

FREE FAMILY GUIDE

When the Power Goes Out

What to do in the first hour, the first night, and the first two weeks. Calm, practical steps for every home.

Most of us were never taught this. Gather the answers now, while everything works.

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Save this everywhere. Keep a copy on every phone and computer, print one, and keep the printout with your flashlights.

Interactive offline version with calculators and checklists, and a personal plan for your family: mymembers.ai/apps/beready

Start here

Most of us were never taught what to do when the power stays off for days. This guide is the short version of what emergency agencies teach, written so a tired, stressed person can follow it by flashlight.

Read it once now, while everything works. Save it on every phone and computer in the house, print a copy if you can, and keep the printed copy with your flashlights.

How to use it

1. **The power just went out?** Go to The first hour.
2. **Something specific is happening?** Go to Situation finder.
3. **Getting ready ahead of time?** Take stock with Use what you already have, walk through What a long outage looks like with your family, then work the Prep checklist from the top.

Is this copy really on your device? Turn on Airplane mode and open it. If it opens, it's saved. On iPhone keep it in Files, **On My iPhone** (not iCloud Drive). On Android keep it in the phone's Downloads (not Google Drive). On computers, keep it out of folders synced to the cloud. Put a copy on every device, copy it to a flash drive kept in a metal tin with a lid (some protection from surges and electrical damage), and print one. Paper needs no power at all.

The offline guide app. This guide also comes as an interactive page with search, checklists and calculators that works with no internet: open mymembers.ai/apps/beready/offline.html on your phone while you have a connection, add it to your home screen, and open it once. It links back to this PDF, so keep both on every device.

Emergency numbers. Life in danger: **911** (if a call won't go through, try texting 911; it works in many areas). Local help, shelters, warming and cooling centers: **211**. Poison Control: **1-800-222-1222**.

This is general safety information based on Ready.gov, the CDC, the American Red Cross, the USDA and the FDA. It is not medical advice. Always follow instructions from local officials.

The first hour

Most outages end in a few hours. The first hour is about staying safe, protecting your food and finding out how long this might last.

1. **Check your own breakers.** If the neighbors have power and you don't, it may be your panel. If the whole street is dark, it is the grid.
2. **Get light the safe way.** Flashlights and battery lanterns, one per person. Avoid candles; they are a leading cause of house fires during outages.
3. **Keep the fridge and freezer closed.** A closed fridge keeps food safe about 4 hours. A full freezer holds about 48 hours, a half full one about 24.
4. **Unplug sensitive electronics** (computers, TVs, the microwave) so a surge doesn't damage them when power returns. Leave one lamp switched on so you know when it's back.
5. **Report it and get information.** Report the outage to your power company (their app, website or phone line). Listen to a battery or hand-crank radio for local news.
6. **Save your phone.** Turn on low power mode, dim the screen, close apps. Text instead of calling. Charge from a power bank or a car running outside, never in a closed garage.
7. **Check on people.** Everyone in the house, then anyone nearby who is older, alone, sick or relies on powered medical equipment.
8. **Think about the weather.** Cold? Pick one room to keep warm before the house cools (Staying warm). Hot? Close blinds on the sunny side now (Staying cool).

9. **Fill containers with water** if you're on a well (the pump needs power) or if officials warn about water service. Fill the bathtub for flushing water.
10. **Write down the time the power went out.** You will need it later to decide what food is still safe.

Never run a generator, grill, camp stove or charcoal indoors, in a garage, or near open windows, even for a few minutes. Carbon monoxide has no smell and kills. See Carbon monoxide and fire.

Situation finder

Find what's happening. Do the first step right away, then read the section.

Headache, dizziness, nausea, or several people feel sick at once, especially with a heater or engine running

Get everyone into fresh air now. Call 911 from outside.

Read: Carbon monoxide

Someone is very cold, shivering hard, confused or slurring words

Move them to the warmest spot, remove wet clothes, wrap the chest and core. Call 911 if confused or drowsy.

Read: Health

Someone is very hot, confused, or has stopped sweating

Call 911. Move them somewhere cooler and cool them with wet cloths and fanning.

Read: Health

Medicine needs to stay cold (like insulin)

Keep it in a closed cooler or the closed fridge. Never freeze it.

Read: Health

Someone relies on powered medical equipment

Switch to backup battery. If you can't keep it running, call 911 or go where there is power.

Read: Health

Tap water stopped or officials say not to drink it

Use stored water. Treat any other water before drinking.

Read: Water

The house is getting cold

Choose one small interior room, close it off, gather everyone there.

Read: Staying warm

The house is getting hot

Move to the lowest, shadiest room. Drink water. Wet cloths on skin.

Read: Staying cool

Fridge has been off more than 4 hours

Check temperatures. Cook or move what you can to coolers.

Read: Food

Toilets won't flush

Don't use them. Set up the bucket toilet.

Read: Toilets

You smell gas

Leave the house now. Don't flip switches. Call 911 or the gas company from outside.

Read: Carbon monoxide and fire

A power line is down

Stay at least 35 feet away. Call 911.

Read: Carbon monoxide and fire

Phones are dying or calls fail

Low power mode, texts only, one phone on at a time.

Read: Communication

A family member isn't home

Text them your meeting plan. Use the out-of-area contact.

Read: Communication

Running out of battery power

Cycle the fridge, charge only phones and lights, recharge from sun or car.

Read: Backup power

A neighbor hasn't been seen

Knock and check, with a second person if you can.

Read: Neighbors

It's day 3 or more and no end in sight

Take stock of water, food, medicine and warmth. Decide whether to stay or go.

Read: When to leave

The power just came back

Check the fridge and freezer before eating anything.

