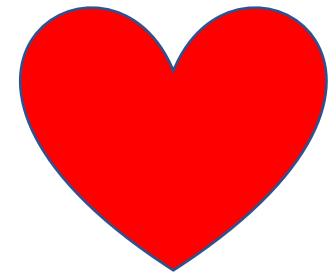


Power Station Cooking

Powering your kitchen in an emergency



What are the advantages to cooking with a Power Station in an emergency?

- SAFETY

- No open flames
- No Carbon Dioxide or Carbon Monoxide



- PORTABILITY

- A Portable Power Station (Solar Generator), mini appliances and foldable solar panels are useful in both Bug Out and Bug In scenarios

- CONVENIENCE

- Electric appliances are often “Set & Forget” – you may well have other things to worry about in a disaster
- You can safely cook nearly anywhere, even in a car or tent



Advantages: (Part 2)

- NOT JUST FOR HEATING FOOD

- A suitable Power Station can run your fridge/freezer or grain mill too

- STEALTHY

- No need to cook outdoors, make lots of smoke or trips to gather expendable resources (IF they are available). Often, even food smells are more contained

- RENEWABLE

- With solar panels you can run your Portable Power Station for years, even decades



Renewable?



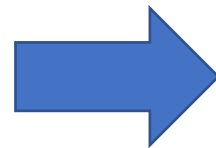
What are the disadvantages to cooking with stored electricity?

- Small & affordable portable power stations don't store a lot of electricity so don't expect to use your full-sized stovetop or toaster oven
- Cooking with electricity can use a lot of the stored energy in your power station so you will need to “mind your Watts” using the tips given here
- To get beyond a short-term emergency you will need a way to replace the power stored in your Portable Power Station (solar, car/truck cigarette lighter plug, generator and/or AC wall plug)

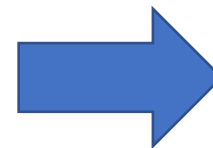
Your Solar Bank Account

Just like with your finances, make sure the amount you are putting into your Power Station (your “solar bank account”) at least equals what you draw out & “spend” over time. Remember, with solar you need to literally “Save for a Rainy Day”

Your “Income”



Your “Bank Account”



Your “Expenses”



Successful Low Watt Cooking Strategies

1. Right size your appliances. An immersion blender (200 to 350 watts) will make powdered milk butter just as well as a Vitamix (1400 watts).
2. With no or limited refrigeration it does NOT pay to cook large batches. Cook just what you need for that meal
3. Once charged, your Power Station simply will reject the power coming your solar panels. Instead, that is the perfect time to use those free incoming watts to cook a meal and still leave your power station topped up
4. Use your Power Station as a supplement to non-renewable ways of cooking (wood/gas/alcohol stoves) to stretch those limited supplies. Cloudy? Cook with gas. Sunny? Cook with electricity
5. Store fast cook items. For example, rice & lentils cook much faster (and therefore take much less fuel/power of any kind) than dried beans. If cooking beans, pre-soak, if possible, to cut cooking time

Power Stations: What Watts Are What?

- Here are the 3 types of Watts you need to know about your Portable Power Station
 - **AC Output Watts (or Inverter Watts):** This determines what appliances your Power Station can power. A Bluetti EB70S has an 800 Watt Inverter so that is it's AC output capability. That means it CAN power a 3 Quart Instant Pot (700 Watts) but can NOT power a Vitamix blender (1400 Watts)
 - **Stored Watt Hours:** This is how much electricity your Portable Power Station can hold. A 1000 Watt Hour Power Station can heat up*roughly* 25 cans of soup in a mini rice cooker (40 Watt hours x 25 = 1000 Watt Hours). NOTE: There are power conversion losses of usually around 15%
 - **Solar Input Watts:** This is how much power, in Watts, your Portable Power Station can receive from a solar panel. The more it can receive the faster you can charge the Power Station and/or pass-through to other devices

What is the *Minimum* sized Power Station I can use for cooking?

- Guideline: To cook with a Portable Power Station you need at least 500 Watts AC output and a similar sized battery as measured in Watt Hours. Below are two example Stations that meet these requirements
- To renewably recharge your Portable Power Station you will need a solar panel. Either fixed, briefcase or folding style. The more portable the solar panel the more expensive it will likely be. However, the more portable the more useful in a Bug Out scenario



Bluetti EB70S

- 800 Watts AC Output
- 716 Watt Hours Storage
- 200 Watts Solar Input
- Cost \$500 to \$600



Jackery 1000

- 1000 Watts AC Output
- 1002 Watt Hours Storage
- 163 Watts Solar Input
- Cost about \$1000

Example: A Not-So-Great Power Station for Cooking

- Bluetti EB3A:
 - 600 Watt AC Output (OK) ✓
 - 268 Stored Watt Hours (too low!) ✗
 - 200 Watt solar input (OK) ✓

A great little Power Station but not enough stored Watt Hours to rely on for cooking



Can It Feed Everyone?

