

## Electronics are built with death dates. Let's not keep them a secret.

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Our analysis of 14 popular consumer devices found most could stop working in 3 to 4 years because of irreplaceable batteries. Here's how we get the tech industry to design products that last longer — and do less damage to the environment.

Perspective by Geoffrey A. Fowler, Columnist  
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If you've got a pair of Apple AirPods, they're going to die — likely sooner rather than later. With mine, the battery lasted a little over two years. And when it could no longer hold a charge, I had to toss it out and buy new AirPods, because the dead battery is glued inside.

Is that just how technology works? No, that's just how tech companies make more money from you.

We the users want electronics that are easy to use, beautiful — and also last a long time. So in my hunt for ways to make tech work better for us, I tried to figure out when 14 of my devices are going to die. Most of them, I discovered, could peter out within three to four years. And half of them are designed to just be thrown away. You can see all the details in my gadget graveyard.

Having to upgrade and replace gear regularly is annoying and it's expensive. Even worse, it's a hidden contributor to our environmental crisis. But I've got some ideas for how we can change that by forcing the tech industry to come clean.

Here's a dirty little secret of the tech industry: "Almost every device these days has a battery that's going to wear out, and it's a built-in death clock," says Kyle Wiens, the CEO of repair community iFixit. Today, there are batteries in everything from your toothbrush to your vacuum cleaner. They are consumable products, like printer ink or tires.

But buying gear with batteries sealed inside is kind of like buying a car where you can't change the tires. We just don't realize we're doing it, or how it's contributing to our climate and sustainability crises.

Gadgets don't consume as much energy as planes and cars, but the damage they cause comes from manufacturing and disposing them. Making new devices requires mining raw materials such as cobalt, often at great human cost. Disposing old gadgets is costly and is fueling a rash of dangerous battery fires in trucks and recycling centers.

And according to Apple, of all the carbon emissions its products add to the earth over their life span, 70 percent comes just from manufacturing. That means every time you buy a new gadget like a laptop, you're adding hundreds of more pounds of carbon into the sky before you even switch it on. But even if you wanted to buy long-lasting devices, it's often impossible to tell when any product's battery might die. Of course, devices fail for many reasons, but dead batteries are the death clock that's built in.

That's why I spent six weeks pushing some of the world's largest corporations to find these basic facts about some of our favorite gadgets:

First, how many recharges — or, “cycles” — can the product's battery take until its capacity drops to 80 percent? “After that, they are defined as dead,” because capacity starts to drop precipitously, explains Bas Flipsen, a lecturer in industrial design engineering at the Delft University of Technology. Second, when that inevitable day comes, what — if anything — can a consumer do to replace their battery?

Only three companies — Nintendo, e-bike maker VanMoof and Apple (in part) — disclosed these battery details on their websites. Nearly half of the companies I contacted, including Sony, Dyson, Logitech, Google-owned Fitbit, Amazon, Therabody and Samsung-owned JBL refused to answer or just ignored my specific questions.

None of this should be a secret. Is this ‘planned obsolescence’?  
How did we end up with disposable gadgets? Let's go back 20 years to the iPod.

Apple's pocket music player rocked the world by putting a thousand songs in our pockets. But it was built differently from other mobile devices of the era: It had a rechargeable battery that was sealed inside.

After as few as 18 months, owners started noticing their iPods could no longer hold much charge — and the hassle of replacing the battery kept most people from trying. iPods were so desirable that many of us just bought a new one. I've still got a dead one in a drawer.

It inspired one of the great acts of guerrilla gadget activism: Casey Neistat, now a renowned YouTuber, was so frustrated by dead iPod batteries, he made a video of himself painting a warning label on Apple's ubiquitous billboards about the iPod's death clock.

<https://youtu.be/SuTcavAzopg>

Yet Apple kept making devices with rechargeable batteries sealed inside, including its most influential product of all, the iPhone. And whatever Apple does, other companies follow.

