



# Product Environmental Report

## iPad Pro (11-inch)

Date introduced

March 18, 2020

### Made with better materials

**100%**

recycled tin in the solder of  
the main logic board, True Tone  
flash, and wireless charger for  
Apple Pencil

### Energy efficient

**65%**

less energy consumed than the  
ENERGY STAR® energy efficiency limit



### Responsible packaging

**100%**

of the wood fiber  
comes from recycled  
and responsible  
sources

**92%**

of the packaging is  
fiber based, due to our  
work to use less  
plastic in packaging

### Tackling climate change

**100%**

of iPad Pro (11-inch) final assembly suppliers  
have committed to 100% renewable energy  
for Apple production

### Smarter chemistry<sup>1</sup>

- Arsenic-free display glass
- Mercury-free display
- Brominated flame retardant-free
- PVC-free
- Beryllium-free

### Apple Trade In

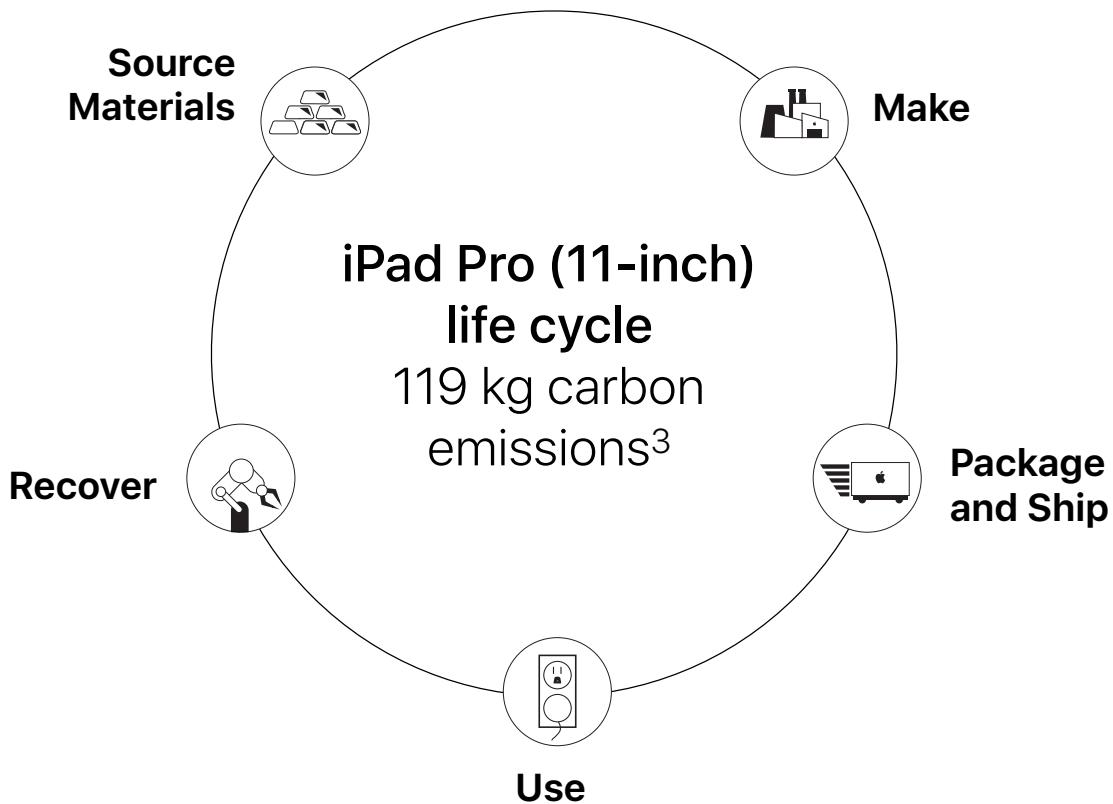
Return your device through  
Apple Trade In and we'll give it  
a new life or recycle it for free.

## Enclosure made with low-carbon aluminum

# Taking responsibility for our products at every stage

We take responsibility for our products throughout their life cycles—including the materials they are made of, the people who assemble them, and how they are recycled at end of life. And we focus on the areas where we can make the biggest difference for our planet: reducing our impact on climate change, conserving important resources, and using safer materials.

