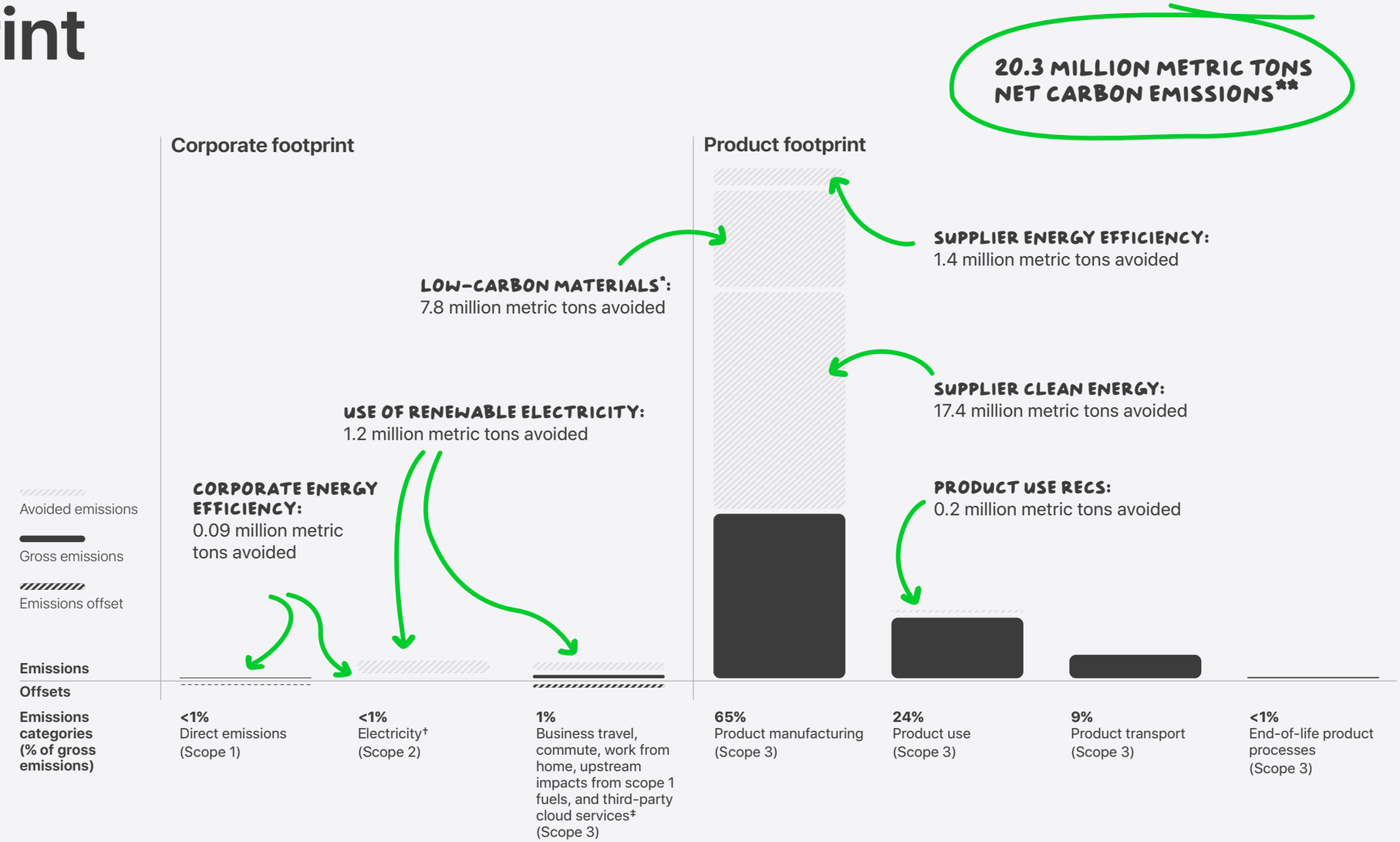
Apple's comprehensive carbon footprint

This past year, we've continued our efforts to reduce Apple's emissions. In 2022, our environmental programs avoided over 28 million metric tons of emissions across all scopes. Initiatives that we've been growing for years — like sourcing 100 percent renewable electricity for our facilities, transitioning suppliers to renewable energy, and using low-carbon materials in products — have yielded clear results. Thanks to this work, we're decoupling business growth from emissions: While our revenue has grown by over 68 percent since 2015, our gross emissions have decreased by over 45 percent.



* Low-carbon materials represents emissions savings from transitioning to recycled materials in our products, or use of low-carbon aluminum, as described on page 14.
** Net carbon emissions represents our total gross footprint minus carbon offsets applied to each category. Percentages shown for each emissions category represent the share of Apple's gross footprint. Totals add up to more than 100 percent due to rounding.
† Beginning in fiscal year 2022, we're including transmission and distribution losses as part of scope 3 emissions, which are matched with renewable electricity.
‡ Beginning in fiscal year 2022, we're incorporating emissions associated with employees working from home as part of Apple's new hybrid work model, as well as emissions from third-party cloud services — the electricity from both of which is addressed using renewable energy.

