How to Use Your Battery to Survive in Place

In this section, we will go over the following steps to effectively incorporate your EcoFlow battery into your emergency plan for power outages.

Step 1: Set Up Your Battery

Step 2: Identify What Devices You'll Need

Step 3: Calculate Your Power Needs

Step 4: Prioritize Your Power Needs

Step 5: Make a Plan for Extended Outages

Backup battery power plays a crucial role in providing electricity during emergencies when the main power grid fails.

- Backup battery power allows for necessary devices and systems like lighting, communication devices, and medical equipment to continue working.
- Having a minimum 72-hour supply of backup battery power gives you time to assess the situation, seek assistance, and make necessary arrangements until regular power is restored.

We will cover general strategies to extend the amount of time you can survive in place during a power outage. **If you have questions about your specific medical needs or devices, please contact your healthcare provider or medical device manufacturer.**

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READY RESPOND RECOVER

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Step 1: Set Up Your Battery

Make sure you understand how the battery works and choose a convenient location to set it up.

We cover this information in more depth in How to Use the Ecoflow Delta 2 Max and How to Use the Ecoflow Delta Pro.

Here are a few important reminders as you set up your battery:

- The batteries are very heavy, so you may need help with unpacking and setting up your battery
- Choose a location where:
  - The battery can remain plugged in to a wall outlet at all times
  - It is in the room with your most important devices; preferably with your devices already connected to it
  - This way, you'll have immediate backup power when you need it with no interruption
- Turn on the AC ports and leave them on; that way the battery is ready to power your larger devices
- If you are planning to use the EcoFlow app to remotely monitor and control your battery, make sure your internet router is also connected to your battery.

Step 2: Identify which devices you'll need in an emergency

Set up your Power Prioritization Worksheet

As you read this section, we recommend filling out this Power Prioritization Worksheet to help you prioritize your power needs.

There are three ways you can access this worksheet:

1. Download the Microsoft Excel document and fill it out on your computer
2. Make a copy of the document and fill it out using Google Spreadsheets
3. Print it out and fill it out by hand

Once you've filled out the worksheet, we recommend printing it out and storing it with your battery. That way, you can easily reference it as needed during an emergency.

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Power Prioritization Worksheet

Device Name	Days/Week Used	Hours/Day Used	Hours of Power Used	Internal Battery	External Battery	Other Battery	Alternate Charging	Low Tech Solution	Priority

Now, we'll review common home medical devices that you may need to power during an emergency.

You can use this list as a starting point to help you identify the devices you'll need in an emergency. You can add the devices that apply to you to your Power Prioritization Worksheet and write in additional devices as needed.

- Apnea Monitors
- Augmentative and Alternative Communication (AAC) Devices/Software
- Automatic Door Openers
- Chair Lifts
- Continuous Positive Airway Pressure (CPAP) Machines
- Bi-level Positive Airway Pressure Machines (BiPAP)
- Continuous Glucose Monitors (CGMs) and Insulin Pumps
- Defibrillators
- Dialysis Machines
- _____
- _____
- _____
- _____
- Elevators/Stair Lifts
- Feeding Tubes and Pumps
- Hospital Beds/Air Mattresses
- Infusion Pumps
- Intravenous Pumps (IVs)
- Medical Refrigeration
- Nebulizers
- Oxygen Concentrators
- Power Wheelchairs/Scooters
- Suctioning Devices
- Vacuum-assisted closure (VAC)
- Ventilators
- _____
- _____
- _____
- _____
- _____

Please note: If you are intending to use the Ecoflow app to remotely monitor your battery, Wi-Fi is crucial, and the router should be plugged into the battery. Depending on the location of your router, you may need an extension cord to connect it to the battery.

Now, we'll go over other considerations for what you'll need to survive in place during an emergency.

The **C-MIST Framework** is a tool for identifying needs that must be considered in planning for a disaster or emergency. C-MIST stands for Communication, Maintaining Health, Independence, Support & Safety, and Transportation.

