You're charging wrong: 5 ways to help make a gadget's batteries last longer

By GEOFFREY A. FOWLER
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Your charging habits may be killing your gadgets.

Many readers have asked me what we can do to prolong the lives of products with rechargeable batteries.

"I have an Apple phone which I usually charge once a day, when it reaches 50% battery or less," emailed Marian Levine of Silver Spring, Maryland. "Will it extend the life of the battery if I wait until the battery is lower?"

It's a murky aspect of gadget ownership: Lithium batteries are finicky. They all gradually lose capacity, meaning it's only a matter of time before your device just doesn't carry enough juice to be useful. But how much time? Some of this is baked into the design — but the ways we charge and use batteries can also make a difference.

For example, leaving your device plugged most of the time may help you avoid the stress of being caught with a low battery. But it also might be stressing your battery.

So what can we do to make batteries live longer? I called up two scientists who study lithium batteries, the University of Michigan's Gregory A. Keoleian and the University of Maryland's Michael G. Pecht. "The key drivers that influence degradation are the temperature, the state of charge and the charge rate," says Keoleian.

They advised us to always follow the specific advice of manufacturers.

But the scientists also shared some useful general tips about how charging habits can help our batteries have long, happy lives.

DON'T CHARGE UNTIL YOU'RE DOWN TO 20%

To squeeze the most life out of your lithium battery, your goal is to slow the speed at which you burn through so-called charge cycles. All devices are designed and manufactured with a target number of times the battery can be completely discharged and recharged. It's typically between 300 and 1,000.

So here's a handy rule: Don't start charging until your battery reaches about 20% — and try to stop when you get to about 80%. This will make sure you maximize each cycle while keeping the battery free of stress. (Keep reading for details on how some smart devices such as iPhones manage this for you.)

"It is better to charge just before you are going to use it — that's the ideal," says Keoleian.

It's also true that the slower you charge, the less damage you do to the battery. These days, some products are sold with "fast" charging capabilities when you use special bricks or car charging stations. Fast is obviously great when you're in a hurry, but Pecht says that you should avoid it when you don't need it.

DON'T KEEP IT PLUGGED IN AT 100% — OR LET IT GO TO ZERO

Many of us charge devices overnight while we sleep, which is fine.

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