Carbon neutrality for our corporate emissions

Since April 2020, we've been carbon neutral for our corporate operations, including direct emissions (scope 1); indirect emissions from purchased electricity, steam, heat, or cooling (scope 2); and emissions from business travel and employee commute (scope 3). In 2022, we expanded the scope 3 emissions we include in our corporate footprint and are now also carbon neutral for work from home, third-party cloud services, electricity transmission and distribution losses, and upstream impacts from scope 1 fuels. To reach neutrality, we focused on driving energy efficiency improvements and transitioning our facilities to 100 percent renewable electricity, which we achieved in 2018. These programs have reduced our scope 1 and scope 2 emissions by 67 percent since 2011, when we first began procuring renewable electricity, even as our business grew. We've addressed the remaining scope 1, 2, and 3 emissions (for a total of 324,100 metric tons) by securing high-quality carbon credits from projects that protect and restore forests, wetlands, and grasslands.

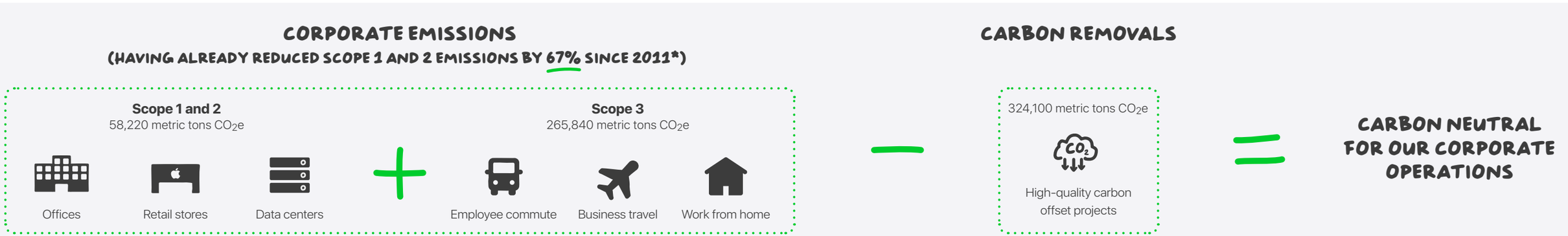
Measuring our footprint

We account for our carbon footprint by following internationally recognized standards, like the World Resources Institute (WRI) Greenhouse Gas Protocol and ISO 14040/14044. For our corporate footprint, we calculate emissions based on consumption data when available; when it's not available, we rely on reasonable assumptions and methodologies to estimate emissions, which we revisit and improve on regularly. For our product hardware carbon footprint, we use a life cycle–based approach. Apple-specific data drives many of our most critical calculations; in cases where that data isn't available, we rely on secondary sources, including industry averages. We continually refine our model to include new sources of product life cycle data — and offer a more accurate and transparent assessment of our footprint. Our comprehensive carbon footprint and our methodology are assessed by a third party each year to confirm accuracy and transparency (see Appendix D). Improving the accuracy of our carbon footprint is an ongoing process — as we learn more, we refine our carbon models and adjust our climate road map. We also regularly revisit the boundary of our footprint to best reflect our impact. For example, in 2022, we expanded our corporate footprint to include work from home emissions, third-party cloud services, electricity transmission and distribution losses, and upstream impacts from scope 1 fuels.

Evaluating climate risks

In 2020, we conducted a climate scenario analysis to help us better understand the potential physical and transition effects of climate change. To align with the Task Force on Climate-related Financial Disclosures (TCFD) recommendations, we considered a range of future scenarios, including a scenario below 2° C. Our assessment had a global scope to capture all our corporate facilities — including offices, retail locations, and data centers — as well as 200 supplier facilities, based on spend. The analysis highlighted how our renewable energy program and carbon neutrality goals could contribute to our corporate resilience. It also provided environmental data that we considered when developing business strategies, including around supply chain diversification, and when safeguarding our global assets. The results of the scenario analysis contributed to a larger body of internal assessments on the physical and transition impacts of climate change on our business.

We're committed to managing regulatory, reputational, and market risks related to climate change. For more information on these climate-related risks and Apple's governance of these risks, read our CDP Climate Change 2022 submission (PDF).



* We've reduced corporate emissions through energy efficiency, renewable electricity, and low-carbon fuels, and we're applying carbon offsets to the remaining emissions.

Appendix A

Greenhouse gas emissions

We account for our carbon footprint by following internationally recognized standards, like the World Resources Institute (WRI) Greenhouse Gas (GHG) Protocol and ISO 14040/14044.[1] Improving the accuracy of our carbon footprint is an ongoing process — as we learn more, we refine our carbon models and adjust our climate roadmap. We also regularly revisit the boundary of our carbon footprint as our data sources improve and our business evolves. For example, in 2022, we expanded our corporate footprint to include work from home emissions, third-party cloud services, electricity transmission and distribution losses, and upstream impacts from our scope 1 fuel use.

