Product Environmental Report

HomePod (2nd generation)

Date introduced
January 18, 2023

Made with better materials

100%
recycled rare earth elements in the speaker magnet

100%
recycled gold in the plating of multiple printed circuit boards

Tackling climate change

100%
We're committed to transitioning our entire manufacturing supply chain to 100 percent renewable electricity by 2030.

Energy efficient

74%
less energy consumed than the ENERGY STAR® energy efficiency requirement

Smarter chemistry[1]

- Mercury-free
- Brominated flame retardant–free
- PVC-free
- Beryllium-free

Responsible packaging

100%
of the wood fiber comes from recycled and responsible sources

96%
of the packaging is fiber-based, due to our work to eliminate plastic in packaging

Apple Trade In

Return your device through Apple Trade In, and we'll recycle it for free.

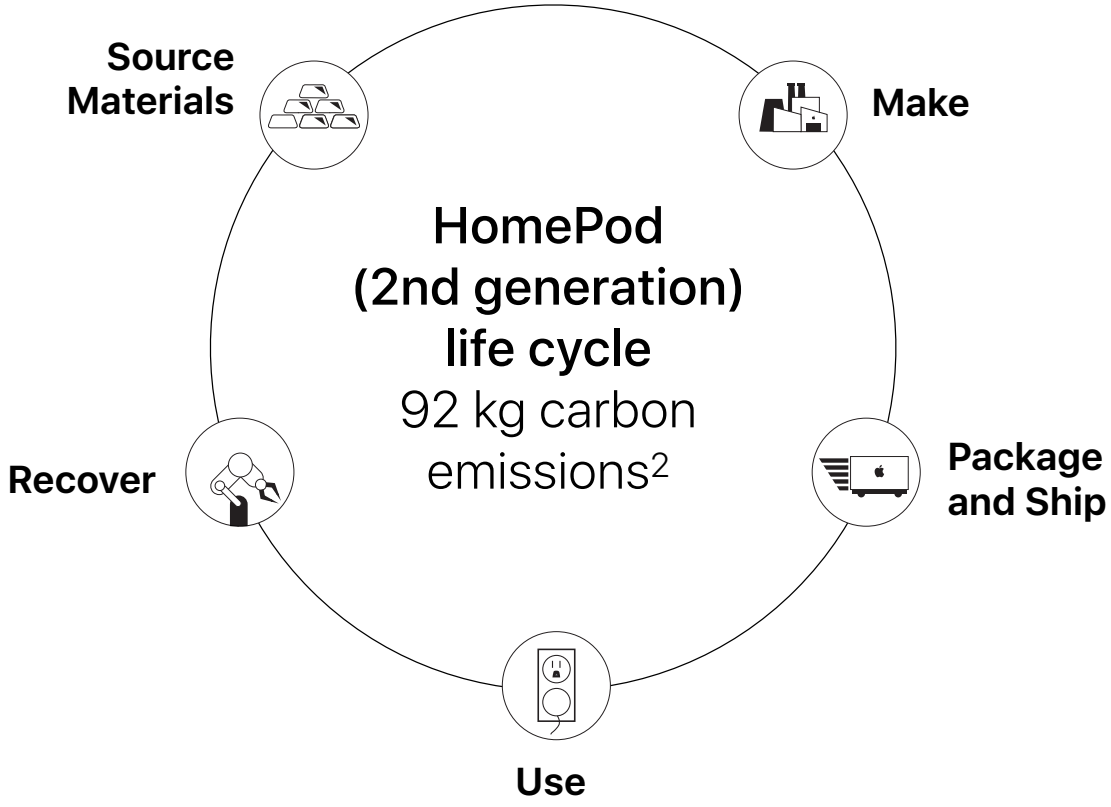
100% recycled gold used in the plating of multiple printed circuit boards—a first for HomePod

This report includes data current as of product launch. Product evaluations are based on U.S. configuration of HomePod (2nd generation).

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 addressing Apple's carbon emissions—by focusing on making energy-efficient products with renewable or recycled materials and with renewable energy. We've reduced the carbon footprint of HomePod (2nd generation) by over 30 percent compared with the previous generation.[3] This decrease was driven primarily by increased energy efficiency, which reduces emissions from product use by nearly 40 percent, as well as a logistics plan that will reduce emissions from shipping by over 80 percent, reduced use of material, and increased use of clean energy to manufacture HomePod (2nd generation). Apple is committed to making carbon-neutral products by 2030.