We'll go over each of these categories and ask brainstorming questions to help you consider what you'll need during an extended power outage.

ASPR, 2021 https://www.phe.gov/Preparedness/planning/abc/Pages/at-risk.aspx

Communication

What devices do you use for communication? E.g. smartphone, laptop

What do you need to communicate with your personal support network and emergency services?

Maintaining Health

Other than those listed on the first page of this section, what devices do you need to help you stay healthy while surviving in place?

What do you need to monitor and maintain your health? E.g. medication reminders, blood pressure cuff, pulse oximeter

What do you need to minimize preventable health conditions? E.g. first aid kit, hygiene kit, clean water, ways to prepare food

Independence

What do you (or those you care for) need to remain independent?

Do you use mobility devices, assistive technology, or vision/communication aids? E.g. power wheelchair, mobility scooter, hearing aids, cochlear implants, speech generating device, smart home devices

Safety & Support

What do you need to keep yourself safe during a power outage? E.g. emergency lighting, flashlights, smoke detectors, digital alarms/reminders

Transportation

What do you need to access personal transportation and navigation? E.g. cell phone, smart phone

Do you have a car? What do you need in order to load your belongings and essential medical devices into your vehicle? E.g. garage door openers, keyless entry devices

Step 3: Calculate your power needs

Using the list of devices you've created, consider the following factors that will impact how long your battery(s) will last:

Number of devices
If you have a larger number of devices that you need to power, your battery won't last as long.

Days per week & hours per day
If you use a device continuously, it will draw more power. If you use it intermittently, it will use less power.

Please note: Devices may use different amounts of power depending on how they are being used. Think of an appliance like an electric kettle or a blender. When it's plugged in but not in use, it uses barely any power. When you are boiling water or making a smoothie, it uses a lot more power while in use.

Battery availability
Consider all types of batteries available to you and their capacity. This can include internal batteries, external batteries, Ecoflow batteries, etc.

Settings: active vs resting
Some respiratory devices will pull different amounts of power depending on whether they are set for active or resting use.

Elevation
Elevation impacts air pressure. If you are using a respiratory device (e.g. a BiPAP or ventilator), higher elevation means using a higher setting and higher battery draw.

High levels of pressure, high respiratory rate, and High Positive End-Expiratory Pressure (PEEP) will all require a higher power draw. To extend your battery's life during a power outage, check with your respiratory therapist to find out the lowest levels you can safely use with your device. Write that information down and attach it to your device so that during an emergency, you can safely change the settings.

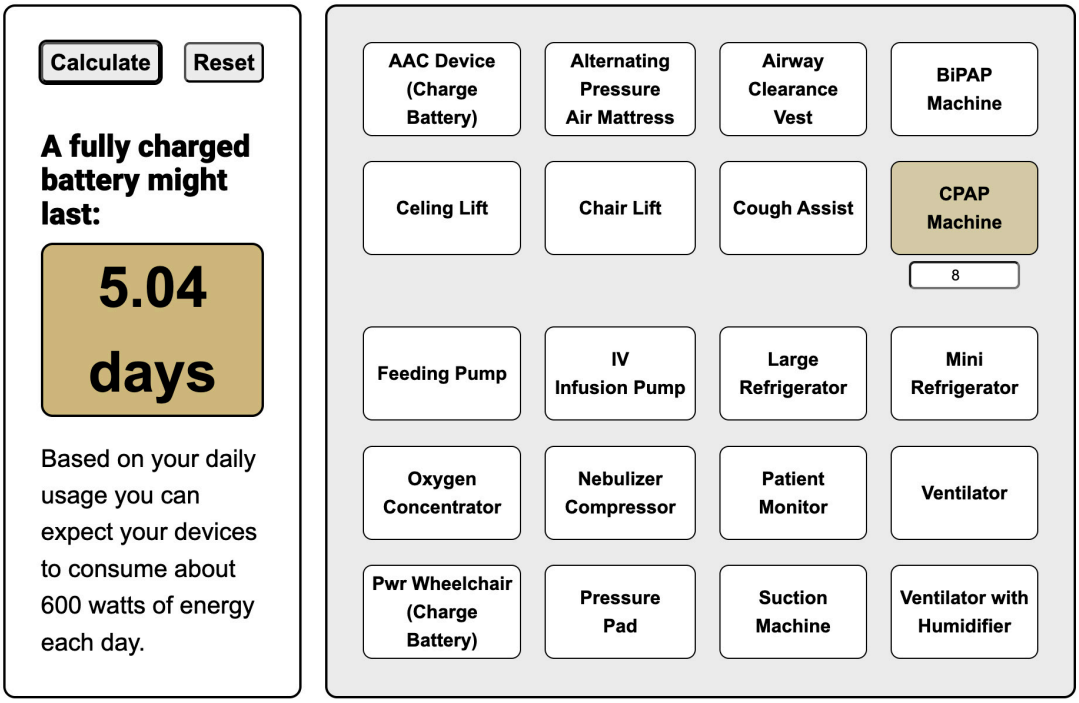
Please note: There are a variety of other circumstances that can impact how long your power will last and how long you can survive in place during a power outage. Things like the weather, access to food, age of battery, or the reason for the power outage can impact how long you can stay at home.