		Fiscal year				
		2022	**2021**	**2020**	**2019**	**2018**
Corporate emissions (metric tons CO_2e)[2]	Gross emissions	**324,100**	**166,380**	**334,430**	**573,730**	**586,170**
	Scope 1	**55,200**	**55,200**	**47,430**	**52,730**	**57,440**
	Natural gas, diesel, propane	39,700	40,070	39,340	40,910	42,840
	Fleet vehicles	12,600	12,090	4,270	6,950	11,110
	Other emissions[3]	2,900	3,040	3,830	4,870	3,490
	Scope 2 (market-based)[4]	**3,000**	**2,780**	**0**	**0**	**8,730**
	Electricity	0	0	0	0	8,730
	Steam, heating, and cooling[5]	3,000	2,780	0	0	0
	Scope 3	**265,800**	**108,400**	**287,000**	**521,000**	**520,000**
	Business travel	113,500	22,850	153,000	326,000	337,000
	Employee commute[6]	134,200	85,570	134,000	195,000	183,000
	Upstream fuel	10,600	0	0	0	0
	Work from home (market-based)	7,500	0	0	0	0
	Transmission and distribution loss (market-based)	0	N/A	N/A	N/A	N/A
	Third-party cloud (market-based)	0	0	0	0	0
	Carbon removals					
	Corporate carbon offsets[7]	–324,100	–167,000[8]	–70,000[9]	0	0
Product life cycle emissions (metric tons CO_2e)[10]	**Gross emissions (Scope 3)**	**20,280,000**	**23,020,000**	**22,260,000**	**24,460,000**	**24,550,000**
	Manufacturing (purchased goods and services)	13,400,000	16,200,000	16,100,000	18,900,000	18,500,000
	Product transportation (upstream and downstream)	1,900,000	1,750,000	1,800,000	1,400,000	1,300,000
	Product use (use of sold products)	4,900,000	4,990,000	4,300,000	4,100,000	4,700,000
	End-of-life processing	80,000	80,000	60,000	60,000	50,000
	Carbon removals					
	Product carbon offsets	0	–500,000[11]	0	0	0
Total gross scope 3 emissions (corporate and product) (metric tons CO_2e)		**20,550,000**	**23,128,400**	**22,547,000**	**24,980,000**	**25,070,000**
Total gross carbon footprint (without offsets) (metric tons CO_2e)[12]		**20,600,000**	**23,200,000**	**22,600,000**	**25,100,000**	**25,200,000**
Total net carbon footprint (after applying offsets) (metric tons CO_2e)[12]		**20,300,000**	**22,530,000**	**22,530,000**	**25,100,000**	**25,200,000**

Notes:

- For data on years prior to 2018, please reference past Environmental Progress Reports.
- Totals might not add up due to rounding.

1 Apple's carbon footprint boundary is aligned with the Greenhouse Gas (GHG) Protocol framework and includes emissions that are material and relevant to Apple, where data is available. Apple's carbon footprint includes direct scope 1 emissions; indirect scope 2 emissions from purchased electricity, steam, heating, and cooling; and indirect scope 3 emissions from purchased goods and services, transportation and distribution, business travel, employee commute, product use, and end of life.

2 Apple is carbon neutral for corporate emissions as of April 2020. Beginning in fiscal year 2022, we've expanded our footprint boundary to include scope 3 emissions associated with work from home, third-party cloud services, electricity transmission and distribution losses, and upstream impacts from scope 1 fuels.

3 Emissions from R&D processes and refrigerant leaks.

4 We estimate the life cycle emissions associated with our use of renewable electricity for our corporate facilities to be about 60,000 metric tons CO_2e. We do not currently account for these emissions in our carbon footprint, due to the poor quality of this data.

5 Beginning in fiscal year 2021, we're accounting for scope 2 emissions from the purchase of district heating, chilled water, and steam.

6 Beginning in fiscal year 2020, we updated our methodology for calculating emissions from employee commute to reflect employees working from home during COVID-19.

7 For a detailed breakdown of carbon offset purchases applied to our corporate footprint, see the carbon offsets table on the following page.

8 We retired 167,000 metric tons of carbon credits from the Chyulu Hills project in Kenya to maintain carbon neutrality for our corporate emissions in fiscal year 2021. This project is certified to the VCS and CCB standards.

9 We retired 70,000 metrics tons of carbon credits — 53,000 from the Chyulu Hills project in Kenya and 17,000 from the Cispatá Mangrove project in Colombia.