Read: When power returns

What a long outage looks like

The best preparation is walking through it in your head, as a family, before it happens. Read this out loud together. At each stage, ask: **what would we do, what would we need, and who would handle it?**

Hour 0 to 4: it's probably short

Lights out, internet down, phones still work. Most people wait. You do the first hour steps, write down the time, keep the fridge shut and listen for news. If it's cold out, start choosing your warm room now. If it's hot, close the blinds.

Hours 4 to 12: the first decisions

The fridge passes its safe window around hour 4. Move milk, meat, leftovers and medicine into a cooler with ice or frozen water bottles from the freezer. Eat the most perishable food first. Charge phones from power banks or a battery station. Cell service may slow down as towers run on backup batteries.

Night 1: the house changes

In winter, an average home can lose a lot of heat overnight. Everyone sleeps in the warm room, in layers, with hats on. In summer, upstairs rooms stay hot; sleep on the lowest floor. Flashlights by every bed. One adult knows where the first aid kit is.

Day 2: the routine starts

Stores and gas stations near you may be dark or cash only. ATMs may not work. Freezer food starts thawing in a half full freezer. Now you need a **daily rhythm**: a morning check of every person, water count, food plan for the day, battery plan, and a neighbor check. If you're on a well or water pressure drops, start

rationing: 1 gallon per person per day for drinking and basic hygiene.

Days 3 to 4: supplies and stress

This is where preparation shows. Families without stored water start looking for it. Medications run low. Kids get restless and adults get short tempered from cold, heat, poor sleep and worry. Toilets may stop flushing if water service is affected. Trash builds up. Keep the routine, keep everyone fed and hydrated, and keep talking to neighbors. Decide together whether staying is still the right call (When to leave).

Week 1 to 2: community

Long outages are survived by streets, not single households. Neighbors who pool water, food, cooking, a battery station or solar panel, first aid skills and childcare do far better than any one home alone. Check on the people nobody has seen. Share what you have extra of. Write down who needs what.

When it ends

Power comes back, often in stages. Check your food before you eat, restart appliances one at a time, then restock and write down what you wish you'd had. That list becomes your next prep checklist.

Give everyone a job. People cope better with a role. In a family of three adults, for example: one handles **water and food**, one handles **power, light and warmth**, one handles **people** (health, medicine, checking neighbors, keeping in touch). Everyone knows where the shutoffs, the first aid kit and the meeting place are.

What every adult and teen should be able to do

- [ ] Find the flashlights, radio, first aid kit and water in the dark
- [ ] Shut off the main water valve
- [ ] Find the electrical panel and reset a breaker
- [ ] Know where the gas meter is, and that you only shut gas off if you smell it or officials tell you to
- [ ] Treat water with bleach and by boiling
- [ ] Run the battery power station and plug in the fridge
- [ ] Recognize carbon monoxide poisoning, hypothermia and heat stroke
- [ ] Text the out-of-area contact and know the two family meeting places
- [ ] Open the garage door by hand (the red release cord)

Use what you already have

Before buying anything, take stock. Most homes already hold days of help. Walk around with your phone and record a short video of each place: the pantry, kitchen cupboards, fridge and freezer, bathrooms, closets, garage, basement, shed and cars. Then you'll know exactly what you have when the lights are off, and you can keep the list current every few months.

Water you already have

- The water heater (often 30 to 80 gallons), the pipes, ice, canned fruit juice, and the toilet tank (not the bowl). See Water.
- Coolers, clean buckets with lids, pitchers and pots can all hold water. Fill them when a storm is forecast.

Warmth you already have

- Sleeping bags, camping pads, comforters, wool blankets, coats, hats and gloves. Put every one in the warm room.
- Camping tents set up indoors over a bed hold body heat well.
- Mylar emergency blankets, bubble wrap or cardboard taped over windows cut heat loss.

Cooling you already have

- Battery and USB fans, spray bottles, washcloths, a kiddie pool or tub of cool water for feet.
- Foil or light colored sheets in sunny windows reflect heat.

Light and power you already have

- Flashlights, headlamps, camping lanterns, solar garden lights (charge them outside by day, bring them in at night), glow sticks, and the batteries in remote controls and toys.
- Laptops and power tool batteries can charge phones with the right adapter. The car charges phones and runs a radio, outdoors only.

Cooking you already have

- A gas grill, charcoal grill, camp stove or fire pit can cook for the family, **outdoors only**, away from doors and windows.
- Count your propane tanks and charcoal. A typical 20 pound grill tank lasts many meals if you cook simply.
- A gas stovetop can usually be lit with a match. Never use it or the oven to heat the house.

Sanitation and safety you already have

- Buckets, contractor or kitchen trash bags, cat litter, sawdust, bleach, hand sanitizer and baby wipes make a working toilet and hand washing station. See Toilets.
- Tarps, duct tape, rope, a hand saw, work gloves and a basic tool kit handle most quick repairs.
- Smoke and carbon monoxide alarms need working batteries. Check them first.

Food you already have

Most pantries hold more than people think. Count roughly: cans, boxes, jars, snacks, baking staples, frozen food. Eat in the right order (fridge, then freezer, then pantry), and use the household calculator in the offline guide to see how many days it covers.

Keep it current. Every few months, or when the clocks change, take a fresh walk-through video. Food gets eaten, batteries get used, medicines expire. Swap out anything past its date.

Water

How much you need

Plan on **1 gallon per person per day**, for drinking and basic hygiene. Keep at least a 3 day supply, and 2 weeks if you can. Nursing mothers, sick people, kids and anyone in hot weather need more.

People	3 days	1 week	2 weeks
1	3 gal	7 gal	14 gal
2	6 gal	14 gal	28 gal
3	9 gal	21 gal	42 gal
4	12 gal	28 gal	56 gal
5	15 gal	35 gal	70 gal
6	18 gal	42 gal	84 gal

Pets need water too. A common rule of thumb from vets is about 1 ounce per pound of body weight per day, more in heat.

