "Because we're going to be doing a gas line to get the propane to the generator, it's an ideal time to upgrade heating, water heating, and cooking appliances. I'm encouraging people to switch to gas, to put in a gas heater, a gas tankless water heater in lieu of a water tank, and a gas cook stove."

Most of Camper's customers live in rural areas and use propane to fuel their generators. "About half our customers have buried tanks or will have us do so when we do the generator installation," he says.

Both installers stress the importance of having a certified professional size and put in a whole-house generator because of the computerized load monitoring system that

comes built into the switch. "If you overload generators you can easily burn them out, and then you are talking a couple of thousand dollars to fix them," Camper says.

## PROPANE PARTNERS

By choosing propane for these building systems, you can reduce the building's reliance on standby power or even spec a smaller, more affordable backup unit. Most propane appliances require backup power only for the electronic ignition, if at all.



### SPACE HEATING

Propane forced-air furnaces provide airflow up to 25 degrees warmer than the average electric heat pump and typically last twice as long.



### WATER HEATING:

Condensing tankless water heaters can provide energy savings up to 40 percent over conventional, electric water heating systems while providing endless hot water delivery.



### FIREPLACES

There's no better way to ride out the storm than cozying up by a fireplace running on your onsite fuel source.



### COOKING


Eating out every night of an outage can add up financially, and who wants to go out in a storm anyway? Propane cooking appliances won't strain your generator's capacity.



### CLOTHES DRYING

For hotels and other buildings with laundry facilities, propane dryers keep the fresh linens coming in a power outage.

## PROPANE AND SOLAR PROVIDE REMARKABLE SAVINGS



The Midas Gold exploration camp is jointly powered by a 12-kW solar array and a 15-kW propane generator designed specifically to work with off-grid renewable energy.

# PROPANE AND SOLAR PROVIDE REMARKABLE SAVINGS FOR OFF-GRID MINING CAMP

**Solar photovoltaics backed by a propane generator provide \$3 million in lifetime savings.**

Despite nearly a century of mining activity, a mining project called the Stibnite Gold Project in central Idaho contains valuable deposits of gold and other minerals,

such as antimony. Mineral exploration firm Midas Gold set up an exploration camp on the site, which it has been studying since 2009 with the goal of opening a world-class mine. The camp includes a core shed, maintenance shop, fuel depot, several office trailers, and a handful of year-round staff members.

The company is currently conducting environmental baseline work on the project site and preparing a plan of operations as it works to secure permits for the mine.

### THE OFF-GRID CHALLENGE

Midas Gold's exploration camp is remote, even by Idaho standards. Located 100 miles northeast of Boise, along the boundaries of the Frank Church Wilderness — the largest contiguous wilderness area in the Lower 48 — the site is "at the edge of nowhere," as the company describes it. In fact, the nearest electrical grid power is 15 miles away, in the 60-person town of Yellow Pine.

Midas Gold plans to connect to the grid when all the permits are secured. In the meantime, the camp must use onsite power generation. In the early days of the camp, that meant using large, fuel-hungry diesel generators to power the camp's lighting, computers, engine block heaters, and other essential equipment.

In addition to being expensive, the smelly, inefficient diesel units weren't a fit with the company's environmental objectives. The camp required an off-grid power solution that would reduce both emissions and costs.

### THE PROPANE AND SOLAR SOLUTION

To overhaul the camp's power usage, Midas Gold worked with clean energy consultant Kelley Dagley to design and build a new power system around two clean sources of energy: solar photovoltaics and propane.

The highly automated system is one that could be used by any business operating off the grid. The company installed a 12-kW solar array on the roof of the camp's fuel depot [the solar capacity will likely double] alongside an 80-kWh battery for power storage. A 15-kW Generac EcoGen propane generator, designed specifically to work with off-grid renewable energy applications, kicks on to recharge the battery when additional power is needed. Together, the solar inverters and propane generator provide the same peak power capacity as a full-size prime diesel generator.



“Originally we considered a diesel generator, but it was harder to come by one that would work well with a renewable energy system, that was also affordable, and that was spec’d to meet EPA Tier 4i emissions regulations,” says Dagley, who is also vice president of the Idaho Clean Energy Association. “The EcoGen is specifically designed to do exactly what we’re using them for, which is a backup to solar generation. And it meets all the EPA standards.”

Today, the camp is run completely on solar and propane; solar is also used to power two microwave relays and an air monitoring station. To improve the camp’s energy performance, Midas Gold took a number of steps to reduce its electrical usage. Motion sensors shut off lighting when not in use, and a remote power monitoring system can shut down the power to unnecessary equipment, like engine block heaters on equipment that won’t be used for weeks.

