# Understand what drains your batteries

by **Stephen Johnson** of *Topo Maps*

It is important to understand what drains your battery. There are some things that drain your battery much faster than others. The big battery drains are powering the screen, GPS, and radios (cellular and WIFI).

1. **Airplane Mode.**Put your iPhone into Airplane mode while you are out. This will turn off the cellular and WIFI radios. As of iOS 9, GPS can still work when you are in Airplane mode. Toggle Airplane mode on and off is really easy. Just swipe up from the bottom of the screen and tap on the airplane icon.
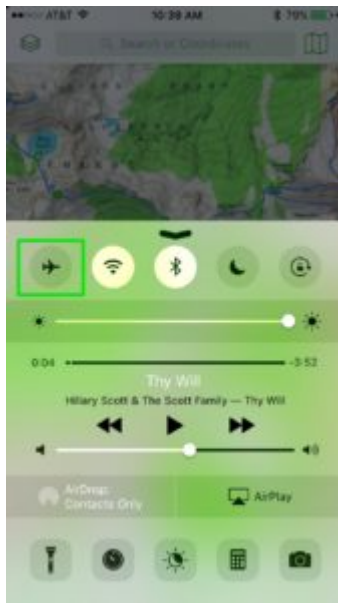
2. **Limit GPS Usage.**Go into the Settings app then select Privacy->Location Services and change all services to "Never" and only leave on the few apps you want to have access to GPS. I only leave on the Camera (I want my photos to be GPS tagged) and Topo Maps+.

3. **"While Using" Permission**. Go into the Settings app then select Privacy->Location Services and change all services to "While Using" (unless you have a good reason to leave one of them as "Always"). This way apps can only use GPS if you are using the app. This gives you control over when GPS is used and when it is not used. You will see a blue bar from the app if it is using GPS and the app is not in the foreground. I also make this change for Topo Maps+. This way I know that no apps are using GPS when I don't want them to. A lot of apps will check in with a server and update their location via GPS. Putting your phone into airplane mode and changing the permission to While Using won't let apps do this.

4. **Don't Record – Use Progress Instead**. In Topo Maps+ I just check my location, I don't record trips. (I record day hikes, but not multi-day backpacking trips.) Instead of recording your trip use [Progress Along Trail](#) to save battery and still find out how far you have come and how far you have left to go.

5. **Limit App Usage**. When I am in the backcountry I only use the Camera and Topo Maps+. I use both of them a lot, but I don't use any other apps. Plan ahead for which apps you plan on using and stick with that plan i.e. don't play games 😉

6. **Screen Brightness**. Turn your screen brightness down as much as possible. I leave the screen brightness way down when I am taking photos and I turn it up a little bit when I am using Topo Maps+ for navigation. You can also easily change this by swiping up from the bottom of the screen. By default your iPhone will automatically adjust your screen brightness. This means that even if you turn it down, the iPhone will turn it back up in bright sunlight. You will want to turn this off so that you can have full control over the screen brightness and keep it lower than your iPhone will want to adjust it to. In the Settings App Select "Display & Brightness" and then turn off "Auto-Brightness".

7. **Start With 100% Battery**. Start following these tips when you leave the house, not just when you get to the trailhead. Don't waste a lot of your battery while you are driving to the trailhead.

8. **Power Off At Night**. At night power your phone all the way off. Tap and hold on the power button and then slider over the power slider.

9. **Low Power Mode**. In the Settings App select Battery and then turn on "Low Power Mode". Do this, even when my phone is at 100% battery.

I generally upgrade my iPhone every one or two years, so I don't have old batteries. As batteries get old they don't last as long. So if you have an older iPhone, your usage may vary.

Want to go even longer?

My wife bought me a GoalZero Nomad 7 solar charger for Christmas. It is awesome! Now I can use my iPhone for more than 3 days and I can take photo spheres. It weights just a little more than a book and it is about the same sizeas a book. Since I have the power, I now read books on iBooks, Olive Tree, or ESV (I had the privilege of working onthe Olive Tree and ESV iOS apps) instead of bringing a book. So if you bring a book backpacking you can swap it out for a solar charger with very little extra weight or space in your pack.