HomePod (2nd generation) life cycle carbon emissions

64%	Production
1%	Transport
34%	Use
<1%	End-of-life processing

Source Materials

HomePod (2nd generation) contains recycled gold, plastic, and rare earth elements.

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. Apple also requires 100 percent of identified tin, tantalum, tungsten, gold, cobalt, and lithium smelters and refiners to participate in third-party audits.[4] 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.

Gold

Apple is pioneering industry-leading levels of traceability in recycled materials to build a gold supply chain of exclusively recycled content. We're now using 100 percent recycled gold in the plating of multiple printed circuit boards.

Plastic

We're transitioning to plastics from renewable or recycled sources as alternatives to fossil fuel–based plastics. For HomePod (2nd generation), 16 components contain more than 35 percent recycled plastic. The white mesh fabric is made of nearly 30 percent recycled plastic, and with the new midnight fabric, we've been able to achieve 100 percent recycled plastic.

Rare earth elements

The speaker magnet contains 100 percent recycled rare earth elements.

Smarter chemistry

HomePod (2nd generation) is free of harmful substances like beryllium, brominated flame retardants, PVC, phthalates, and mercury.[1] And 100 percent of the materials in HomePod (2nd generation) are covered by our Regulated Substances Specification.

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 suppliers' 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.

Greener chemicals

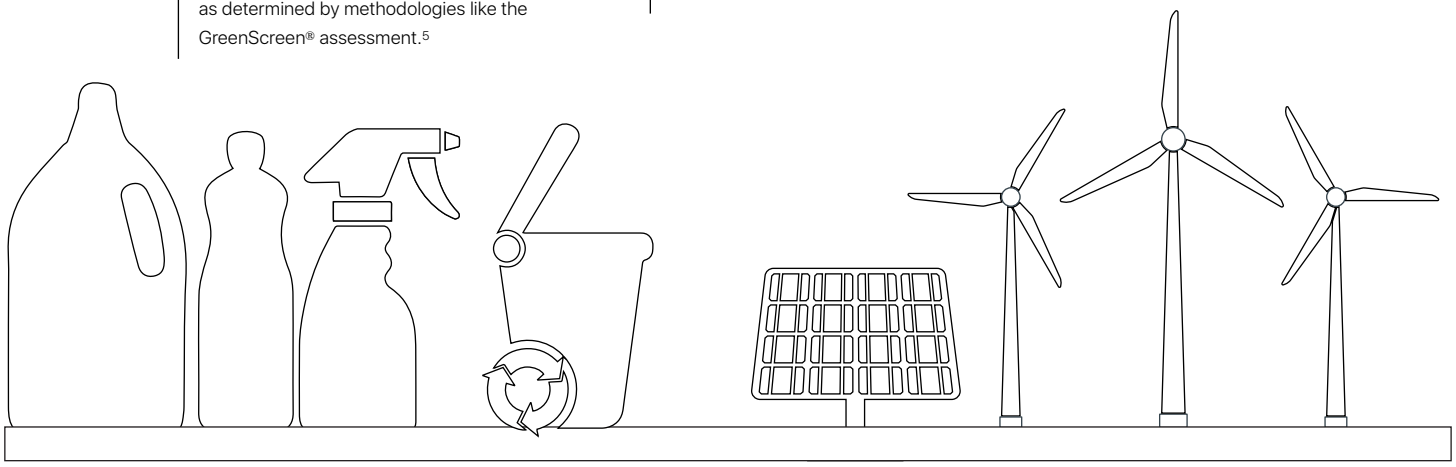
All established HomePod (2nd generation) final assembly supplier sites use safer cleaners and degreasers in their manufacturing processes, as determined by methodologies like the GreenScreen® assessment.[5]

Zero Waste to Landfill

No established HomePod (2nd generation) final assembly supplier sites generate any waste sent to landfill.[6]

Supplier energy use

All HomePod (2nd generation) final assembly supplier sites are transitioning to 100 percent renewable energy for Apple production.



Package and Ship

HomePod (2nd generation) packaging does not use outer plastic wrap.[7] This brings us one step closer to our goal of completely removing plastic from all our packaging by 2025.

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.[8] And we have protected or created enough responsibly managed forests to cover all the virgin wood fiber we use in our packaging.[9] This ensures working forests are able to regrow and continue to clean our air and purify our water.