**We sell millions of products. So making even small adjustments can have a meaningful impact.**



## Carbon footprint

We continue to make progress in reducing Apple's contribution to climate change—by focusing on making energy-efficient products with renewable or recycled materials and with renewable energy. Though the new camera design and additional memory drove up emissions, we worked with our suppliers to increase their use of renewable energy through our Supplier Clean Energy Program to help keep the iPad Pro (11-inch) carbon footprint about the same as the previous generation.<sup>4</sup> Apple is committed to using carbon life cycle assessments to identify opportunities to drive down product greenhouse gas emissions.

## iPad Pro (11-inch) life cycle carbon emissions

89%	Production
4%	Transport
6%	Use
<1%	End-of-life processing

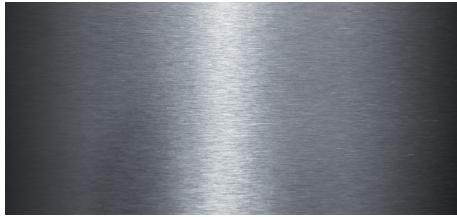


# Source Materials

We expanded our use of 100 percent recycled tin solder across multiple components.

To conserve important resources, we work to reduce the material we use and aim to one day source only recycled or renewable materials in our products. And as we make this transition, we remain committed to the responsible sourcing of primary materials. We map many materials, some to the mineral source, and establish the strictest standards for smelters and refiners.

We're proud to be recognized as a worldwide leader in the responsible sourcing of minerals in our products. Our product designs also consider the safety of those who make, use, and recycle our products, restricting the use of hundreds of harmful substances. Our standards go beyond what's required by law to protect people and the environment.



## Aluminum

Our focus on Apple's carbon footprint extends to the materials we source. So we prioritized aluminum that was smelted using 100 percent hydroelectricity rather than fossil fuels for the enclosure, where the majority of the aluminum is located.



## Plastic

We're transitioning to plastics from renewable or recycled sources as alternatives to fossil fuel-based plastics. For iPad Pro (11-inch), we use 35 percent or more recycled plastic in multiple components.



## Tin

We use 100 percent recycled tin in the solder of the main logic board, True Tone flash, and wireless charger for Apple Pencil. Apple also requires 100 percent of identified tin, tantalum, tungsten, gold, and cobalt smelters and refiners to participate in third-party audits.<sup>5</sup>



## Smarter chemistry

iPad Pro (11-inch) is free of harmful substances like beryllium, brominated flame retardants, PVC, phthalates, mercury in the display, and arsenic in the display glass.<sup>1</sup> And 100 percent of the materials in the iPad Pro (11-inch) are covered by our [Regulated Substances Specification](#). We go beyond what's required by aiming to understand the nonregulated substances in every part of every product—an effort that requires an industry-leading level of transparency through the entire supply chain. So far, we've identified the makeup of over 80 percent by mass of iPad Pro (11-inch).



# Make

The Apple Supplier Code of Conduct sets strict standards for the protection of people in our supply chain and the planet that we all share. Every year, we assess our suppliers' performance in upholding the standards required by our Code.

We work closely with our suppliers to provide safe and healthy workplaces where people are treated with dignity and respect, and to reduce their environmental impact. Our requirements apply across our supply chain, and include the responsible sourcing of materials. From the strong foundation set by our Code, we go further—from helping suppliers transition to renewable energy, to providing educational opportunities for their employees, to supporting final assembly suppliers in reducing waste. All final assembly sites for iPhone, iPad, Mac, Apple Watch, AirPods, HomePod, and Apple TV have been certified as UL Zero Waste facilities.<sup>6</sup>