10 Because we're committed to accuracy and transparency, we regularly refine our product life cycle assessment model and sources of data. For example, last year we obtained more granular data summarizing in which countries our products are sold and used, resulting in more granularity possible for grid emission factors used in the carbon footprint of the product use phase. The net result was an increase in our fiscal year 2021 carbon footprint. When using the same level of data granularity and model as fiscal year 2021, our product use carbon emissions in fiscal year 2021 would have been about 2.5 percent lower.

11 For fiscal year 2021, we retired credits from the Chyulu Hills project in Kenya and purchased carbon credits from two additional projects to offset a total of 500,000 metric tons of direct emissions across our value chain. The first project, a REDD+ coastal conservation project in Guatemala, protects and conserves forests from deforestation and degradation. The second project aims to establish forests on about 46,000 hectares of barren land that isn't otherwise in use across seven counties in the Guizhou province of China. Both projects are certified to the same high standards that we require for projects in the Restore Fund, including VCS and CCB standards.

12 Due to rounding, our gross and net carbon footprints do not always equal the sum of the subtotals disclosed above.

Fiscal year 2022 energy and carbon footprint (corporate facilities)

The table below provides a detailed breakdown of 2021 energy use, which we used to calculate our greenhouse gas emissions.

Location	Scope 1			Scope 2		
	Total gas (MMBtu)	Renewable biogas (MMBtu)	Scope 1 emissions (metric tons CO_2e)	Electricity (million kWh)	Renewable electricity (million kWh)	Scope 2 emissions (market-based, metric tons CO_2e)[1]
Corporate	**826,063**	**202,978**	**31,030**	**856**	**856**	**0**
Cupertino, CA	672,244	202,978	22,849	428	428	0
Elk Grove, CA	13,782	–	732	13	13	0
Austin, TX	20,948	–	1,113	64	64	0
Other U.S.	67,362	–	3,585	57	57	0
Cork, Ireland	20,151	–	1,070	16	16	0
Singapore	142	–	8	15	15	0
China	686	–	37	33	33	0
Other international	30,748	–	1,636	230	230	0
Data centers	**19,109**	**17,961**	**62**	**2,138**	**2,138**	**0**
Maiden, NC	17,961	17,961	1	432	432	0
Mesa, AZ	312	–	17	379	379	0
Newark, CA	–	–	–	20	20	0
Prineville, OR	836	0	44	275	275	0
Reno, NV	–	–	–	419	419	0
Viborg, Denmark	N/A	N/A	N/A	27	27	0
Colocation facilities (U.S.)	N/A	N/A	N/A	371	371	0
Colocation facilities (international)	N/A	N/A	N/A	117	117	0
China	N/A	N/A	N/A	98	98	0
Retail stores	**58,720**	**0**	**3,119**	**205**	**205**	**0**
Domestic (U.S.)	36,005	–	1,912	97	97	0
International	22,716	–	1,207	108	108	0
Total	**903,892**	**220,939**	**34,211**	**3,199**	**3,199**	**0**

Notes:

- Dash indicates unavailable data.
- N/A = Gas use at colocation facilities is considered outside of Apple's operational control.

1 Scope 2 market-based emissions from purchased electricity is zero. But, we also account for purchased steam, heating, and cooling, which resulted in 3,020 metric tons of emissions in fiscal year 2022.

Appendix D

Net comprehensive carbon footprint, facilities energy, carbon, waste, paper, and water data (Apex)

INDEPENDENT ASSURANCE STATEMENT

To: The Stakeholders of Apple Inc.

Introduction and objectives of work

Apex Companies, LLC (Apex) was engaged by Apple Inc. (Apple) to conduct an independent assurance of select environmental data reported in its 2022 environmental report (the Report). This assurance statement applies to the related information included within the scope of work described below. The intended users of the assurance statement are the stakeholders of Apple. The overall aim of this process is to provide assurance to Apple's stakeholders on the accuracy, reliability and objectivity of Subject Matter included in the Report.

This information and its presentation in the Report are the sole responsibility of the management of Apple. Apex was not involved in the collection of the information or the drafting of the Report.

Scope of Work

Apple requested Apex to include in its independent review the following (Subject Matter):

- Assurance of select environmental data and information included in the Report for the fiscal year 2022 reporting period (September 26, 2021 through September 24, 2022), specifically, in accordance with Apple's definitions and World Resources Institute (WRI)/World Business Council for Sustainable Development (WBCSD) Greenhouse Gas Protocol:
  - Energy: Direct (Million Therms) and Indirect (Million kilowatt hours (mkWh))
  - Renewable Energy (mkWh)
  - Water Withdrawal (Million Gallons)
  - Greenhouse Gas (GHG) Emissions: Direct Scope 1 emissions by weight, Indirect Scope 2 emissions by weight, Indirect Scope 3 emissions by weight (Purchased Goods and Services, Fuel and Energy Related Activities, Employee Commute and Business Travel) (Metric Tonnes of Carbon Dioxide equivalent)
  - Waste Quantities and Disposition (Metric Tonnes)
  - Paper Quantities (Metric Tonnes)
  - Appropriateness and robustness of underlying reporting systems and processes, used to collect, analyze, and review the environmental information reported