Storing it

- [ ] Buy sealed bottled water and keep it until the date on the label, or
- [ ] Fill clean, food-grade containers (never old milk jugs, which are hard to clean and break down) and replace every 6 months
- [ ] Store in a cool, dark place away from chemicals and fuel
- [ ] Label each container with the date you filled it

Hidden water already in your home

- **Water heater:** often 30 to 80 gallons. Turn off its power or gas first, let it cool, open a hot water tap

upstairs to let air in, then drain from the valve at the bottom into a clean container. Treat it before drinking if it looks cloudy.

- **Pipes:** open the highest faucet in the house, then catch the water from the lowest one.
- **Ice cubes** and the liquid in canned fruits and vegetables.
- **Toilet tank** (the tank, never the bowl) is usable if no cleaning chemicals are in it. Treat it first.
- **Never drink** water from a waterbed, swimming pool, hot tub, radiator or boiler. Pool water is fine for flushing toilets.

If your water service is shut off or officials report a problem, close your main water valve so contaminated water can't flow into your pipes.

Making water safe

Boiling is the best way. If water is cloudy, let it settle and filter it through a clean cloth or coffee filter first.

1. Bring to a rolling boil for **1 minute**. Above **6,500 feet** elevation, boil for **3 minutes**.
2. Let it cool. Store in clean, covered containers.
3. Pour it back and forth between two clean containers to improve the flat taste.

Bleach, if you can't boil. Use regular, unscented liquid household bleach (6% or 8.25% sodium hypochlorite). No scented, color-safe or "splash-less" bleach.

Water	6% bleach	8.25% bleach
1 quart	2 drops	2 drops
1 gallon	8 drops	6 drops
2 gallons	16 drops (1/4 teaspoon)	12 drops (1/8 teaspoon)
4 gallons	1/3 teaspoon	1/4 teaspoon
8 gallons	2/3 teaspoon	1/2 teaspoon

1. Add the bleach, stir, and **wait 30 minutes**.
2. It should have a slight chlorine smell. If it doesn't, add the same amount again and wait another 15 minutes.
3. Keep an eyedropper with your bleach so you can count drops in the dark.

Bleach doesn't remove chemicals, fuel or heavy metals. If water may have chemicals in it (flood water, near a spill), don't drink it. Water filters sold for camping remove many germs but not all viruses; follow the maker's directions and boil or bleach too if unsure.

Food

Eat in this order

1. **Fridge first.** A closed fridge keeps food safe about **4 hours**. Eat the most perishable things first: leftovers, meat, dairy, cut fruit.
2. **Freezer next.** A **full** freezer stays frozen about **48 hours** if you keep it closed, a **half full** one about **24 hours**. Frozen food is a cooler for itself, so keep it packed together.
3. **Pantry last.** Canned and dry food keeps, so save it.

The food safety rules

- Keep an appliance thermometer in the fridge and freezer. Safe is **40°F or below** in the fridge and **0°F or below** in the freezer.
- **Throw out** meat, poultry, seafood, milk, eggs, soft cheese, cooked leftovers and cut fruit that has been **above 40°F for more than 2 hours**.
- Frozen food that still has ice crystals, or is 40°F or below, can be refrozen or cooked.
- **Never taste food to check it.** Spoiled food can look and smell fine. When in doubt, throw it out.
- After 4 hours, move fridge food into coolers with ice, frozen gel packs or frozen water bottles. In winter, outdoor cold is not reliable: sun can warm food and animals can get into it.
- Hard cheeses, butter, fresh whole fruits and vegetables, peanut butter, jelly, mustard and ketchup usually keep safely at room temperature for a while. When unsure, check the USDA guidance in the Sources.

How much food

Plan for at least 3 days, and 2 weeks if you can. Calorie needs vary a lot by age, size and activity; about **2,000 calories a day** is a common planning number for an adult, less for young children, more for teens and very active or cold people. Staying warm burns calories, so eat regularly in winter.

A 2-week no-cook pantry

- [ ] Peanut butter or other nut butters
- [ ] Canned tuna, chicken, salmon, beans and chili (with a manual can opener)
- [ ] Canned fruit and vegetables in juice
- [ ] Crackers, whole grain cereal, granola, rice cakes
- [ ] Protein bars, trail mix, nuts, dried fruit
- [ ] Shelf-stable milk or powdered milk, juice boxes
- [ ] Instant oatmeal and ready-to-eat soups (can be eaten warm or not)
- [ ] Baby formula and baby food if you have an infant, with ready-to-feed formula so you don't need to mix with water
- [ ] Food for any special diets and allergies in your household
- [ ] Comfort food: hard candy, cookies, coffee or tea bags
- [ ] Paper plates, cups, utensils, foil, trash bags (dish water may be scarce)

Cooking without power

Camp stoves, grills and propane burners are for **outdoors only**, away from doors and windows. A gas stovetop can usually be lit with a match during an outage, but never use the oven or stovetop to heat the house. A small electric kettle or hot plate can run

on a large battery power station, but uses a lot of its charge.

Sprouts: fresh food from your pantry

After a week, fresh vegetables are gone. Seeds sold for sprouting (alfalfa, mung beans, lentils, broccoli) grow into fresh greens in 3 to 6 days with only a jar and a little water.

1. Use seeds labeled for sprouting and safe water. Soak 1 to 2 tablespoons in a jar of water overnight.
2. Drain, rinse and drain again, 2 or 3 times a day. Keep the jar tilted so water runs out.
3. Eat when the sprouts are a short length, usually day 3 to 6. Lentils and mung beans can also be cooked.

The FDA warns raw sprouts can carry bacteria. Children, older adults, pregnant women and people with weak immune systems should cook sprouts thoroughly or skip them.

Staying warm safely

A house without heat cools slowly at first and then steadily. The goal is to keep **people** warm, not the whole house.