The poorly performing electric heat pump in the main office trailer was replaced with a propane furnace that performs better in cold weather. Even when the temperatures dip into the negatives, Dagley says, “It’s toasty warm.” In all, the camp was able to reduce its usage to about 30 MWh per year.

## MILLIONS IN FUEL SAVINGS

Dagley used sophisticated solar modeling and examined diesel prices 20 years into the future to calculate the ROI on Midas Gold’s investment. The results were remarkable. The propane generator itself cost less than \$5,000; the entire solar and propane power system cost about \$169,000. That investment yields a 27 percent tax-free dividend in the first year, growing 7 percent every year for 25 years. The capital payback is in just over two years, including a 30 percent tax credit in the first year. The company expects to save about \$3 million in diesel costs over the life of the project.

## PROPANE IMPROVES CAMP LIFE

“The quality of life around the core shed area has improved greatly,” Dagley says. “It’s quiet most of the time, because now the propane generator comes on only as needed, plus it runs quietly. It operates at full capacity, so it doesn’t have to run nearly as long — unlike the diesel generator idling 24/7, which puts out a little bit of a stink. Propane is a lot cleaner just from a usability standpoint.”

## MEETING ENVIRONMENTAL OBJECTIVES

In addition to reducing carbon emissions by eliminating the use of diesel fuel, the company has also reduced the chance of a diesel fuel spill while hauling the fuel alongside the East Fork of the South Fork of the Salmon River and other area streams. “Every fuel truck we keep off the road reduces risk, and we view propane transportation as a safer alternative in the event of a traffic accident,” says Jeff Root, Midas Gold’s Land Manager.

“Despite improved environmental performance by the modern mining industry, mining companies still face negative perceptions,” says Bob Barnes, Midas Gold’s COO. The exploration camp will serve as an example for the environmentally friendly approach the company is committed to. “As we go into the permitting process, taking a sustainable approach reflects how we want to run the project now and in the future,” Barnes says.

PROJECTED LIFETIME SAVINGS:

**3 MILLION**



Midas Gold staff pose with the EcoGen propane generator.

From left to right: Chuck Eilers, Lead Equipment Operator; Kelley Dagley, Dagley LLC; Bob Barnes, COO; Richard Moses, Field Operations Manager; Layne Mouritsen, Field Operations Supervisor.



# RELIABLE POWER MAKES HAPPY CAMPERS

**Camp Woodstock offer kids a getaway from the always-on connections of the everyday world. But while the camp may be isolated from city amenities, propane ensures campers remain warm and well fed in any weather.**

For Anthony Gronski, summer camp is a training ground for life.

The executive director at YMCA Camp Woodstock, a summer camp and retreat center in Woodstock Valley, Connecticut, says today's kids are so electronically connected through texting and their phones that it's difficult for them to learn to

build relationships face to face. Summer camp offers an opportunity to disconnect from the internet and bond with friends in a positive environment where kids can be kids.

The camp's remote location, on a pristine 75-acre lake surrounded by woodlands and farms, is an ideal setting to create that environment. So even though there's no natural gas available and the electric grid can be unreliable, Gronski wouldn't change a thing. The camp simply turned to propane to fuel the generators, heating systems, and cooking appliances that keep them running in any weather condition.

For institutions and retreats like Camp Woodstock that consider a remote location to be a selling point rather than a turnoff, propane can play a unique role in offering high-efficiency heating systems and reliable power sources that wouldn't be available otherwise. That's particularly vital for non-profit organizations like the YMCA, where lost revenue from a weekend without power or uncomfortable and upset guests can wreak havoc on an operating budget.

### BACKUP POWER PROTECTS BUDGET AND CAMPERS

Camp Woodstock, for instance, offers \$177,000 in financial aid and scholarships to campers each year. But losing a week of summer camp to a power outage could result in up to \$300,000 in losses — and that's not even including the loss of income from families who decide not to return.

To avoid that scenario, the camp employs eight propane generators, six mobile and two permanently installed, to keep the camp running in an outage. "Out here, we lose power," Gronski says. "We're mainly wooded and pretty much the way it was since it was incorporated in 1670." Because the nearby community is so spread out, it's frequently the lowest on the priority list when power is restored. "We were the last ones to get power the last time it went out. Everyone here is prepared for it. Everyone has generators."

