

temperatures reduce the efficiency of lithium batteries, top up your phone during sunny rest breaks or when you stop for lunch or first make camp. Using a storage battery ensures that your phone receives a consistent stream of electrons, as the output from solar panels can vary based on sun exposure. You can recharge the external battery while you hike by connecting it to a solar panel draped over your backpack or top it up at camp. Most products that combine solar panels with a battery often lack the surface area of panels to collect enough sun power; the ideal system should produce between 7 and 21 watts of power. Because the quality and durability of solar products can vary, opt for trail-tested devices made by Goal Zero, Anker, Nekteck, and RAVPower.



*A solar panel and external battery can keep your GPS and smartphone at full power throughout a trip.*

### **Call for Help via Satellite**

Backpackers who hike solo, prefer backcountry terrain outside of cell coverage, or are just concerned about getting lost might consider carrying a personal locator beacon (PLB) or satellite messenger. These handheld devices are about the same size as a GPS and use satellites to alert search-and-rescue teams of your status and location in case of an emergency. Higher-end models include GPS mapping, allow two-way text messaging, and provide up-to-date weather reports. Companies that manufacture PLBs and messengers include Garmin, ACR Electronics, and SPOT, all of which charge a satellite service fee in addition to the cost of a unit, which ranges from \$100 to \$500.

### **How to Hike Out**

Deciding you want to rescue yourself requires more than just enough energy. You need a plan to guide you, a route to follow, and the ability to evaluate new situations as they arise. First, however, you need to figure out your approximate location.

### **Finding Your Location**

If you're carrying a mapping GPS, you've got orbiting satellites working on your team. The map screen of a GPS device will be centered over your location, and you can zoom in and out or scroll the map to locate nearby landmarks. To find your coordinates, create a waypoint on your current location. If you laid a track of waypoints as you hiked, the GPS's trackback function can lead you back to your starting point. Otherwise, place a waypoint where you want to go and follow the trails on the digital map to reach it.

A map and compass can also help you pinpoint your location, but first, you need to narrow down your general area. The two best methods are fixing the cardinal directions (north, south, east, and west), and reading the terrain. Start by figuring out which way is north using your compass. If you don't have a compass, that's a problem, but not an insurmountable one. You can estimate which direction is south by using an analog watch face and the sun. If you're wearing a digital watch or no watch at all, you can draw a clock face on the ground and follow the