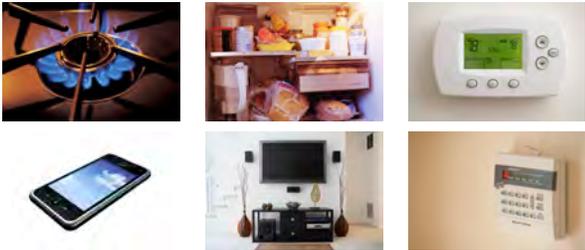


Fastest Way To Prepare

Power for Heat & Light

- Scalable systems that are affordable to put into place and high enough quality to use if your planning goes out to 6, 12, or 24 months.
- Solutions that you can start using and getting benefit from BEFORE you need them.
- A simple trick that will let you turn "extra" beans and rice into usable electricity to run your gear.



When the grid goes down, you have 2 options...

Use Less

Make More

"Off Grid" Power Costs a LOT of Money

Main Power Options

Generator

Solar/Wind

Human Power

- Solar/wind take time and money—BIG warning in just a minute.
- Human powered generators need lots of man hours per week—I'll show you one I DO like.
- Gas generators can be bought today or tomorrow and used immediately.

Run "Everything" vs. Price and Weight

- Whole house 8-20kw generator costs \$\$\$ + fuel problems.
- 3-8 kw generators aren't easy for smaller or older people to maneuver.
- 2 kw generators weigh roughly 50 pounds, sip gas, and cost under \$1,000.



What I Recommend



Red vs. Blue?

- High Quality
- Yamaha comes with more "goodies"
- Can both be run parallel for 2x output
 - Redundancy
 - Easier to carry
 - Spread out
 - You control fuel use



Add a 3rd Option...

- Relative newcomer
- Good reviews so far
- Stackable
- Significantly less expensive
- Limited/no dealer network



Another vote for Red or Blue

- Tri-Fuel Adaptors
 - Gas, Propane, or Natural Gas
 - Smells better
 - CAN'T gum up
 - Safely/legally store more and no pouring fuel onto a hot generator
- Propane-Generators.com
 - GeneratorSales.com



Remember Carbon Monoxide

- 400 deaths & 20,000 hospitalizations per year
- WILL kill you before it "kills" the generator
- Use a plug-in CO detector at the generator
- AA CO detector from Amazon.com for under \$20.



QUICK primer on solar

- Mono-crystalline, Poly-crystalline, Amorphous, or Thin film.
- Beware of 60 watt solar generators paired with "modified sine wave" inverters.
- We're SLOWLY moving to solar...not cheap, easy, or fast.



How To "Turn Beans Into Electricity"

- Trade food for time pedaling your human powered generator.
- DIY and Done for you plans at PedalPowerGenerator.com



Adding Flexibility with Batteries

- Without batteries, you "use it or lose it"
- Lithium Polymer, Lithium Ion, or AGM are all great...but very expensive.
- We went with T-105 type 6V batteries by Interstate, Deka, and Alliance. They're 200aH batteries. \$100-\$150 apiece



Charging the Batteries

- Must be maintained whether you use them or not.
- I charge and check water levels once a month.
- We use a 6/12 volt Schumacher AC charger (need to upgrade)
- Yamaha Inverter/Generators charge batteries directly.
- Controllers take DC from solar/wind/human power and use it to charge batteries

Inverters

- Convert 12 volt power to AC power
- Peak efficiency at 60-70% of rating
- Don't use at less than ½ load
- Pure sine wave (good) vs. modified sine wave (not so much)
- 80-90% efficient is normal in stores. 90-98% is readily available
- Running load vs. peak load
- Multiple inverters vs. single inverter



Ways to Use Less Power

- Candles, Lanterns, and LED Lights
 - Christmas Tree Lights!
 - Headlamps & lanterns
- Refrigerator—insulation, empty space, limited access
 - Propane (RV refrigerator/freezer) \$1000 & up (a trick in a minute)
 - Keep it full when the power's on
 - Also consider using a deep freeze & cooler instead of a fridge
- Cook with the smallest possible appliance

More Power Savers

- Adjust clothing (thank you President Carter)
- Create micro-environments within your house (drain pipes)
- Solar cookers

Fresnel Lens Cooker



Satellite Dish Cooker



\$300 Sun Oven from SunOven.com



Small Batteries

- We keep 50+ AA & AAA disposables on hand.
- NiMh Rechargables—Don't buy unless you see an mAh rating.
 - Sanyo Eneloop (new)
 - AmazonBasic
 - GP
- Lithium vs. Alkaline 2-3x longer with electronics
 - Lithium is lighter and has a 15 year shelf life
 - Lithium rechargables ~\$10

2 Parting Tricks

- Computer UPS systems (battery backup)
 - Especially ones with Automatic Voltage Regulation
 - When they die, open them up and replace batteries from Amazon or Radio Shack for a fraction of the cost!
- Consider a used RV
 - Water storage, generator, propane tanks, propane/120V refrigerator, A/C, deep cycle batteries, charge controller
 - For a few hundred to a few thousand dollars
