

# Guardrail Tutorials

for

iPaddlers



Managing your  
**Lithium-ion Battery**

## iPad & iPhone

*BATTERY MANAGEMENT*

Basic Functionality

iOS 12

JULY 2019

# It charges fast for convenience and slow for longevity.

Your Apple lithium-ion battery uses fast charging to quickly reach 80% of its capacity, then switches to slower trickle charging. The amount of time it takes to reach that first 80% will vary depending on your settings and which device you're charging. Software may limit charging above 80% when the recommended battery temperatures are exceeded. This combined process not only lets you get out and about sooner, it also extends the lifespan of your battery.



## It makes charging easier.

Charge your Apple lithium-ion battery whenever you want. There's no need to let it discharge 100% before recharging. Apple lithium-ion batteries work in charge cycles. You complete one charge cycle when you've used (discharged) an amount that equals 100% of your battery's capacity — but not necessarily all from one charge. For instance, you might use 75% of your battery's capacity one day, then recharge it fully overnight. If you use 25% the next day, you will have discharged a total of 100%, and the two days will add up to one charge cycle. It could take several days to complete a cycle. The capacity of any type of battery will diminish after a certain amount of recharging. With lithium-ion batteries, the capacity diminishes slightly with each complete charge cycle. Apple lithium-ion batteries are designed to hold at least 80% of their original capacity for a high number of charge cycles, which varies depending on the product.

# iPad Battery Care

## Some Useful Tips



Shutdown and restart your iPad once each week (or at least one a month). Run the battery down to 5% or less, then charge it up to 100% and restart the device. This apparently helps to re-calibrate the battery software giving a more accurate indication of battery range and level of charge.

Generally avoid over-discharging the battery as it may shorten the lifespan of the battery. It is alright to keep the charge between 20% to 80% (except of course when you are re-calibrating)

Also avoid leaving the battery connected to the charger for too long once the battery has been fully charged.

Avoid storing the battery fully discharged. Charge the battery to 50% before storing, After storage, charge fully before use.

Avoid frequent full discharges. Better to maintain the 20% to 80% level, even if it requires partial charging more often. Lithium ion batteries do not have the 'memory' problem common to some older battery types (such as NiCad).

Protect the iPad from overheating, which can ruin the battery. It may help to remove the case when charging to allow heat to escape.



# Tips to Save Battery Power

## Customising Settings

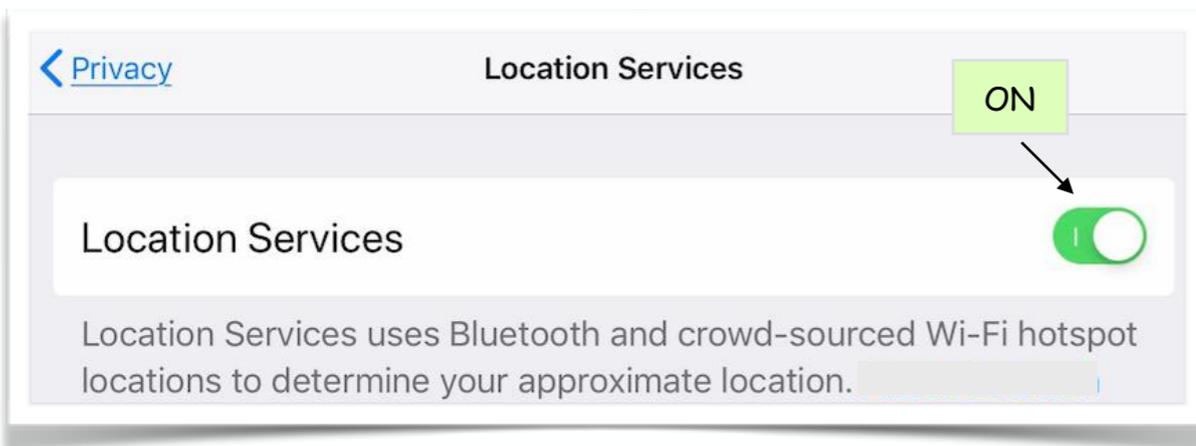
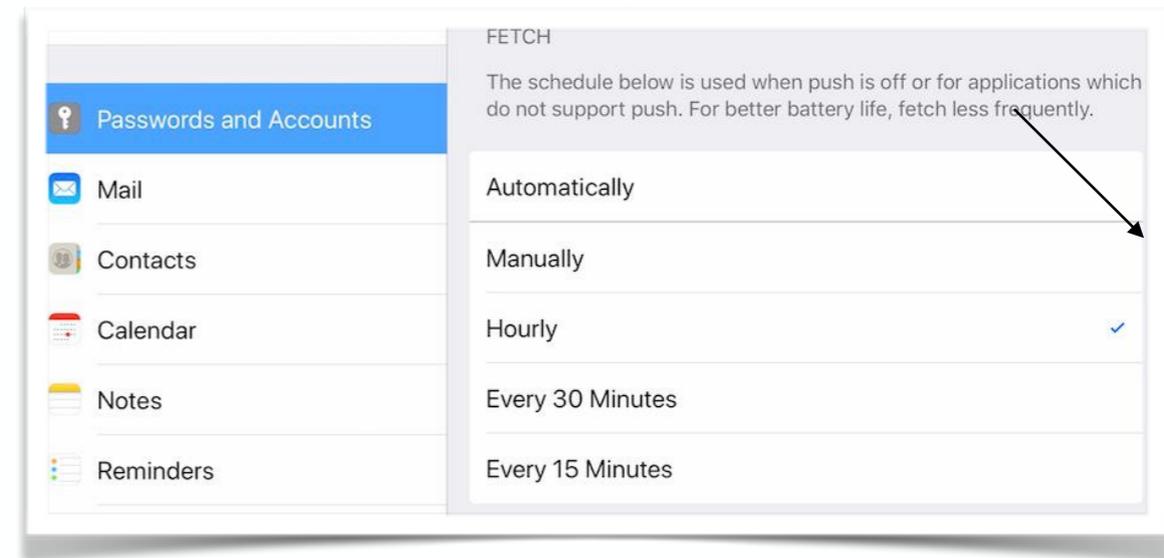