Excluded from the scope of our work is any assurance of information relating to:

- Text or other written statements associated with the Report
- Activities outside the defined assurance period

Assessment Standards

Our work was conducted against Apex's standard procedures and guidelines for external Verification of Sustainability Reports, based on current best practice in independent assurance. Apex procedures are based on principles and methods described in the International Standard on Assurance Engagements (ISAE) 3000 Revised, Assurance Engagements Other than Audits or Reviews of Historical Financial Information (effective for assurance reports dated on or after Dec. 15, 2015), issued by the International Auditing and Assurance Standards Board and ISO 14064-3: Greenhouse gases -- Part 3: Specification with guidance for the validation and verification of greenhouse gas statements.

Methodology

Apex undertook the following activities:

1. Virtual/ remote site visit to Apple facilities in Cork, Ireland
2. Site visit to Apple facilities in Culver City, California
3. Interviews with relevant personnel of Apple;
4. Review of internal and external documentary evidence produced by Apple;
5. Audit of environmental performance data presented in the Report, including a detailed review of a sample of data against source data; and
6. Review of Apple information systems for collection, aggregation, analysis and internal verification and review of environmental data.

The work was planned and carried out to provide reasonable assurance for all indicators and we believe it provides an appropriate basis for our conclusions.

Our Findings

Apex verified the following indicators for Apple's Fiscal Year 2022 reporting period (September 26, 2021 through September 24, 2022):

Parameter	Quantity	Units	Boundary / Protocol
Natural Gas Consumption	903,892	Metric million British thermal unit	Worldwide occupied properties / Apple Internal Protocol
Electricity Consumption	3,199	Million kilowatt hours (mkWh)	Worldwide occupied properties / Apple Internal Protocol
Renewable Energy	3,199	Million kilowatt hours (mkWh)	Worldwide / Invoiced quantities & self-generated
Scope 1 GHG Emissions	55,202	Metric tonnes of carbon dioxide equivalent (tCO_2e)	Worldwide occupied properties / WRI/WBCSD GHG Protocol
Scope 2 GHG Emissions (Location-Based)	1,065,405	tCO_2e	Worldwide occupied properties / WRI/WBCSD GHG Protocol
Scope 2 GHG Emissions (Market-Based)	3,018	tCO_2e	Worldwide occupied properties / WRI/WBCSD GHG Protocol
Scope 3 GHG Emissions – Fuel and Energy Related Activities (Location-Based)	43,578	tCO_2e	Worldwide occupied properties / WRI/WBCSD GHG Protocol Value Chain (Scope 3)
Scope 3 GHG Emissions - Fuel and Energy Related Activities (Market-Based)	10,648	tCO_2e	Worldwide occupied properties / WRI/WBCSD GHG Protocol Value Chain (Scope 3)
Scope 3 GHG Emissions – Business Travel	113,475	tCO_2e	Worldwide occupied properties / WRI/WBCSD GHG Protocol Value Chain (Scope 3)
Scope 3 GHG Emissions – Employee Commute	134,242	tCO_2e	Worldwide occupied properties / WRI/WBCSD GHG Protocol Value Chain (Scope 3)
Scope 3 GHG Emissions - Work From Home Emissions (Employee Commute) (Location-Based)	42,967	tCO_2e	Worldwide occupied properties / WRI/WBCSD GHG Protocol Value Chain (Scope 3)
Scope 3 GHG Emissions – Work From Home Emissions (Employee Commute) (Market-Based)	7,474	tCO_2e	Worldwide occupied properties / WRI/WBCSD GHG Protocol Value Chain (Scope 3)
Scope 3 GHG Emissions - Other Cloud Services (Purchased Goods and Services) (Market-Based)	0	tCO_2e	Worldwide occupied properties / WRI/WBCSD GHG Protocol Value Chain (Scope 3)

Water Withdrawal	1,527	Million gallons	Worldwide occupied properties / Apple Internal Protocol
Water Discharge	679	Million gallons	Worldwide occupied properties / Apple Internal Protocol
Trash Disposed in Landfill	15,086	Metric tonnes	Worldwide occupied properties / Apple Internal Protocol
Hazardous Waste (Regulated waste)	1,261	Metric tonnes	Worldwide occupied properties / Apple Internal Protocol
Recycled Material (Removal by recycling contractor)	35,583	Metric tonnes	Worldwide occupied properties / Apple Internal Protocol
Composted Material	3,958	Metric tonnes	Worldwide occupied properties / Apple Internal Protocol
Waste to Energy	543	Metric tonnes	Worldwide occupied properties / Apple Internal Protocol
C&D Landfilled	4,877	Metric tonnes	Worldwide occupied properties / Apple Internal Protocol
C&D Recycled	23,535	Metric tonnes	Worldwide occupied properties / Apple Internal Protocol
Paper Used	632	Metric tonnes	Worldwide occupied properties / Apple Internal Protocol
Product end use avoided emissions	200,000	tCO_2e	Worldwide occupied properties / WRI/WBCSD GHG Protocol Value Chain (Scope 3)