96%

of the packaging[10] is fiber-based, due to our work to eliminate plastic in packaging

49%

recycled content in fiber packaging

100%

of the virgin wood fiber in the packaging comes from responsibly managed forests[8]

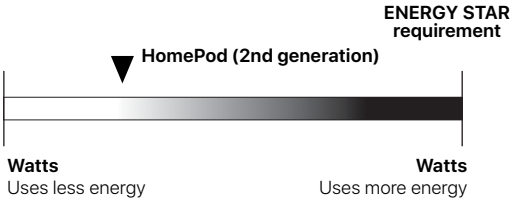
Use

HomePod (2nd generation) uses 74 percent less energy than the requirement for ENERGY STAR.[11]

We design our products to be energy efficient, long-lasting, and safe. HomePod (2nd generation) uses software and power-efficient components that intelligently manage power consumption. We also run our own Reliability and Environmental Testing Labs, where 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 consumption of ENERGY STAR–rated products

Apple devices consistently rank among the high-performing products rated by ENERGY STAR, which sets specifications that typically reflect the 25 percent most energy-efficient devices on the market. HomePod (2nd generation) in low power mode consumes 74 percent less energy than the requirement for ENERGY STAR.[11]



Designed to last

To ensure durability, we assessed HomePod (2nd generation) 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

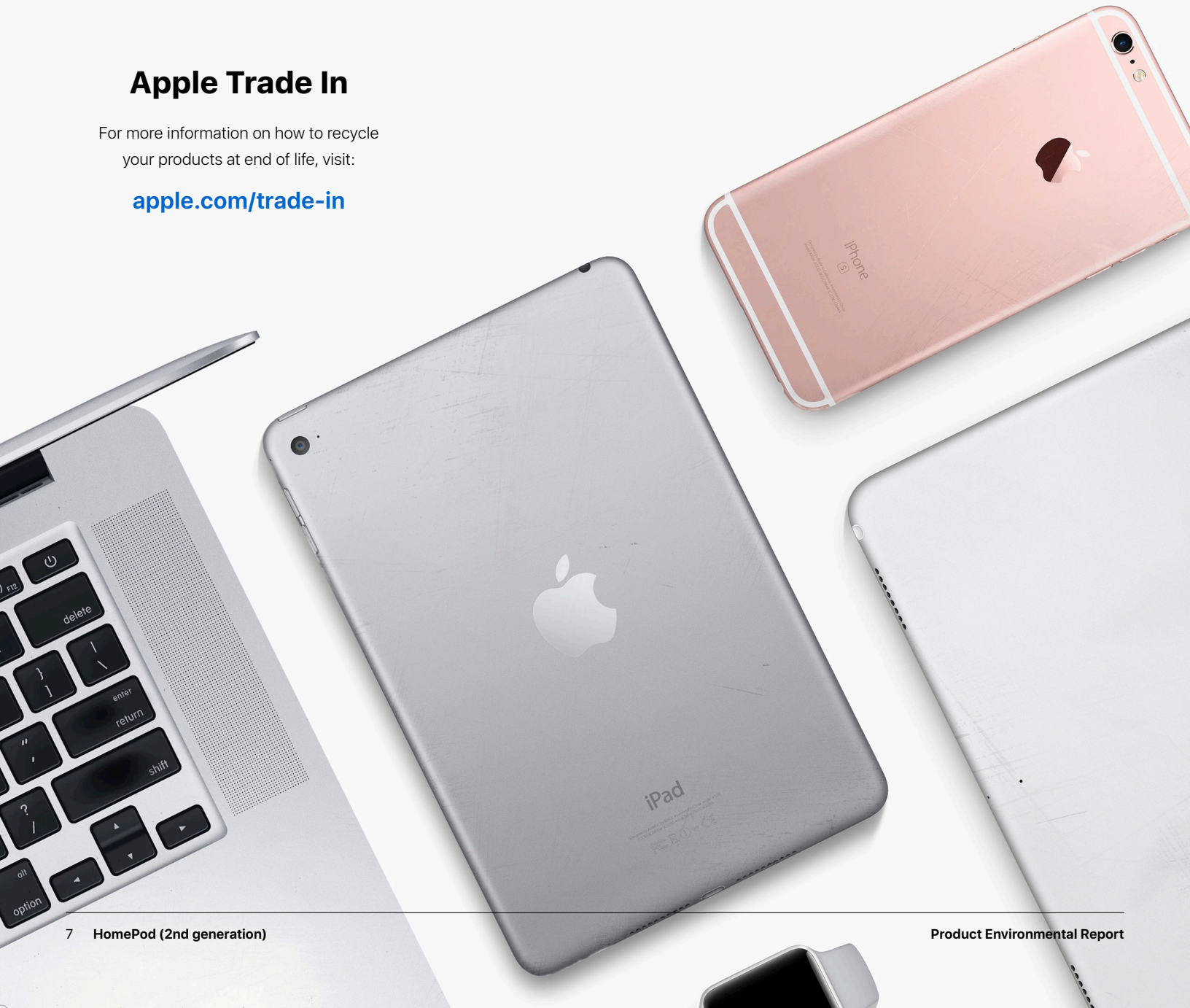
Return your product with Apple Trade In, and we'll recycle it for free.