Low Power Mode

Understanding the Settings of the iPad is the key to managing battery usage. Many of the default settings are unnecessary, and can lead to wasteful use of battery power. Adjusting many of the settings as follows, can lead to a substantial saving of power. First of all you could begin by reducing the **'Display Brightness'** to a comfortable level, which may help more than most other methods.

### Settings -> Passwords and Accounts:

Disable **Automatically** fetch mail - change to a better setting such as 'Hourly', or even 'Every 15 Minutes'. This will ensure the device is not constantly checking with the mail server over the internet for new emails which uses battery power unnecessarily.



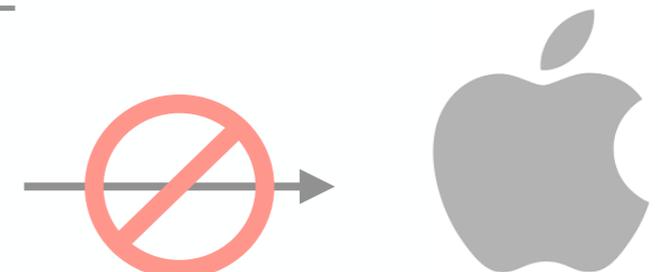
### Settings -> Privacy:

Turn off **Location Services** for any apps that don't really need to use your location (you can always turn them back on later if needed).



### Settings -> Privacy -> Location Services:

Scroll down to **System Services** and turn off **iPad Analytics** (under PRODUCT IMPROVEMENT), which sends analytical data to Apple (they probably get more than enough analytical data).