Gross Carbon Footprint			
Corporate GHG Emissions (Market-Based)[1]	324,059	tCO_2e	Worldwide occupied properties / WRI/WBCSD GHG Protocol
Product Use	4.86	Million metric tonnes of carbon dioxide equivalent	Worldwide occupied properties / WRI/WBCSD GHG Protocol
Manufacturing[2]	13.44	Million metric tonnes of carbon dioxide equivalent	Worldwide occupied properties / WRI/WBCSD GHG Protocol
Transportation[3]	1.87	Million metric tonnes of carbon dioxide equivalent	Worldwide occupied properties / WRI/WBCSD GHG Protocol
Recycling[3]	0.08	Million metric tonnes of carbon dioxide equivalent	Worldwide occupied properties / WRI/WBCSD GHG Protocol

Gross Carbon Footprint[4]	20.57	Million metric tonnes of carbon dioxide equivalent	Worldwide occupied properties / WRI/WBCSD GHG Protocol

1. Corporate GHG Emissions = Scope 1 GHG Emissions + Scope 2 (Market-Based) GHG Emissions + Scope 3 GHG Emissions
2. Manufacturing emissions (30.83 million metric tonnes) not verified by Apex - reportedly verified by another third-party provider - CEP emissions reductions (17.39 million metric tonnes).
3. Not Verified by Apex. Reportedly verified by another third-party provider.
4. Gross Carbon Footprint = Corporate GHG Emissions + Product Use + Manufacturing + Transportation + Recycling

Our Conclusion

Based on the assurance process and procedures conducted regarding the Subject Matter, we conclude that:

- The Energy, Water, Waste, Paper, and Scope 1, Scope 2, Scope 3 (Business Travel & Employee Commute) GHG Emissions assertions shown above are materially correct and are a fair representation of the data and information;
- There is no evidence that the Scope 3 (Work From Home, Other Cloud Services, and Fuel and Energy Related Activities) GHG emissions are not materially correct and are not a fair representation of the data and information;
- Apple has established appropriate systems for the collection, aggregation and analysis of relevant environmental information, and has implemented underlying internal assurance practices that provide a reasonable degree of confidence that such information is complete and accurate.

Statement of independence, integrity and competence

Apex has implemented a Code of Ethics across the business to maintain high ethical standards among staff in their day to day business activities. We are particularly vigilant in the prevention of conflicts of interest.

No member of the assurance team has a business relationship with Apple, its Directors or Managers beyond that required of this assignment. We have conducted this verification independently, and there has been no conflict of interest.

The assurance team has extensive experience in conducting verification and assurance over environmental, social, ethical and health and safety information, systems and processes, has over 30 years combined experience in this field and an excellent understanding of Apex standard methodology for the Assurance of Sustainability Reports.

Attestation:

Trevor Donaghu, Lead Verifier
Program Manager
Sustainability and Climate Change Services

David Reilly, Technical Reviewer
Principal Consultant
Sustainability and Climate Change Services

March 13, 2023

End notes

Introduction

1 Apple is carbon neutral for corporate emissions, which include scope 1 and 2 emissions, as well as scope 3 emissions from employee travel, business commute, work from home, and third-party cloud services.

2 Apple follows the GHG Protocol Corporate Accounting and Reporting Standard (GHG Protocol) to calculate value chain emissions. The GHG Protocol defines scope 1 emissions as direct greenhouse gas emissions that occur from sources that are owned or controlled by the company; scope 2 emissions as the indirect greenhouse gas emissions from the generation of purchased electricity, steam, heat, and cooling consumed by the company; and scope 3 emissions as all "other indirect emissions" that occur in the value chain of the reporting company, including both upstream and downstream emissions. Apple sets an operational boundary for its emissions and excludes the following scope 3 categories, as defined by the GHG Protocol, which collectively make up less than 10 percent of our 2015 base year scope 3 emissions: "capital goods" due to limited data availability, which limits our ability to influence these emissions, and "waste generated in operations," as these emissions are negligible.

3 Apple reports data about the recycled content of its products at different levels of fidelity, based on the level of independent data verification. The bulk of Apple's recycled content data is certified and thus verified by an independent third party. Less than 5 percent of the total mass shipped in Apple products in fiscal year 2022 contains recycled content that is either supplier verified, meaning it has been reported by the supplier and cross-checked by Apple, or supplier reported, meaning it has been reported by the supplier based on production and allocation values. In all cases, Apple defines recycled content in alignment with ISO 14021. We do not currently include industry-average recycled content, which may result in underreporting actual recycled content. Total recycled material shipped in products is driven by product material composition and total sales — as a result, this overall recycled or renewable content percentage may fluctuate based on the number and type of products sold each year.