While this section can help you estimate how long you have before you need to evacuate, it is only an estimate. It is important to have an evacuation plan in place in case something unexpected comes up.

Next, let's estimate how much power you need and how long you can survive in place using your EcoFlow battery.

Option 1: Use our Power Calculator

Our Power Calculator allows you to select the medical devices you need to power and how long you'll need to power them each day. It then calculates how long a fully charged battery will last, which can give you an idea of how long you will have before you need to recharge your battery or evacuate.



Each type of device requires a different amount of power, which is measured in watts. Our Power Calculator knows the approximate wattage that each of these devices requires.

To save power during an outage, we recommend turning off your devices or unplugging them from your battery when not in use.

Please note: These are only estimates. During a power outage, be sure to check your battery's time and power remaining regularly.

Option 2: Conduct your own power audit

Follow these steps:

1. **Fully charge your battery**
2. **Unplug the battery from the wall outlet**
3. **Use the battery to power the devices on the list you've created for 24-48 hours**
4. **Based on how much power you've used and how much you have left, calculate how long you'd be able to safely remain at home before recharging the battery or evacuating**

If there are devices that you use intermittently or your usage varies, you may want to run this experiment more than once to get an accurate estimate of your needs.

If your power audit reveals that your battery will not last for at least 72 hours during a power outage, please review Step 4 carefully to help you prioritize your device usage.

Important note: Use caution, especially if you have critical medical devices that you need overnight.

If you overload the battery, it will automatically shut itself off. Consider unplugging less important devices overnight to ensure you don't lose power.

Check the remaining battery time carefully before going to sleep. If you have less than 24 hours of power left, stop your power audit and plug in your battery and devices as normal.

Step 4: Prioritize your power needs & consider alternative solutions

In this section, we'll cover strategies to help you extend the amount of time you can stay at home during a power outage.

As mentioned earlier, your Ecoflow battery should provide enough power for you to survive in place for **at least 72 hours** before needing to evacuate.

1. **Consider the power needs of your devices**
2. **Consider alternative power sources**
3. **Prioritize devices to power with your EcoFlow battery**

By the end of this section, you should be able to decide:

- Which devices are **top priority** and need to be plugged into your Ecoflow battery
- Which devices are **lower priority** and can be unplugged from your Ecoflow battery to preserve power
- Which devices can use an alternative power source or a different low-tech solution

1 Consider the power needs of your devices

To help extend the amount of time you can survive in place, please consider the following:

For each device on your Power Prioritization Worksheet:

How often do you require this device? How many days of the week, and for how many hours each day?

If you don't need the device at all times, consider turning it off or unplugging it from your battery.

Does this device have an internal battery? How many minutes or hours can the device work before it needs to be plugged in? Or, how many times can it be used?