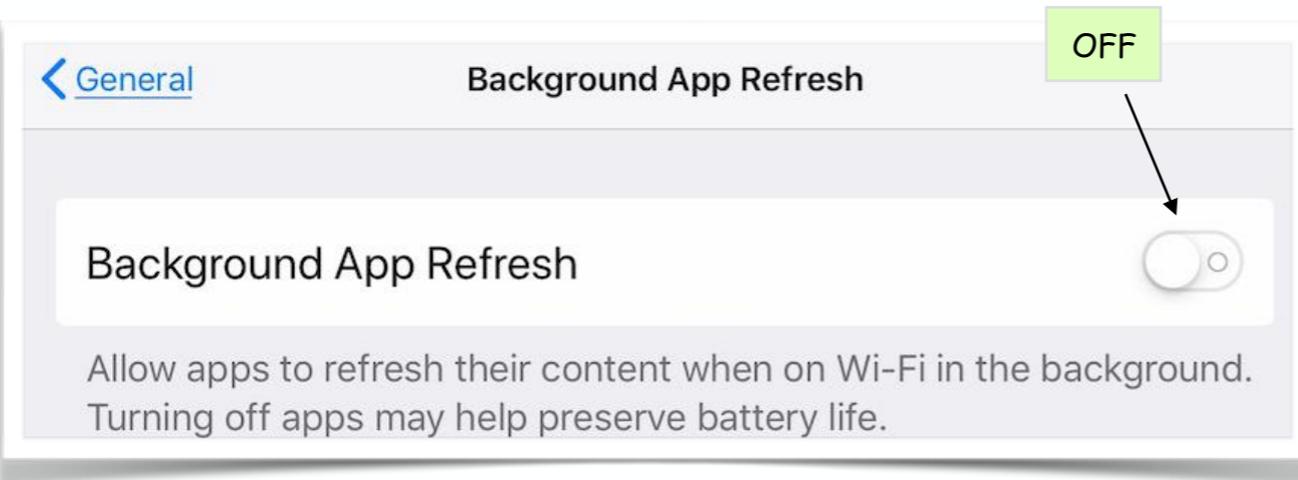


# Tips to Save Battery Power

... continued

## Background Apps:

Shutdown apps running in the background by double pressing the **Home** button until the app thumbnails appear. Select the app to close, swipe upwards and flick it off the screen. It will be removed from memory until next time you need it. This is something that should be done fairly regularly, not just to conserve battery power, but also to free up system resources such as RAM (Random Access Memory).

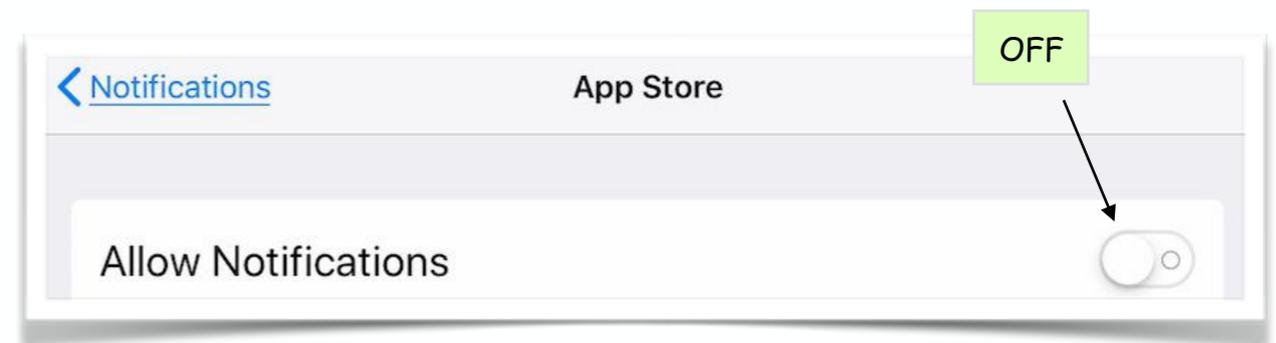


## Settings -> General -> Background App Refresh:

By turning this off, you can save some battery power by reducing background activity. You can also turn apps OFF or ON individually instead. Do this by leaving the **Background App Refresh** button turned on, and working down through the list of apps, turning on or off as required.

## Settings -> Notifications:

Turn off unnecessary **Notifications** (under NOTIFICATION STYLE). You could just turn all **OFF**, then turn any back **ON** once you are sure you need them. You can certainly live without all of the notifications that are enabled by default.