“We are part of the problem, because when we buy a short-lived product, we send manufacturers a signal that it's okay to make short-lived products,” says iFixit's Wiens.

How much of this is a grand scheme to get us to keep spending money? There's a term for that: planned obsolescence.

I've not seen much evidence of smoke-filled rooms where tech executives hatch ways to make products fail. But disposable electronics are the product of planning. Marketers have had tremendous success luring us with products that are ultra thin or waterproof, both of which are easier to do with glued or soldered-in batteries. “This is the most simple, quick and economical solution,” says Flipsen, the engineer.

But other designs are possible, he says. For example, GoPro's adorable action cameras have user-removable batteries — and you can take the cameras for a swim. Samsung's Galaxy Buds contain batteries that are comparatively easy to pop in and out. A company called Framework makes a great laptop with modular, upgradable parts that's still about the same weight as a MacBook Air.

Apple has cleaned up its act in some ways. While the batteries on iPhones are still sealed inside, today you can get Apple to replace one for \$69.

But the \$179 AirPods, Apple's most successful new product in years, show longevity still isn't a paramount concern. If you show up at an Apple Store with dead AirPods batteries, they'll only sell you new ones. (Apple wouldn't comment when I asked why.)

Sadly, I found many other devices are also designed to become trash. The battery in my Philips Sonicare toothbrush not only can't be replaced — it's fixed so firmly inside that the manual says you have to take a hammer to it just to throw it away (because batteries can cause trash fires). "The battery is firmly placed, in a water-resistant handle, to ensure safety, durability, longevity and robust performance," says Philips.

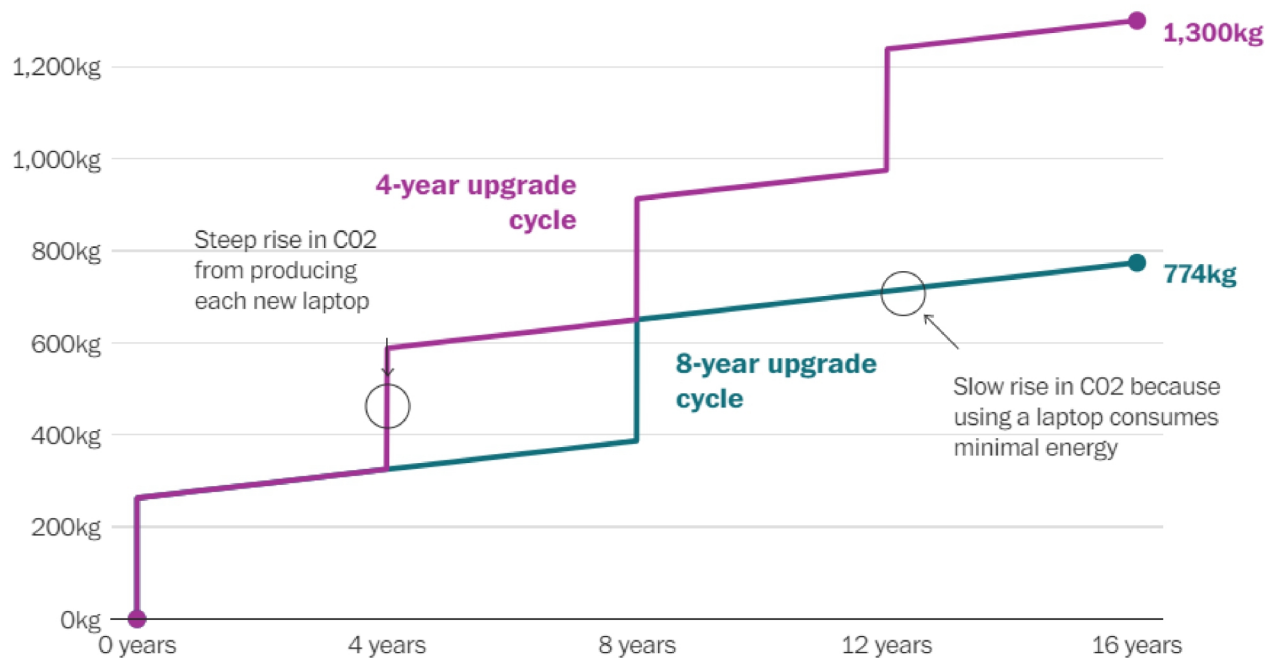
Many manufacturers tout their recycling programs as a sign of their environmental commitments. Amazon, for example, offers no battery-replacement service for out-of-warranty Fire tablets, though it offers customers a 20 percent discount on a new Fire tablet if they send in their old one.