**CHECK OUT THE VIDEO ABOUT CAMP WOODSTOCK AT [PROPANE.COM/COMMERCIAL-CONSTRUCTION](https://www.propane.com/)**

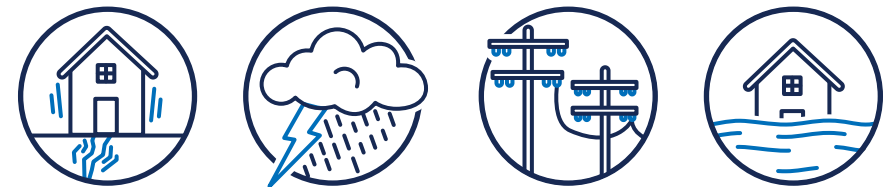


“The generators are critical to maintaining the camp’s lighting, refrigeration, heating, and particularly the pumps for well water. “That’s just such a comfort to have generators set up, because two things that really can stop camp is water and septic,” Gronski says. “So those generators keep us operating and keep water flowing in both directions.”

Gronski recalls one Labor Day weekend when the camp was hosting its family camp, one of the most popular and busy weekends of the year, and a hurricane came through and knocked out power for most of the state. “We immediately started calling all the families, letting them know, ‘Hey, we’re going to be operating. We’ve got generators. We’re not going to let this prevent your family from having this weekend.’ So we have the generators going, the families came out, and they had a great weekend. And really, that’s one of the weekends I take the most pride in.

“I remember the last meal, one of the participants who has been coming to family camp for 30 years mentioned that the hum of the generators was a comfort to fall asleep to.”

## COMMON CAUSES OF POWER OUTAGES



These five states had the most weather-related outages between 2008 and 2014, according to findings by B2B International Research<sup>1</sup>: California [525 outages], New York [399], Texas [335], Michigan [328], and Pennsylvania [294].

1. Power Outage Impact Research, B2B International — 2015.

**“WE WERE THE LAST ONES TO GET  
POWER THE LAST TIME IT WENT OUT.  
EVERYONE HERE IS PREPARED FOR IT.  
EVERYONE HAS GENERATORS.”**

In addition to reliable power, Camp Woodstock uses propane throughout the 42 buildings onsite, including lodges, cabins, and meeting spaces. All of the buildings use propane furnaces or boilers for space heating. Three centralized bathhouses use boilers for hot water, and the lodges use propane storage tank water heaters for their bathrooms. Two of the lodges also have propane fireplaces.

Just as crucial to the success of the camp, however, is a dining hall that serves three meals a day to 400 people onsite. The kitchen uses propane to fuel convection ovens, grills, and a large kettle that can handle 40 pounds of pasta. “It’s really critical that our dining hall can maintain operation, regardless of the weather, without power,” Gronski says. “We really rely on the propane to continue to flow even when we lose power.”



The Yanmar CP10WN CHP system uses an internal combustion engine, fueled by propane or natural gas, to produce both heat and electric power.

# ONE PIECE OF EQUIPMENT THAT CAN DEMOLISH ELECTRIC BILLS

**This homeowner's \$14,000 annual energy savings are no fairy tale. They're the result of a powerful and highly efficient cogeneration heating system.**

Contractor Kent Thuesen's client had an uncommon house with a common problem. The client's luxe 14,000-square-foot home in Waccabuc, New York, was guzzling fuel oil and electricity, and he needed to cut his energy bills — big time.

Thuesen, who owns Thuesen Mechanical, a heating and plumbing business in Mount Kisco, New York, priced out some ambitious energy-saving options. Solar photovoltaic panels? They'd have a 20-year payback, even with tax credits. Geothermal? A likely 12-year payback.

Instead, Thuesen suggested a third option. By retrofitting a powerful, high-performance cogeneration heating system in the home, Thuesen could shrink his client's bills by about \$14,000 a year, or 30 to 40 percent, while offering a 5-to 6-year payback. The client was sold.

The propane-fueled cogeneration system provides the astonishing savings by combining on-site production of electricity with heat for the home. The Yanmar CP10WN CHP (or combined heat and power) unit activates whenever the radiant heating, domestic hot water, or pool and spa heating systems call for heat. The internal engine provides 10kW of electrical power that feeds the home or is sold back to the grid. Heat from the engine is captured to bring water to about 160 degrees to feed the heating systems.

In its first two years of operation, the cogen system has run for about 4,000 hours per year. It ends up providing about 90 percent of the home's heat; the old oil-fired boilers were left in as backup. "Those one or two weeks of the year where the temperature gets so cold outside, I need the backup of the oil boilers to get past those months," Thuesen says. "We're going to end up taking the oil boilers out and I'm going to put a modulating propane boiler in place of that. We just left them in there to show how easily you can retrofit into an existing system with cogeneration."