1. **Pick one room** before the house gets cold: small, on the side away from the wind, few windows, ideally an inner room. Close the doors to every other room.
2. **Seal it.** Close curtains, hang blankets over windows and doorways, roll towels against the bottom of doors.
3. **Everyone sleeps there,** together. Body heat adds up. A small tent or blanket fort over the bed holds even more heat.
4. **Dress in layers:** wool or synthetic next to the skin, then fleece, then a shell. Cotton gets damp and pulls heat away. Hats and socks to bed.
5. **Stay dry.** Change damp clothes and socks right away.
6. **Eat and drink.** Your body makes heat from food. Warm drinks help. Skip alcohol; it makes you lose heat faster.
7. **Move a little** through the day to warm up.

Heaters

- Use only heaters **labeled for indoor use**, and follow the maker's directions exactly, including any ventilation.
- Keep anything that can burn at least **3 feet** away. Never leave a heater running while you sleep or leave the room unless it is designed for that.
- A battery carbon monoxide alarm in the room is a must with any fuel-burning heater.

- A fireplace or wood stove works if the chimney has been cleaned and inspected. Open the damper, use dry wood, and keep a screen in front.
- Never use a gas oven or stovetop to heat a room. Never bring a grill, camp stove or outdoor heater inside.

Protect your pipes

- Let faucets drip on outside walls and open the cabinet doors under sinks.
- If the house will get below freezing for a long time, shut the main water valve and open all faucets to drain the pipes, and drain the water heater (save that water to drink).

The car

A running car can warm people and charge phones, but only **outside** in the open, never in a garage, even with the door open. In snow, make sure the tailpipe is clear before starting the engine.

Staying cool safely

Heat is just as dangerous as cold, and it's worse for older adults, babies, people with health problems and anyone on certain medicines.

1. **Close blinds and curtains** on the sunny side in the morning. Open windows at night if it is cooler outside than in, and close them again by mid-morning.
2. **Go low.** The lowest floor or basement is the coolest place in the house.
3. **Drink water regularly,** before you're thirsty. Avoid alcohol and lots of sugar.
4. **Cool your body:** wet cloths on the neck, wrists and armpits, a cool (not ice cold) shower or bath if you have water, a damp sheet and a battery fan.
5. **Wear** light, loose, light colored clothing.
6. **Rest** in the hottest part of the day. Do heavy work early or late.
7. **Go somewhere cool** for a few hours if you can: a cooling center, library, or a neighbor or family member with power. Call 211 to find one.

> Never leave a child, an older adult or a pet in a parked car, not even for a few minutes. Check on neighbors who live alone twice a day in a heat wave.

Fans help but can't prevent heat illness once it is very hot. Know the warning signs in Health and first aid.

Carbon monoxide and fire

More people are hurt by carbon monoxide and fires during outages than by the outage itself.

Carbon monoxide (CO)

- CO is a gas you can't see or smell. It comes from generators, grills, camp stoves, cars, fuel heaters and fireplaces.
- **Never** use a generator, grill, camp stove or charcoal inside a home, garage, basement, crawlspace or tent, even with doors and windows open.
- Run generators outside, at least **20 feet** from any door, window or vent, pointed away from the house.
- Have **battery-powered CO alarms** (or plug-ins with battery backup) on every level and outside sleeping areas. Test them.
- **Signs:** headache, dizziness, weakness, upset stomach, vomiting, chest pain, confusion. People who are asleep or drinking can die before they notice. If several people or pets get sick at once, think CO.
- **If you suspect CO:** get everyone outside into fresh air right away, then call 911. Don't go back in until officials say it's safe.

Fire

- Use flashlights and battery lanterns, not candles. If you must use a candle, put it in a sturdy holder, away from anything that burns, and never leave it alone.
- Test smoke alarms and keep a fire extinguisher where you can reach it.
- Plan two ways out of every room.

- Store fuel (gas, propane, kerosene) outside the living space, in approved containers.
- Let a generator cool before refueling it.

Gas and power lines

- If you smell gas or hear a hissing sound, leave right away, leave the door open, and call 911 or the gas company from outside. Don't flip switches or light anything.
- Don't shut off natural gas unless you smell it or officials say to. Once it is off, only the gas company should turn it back on.
- Stay at least 35 feet away from downed power lines and anything they touch, including water and fences. Assume every line is live.
- Never connect a generator to your home's wiring unless an electrician has installed a transfer switch. Backfeeding can kill utility workers.

Backup power: battery stations

A portable battery power station (a large battery with outlets, charged from the wall, a car or solar panels) is the safest backup power for most homes, because it makes no fumes and can be used indoors. Here is how to get the most from any brand.

Read the two numbers that matter

- **Capacity, in watt-hours (Wh):** how much energy it stores. A 1,000 Wh station can, in theory, run a 100 watt device for 10 hours.
- **Output, in watts (W):** the most it can power at once. It must also handle the **surge** when a fridge compressor starts, which can be 3 to 5 times its running watts. Check the station's "surge" or "peak" rating.
- You only get about **85%** of the capacity in real use, because the inverter loses some energy turning battery power into wall power.

Find your fridge's watts

- Look on the label inside the fridge or on the back. If it lists **amps**, multiply by 120 to get watts (example: 1.5 amps x 120 = 180 watts).
- Many modern fridges run at about 100 to 200 watts while the compressor is on, and the compressor is on only part of the time.
- Best of all, plug the fridge into the station for an hour on a normal day and see what the station's screen shows.

Estimate how long it will last

Plugged in nonstop: the fridge turns its compressor on and off on its own, often running about a third to half the time.

Hours = (Wh x 0.85) ÷ (fridge watts x share of time running)

Example: 1,500 Wh station, 150 W fridge running 40% of the time: (1,500 × 0.85) ÷ (150 × 0.4) = about **21 hours**.

