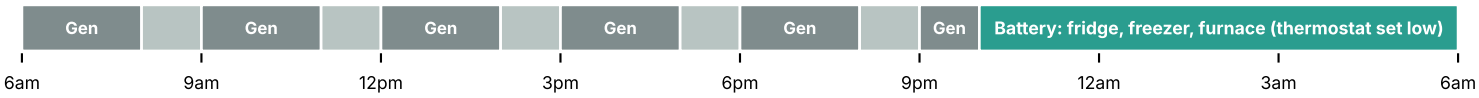
Home backup power - outage plan

House furnace, garage held above freezing, fridge, freezer, light house use | ~3,900W dual-fuel inverter generator, Ridgid batteries (~90 Ah), 60 lb propane (3 tanks), 10 gal gas (2 jerry cans)
Furnace and garage boiler burn utility natural gas; the generator just powers their controls, fans, pumps, etc.

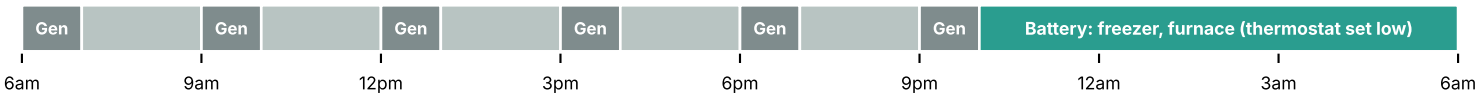
Battery (overnight) | Coasting (generator off, daytime) | Generator on propane | Generator on gasoline

The plan - cycled generator, average 30F outside

Days 1-2, easy mode: generator 2 hours on / 1 hour off, battery overnight 10pm-6am

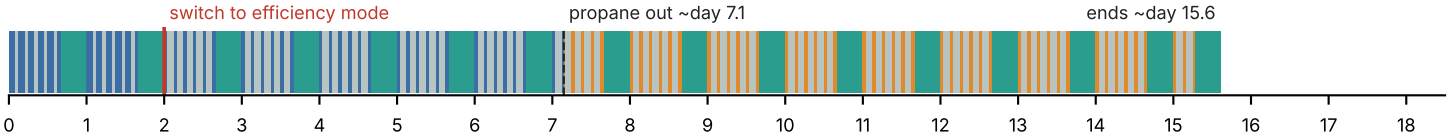


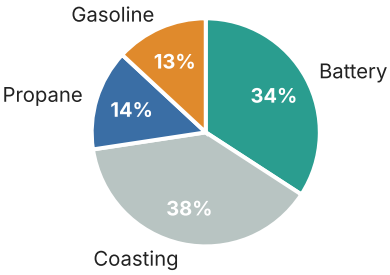
Day 3 on, efficiency mode: generator 1 hour on / 2 hours off, battery overnight 10pm-6am



Gen hours: furnace runs flat out (thermostat up), fridge and freezer pull down cold, batteries charge, garage boiler catches up. Light grey: generator off, house coasts, small loads on Ridgid batteries.

Full timeline





Total coverage: ~16 days (pie = share of hours)

Days 1-2: 11 generator hours/day, ~10.0 lb propane/day

Day 3 on: 6 generator hours/day, ~6.4 lb propane/day

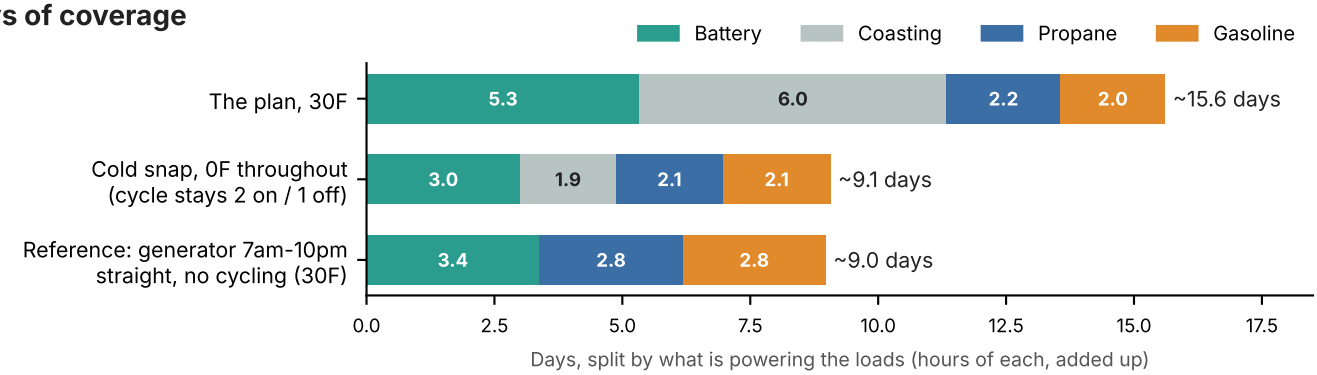
Propane lasts to ~day 7.1; gasoline to ~day 15.3

Overnight battery: one pack swap ~2:30am on days 1-2, none after

Switching to efficiency mode on day 3

Big freezer moves to the 35-38F garage (~45% less work). Fridge unplugged; remaining fridge food goes to the garage, which is held at fridge temperature anyway. Generator drops to 1 on / 2 off with the daytime thermostat set a little lower. With the fridge off, the overnight battery has ~0.5 kWh spare, enough for about an hour of furnace run time through the night.

Total days of coverage



Days, split by what is powering the loads (hours of each, added up)

Reading the results

The generator burns nearly the same amount of fuel whether the electrical draw is small or large. There is cost in just keeping the engine running, so concentrating energy usage and capture in the shortest time span yields efficiency advantage. In this way, cycling generator on/off hours can particularly increase efficiency. Then we'll charge batteries during generator up-times while we'd be running it for furnace and food cooling sprints anyway. At 0F the furnace runs about two-thirds of the day, so we modeled it for 2 on / 1 off. Expect the thermostat temp may take more furnace up-time to maintain on cold overnights, even if you set it lower at night. Cold weather note: cold 20 lb tanks may have slower flow rate, but manifolding two tanks, keeping them sheltered outdoors out of the wind, or switching to gasoline are potential workaround options.

Assumptions (rough, +/- 30%): daily generator output at 30F ~7.6 kWh (days 1-2) and ~5.8 kWh (day 3 on); at 0F ~10-11 kWh. Furnace ~600W while firing; garage boiler ~20W avg at 30F, ~60W at 0F. Burn ~0.5 lb/hr propane plus 0.6 lb per kWh; 1 lb propane ~ 0.19 gal gas; 18 lb usable per tank. Battery ~1,250-1,300 Wh usable. A remote-start fob makes cycling easier. Garage coasts on slab mass. Vehicle fuel held in reserve. Assumes utility natural gas stays on.