### VITAL BACKUP

While Thuesen's client enjoys his monthly energy savings, he's perhaps just as pleased with the CHP unit's standby power abilities. The unit was installed with a battery that instantly provides power to the home in the event of a grid outage. The system kept the client's home running throughout Superstorm Sandy, but it's also useful for protection against Waccabuc's inadequate electrical grid.

"You've got [grid] electric that sometimes, instead of 240 volts, we've got 198 volts," Thuesen says. "That low voltage actually puts a surge on any compressors — refrigerators, dishwashers, microwaves, TVs. In the hottest days of summer, the voltage drops so low it actually registers as a power outage."



The cogen unit balances the electricity in the house, providing a stable, constant 240 volts. “Since we installed this, he hasn’t burnt out a television, a computer, anything that he used to lose,” Thuesen says.

## HYBRID AND COMMERCIAL INSTALLATIONS

CHP systems are also gaining traction in light commercial applications and installations that combine other renewable energy sources like solar photovoltaics [PV] or geothermal.

Blossman Services’ Autogas Research & Technology Center, for instance, installed a propane-fueled CHP unit and roof-mounted photovoltaics in its new 12,000-square-foot facility in Asheville, North Carolina. The company expects the combined systems to produce all of the center’s power — 40 percent from solar and 60 percent from the CHP unit — and reduce emissions by 68 percent compared with using power from the grid.



1. The average financial impact on education, healthcare, retail, government, hospitality, and manufacturing facilities.

Blossman Services President and CEO Stuart Weidie expects the cogeneration unit to reshape the way people think about their power source. “We’re calling it the building of the future because we believe on-site power generation is a much more efficient and environmentally friendly way to produce electricity for homes and businesses,” he says. “When power comes from off-site, you’re only getting about 30 percent of the generated electricity at your plug. More than 30 percent of the energy is lost in production, and another 30 percent is lost in transmission over power lines.

“We don’t have a tremendous hot water load here, but CHP is a great product for restaurants, hotels, and nursing homes that have large hot water demands,” Weidie says. It works with existing water pipes like a boiler and can be used with a forced-air ducted

system by running hot water coils through an air handler. Another bonus: “You can’t hear it operating,” Weidie adds. “The decibel level is as quiet as driving down the road.”

Combining geothermal and CHP systems can be a particularly clever hybrid solution, suggests Jonathan Davies, CFO of Blueprint Energy Group, a CHP distributor based in Norwalk, Connecticut. Standard geothermal systems in the Northeast tend to be sized for the greater heating load [a delta of 60 degrees or more between indoor air and frosty winter temperatures]. When builders combine geothermal and cogen, they can reduce the number of wells and the size of the geothermal system to be closer to the cooling load [a delta of only 30 to 40 degrees].



Blossman Services’ Autogas Research & Technology Center

“So now you have saved a third of the geothermal infrastructure,” Davies says, “and you have a system that can supplement the cogen when needed for additional heat and can provide the cooling in the summer as planned.”

A 5-kW CHP unit launched by Yanmar in 2012 has dramatically expanded potential uses for the technology. While the smaller units are still most cost effective in homes with summertime heating loads such as pools, their power and heat output make them appropriate for smaller commercial settings and residential homes ranging from 2,500 to 8,000 square feet. Operating at 84 percent efficiency, the CP5WN compares favorably with the 33 percent efficiency attained using power from a traditional utility plant.

With the ability to produce both heat and electricity, these more cost-effective units can be a savvy stand-in for standby generators in homes and buildings that require backup power.



# OFF THE GRID, WITH PEACE OF MIND

**A home powered solely by solar panels and a propane generator protects the environment — and takes care of the neighbors.**

When the power's out in their neighborhood, Patricia Seaward's neighbors grind their coffee beans at her house. Her coffee grinder, and the rest of her off-grid home in Barbers Island, Maine, keeps running in any weather condition thanks to two resilient sources of power: solar and propane.

Independent by nature, Seaward chose the off-grid lifestyle after a career working at the Maine Department of Environmental Protection.

"Once I received a quote from Central Maine Power, I realized that the components for solar electric were only a few thousand dollars more than being grid-tied," she says. "I rationalized where I worked and decided that I could lead by example. It was more the philosophy, doing my part for the environment, that attracted me."