Cycling it by hand stretches the battery much further. Plug the fridge in for about **1 hour, every 4 hours** (6 hours a day). Keep it closed in between and check the thermometer.

Days = (Wh x 0.85) ÷ (fridge watts x hours plugged in per day)

Same example: (1,500 × 0.85) ÷ (150 × 6) = about **1.4 days** per charge, and longer in a cool house. Use the power calculator in the offline guide for your own numbers.

Make the battery last

1. Keep the fridge closed. Every opening costs cold you have to buy back with battery.
2. Put frozen water bottles in the fridge to hold the cold between cycles.
3. Turn the fridge's own setting a little colder before the cycle, not warmer.
4. Turn off the station's AC outlets when nothing is plugged in; the inverter uses power just being on.
5. Use the USB and 12 volt car ports for phones, lights and fans when you can. They waste less than the wall outlets.
6. Priority order: medicine and medical devices, phones and radio, lights, fridge, everything else.
7. Skip heaters, hair dryers, microwaves and coffee makers. They drain a station in minutes.

Recharging

- **From the car:** the 12 volt socket recharges slowly. Only with the engine running, outdoors, never in a garage.
- **From solar panels:** see the next section.
- Keep the station charged all year. Top it up every few months, and fully charge it whenever a storm is forecast.

Gas generators

If you have one, it must run outside, at least 20 feet from the house, never in a garage. Store fuel safely and run it every few months. Use heavy outdoor extension cords. Never plug it into a wall outlet.

Solar charging

Portable solar panels can recharge a power station during a long outage. They help a lot in summer and much less in winter, so plan for both.

How much power to expect

A panel's rating (like 100 W or 200 W) is what it makes in perfect, direct sun. Real output is lower. A rough estimate:

Watt-hours per day = panel watts x hours of strong sun x 0.75

- **Summer, clear sky:** often 5 to 6 hours of strong sun. A 200 W panel might put about 750 to 900 Wh into the battery.
- **Winter, clear sky:** often only 2 to 3 hours of strong sun, less the farther north you are. The same panel might put in about 300 to 450 Wh.
- **Cloudy days:** expect a small fraction of that, sometimes almost nothing. Don't count on solar to run a fridge through a cloudy winter week.

Aim it right

1. Face the panel toward the sun: **south** if you live in the Northern Hemisphere.
2. Tilt it up so the sun hits it straight on. A simple test: the panel's shadow behind it should be as small as possible.
3. Winter sun is low, so tilt panels steeper (more upright). Summer sun is high, so tilt them flatter.
4. Turn the panel to follow the sun every 2 to 3 hours. This can add a lot of power.
5. Avoid any shade, even a little. One shaded corner can cut output a lot.

6. Keep panels clean, and brush off snow and frost in the morning.
7. Panels work better when cool. Prop them up so air can flow behind them.

Practical tips

- Charge in the middle of the day, when the sun is strongest.
- Put the station in the shade, near a window, with the cable running out to the panel. Don't let the station itself bake in the sun.
- Bring panels in at night and in high winds.
- Practice once on a sunny weekend so you know the connectors fit and what your setup really produces.

Health and first aid

> Call **911** for chest pain, trouble breathing, severe bleeding, unconsciousness, confusion, seizures, or signs of carbon monoxide poisoning or heat stroke. If calls fail, try texting 911.

Medicines

- Keep at least a week's supply of daily medicines, more if your doctor and insurance allow. Ask your pharmacist about an emergency supply.
- Keep a written list of every medicine, dose and time, plus allergies, for each person.
- **Insulin and other refrigerated medicines:** the FDA says insulin may be kept unrefrigerated between 59°F and 86°F for up to 28 days. Keep it out of heat and direct sun, and never let it freeze. A cooler with ice packs works; don't let insulin touch the ice. Check each medicine's own label, and ask your pharmacist.

Powered medical equipment

- Tell your power company if someone depends on oxygen, a breathing machine, a feeding pump, dialysis or a powered wheelchair. Many keep a priority or medical needs list.
- Know how long each device runs on battery. Have a backup battery or power station, and a plan for where to go if it runs low (a hospital, a fire station, family with power).
- Keep the maker's phone number and manual with the device.

Hypothermia (body too cold)

Signs: shivering, exhaustion, confusion, fumbling hands, memory loss, slurred speech, drowsiness. Babies may have bright red, cold skin and very low energy. Body temperature below 95°F is an emergency.

1. Call 911 if they are confused, drowsy or their temperature is below 95°F.
2. Move them to a warm place and remove wet clothing.
3. Warm the **center** of the body first: chest, neck, head and groin, with dry blankets, layers, and skin to skin contact under blankets if needed.
4. Give warm, sweet drinks only if they are alert. No alcohol.
5. Keep them dry and wrapped, including the head and neck, even after they warm up.

Frostbite

Signs: white or grayish yellow skin, skin that feels firm or waxy, numbness. Get them somewhere warm. Soak the area in warm (not hot) water or use body heat. Don't rub it, and don't use a heating pad, heater or fire, because numb skin burns easily. Seek medical care.

Heat exhaustion and heat stroke

Heat exhaustion: heavy sweating, cold, pale, clammy skin, fast weak pulse, nausea, muscle cramps, tiredness, dizziness, headache, fainting. Move to a cooler place, loosen clothes, put cool wet cloths on the body, and sip water. Get medical help if they vomit, get worse, or it lasts more than an hour.

Heat stroke is an emergency: body temperature 103°F or higher, hot red dry or damp skin, fast strong

pulse, headache, confusion, passing out. **Call 911.** Move them somewhere cooler and cool them with wet cloths, a cool bath if possible, and fanning. Don't give them anything to drink.

Dehydration

Signs include thirst, dark urine or little urine, dizziness, dry mouth and, in babies, fewer wet diapers. Sip water regularly; don't wait for thirst. Oral rehydration packets or sports drinks help after vomiting or diarrhea.