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 and accessories to Apple. Eligible devices can be traded in for credit or an Apple Store Gift Card, while accessories and other devices can be recycled for free.[12] 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/trade-in



Definitions

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.

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_2 equivalency factors (CO_2e):

- **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- or four-year period for power use by first owners based on the product type. Product use scenarios are based on historical customer use data for similar products. Energy use is simulated in various ways; for example, by modeling daily battery drain or through performing activities like movie and music playback. 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

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.

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 the 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. We're committed to transitioning our entire manufacturing supply chain to 100 percent renewable electricity by 2030.

Endnotes

[1] Apple's Regulated Substances Specification describes Apple's restrictions on the use of certain chemical substances in materials in Apple products, accessories, manufacturing processes, and packaging used for shipping products to Apple's end-customers. Restrictions are derived from international laws or directives, regulatory agencies, eco-label requirements, environmental standards, and Apple policies. Every Apple product is free of PVC and phthalates except for AC power cords in India, Thailand (for 2-prong AC power cords), 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 for new products where technically possible.

[2] Greenhouse gas emissions were calculated using a life cycle assessment methodology in accordance with ISO 14040 and 14044 standards and based on HomePod (2nd generation). We often update our carbon models to leverage new information. As a result, our estimate for the carbon footprint of the previous-generation HomePod decreased from 146 kg CO_2e (as published in its Product Environmental Report) to 134 kg CO_2e.

Carbon footprint	
HomePod (2nd generation)	**HomePod (1st generation)**
92 kg CO_2e	134 kg CO_2e

Endnotes

[3] HomePod (1st generation) was used for comparison as the most recently released and similar device. Preproduction HomePod (2nd generation) was compared to shipping HomePod (1st generation) since these are the two most similar devices.

[4] We map materials in our supply chain and publish a list of identified tin, tantalum, tungsten, and gold (3TG), cobalt, and lithium smelters and refiners in our supply chain. Third-party assessments seek to confirm sourcing practices and are part of our responsible sourcing program. In addition, our efforts consider a broad range of risks, including social, environmental, human rights, and governance risks.

[5] Chemicals that meet GreenScreen® benchmark 3 or 4 or other equivalent methodologies like U.S. EPA Safer Choice are considered safer and preferred for use. GreenScreen® is a comprehensive hazard assessment tool that evaluates substances against 18 different criteria. For more information, visit www.greenscreenchemicals.org.

[6] All established final assembly supplier sites—or those that have been Apple suppliers for more than one year—for HomePod (2nd generation) are third-party verified as Zero Waste by UL LLC (UL 2799 Standard). UL requires at least 90 percent diversion through methods other than waste to energy to achieve Zero Waste to Landfill (Silver 90–94 percent, Gold 95–99 percent, and Platinum 100 percent) designations.

[7] Based on retail packaging as shipped by Apple.

[8] Responsible sourcing of wood fiber is defined in Apple's Sustainable Fiber Specification. We consider wood fibers to include bamboo.

[9] For more information about our work to protect and create responsibly managed forests, please read our Environmental Progress Report.

[10] Breakdown of U.S. retail packaging by weight. Select non-plastic, non-fiber materials excluded.

[11] Energy consumption and energy efficiency values are based on the ENERGY STAR Program Requirements for Audio/Video Version 3.0. For more information, visit www.energystar.gov. ENERGY STAR and the ENERGY STAR mark are registered trademarks owned by the U.S. Environmental Protection Agency.

All energy values assume a Wi-Fi connection.

- Low power mode/Sleep: Low power state that is entered automatically after music playback stops.
- Music playback: Condition in which a typical music track is played on HomePod (2nd generation) from Apple Music at 50 percent volume. Power will vary depending on music track and volume.
- Power supply efficiency: Average of the power supply's measured efficiency when tested at 100 percent, 50 percent, and 20 percent of the power supply's rated output current.

	Power consumption for HomePod (2nd generation)		
Mode	**100V**	**115V**	**230V**
Low power mode	0.93W	1.04W	1.04W
Music playback	8.17W	8.08W	8.28W
Power supply efficiency	89.78%	90.02%	88.69%

[12] 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.