## Greener chemicals

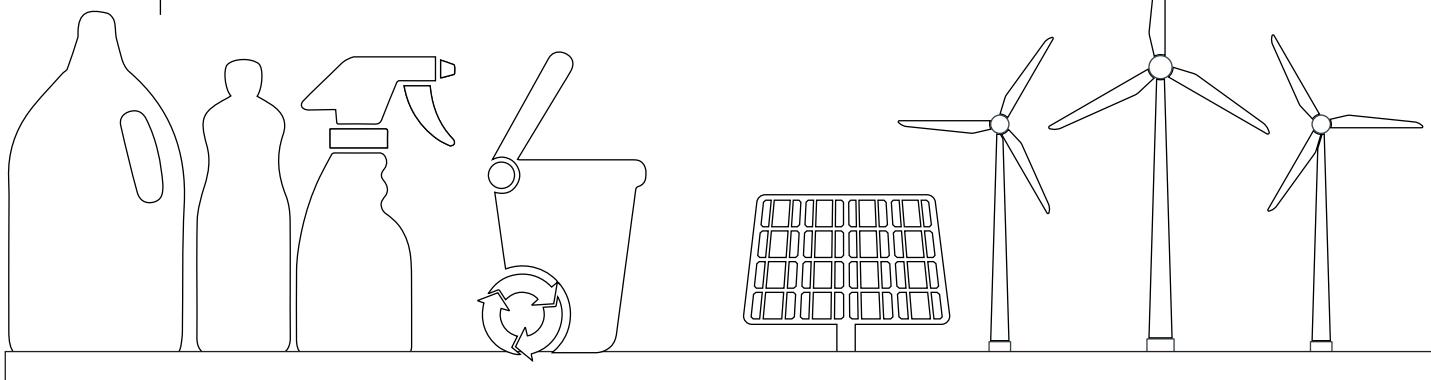
All iPad Pro final assembly supplier sites use safer cleaners and degreasers in their manufacturing processes, as determined by the GreenScreen® assessment method.<sup>7</sup>

## Zero Waste to Landfill

iPad Pro final assembly supplier sites do not generate any waste sent to landfill.<sup>6</sup>

## Supplier energy use

All iPad Pro final assembly suppliers are transitioning to 100 percent renewable energy for Apple production.





## Package and Ship

iPad Pro (11-inch) packaging is made with recyclable, fiber-based materials.

To improve our packaging, we are working to eliminate plastics, increase recycled content, and use less packaging overall. All of the wood fiber in our packaging is either recycled or comes from responsibly managed forests.<sup>8</sup> And we have protected or created enough responsibly managed forests to cover all the virgin wood fiber we use in our packaging.<sup>9</sup> This ensures working forests are able to regrow and continue to clean our air and purify our water.

**92%**

of the packaging<sup>10</sup>  
is fiber based, due to our  
work to use less plastic  
in packaging

**45%**

recycled content in  
fiber packaging

**100%**

of the virgin wood  
fiber in the packaging  
comes from responsibly  
managed forests<sup>8</sup>



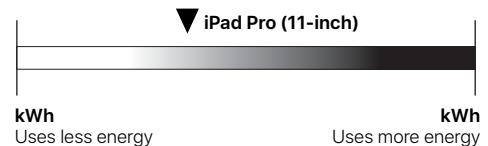


# Use

iPad Pro (11-inch) uses 65 percent less energy than the requirement for ENERGY STAR.

We design our products to be energy efficient, long lasting, and safe. iPad Pro (11-inch) uses software and power-efficient components that intelligently manage power consumption. We also run our own Reliability and Environmental Testing Labs, so our products go through rigorous testing before they leave our doors. Our support continues throughout each product's life cycle, with regular software updates to keep devices current and a network of authorized repair professionals to service them, if necessary.

**ENERGY STAR  
requirement**



## Energy consumption of ENERGY STAR-rated products

Apple devices consistently rank among the high-performing products rated by ENERGY STAR—which was established to represent the 25 percent most energy-efficient computers on the market. iPad Pro (11-inch) consumes 65 percent less energy than the requirement for ENERGY STAR.<sup>11</sup>



## Designed to last

To maximize durability, we assessed iPad Pro (11-inch) in our Reliability Testing Lab, using rigorous testing methods that simulate customers' experiences.

## Made with smarter chemistry

We apply rigorous controls for materials users touch—all based on recommendations from toxicologists and dermatologists.