Bleeding

1. Call 911 for heavy bleeding.
2. Press firmly on the wound with a clean cloth or gauze, and keep pressing. Don't lift it to check.
3. If blood soaks through, add more cloth on top and press harder.
4. For life-threatening bleeding from an arm or leg, a tourniquet placed 2 to 3 inches above the wound (not on a joint) can save a life, if you have one and know how to use it.

Burns

Cool the burn under cool (not ice cold) running or poured water for at least 10 minutes. Remove rings and tight items before swelling. Cover loosely with a clean, dry dressing. Don't use ice, butter or ointment on a serious burn. Call 911 for large burns, burns on the face, hands, feet or groin, or any burn on a baby or older adult that looks deep.

Stomach illness

Outages raise the risk from spoiled food and poor handwashing. Wash hands with soap and clean water,

especially after the toilet and before food. Hand sanitizer with at least 60% alcohol helps when water is short.

First aid kit

- [ ] Bandages in several sizes, gauze pads, medical tape, elastic wrap
- [ ] Gloves, scissors, tweezers, a thermometer
- [ ] Pain and fever reducer for adults and kids, antihistamine, anti-diarrhea medicine
- [ ] Antibiotic ointment, burn gel, hydrocortisone cream
- [ ] Oral rehydration packets
- [ ] A tourniquet and a first aid manual
- [ ] A week or more of everyone's prescription medicines, and spare glasses

Toilets and sanitation

If the water supply stops, or the sewer backs up, the toilet becomes a health problem fast. Don't keep flushing if sewage is backing up into drains.

If water stopped but the sewer works

You can flush by pouring a bucket of water (from the bathtub, pool, or rinse water) quickly into the bowl. Save drinking water for drinking.

The bucket toilet

1. Line a 5 gallon bucket (or the empty toilet bowl) with two heavy trash bags.
2. After each use, cover waste with a scoop of cat litter, sawdust, dry dirt or shredded paper. This cuts odor and moisture.
3. If you can, pee in a separate container. A dry toilet smells far less. Urine can be poured on soil away from water sources and gardens, or down a working drain.
4. Keep a tight lid on it. Keep toilet paper and hand sanitizer next to it.
5. When the bag is about half full, tie it off, put it in a second bag, and store it in a covered trash can outside, away from people and pets, until trash pickup returns.

Keeping clean

- [ ] Wash hands with soap and clean water after the toilet and before food. Use hand sanitizer (60% alcohol or more) in between.
- [ ] Baby wipes or no-rinse body wash for bathing
- [ ] Paper plates and utensils to save dish water

- [ ] Heavy trash bags, ties, gloves, cat litter or sawdust, a bucket with a lid
- [ ] Feminine supplies, diapers and wipes
- [ ] Household bleach for cleaning (1/3 cup per gallon of water for surfaces)

Communication

Make phones last

- Turn on low power mode, dim the screen, and close apps. Turn off Wi-Fi, Bluetooth and location when you don't need them.
- In a long outage, keep only one family phone on at a time and turn the rest fully off. Agree on check-in times.
- Airplane mode saves power when there's no signal, because a phone searching for a tower drains fast.
- Charge from power banks, the power station's USB ports, solar chargers, or a car running outdoors.

Text, don't call

Texts often get through when calls don't, and they use less battery. Keep calls short and save them for emergencies. Cell towers have backup power that can run out after hours or days, so service may get weaker as an outage drags on.

Radio

A battery or hand-crank radio is how you'll hear news when the internet is down. A **NOAA Weather Radio** gets official weather and emergency alerts. Know your local news station's number on the dial.

The family communication plan

1. **Out-of-area contact:** one relative or friend in another state everyone checks in with. Long distance calls and texts can work when local ones don't.
2. **Two meeting places:** one right outside your home (for a fire), and one in your neighborhood

or town in case you can't get home.

3. **Write it down.** Every person carries a paper card with key numbers. Phones die and nobody remembers numbers anymore.
4. **Know the plan at work and school:** how the school releases kids, who is allowed to pick them up.
5. **Practice it** twice a year.

Off-grid communication

When phones, texts and the internet are all down, the only plan that works is the one you agreed on **before**. Work this out now with the people closest to you: family, close friends, and your neighbors.

Agree on these now

1. **Two meeting places and times.** One near home, one in town. Pick fixed times to show up there (for example 9 AM and 5 PM each day) so nobody waits all day.
2. **A radio channel.** Inexpensive FRS walkie-talkies need no license. In a neighborhood they often reach a few blocks to a mile or two (the distance on the box is best case). Agree on a channel, a backup channel and a privacy code. Privacy codes don't make it private: anyone can listen, so never say what you wouldn't shout down the street.
3. **Check-in times to save batteries.** Radios off most of the day, on for 10 minutes at agreed times (for example on the hour, or 8 AM, noon and 6 PM).
4. **A paper message board.** A spot everyone knows (the meeting place, a church door, a neighbor's porch) where notes get left. At home, leave a note inside the door saying where you went and when.
5. **Runners.** If radios fail, who walks messages, in pairs and in daylight.
6. **Signals.** Green in the window = we're OK, red = we need help. Three whistle blasts = help.
7. **Your out-of-area contact.** If anyone gets a moment of signal, one text to them can tell the

whole family you're safe.

Longer range, if someone is interested

- **GMRS radios** have more power and range than FRS. They need an FCC license, with no test, and one license covers your family.
- **Ham (amateur) radio** can reach across a region or farther. It needs a license test; local ham clubs teach it and often help their towns in emergencies.
- **CB radios** need no license and are common in trucks.
- **Mesh texting devices** (small radios that pair with your phone and pass text messages from device to device) need no license or cell service. The more neighbors who have one, the farther messages travel.
- A **NOAA Weather Radio** only receives, but it's how official alerts reach you.