- Here are some rough guidelines on what size of Power Station you need to power different things:
 - 500 Watts AC Output: Only small rice cookers, mini griddles & immersion blenders. Good only if cooking only for 1 or 2
 - 800 to 1000 Watts AC Output: All of the above plus a 3 Quart Instant Pot or a 4 to 6 cup rice cooker. Good for about 2 to 4 people
 - 1500+ Watts AC Output: All of the above plus a 700 or 800 Watt microwave, a 6 Quart Instant Pot and Vitamix style blender. Good for 5+ people
- Don't forget your Power Station can also act as supplement to your other, nonrenewable cooking resources, so a 500 Watt Power Station may still be helpful to feed a family of 4

Great Low Watt Appliances #1

- Dash Mini Rice Cooker; 200 Watts; \$22 - things you can cook:
 - 2 cups of cooked Rice or Quinoa: 35 minutes, 90 Watt Hours
 - 3 small or 1 large Cinnamon Rolls: 30 Watt Hours
 - Heat a can of Chunky Soup: 40 Watt Hours
 - Boil 2 Cups of Water: 55 Watt Hours



Great Low Watt Appliances #2

- Dash Mini Egg Cooker; 350 Watts; \$20 - things you can cook:
 - 7 Hard Boiled Eggs Using Only 2.5 Ounces of Water and 90 Watt Hours
 - 1 Cup of Broccoli: 1.5 Oz of Water, 60 Watt Hours
 - 4 Oz Fish Fillet: 2.5 Oz of Water, 90 Watt Hours

NOTE: A great way to steam small quantities of food without using much water (often in short supply in an emergency)



Great Low Watt Appliances #3

- An Immersion Blender; 200 to 500 Watts; \$30 to \$60 - things you can make:
 - Powdered milk butter (powdered milk & oil)
 - Nut butters
 - Cheese or cheese-less sauces
 - Batters, icings, even ice cream bases
 - Smooth out soups
 - Wisk & chop with attachments

NOTE: Immersion blenders love to claim hundreds of Watts in their advertising but usually use a fraction of that. They are also typically used briefly and so, consume few Watt Hours



Great Low Watt Appliances #4

- 3 Quart Instant Pot; 700 Watts; \$80 - things you can make:
 - 8 cups of soup: 350 Watt hours, 4 Cups 170 Watt Hours
 - 4 pints of yogurt: 120 Watt Hours on Yogurt function
 - Steam vegetables 5 minutes: 115 Watt Hours
 - 4 Hour on slow cook mode: 300 Watt Hours

NOTE: Instant Pots don't always use their full power. For slow & pressure cooking they cycle on and off taking less watts than you would expect



The Microwave Trap!

- Microwaves are advertised by their *COOKING POWER* which is usually at least 20% LOWER than the actual watts they draw
- Don't think your 800 watt AC output Portable Power Station can run a "700 Watt Microwave". That microwave probably draws 1000 to 1200 watts from the wall!
- You CAN run a microwave on a Portable Power Station but most are going to put a 1100+ Watt load on the AC inverter
- Microwaves are not nearly as efficient as other forms of electric cooking



Higher Watt Appliances Examples

- Keurig - Brew one 8 oz cup of coffee:
 - 1300 Watts, 2 mins, 30 Watt Hours
- 1100 Watt Microwave:
 - Heat can of Chunky soup: 2 to 3 mins, 60 to 80 Watt Hours
- Vitamix:
 - Blend 16 oz smoothy: 2 minutes, 50 to 60 Watt Hours



Portable Power Station Purchasing Tips

- Buy a named brand: Bluetti, Ecoflow, Anker or Jackery are typically good brands
- Buy LifePO4 batteries (if possible) vs regular Lithium Ion: LifePO4 batteries lose their total capacity much slower than regular Lithium Ion (lasting 4x to 6x longer) and do NOT suffer from thermal runaway fires, making them much safer
- Make sure your Power Station has “Pass Through Charging” which means it can power things while it is being charged by solar or other methods
- Right size the Power Station you buy for your needs - remember the 3 Types of Watts!
- Watch reviews on the make/model you are thinking about buying. Recommended YouTube channels are HoboTech, Silver Cymbal & Tech Made Easy. Watch out for fake reviews/ads (4Patriots *cough* overpriced junk*cough*, for example)
- As of 2022, a good deal is 80 cents, or less, per stored Watt Hour. For example, if the station has 1000 stored Watt Hours, then \$800 is a good price. All the majors have sales and it is always best to wait for one before purchasing (Black Friday & Amazon Prime Days, for example)

Finally: Other Places Power Stations & Low Watt Appliances are Helpful

- Turn Camping into Glamping with lights, music & hot meals with your Portable Power Station & an Instant Pot. Especially with open fire bans in many campgrounds this may be your only way of cooking
- Save money at hotels or dorms. Everyone knows eating out is expensive but carrying a small rice cooker means you can cook meals in your hotel/dorm even if they don't provide/allow a microwave
- Car, Van or RV living. With a folding solar panel, a Portable Power Station and some low watt appliances you can literally live & cook out of your vehicle - #vanlife