But recycling isn't the solution it might appear to be. Recyclers can only recover a tiny fraction of the critical raw material that goes into an old gadget. "You simply can't melt down a truck full of old smartphones to make a truck full of new smartphones," says Wiens.

Much of the industry is hooked on the idea that we'll keep upgrading. "These companies have built their business models based on replacement rates that are faster than what consumers want," says Ugo Vallauri, co-director of the U.K.-based Restart Project, which advocates for repairable electronics. "They are finding it really hard to figure out a future where they can prosper while responding to the challenges that the planet and consumers are putting to them."

## Slower upgrades reduce your carbon impact

The cumulative greenhouse gas (CO<sub>2</sub>e) emissions from using a typical medium-sized laptop decreases the longer you wait before upgrading to a new one



Note: Cumulative CO<sub>2</sub>e measured in kilograms

Source: [The Restart Project](#)

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## Coming clean

The best thing for us and for the environment is for us to hold onto gadgets longer. For that to happen, we're going to need information.

So let's revive Neistat's radical act of transparency and demand to know when gadgets are designed to die. If companies won't come clean on their own, let's require a label right there on the shelf that lists the battery recharge count and how much it costs to replace the battery. The Federal Trade Commission already has the power to require other labels on products — why not for batteries?





French electronics stores now prominently display repairability indexes from zero to 10, as seen here on two smartphones for sale in Paris scored 8.5 and 8.1, respectively. (Christina Passariello/TWP)

We could also take inspiration from France, which in 2021 began requiring some categories of products to include a repairability score, rated from 1 to 10. You can't miss it when you're shopping. And there are already signs it's getting companies to change how they design their products — because they now have to compete on longevity as much as price and other features.

In the United States, we're poised to soon get laws that give consumers the right to repair products. It would mean even if a battery is sealed inside a product, its maker has to sell replacements and share instructions on how to repair it.

Yet some environmental activists argue we can't leave it up to tech companies to make design decisions that are critical for the planet. Jean-Pierre Schweitzer, a senior policy officer at the European Environmental Bureau, a network of environmental organizations, is part of a group trying to get European lawmakers to ban batteries that can't be replaced. "End users and independent operators should be able to replace batteries with commonly available tools," he says.

According to Schweitzer's organization, requiring just smartphones and tablets to have user-replaceable batteries would save European consumers \$20 billion and reduce the industry's contribution to greenhouse gas emissions by 30 percent in 2030 alone.

Yet the devil is in the details: Should we ban glued-in batteries altogether — or any that require special tools to remove? Some in the tech industry have been pushing back that it needs an exemption for products designed to work in “wet conditions.” But that excuse could be applied to any mobile device.

We also have to weigh our own responsibility in confronting the environmental crisis. As a professional gadget guy, I totally understand the appeal of upgrades.

But we have to push back against the marketing machine that makes an annual cycle of product updates feel like anything other than crass consumerism. The reality is, upgrades often offer very little new features. One classic tell is in the slogan “best iPhone ever.” Did anyone expect it to be worse than last year’s model?

We need to shift our relationship with technology. Not long ago, people used to assemble radios and computers at home, so they knew how they work — and how to keep them running for a long time. Nowadays, it feels forbidden to crack open a computer just to see what’s inside.

It’s a good thing that technology is now more accessible. But if you can’t simply replace the battery in something you own, does it really even belong to you?