If yes, keep devices with an internal battery fully charged. That way, you can delay needing to power them with your EcoFlow battery for as long as possible.

Is this device able to accept a rechargeable or non-rechargeable external battery?

If yes, keep a spare external battery for the device fully charged. That way, you can delay needing to power them with your EcoFlow battery for as long as possible.

Are there any other ways you can power or charge the device other than plugging it into the wall outlet or your Ecoflow battery?

Depending on the devices you need, consider using portable chargers, power banks, power stations, solar chargers, and/or hand crank power generators. This can help the power in your EcoFlow battery last longer.

Are there any low-tech or alternative solutions to addressing your basic needs and safety?

Lighting: LED flashlight & batteries, battery powered lantern, light sticks
Cooking: Propane grill/ camping stove, spare tanks
Shelter: Appropriate clothing for the temperature, spare blankets/ screens for windows
Water: One gallon of water per person per day for 10 days
News & Communication: Hand crank/solar radio, handheld UHF/VHF band transceivers & batteries
Sanitation: Bathtub full of water, spare 5-gallon bucket with toilet lid, trash bags, cat litter

2 Consider alternative power sources

Smaller electronic devices

Examples: cell phones, tablets, e-readers, and laptops

For smaller devices, you can purchase a variety of small external batteries with USB-A or USB-C ports. Similar to your EcoFlow battery, you can leave these batteries plugged in at all times so they're available in case of an emergency. Options include:

Portable chargers: These are typically small, lightweight devices that can fit in a pocket or purse. Depending on what you get, they usually have enough power to recharge a smartphone 1-3 times.
Approximate price range: $10-$50

Power banks: These are typically a little larger and hold more power than a portable charger. Depending on what you get, they usually have enough power to charge multiple devices, including smartphones, tablets, and laptops.
Approximate price range: $20-$180.

Portable power stations: These are large external batteries that can power and charge a variety of devices. This includes the EcoFlow battery line, though there are less powerful options that are smaller and cost less.
Approximate price range: $150-$2,500

You can also use renewable sources of power.

Solar chargers: These are small solar panels that come in a variety of shapes and sizes. While they don't have the capacity to power larger devices or recharge your EcoFlow battery, they can provide power for smaller devices in an emergency.
Approximate price range: $20-$150

Hand crank generators: These are devices with a crank on the side that you can turn by hand. They come in a variety of sizes, and can be used to power small devices during an emergency.
Approximate price range: $10-$180.

Medical devices with internal batteries

Examples: ventilators, oxygen concentrators, feeding systems

If your device has an internal battery, keep it plugged in and fully charged at all times. Check your user manual for whether your device has an internal battery and how long it should last. Note that the age of the battery may impact how long it can last.

Medical devices with external batteries

Examples: some ventilators, power wheelchairs and scooters

If you have a medical device that can accept an external battery, consider purchasing an external battery and keeping the external battery plugged in and charged at all times.

You can check your user manual and/or contact the vendor of your device to see if your medical device can accept an external battery and what type is recommended.

Typically, these batteries work like car batteries and can be hooked up to a trickle charger. Make sure to set up a maintenance schedule to monitor the battery to make sure it's fully charged and functioning properly.

3 Prioritize which devices to power with your EcoFlow battery

Top Priority: Essential Medical Devices

The top priority is being able to power essential medical devices for at least 72 hours.

If you have calculated your power needs and your battery isn't sufficient to power your devices for at least 72 hours, consider alternative power sources for lower-priority devices or other strategies to lower the power needs for your battery.

During a power outage, keep a close eye on your remaining battery life and unplug lower-priority devices as needed.

High Priority: C-MIST

Review your list of devices necessary for Communication, Maintaining Health, Independence, Support & Safety, and Transportation.

Prioritize any of these devices that cannot use an alternative power sources or a low-tech solution.

Low Priority: Non-essential devices

Deprioritize any devices that are not necessary to survive in place.

Deprioritize any devices that have a low-tech alternative or can use an alternative power source.

Deprioritize any devices that are not medically necessary and do not address any of your C-MIST needs.