Seaward hired Albert Monaco, an electrician experienced with solar generation, to design her home's off-grid, battery-based system. Monaco, owner of Oyster Creek Electric and Solar Options in Alna, Maine, installed a 2.5-kW solar photovoltaic array to power the home and charge the batteries.

But for peace of mind, and with the size of her roof limiting the number of solar panels that could be installed, both Monaco and Seaward knew the home would need a source of backup power. "Because of the days being so short in our winters, on some days you can't produce enough power [with the solar panels]," Monaco says.

To keep the home running year-round, Seaward turned to propane backup power as the most cost-effective and environmentally friendly option. "My job at the Maine Department of Environmental Protection entailed working with homeowners whose wells were at risk or contaminated by various petroleum products," she says. "As I live on the top of a hill, any petroleum spill could impact more than my property."



The home's domestic hot water and in-floor radiant heat are provided by a propane boiler, while a propane soapstone heater can be manually operated between seasons.

Her neighbors would have little use for their coffee grounds if their water supply was contaminated, and diesel fuel has the potential for contamination from spills and leaks that are retained in the soil. Propane doesn't spill, pool, or leave a residue, so it's not harmful to soil or water in the unlikely event of a tank leak. Seaward also considered wind-generated backup power, but the cost was prohibitive.



Monaco installed a 2-kW propane generator with the start mechanism tied into the voltage of the batteries. When the batteries are depleted to a certain voltage, the generator automatically kicks on until the batteries are replenished to 80 percent.

**PROPANE VS. DIESEL**

In addition to its environmental benefits, propane has several other advantages over diesel, Monaco says. First, propane tanks are available in large sizes, so timely refueling isn't a concern. "Most people have a tank that will run them 100, 200 hours, and that usually is about the run time for a year," he says. Second, "Propane is also a whole lot cleaner, so maintenance on the machine is a lot less than if you were running on gasoline."

Propane also powers Seaward's refrigerator, a clothes dryer, a manually operated soapstone heater for between seasons, and a boiler that provides hot water for domestic use and in-floor radiant heat. By using propane in all five applications, the home provides maximum performance, comfort, and efficiency.

Monaco says Seaward is far from the only local homeowner who has decided to leave the grid behind — in fact, his home is off the grid, too. The local power company now has an owner in a foreign country and has cut back on local employees capable of quickly restoring power in an outage, he says. "We had a little snowstorm up here this winter, and we had winds 40, 50 miles per hour. But some people were out of power for three or four days because they just don't have the manpower."



Ward Cedar Log Homes of Houlton, Maine, supplied the northern white cedar for siding and purlins and pine for interior walls. The galley kitchen, designed for greater efficiency, includes a three-burner stove, broiler, and oven fueled by propane.

Monaco and Seaward won't have to worry about an electrical bill in retirement, and remaining blissfully unaware of power outages is also a major advantage. "I'll go down to the local coffee shop and realize, 'Oh, the power's out?'" Monaco says. Owning one of the only homes with power has its perks. "That's a real nice benefit right there."



A POWER OUTAGE COSTS  
A FAMILY AN AVERAGE OF

**\$1,250**

**FINANCIAL COSTS OF POWER OUTAGES:**

- Spoiled food.
- Eating at restaurants.
- Damage to electronics and homes.
- Lost wages from home businesses.
- Hotels and temporary relocation costs.

**EMOTIONAL COSTS OF POWER OUTAGES:**

- Stress on families.
- Financial demands.
- Dangerous excesses of heat or cold.
- Lack of phones, email, and communication.
- Inability to cook.
- Loss of showers and bathrooms.

**LEARN MORE ABOUT PROPANE  
IN RESIDENTIAL CONSTRUCTION  
AT: [PROPANE.COM/RESIDENTIAL-CONSTRUCTION](http://PROPANE.COM/RESIDENTIAL-CONSTRUCTION)**



## LEARN MORE AT PROPANE.COM

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Propane standby power work in concert with a variety of other powerful propane systems to make homes and buildings more resilient. Visit [Propane.com](https://www.propane.com) to access free tools and resources on all that building with propane has to offer.

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Download the commercial propane generators fact sheet, brochures with exclusive research about your customers' greatest power outage concerns, videos, and more.

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#### [PropaneTrainingAcademy.com](https://www.propanetrainingacademy.com)

Take this in-depth course at the Propane Training Academy to learn more about propane generator applications and the benefits of different fuel sources. Plus, you can earn credits from the AIA, NAHB, NARI, and GBCI [in conjunction with the USGBC].

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