# Tips to Save Battery Power

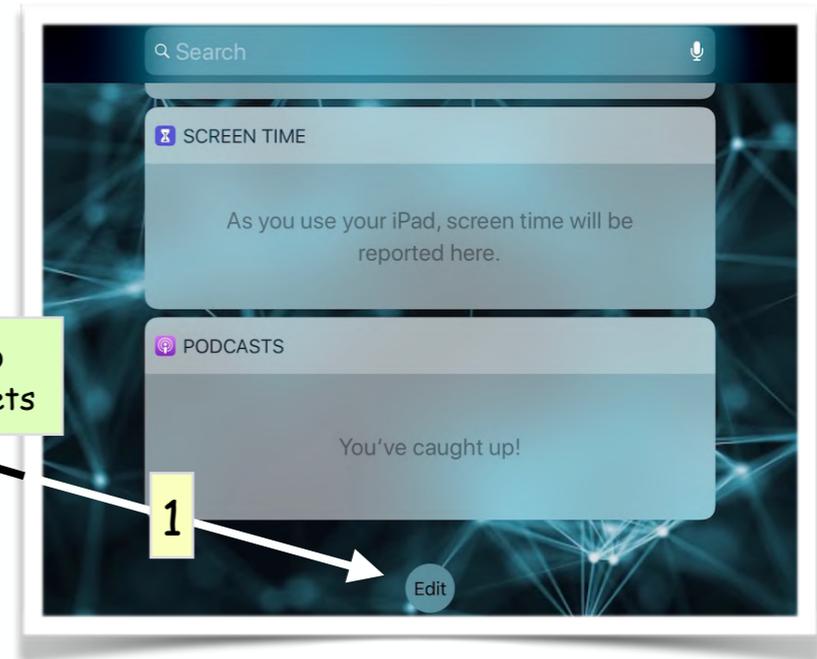
... continued

## Widgets Screen:

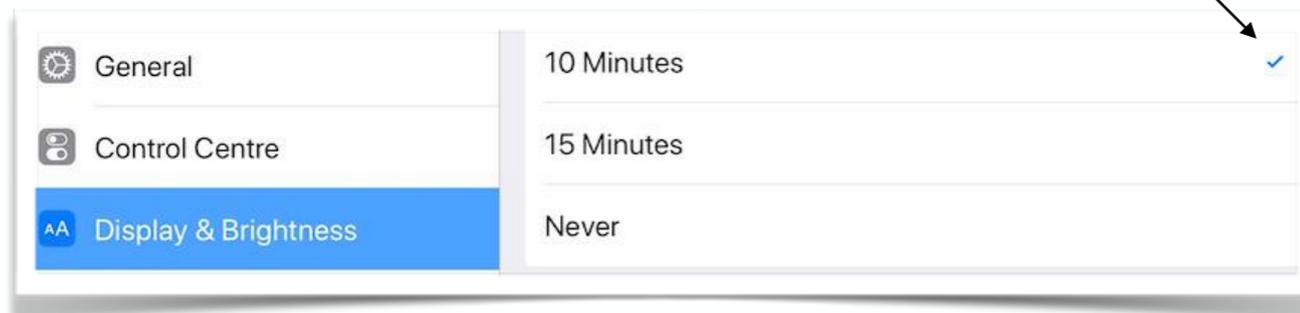
Swipe to the left of the **Home** screen to access the **Widgets** screen. Use the **Edit** button at the bottom of the list of widgets to remove (or add) widgets. Once you tap the Edit button the list of widgets will pop out. You will need to do two taps to remove. Once removed, a little more battery power may be saved.



Tap **Edit** to remove widgets



10 Minutes ON

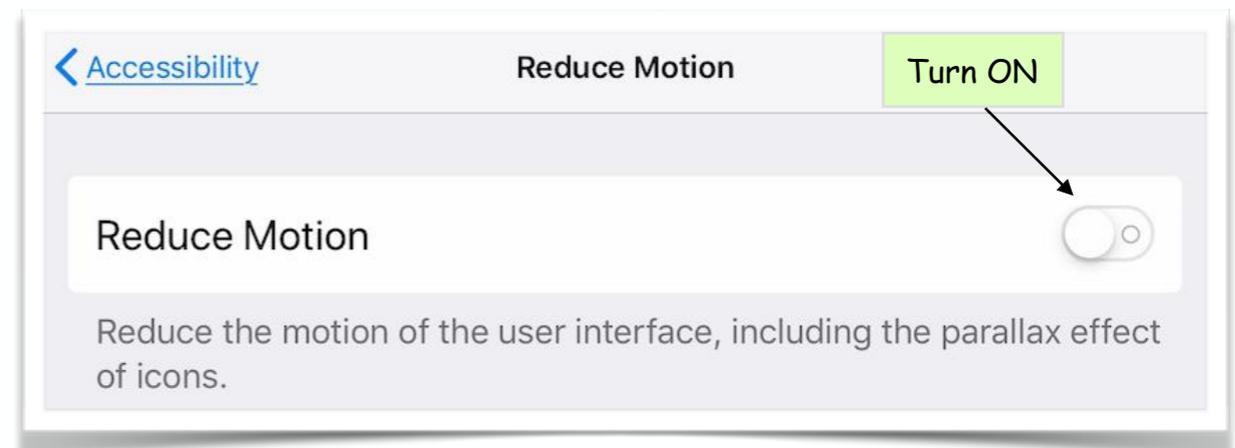


## Settings -> Display & Brightness:

**Auto-Lock** should be ON and set to a suitable time. The iPad should be allowed to go into sleep mode at a time that suits you (the default 2 Minutes is usually too soon). You can always put the device into sleep mode manually by pressing the power button. If it is set to 'Never', the battery will drain quickly.

## Settings -> General -> Accessibility:

Turn on **Reduce Motion**. This will apparently save battery power by reducing animation of the user interface.



# Summary

## Battery Tips and Tricks



- Shutdown and restart your iPad once each week
- Avoid over-discharging the battery
- Avoid allowing the iPad (or iPhone) to overheat
- Disallow the device to fetch mail 'Automatically'
- Turn off 'Location Services' for apps that don't require it
- Turn off unnecessary Notifications
- Shutdown apps running in the background
- Turn off 'Background App Refresh'
- Turn off 'send analytics to Apple'
- Widgets - turn off unless required
- 'Auto-Lock' should be on - set to a suitable 'sleep' time
- 'Reduce Display Brightness' if comfortable to your eyes
- Turn on 'Reduce Motion' - under the 'Accessibility' options