Please note: During a power outage, **monitor your battery's remaining time closely**. This will vary greatly as you plug in devices or turn them on/off. Make a plan that is flexible enough to meet your needs, even if unexpected circumstances arise.

Make an **evacuation plan that includes the minimal number of hours you need before you have to evacuate**. You will need enough time to pack necessary belongings and medical supplies and get to a location that can power the equipment you need.

Step 5: Make a plan for extended power outages

What if the power outage lasts longer than 72 hours?

Power outages can be unpredictable, so it's important to be prepared in case the power outage lasts more than 72 hours.

1. **Make an emergency evacuation plan**
2. **Make a plan for recharging your EcoFlow battery**

Emergency preparedness tips:

Make sure you are signed up to receive emergency alerts from your county and city jurisdictions.
During an emergency, emergency managers will set up evacuation shelters and provide updates on the news or via alerts. These alerts will include the location of the evacuation shelters. These evacuation shelters provide power, food, showers, and support services.

Consider registering with your local power company for a "medical alert flag."
If your power company does a power shut off for safety reasons, you will be notified with enough time to make alternative plans.
Please note: This does not get you priority to turn your power back on or a warning for unplanned power outages.

Consider installing a power disruption alarm to alert you when the power goes out.
This can be especially important if you rely on medical devices while you are asleep.

1 Make an emergency evacuation plan

As a rule of thumb, you should evacuate when you only have 4 hours of power left in your Ecoflow battery.

However, if you rely on medical devices overnight, you may need to evacuate earlier. Do not go to sleep with less than 12 hours of battery left.

We recommend that you:

Create a list of important addresses and phone numbers, and keep it on your fridge or another accessible place

- Speak with your friends, family members, neighbors, and/or other community members to create a personal support network for emergencies
- Ensure that accessible and safe transportation is available to you
- Make sure you are signed up to receive emergency alerts from your county and city jurisdictions. During an emergency, emergency managers will set up evacuation shelters and provide updates on the news or via alerts. These alerts will include the location of the evacuation shelters.
  - These evacuation shelters provide power, food, showers, and support services.

If you need to evacuate with your medical devices:

- Print out or write down the instructions for use and attach them to your device
- Make a list of all the necessary components and label them so nothing gets left behind

If you'd like more information on creating an emergency evacuation plan, you can check out the CIDE's Emergency Preparedness Services course!

If no other options are available and you need to evacuate, call 911.

2 Make a plan to recharge your EcoFlow battery during an extended power outage

There are a few options for recharging your battery during a power outage.

Recharging your battery at a public building

You can take your Ecoflow battery with its AC charging cord to certain public buildings to plug it into a wall outlet and charge it.

Libraries, rec centers, and certain grocery outlets or hotels may allow you to charge your battery. However, it's important to **contact them ahead of time** to make sure they will allow you to use their wall outlets.

Clinics, hospitals, fire stations, evacuation shelters, or warming/cooling centers are also options.

- Some **hospitals** may allow you to use their outlets, but most will want to admit you.
- For **fire stations**, you can go as long as there is staff, but if they get called away you will have to leave.
- Again, it's important to contact them ahead of time to make sure you can use their wall outlets.

Since the batteries are heavy, **you may need assistance to help you move the battery** to a location where you can plug it in and charge it

Recharging your EcoFlow Delta Pro using an EV charging station

If you have the Ecoflow Delta Pro, you can pay to charge it at an EV charging station.

Please note: The Ecoflow Delta 2 Max cannot use EV charging stations.

Recharging your battery using solar panels

You can purchase a 1600 watt solar panel to recharge your EcoFlow battery. These are expensive, so make sure to check with the manufacturer to make sure the solar panel you purchase will work with your EcoFlow battery.
Approximate cost: $600-$5,000.

Recharging your battery from your car

You can also charge your Ecoflow battery from your car while it is on and running. However, we **do not recommend** this strategy, as it will charge slowly and you may run out of gas or drain your car battery before you get a useful amount of power.