



# LIVING WITH NATURE: SOLAR. WIND AND ... PROPANE?

## THREE EXAMPLES OF REALISTIC LOW CARBON, ENERGY-OPTIMIZED HOMES

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Building close to nature is a balancing act. We seek to preserve the qualities that make us want to be in a natural setting while also providing the comforts we expect in a modern home. To help achieve this balance, propane offers reliability plus freedom from worry about toxicity or harm to the natural environment. These qualities make it a good companion to any renewable energy plan for your close-to-nature home.

When it comes to a home's energy sources, achieving reliability with a light footprint on the land, the water, and the air is especially challenging. Solar and wind generation systems are good places to start. They bring a low-carbon footprint, and if a grid tie-in is possible, allow homeowners to sell low-carbon power back to a local utility on high-generation days. A grid tie-in may be a necessity if your renewable electric system cannot provide all the energy a home may need.

But relying on electricity alone can be a problem—and may not provide as light an environmental footprint as you think. The grid you tie in to may get its electricity mostly from a centralized coal-fired plant. Although those electric generation plants may be far away, the high-carbon fuel it burns to produce power, violates the spirit of a low-carbon home.

Moreover, electric generation is notoriously inefficient. At centralized generation plants, typically two-thirds of the thermal energy created in the generation process is lost. Thus, only one-third of the energy is converted into electricity. And, in the transmission of electricity across miles of electrical lines, 5 percent of the power is lost due to resistance in the aluminum or copper wires.

What if we looked at the total energy use of the home and separated out the high-intensity appliances from the lighting and outlet power that solar and wind can service? Is propane a good choice for these appliances?

The targeted use of propane can make for a lower load on your electrical system when used for

water heaters, stoves, clothes dryers and other high-heat applications. These applications can quickly drain solar and wind-charged batteries and overload even on-the-grid systems because those applications require so much electricity to operate properly. Electric high-heat appliances use three times as much energy as propane ones because, as noted above, two-thirds of the energy consumed by electric power plants escapes as heat.

Propane powers high-heat applications for [this California luxury wine country home ↗](#) which has vineyard views, a 1500-bottle wine cellar/tasting room, and a creek you can dip into just off the porch. The home uses propane for the kitchen stove, fireplace, water heater and furnace. An outdoor grill is also linked to the main propane tank. Using propane for the stove and water heater takes a substantial load off the conventional grid-tied electrical system.

[This off-grid home ↗](#) in the middle of the Colorado forest combines solar electricity with propane. The home features a propane-powered on-demand water heater and three direct-vent propane heaters that augment passive solar design and a wood stove for space heat.

It turns out that propane appliances bring an added bonus: lower operating costs. For example, gas stoves with electronic ignition [versus pilot lights] cost half as much to operate as electric ones. The same goes for water heaters and clothes dryers. Gas appliances tend to cost more up front, but they make up for the extra cost through operating savings usually within one year.

In addition, the reliability and performance of all your propane applications come at virtually no net impact on the surrounding environment you are trying preserve. Propane storage tanks help maintain the scenery by slipping into relatively small outside spaces without trenching up the habitat. And, they can be filled by a service technician without damaging ground cover.

Beyond this, propane is nontoxic and low-carbon. It burns virtually free of soot and produces less sulfur and nitrous oxides than diesel, gasoline and other fuels—and all of that is better for our air quality and our health. And, in the unlikely event of a spill from its container or tank, propane vaporizes into the air—leaving air, soil, and water clean and healthy.

What about propane for reliable backup electricity generation when the grid goes down or your batteries are low? Propane is an excellent fuel for backup generators, too.

A good example of propane used exclusively for backup power is [this 35-acre ranch ↗](#) located in the Colorado mountains five miles from the nearest electric utility pole. Hooking it to the grid would have been wildly expensive. Instead, electricity generated by solar photovoltaic panels and a wind turbine charges batteries that power the electrical system. Rooftop solar provides hot water for showers, dishwasher, hot tub, and a radiant-heating system in the floor. But successive cloudy days can run down the battery system, so a 1,000-gallon propane tank

provides fuel to two backup generators as necessary to keep the ranch going.

For those who also have propane-powered appliances as well, the same propane tank that powers an emergency electrical generator can, of course, supply those appliances.

Building close to nature doesn't have to mean making difficult trade-offs. Instead, with the right combination of technologies and materials, you can achieve optimal results that meet your needs and the needs of nature at the same time.

## ABOUT THE AUTHOR

Kurt Cobb is best known for his work as a [blogger](#), columnist, speaker and author focusing on energy and the environment. His work has been featured on Business Insider, Resilience, Investing.com, and many other sites. He is a fellow of the Arthur Morgan Institute for Community Solutions and he writes a widely read blog called Resource Insights.