4 Renewable electricity refers to fossil fuel–free sources of energy, like wind, solar, and low-impact hydroelectricity projects. Clean electricity refers to both renewable electricity as well as other projects that Apple considers "low carbon" but not "renewable," like nuclear and large-impact hydroelectricity projects, which may be included as a result of low-carbon electricity provided by the grid.

5 We plan to reach carbon neutrality beginning with our fiscal year 2030 carbon footprint.

6 Beginning in fiscal year 2025, we plan to eliminate plastic from our packaging. Apple's goal to eliminate plastic from our packaging includes retail bags, all finished goods boxes (including plastic content in labels and in-box documentation), packaging sent to our customers as part of Apple Trade In, AppleCare packaging for whole units and service modules (with the exception of plastics needed to protect items from electrostatic discharge), and secondary packaging of Apple products and accessories sold by Apple. Our goal does not include the inks, coatings, or adhesives used in our packaging. We plan to eliminate plastic from the packaging of refurbished Apple products by 2027, once old product packaging designs are phased out.

Climate Change

7 We plan to reach carbon neutrality beginning with our fiscal year 2030 carbon footprint.

8 Intergovernmental Panel on Climate Change (IPCC), "Summary for Policymakers of IPCC Special Report on Global Warming of 1.5°C approved by governments," press release, www.ipcc.ch/2018/10/08/summary-for-policymakers-of-ipcc-special-report-on-global-warming-of-1-5c-approved-by-governments.

9 Corporate emissions include scope 1 and 2 emissions from Apple retail stores, corporate offices, Apple-owned and colocated data centers, and Apple-produced digital content for Apple One services, as well as scope 3 emissions associated with business travel, employee commute, work from home, upstream impacts from scope 1 fuels, and use of third-party cloud services.

10 Refer to Appendix A for a description of our methodology for calculating life cycle carbon emissions.

11 The Science Based Targets initiative (SBTi) has validated the following emissions reduction target for Apple: 61.7 percent by fiscal year 2030 relative to our fiscal year 2019 emissions. This SBTi-validated target is derived from our target to reduce emissions by 75 percent by fiscal year 2030 relative to 2015, with a base year of 2019 instead. Our SBTi target excludes less than 3 percent of scope 1 and 2 emissions in the base year, including fire suppressants, refrigerant leakage, purchased or landlord-provided steam and chilled water, and certain greenhouse gases (HFC, PFC, SF6, and NF3), which do not meet Apple's relevance threshold. In addition, our SBTi target excludes the following scope 3 categories, which collectively are approximately 10 percent of our base year scope 3 emissions: "capital goods" due to limited data availability, which limits our ability to influence these emissions, as well as "fuel and energy related activities" and "waste generated in operations," as these emissions are negligible.

12 Gross carbon footprint refers to Apple's carbon footprint before applying carbon offsets. Our net carbon footprint incorporates carbon offsets.

13 Testing was done under the condition of streaming 4K movies played on Apple TV 4K (3rd generation) with the Siri Remote from the Apple TV app.

14 Based on sales-weighted averages of Mac, iPad, iPhone, Apple Watch, Apple TV, HomePod, AirPods, and Beats.

15 Eligible products are those in a product category for which ENERGY STAR certification exists. 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.

16 Apple lists eligible products sold in the United States and Canada on the Electronic Product Environmental Assessment Tool (EPEAT) Registry. Eligible products are those in a product category for which EPEAT registration exists, including desktop computers, notebook computers, computer displays, mobile phones, and tablets. For more information, visit www.epeat.net.

17 Testing was done under the condition of streaming 4K movies played on Apple TV 4K with the Siri Remote from the Apple TV app.

18 Testing was conducted by Apple in February 2022 using preproduction Mac Studio systems with Apple M1 Ultra with 20-core CPU and 64-core GPU. Power was measured using a representative workload in a commercial application. High-end PC desktop data comes from testing Alienware Aurora R13 with Core i9-12900KF and GeForce RTX 3090. Performance tests are conducted using specific computer systems and reflect the approximate performance of Mac Studio.

19 Efficiency performance is based on the U.S. Department of Energy Federal Energy Conservation Standards for Battery Chargers. The energy efficiency values are based on the following conditions:

- Power adapter, no load: Condition in which the Apple USB Power Adapter with the USB-C to Lightning Cable (1 m) is connected to AC power but not connected to iPhone
- Power adapter efficiency: Average of the Apple 20W USB Power Adapter with the USB-C to Lightning Cable (1 m) measured efficiency when tested at 100 percent, 75 percent, 50 percent, and 25 percent of the power adapter's rated output current