Our off-grid plan	
Meeting place near home, and times	
Meeting place in town, and times	
Radio channel, privacy code	
Backup channel	
Radio check-in times	
Message board spot	
Out-of-area contact	
Neighborhood channel and meeting time	

- [ ] Two FRS walkie-talkies per household (more for larger families), with spare batteries or rechargeable ones and a way to charge them
- [ ] Channel, code and check-in times written on a card in every go bag
- [ ] Tested once: everyone tries the radios from the meeting places

Money, cars and fuel

- **Cash:** card readers and ATMs need power and internet. Keep some cash in small bills at home.
- **Gas tank:** keep the car at least half full. Gas pumps need power, so stations may close.
- **The car is a resource:** a charger for phones and the power station, a warm or cool place to sit, a radio. Only outdoors, engine running only in the open, tailpipe clear of snow.
- **Garage door:** learn how to open it by hand with the release cord.
- **Documents:** copies of IDs, insurance, prescriptions and important papers in a waterproof bag, plus photos of them on a password-protected device or account.

Kids, older adults and stress

Kids

- Give them a simple job: flashlight keeper, water counter, pet helper. Kids cope better when they have a role.
- Keep routines (meals, bedtime) as normal as you can.
- Pack books, cards, board games, crayons and a favorite comfort item.
- Tell them the truth simply and calmly. Kids take their cues from the adults.

Older adults and people with disabilities

- Check twice a day in very cold or very hot weather. Older adults feel temperature changes less and get sick from them faster.
- Make sure they have medicine, water, light, a way to call for help, and a plan for any powered equipment.
- Hearing aid batteries, spare glasses, mobility aids and their charging plan.

Stress

Cold, heat, darkness, poor sleep and uncertainty wear everyone down. Eat, drink water, sleep in shifts if needed, get outside in daylight, and talk about it. Check in on how each person is doing, not just what they need. If someone is in crisis, call or text **988**, the Suicide and Crisis Lifeline.

Pets

- [ ] At least 2 weeks of food, in an airtight container
- [ ] Water: a common rule of thumb is about 1 ounce per pound of body weight per day, more in heat
- [ ] Medicines and copies of vaccination records
- [ ] Leash, harness, carrier or crate for each pet
- [ ] Cat litter and box, or bags for dog waste
- [ ] A current photo of you with each pet, in case you get separated
- [ ] A list of pet-friendly shelters, hotels and family outside the area

Pets feel cold and heat too. Bring them into the family's warm or cool room. Many public shelters only accept service animals, so plan where pets would go if you have to leave.

Neighbors and community

In a long outage, the street is the safety net. Ten households that know each other can share what no single home has. And when everyone knows that if nobody harms anybody, everybody will have what they need, there's far less reason for anyone to be harmed. Agreeing on that ahead of time is the most important part of the plan.

Organize your street now

1. **Meet the neighbors** on your block. Swap names and phone numbers. A paper list matters most.
2. **Take stock of skills:** nurses, doctors, EMTs, electricians, plumbers, mechanics, people who hunt, garden, cook for crowds, speak other languages, or care for kids.
3. **Take stock of equipment:** generators, power stations, solar panels, chainsaws, wood stoves, large coolers, camp stoves, water filters, ham or CB radios.
4. **Know who's vulnerable:** older adults living alone, newborns, people who use oxygen or powered equipment, people without a car.
5. **Pick a gathering spot** (a driveway, a church, a community room) and a time each day to check in during an outage.

During an outage

- Check on vulnerable neighbors at least once a day, twice in extreme heat or cold. Go in pairs.
- Pool and share: one home with a wood stove can warm several families; one power station can charge a dozen phones; one grill can cook for the street (outdoors).

- Share news from radios and officials. Stop rumors.
- Keep a written list of who needs what, and who has extra.

Simple signals when phones are down

Agree on these with your neighbors ahead of time:

- A **green** sign or cloth in the front window: **we're OK**.
- A **red** sign or cloth: **we need help**, please knock.
- No sign: nobody has checked on us yet.
- A whistle: three short blasts means help.

Spreading the word

Knock in daylight, in pairs, and keep it to two minutes: who you are, that you're not selling anything, and that you're putting together a simple list so the street can help each other in an outage. Leave a short note with a link or your house number if nobody answers. Don't put notes in mailboxes, and never ask at the door what supplies or valuables people have. Free scripts, printable door notes, texts and announcements: mymembers.ai/apps/beready/kit

Churches and local groups

Many churches, community centers and CERT (Community Emergency Response Team) groups organize help during outages and offer free training. Your local emergency management office can tell you what's nearby. Ham radio clubs often help with communication when everything else is down.

When to leave home

Staying home is usually best. Leave, or move someone else out, when home stops being safe:

- You can't keep everyone warm and dry, or someone shows signs of hypothermia.
- The house is too hot to cool down, or someone shows signs of heat illness.
- Someone's medical equipment or medicine can't be kept running or safe.
- You're out of safe water and can't get more.
- Officials tell you to evacuate, or there is a gas leak, fire, flooding or structural damage.

Where to go

- Family or friends with power, outside the outage area
- Warming centers, cooling centers and shelters: call **211**, listen to local radio, or check the Red Cross shelter map when you have a signal
- A hotel outside the area, if roads are safe

Go bag (one per person)

- [ ] Water and snacks for the trip
- [ ] Medicines, the medication list, glasses
- [ ] Phone, charger, power bank
- [ ] Copies of IDs and insurance cards, cash
- [ ] Change of clothes, warm layer, sturdy shoes
- [ ] Flashlight, whistle, small first aid kit
- [ ] Pet supplies and leash

Before you leave: shut off the main water if pipes might freeze, unplug appliances, lock up, and leave a note saying where you went (inside, or with a trusted neighbor).