# Recover

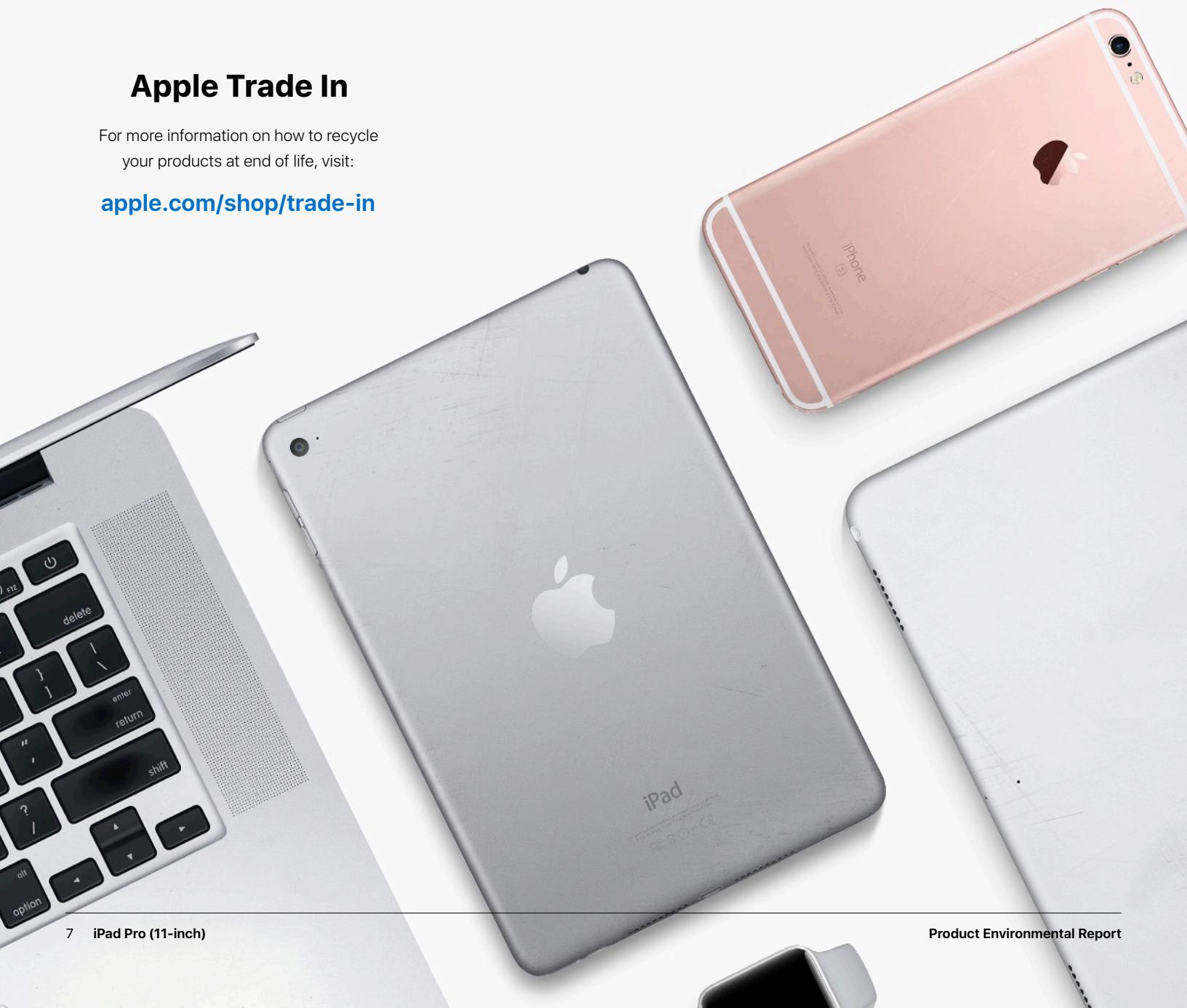
Return your product with Apple Trade In and we'll ensure it has a long life or recycle it for free.