20 Apple began sourcing 100 percent renewable electricity for its corporate operations on January 1, 2018.

21 Apple's independent assurance provider for the Supplier Clean Energy Program conducts work against standard procedures and guidelines for external verification of sustainability reports, based on current best practice in independent assurance. The procedures are based on principles and methods described in *International Standard on Assurance Engagements (ISAE) 3000 (Revised), Assurance Engagements Other than Audits or Reviews of Historical Financial Information* (*Effective for assurance reports dated on or after December 15, 2015*), issued by the International Auditing and Assurance Standards Board, and ISO 14064-3:2019, *Greenhouse gases — Part 3: Specification with guidance for the verification and validation of greenhouse gas statements.*

22 Our use of the term *RECs* covers renewable energy certificates and similar certifications around the world, such as Guarantees of Origin (GOs) in Europe, Large-Scale Generation Certificates (LGCs) in Australia, and Green Electricity Certificates (GECs) in China.

23 2021 renewable electricity figures associated with Apple's Supplier Clean Energy Program do not include REC purchases that Apple made to address a small increase to its carbon footprint. When accounting for the REC purchases, the total renewable energy online in Apple's supply chain was 10.6 gigawatts, generating 18.6 million megawatt-hours and avoiding 14.2 million metric tons of carbon emissions.

24 ELYSIS was used in the production of the 16-inch MacBook Pro that was released in 2019. The 16-inch MacBook Pro released in 2021 now features a 100 percent recycled aluminum enclosure.

25 Based on the methodology Apple uses to calculate transportation emissions, which is regularly reviewed by a third party, Fraunhofer IZM.

26 Rogelj, J., D. Shindell, K. Jiang, S. Fifita, P. Forster, V. Ginzburg, C. Handa, H. Kheshgi, S. Kobayashi, E. Kriegler, L. Mundaca, R. Séférian, and M.V.Vilariño, 2018: "Mitigation Pathways Compatible with 1.5°C in the Context of Sustainable Development." In: *Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty* [Masson-Delmotte, V., P. Zhai, H.-O. Pörtner, D. Roberts, J. Skea, P.R. Shukla, A. Pirani, W. Moufouma-Okia, C. Péan, R. Pidcock, S. Connors, J.B.R. Matthews, Y. Chen, X. Zhou, M.I. Gomis, E. Lonnoy, T. Maycock, M. Tignor, and T. Waterfield (eds.)]. In Press. www.ipcc.ch/site/assets/uploads/sites/2/2019/02/SR15_Chapter2_Low_Res.pdf.

Resources

27 Apple reports data about the recycled content of its products at different levels of fidelity, based on the level of independent data verification. The bulk of Apple's recycled content data is certified and thus verified by an independent third party. Less than 5 percent of the total mass shipped in Apple products in fiscal year 2022 contains recycled content that is either supplier verified, meaning it has been reported by the supplier and cross-checked by Apple, or supplier reported, meaning it has been reported by the supplier based on production and allocation values. In all cases, Apple defines recycled content in alignment with ISO 14021. We do not currently include industry-average recycled content, which may result in underreporting actual recycled content. Total recycled material shipped in products is driven by product material composition and total sales — as a result, this overall recycled or renewable content percentage may fluctuate based on the number and type of products sold each year.

28 Beginning in fiscal year 2025, we plan to use 100 percent recycled cobalt in all Apple-designed batteries (on a mass-balance basis), 100 percent recycled tin soldering and 100 percent recycled gold plating of all Apple-designed rigid and flexible printed circuit boards, and 100 percent recycled rare earth elements in all magnets. We calculate our use of recycled cobalt on a mass-balance basis at the end of each fiscal year.

29 Apple's goal to eliminate plastic from our packaging includes retail bags, all finished goods boxes (including plastic content in labels and in-box documentation), packaging sent to our customers as part of Apple Trade In, AppleCare packaging for whole units and service modules (with the exception of plastics needed to protect items from electrostatic discharge), and secondary packaging of Apple products and accessories sold by Apple. Our goal does not include the inks, coatings, or adhesives used in our packaging. We plan to eliminate plastic from the packaging of refurbished Apple products by 2027, once old product packaging designs are phased out.

30 We currently do not account for industry average recycled content, and therefore it is likely that far more than 4 percent recycled gold exists in Apple's supply chains today. Apple's focus is on creating certified and ethical sources of recycled gold.

31 Apple reports data about the recycled content of its products at different levels of fidelity, based on the level of independent data verification. The bulk of Apple's recycled content data is certified and thus verified by an independent third party. Less than 5 percent of the total mass shipped in Apple products in fiscal year 2022 contains recycled content that is either supplier verified, meaning it has been reported by the supplier and cross-checked by Apple, or supplier reported, meaning it has been reported by the supplier based on production and allocation values. In all cases, Apple defines recycled content in alignment with ISO 14021. We do not currently include industry-average recycled content, which may result in underreporting actual recycled content. Total recycled material shipped in products is driven by product material composition and total sales — as a result, this overall recycled or renewable content percentage may fluctuate based on the number and type of products sold each year.