When power returns

1. **Check food before eating anything.** Check thermometers. Throw out perishable food above 40°F for more than 2 hours. Refreeze only what still has ice crystals or is 40°F or below.
2. Plug appliances back in **one at a time**, a few minutes apart, to avoid a surge.
3. Reset clocks, alarms, the thermostat, and any medical devices.
4. Check for frozen or burst pipes before turning the water back on.
5. Recharge every battery, power bank and the power station right away.
6. If your water was off or under a boil notice, follow officials' instructions before drinking tap water. Run taps to flush the lines.
7. Restock water, food, medicine and fuel.
8. **Hold a family debrief:** what worked, what we ran out of, what we wish we'd had. Add it to your checklist.

Family info sheet

Fill this in, print it, and keep a copy with your flashlights and one in each go bag. Phones die; paper doesn't.

Our household	
Address	
Meeting place outside the home	
Meeting place in town	
Out-of-area contact (name, phone)	
Neighbor we trust (name, phone)	
Doctor / pharmacy (phone)	
Power company outage line	
Water / gas company	
Insurance (company, policy #)	
Vet (phone)	

Person	Birthday	Medicines and doses	Allergies / conditions

Where things are	
Main water shutoff	
Electrical panel	
Gas meter and wrench	
Flashlights and batteries	
Stored water	
First aid kit and medicines	
Radio	
Power station and cords	
Cash and documents	

Who does what	
Water and food	
Power, light and warmth	
Health, medicine and people	
Pets	
Checking on neighbors	

Prep checklist

Work from the top down. The first group protects life; each group after that makes a long outage easier. Spread it over a few weekends. Nobody does it all at once.

1. This week (mostly free)

- [ ] Save this guide on every phone and computer, and print a copy
- [ ] Copy the guide and your family plan to a flash drive (two if you can); store one in a metal tin with a lid, inside a zip-top bag, with a phone adapter
- [ ] Fill in the family info sheet
- [ ] Pick an out-of-area contact and two meeting places; tell everyone
- [ ] Agree on your off-grid plan: radio channel, check-in times, message board spot
- [ ] Find the main water shutoff, electrical panel and gas meter, and show everyone
- [ ] Test smoke and carbon monoxide alarms; replace batteries
- [ ] Fill clean containers with water
- [ ] Put an appliance thermometer in the fridge and freezer
- [ ] Fill empty freezer space with containers of water to freeze
- [ ] Write down every person's medicines and doses
- [ ] Meet one neighbor you don't know yet

2. Life and safety

- [ ] Battery CO alarms on every level and near sleeping areas
- [ ] Flashlights or headlamps for every person, plus spare batteries

- [ ] Battery or hand-crank radio (NOAA Weather Radio if you can)
- [ ] 3 days of water (1 gallon per person per day), then build to 2 weeks
- [ ] 3 days of no-cook food, then build to 2 weeks; a manual can opener
- [ ] A week or more of prescription medicines; first aid kit
- [ ] Unscented bleach and an eyedropper
- [ ] Fire extinguisher

3. Warmth, cooling and comfort

- [ ] Warm sleeping bags or extra blankets for everyone; hats, gloves, wool socks
- [ ] Battery or USB fans, spray bottles
- [ ] Coolers and ice packs
- [ ] Indoor-safe heating plan (a heater labeled for indoor use, or a cleaned and inspected fireplace or wood stove)

4. Power and communication

- [ ] Power banks charged for every phone
- [ ] A car charger for every phone
- [ ] A portable battery power station sized for your fridge and medical needs
- [ ] A portable solar panel that fits the station
- [ ] Paper list of phone numbers for every person

5. Sanitation and household

- [ ] Two 5 gallon buckets with lids, heavy trash bags, cat litter or sawdust
- [ ] Toilet paper, wipes, hand sanitizer, soap
- [ ] Paper plates, cups, utensils, foil
- [ ] Duct tape, work gloves, a basic tool kit

- [ ] Cash in small bills; keep the gas tank at least half full
- [ ] Copies of documents in a waterproof bag

6. Family and community

- [ ] Pet supplies for 2 weeks
- [ ] Comfort items, games and books for kids
- [ ] A go bag for each person
- [ ] Neighbors' names and numbers on paper; agree on the window signals
- [ ] Take a first aid and CPR class (Red Cross or local)
- [ ] Do a lights-out practice evening

Practice: a lights-out evening

One evening, turn off the main breaker (or just agree not to use power) for 3 or 4 hours. It's the fastest way to find out what you're missing, and kids usually love it.

1. Start at dinner time. Make a no-cook dinner from the pantry.
2. Everyone finds their own flashlight in the dark.
3. Run the fridge on the power station for an hour and read the screen. Write down the watts.
4. Set up the warm room (or cool room) and see how it feels after an hour.
5. Each person texts the out-of-area contact. Each person says the two meeting places from memory.
6. Find the water shutoff and the panel by flashlight.
7. Talk through the long outage walkthrough. Who does what?
8. Afterward, write down three things you wish you'd had. Buy those first.

Sources

Every number in this guide comes from these organizations. When in doubt, follow them and your local officials.

- **Ready.gov**, power outages, water, food, family plans: ready.gov/power-outages, ready.gov/water, ready.gov/food, ready.gov/plan
- **CDC**, making water safe, carbon monoxide, cold and heat: cdc.gov/water-emergency, cdc.gov/carbon-monoxide, cdc.gov/winter-weather, cdc.gov/heat-health
- **American Red Cross**, power outage safety, first aid, shelters: redcross.org power outage, find an open shelter
- **USDA**, food safety in a power outage: fsis.usda.gov
- **FDA**, insulin and medicines in an emergency: fda.gov insulin storage
- **NOAA Weather Radio**: weather.gov/nwr
- **988 Suicide and Crisis Lifeline**: call or text 988