When products are used longer, fewer resources are extracted from the earth. That's why we launched Apple Trade In—it offers customers a seamless way to return their old devices to Apple. Customers can trade in eligible devices for an Apple Store Gift Card.<sup>12</sup> If a device is not eligible for credit, we'll recycle it for free. We also offer and participate in [product take-back and recycling collection programs](#) for 99 percent of the countries where we sell products—and we hold our recyclers to high standards. Our efforts to keep harmful substances out of our products also mean our materials are safer to recover and reuse.

## Apple Trade In

For more information on how to recycle your products at end of life, visit:

[apple.com/shop/trade-in](http://apple.com/shop/trade-in)



# Definitions

**Recycled materials:** Recycling makes better use of finite resources by sourcing from recovered rather than mined materials. Recycled content claims for materials used in our products have been verified by an independent third party to a recycled content standard that conforms to ISO 14021.

**Bio-based plastics:** Bio-based plastics are made from biological sources rather than from fossil-fuel sources. Bio-based plastics allow us to reduce reliance on fossil fuels.

**Renewable materials:** We define bio-materials as those that can be regenerated in a human lifespan, like paper fibers or sugarcane. Bio-materials can help us use fewer finite resources. But even though bio-materials have the ability to regrow, they are not always managed responsibly. Renewable materials are a type of bio-material managed in a way that enables continuous production without depleting earth's resources. That's why we focus on sources that are certified for their management practices.

**Supplier Clean Energy Program:** Since the electricity used to make our products is the largest contributor to our overall carbon footprint, we're helping our suppliers become more energy efficient and transition to new renewable energy sources. As part of this program, Apple and our suppliers are working to generate and procure more than 4 gigawatts of new renewable energy worldwide by 2020. This goal represents approximately one-third of our current manufacturing carbon footprint.

**Carbon footprint:** Estimated emissions are calculated in accordance with guidelines and requirements as specified by ISO 14040 and ISO 14044. There is inherent uncertainty in modeling carbon emissions due primarily to data limitations. For the top component contributors to Apple's carbon emissions, Apple addresses this uncertainty by developing detailed process-based environmental models with Apple-specific parameters. For the remaining elements of Apple's carbon footprint, we rely on industry average data and assumptions. Calculation includes emissions for the following life cycle phases contributing to Global Warming Potential (GWP 100 years) in CO<sub>2</sub> equivalency factors (CO<sub>2</sub>e):

- **Production:** Includes the extraction, production, and transportation of raw materials, as well as the manufacture, transport, and assembly of all parts and product packaging.
- **Transport:** Includes air and sea transportation of the finished product and its associated packaging from manufacturing site to regional distribution hubs. Transport of products from distribution hubs to end customers is modeled using average distances based on regional geography.
- **Use:** Apple assumes a three-year period for power use by first owners. Product use scenarios are based on historical customer use data for similar products. Geographic differences in the power grid mix have been accounted for at a regional level.
- **End-of-life processing:** Includes transportation from collection hubs to recycling centers and the energy used in mechanical separation and shredding of parts. For more information on the carbon footprint, visit [apple.com/environment/answers](http://apple.com/environment/answers).

# Endnotes

<sup>1</sup>Apple defines its restrictions on harmful substances, including definitions for what Apple considers to be "free of," in the [Apple Regulated Substances Specification](#). Every Apple product is free of PVC and phthalates with the exception of AC power cords in India, Thailand, and South Korea, where we continue to seek government approval for our PVC and phthalates replacement. Apple products comply with the European Union Directive 2011/65/EU and its amendments, including exemptions for the use of lead such as high-temperature solder. Apple is working to phase out the use of these exempted substances where technically possible.

<sup>2</sup>iPad Pro (11-inch) achieved a Gold rating for EPEAT in the United States and Canada. Electronic Product Environmental Assessment Tool (EPEAT) is a program that ranks computers and displays based on environmental attributes in accordance with IEEE 1680.1-2018. For more information, visit [www.epeat.net](http://www.epeat.net).

<sup>3</sup>Greenhouse gas emissions were calculated using a life cycle assessment methodology in accordance with ISO 14040 and 14044 standards and based on the iPad Pro 11-inch (2nd generation) with 128GB storage configuration. We often update our carbon models to leverage new information. As a result, our estimate for the carbon footprint of the iPad Pro 11-inch (1st generation) with 64GB storage increased from 113 kg CO<sub>2</sub>e (as published in its Product Environmental Report) to 114 kg CO<sub>2</sub>e.

iPad Pro (11-inch) carbon footprint		
	2nd generation	1st generation
64GB	-	114 kg CO <sub>2</sub> e
128GB	119 kg CO <sub>2</sub> e	-
256GB	130 kg CO <sub>2</sub> e	128 kg CO <sub>2</sub> e
512GB	158 kg CO <sub>2</sub> e	152 kg CO <sub>2</sub> e
1TB	206 kg CO <sub>2</sub> e	184 kg CO <sub>2</sub> e

# Endnotes

<sup>4</sup> iPad Pro 11-inch (1st generation) was used for comparison as the most recently released and similar device. Preproduction iPad Pro 11-inch (2nd generation) with 128GB was compared to shipping iPad Pro 11-inch (1st generation) with 64GB, since these are the two lowest configurations offered.

<sup>5</sup> Third-party assessments seek to confirm sourcing practices and are part of our responsible sourcing program. In addition, our efforts consider conflict, human rights, and other risks.

<sup>6</sup> Final assembly supplier sites for iPad Pro (11-inch) are third-party certified as Zero Waste by UL LLC (UL 2799 Standard). This means these final assembly supplier sites do not generate any waste sent to landfill.

<sup>7</sup> Only chemicals that meet GreenScreen® benchmark 3 or 4 are considered safer and preferred for use. Final assembly sites for iPad Pro (11-inch) are among the 18 final assembly supplier facilities that have adopted these safer cleaners. GreenScreen® is a comprehensive hazard assessment tool that evaluates substances against 18 different criteria. For more information, visit [www.greenscreenchemicals.org](http://www.greenscreenchemicals.org).

<sup>8</sup> Responsible sourcing of wood fiber is defined in Apple's [Sustainable Fiber Specification](#). We consider wood fibers to include bamboo.

<sup>9</sup> For more information about our work to protect and create responsibly managed forests, please read our [Environmental Responsibility Report](#).

<sup>10</sup> Breakdown of U.S. retail packaging by weight.

<sup>11</sup> Energy consumption and energy efficiency values are based on the ENERGY STAR Program Requirements for Computers, including the max energy allowance for iPad Pro (11-inch). For more information, visit [www.energystar.gov](http://www.energystar.gov). ENERGY STAR and the ENERGY STAR mark are registered trademarks owned by the U.S. Environmental Protection Agency.

iPad Pro (11-inch) is tested with a fully charged battery and powered by the 18W USB-C Power Adapter with the USB-C Charge Cable (1m).

- Sleep: Low power state that is entered automatically after 2 minutes of inactivity (default) or by pressing the Sleep/Wake button. Connected to Wi-Fi. All other settings were left in their default state.
- Idle—Display on: Display brightness was set as defined by ENERGY STAR Program Requirements for Computers, and Auto-Brightness was turned off. Connected to Wi-Fi. All other settings were left in their default state.
- Power adapter, no-load: Condition in which the 18W USB-C Power Adapter with the USB-C Charge Cable (1m) is connected to AC power but not connected to iPad Pro (11-inch).
- Power adapter efficiency: Average of the 18W USB-C Power Adapter with the USB-C Charge Cable (1m) measured efficiency when tested at 100 percent, 75 percent, 50 percent, and 25 percent of the power adapter's rated output current.

Mode	Power consumption for iPad Pro (11-inch)		
	100V	115V	230V
Sleep	0.50W	0.50W	0.52W
Idle—Display on	2.48W	2.48W	2.57W
Power adapter, no-load	0.02W	0.02W	0.03W
Power adapter efficiency	87.3%	87.7%	87.9%

<sup>12</sup> Trade-in values vary based on the condition, year, and configuration of your trade-in device, and may also vary between online and in-store trade-in. You must be at least 18 years old. In-store trade-in requires presentation of a valid, government-issued photo ID (local law may require saving this information). Additional terms from Apple or Apple's trade-in partners may apply.

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