EA Engineering, Science, and Technology, Inc., PBC

2022

CARBON FOOTPRINT REPORT

Issued September 2023

OPENNESS | PRUDENCE | BALANCE | CHALLENGE

2022 CARBON FOOTPRINT REPORT

1.0 ABOUT EA

Headquartered in Hunt Valley, Maryland, EA Engineering, Science, and Technology, Inc., PBC (EA) is a 100 percent (%) employee-owned, public benefit corporation (PBC) that provides environmental, compliance, natural resources, infrastructure engineering, and technology solutions to a wide range of public and private sector clients. In calendar year (CY) 2022, EA maintained a normalized headcount of 659 employees, based on full-time equivalents (FTEs)[1], working across a network of 26 commercial offices in the United States (U.S.) including Alaska, Hawaii, and the territory of Guam.

First initiated in 2009, this is EA's eleventh tabulation of greenhouse gas (GHG) emissions resulting from the company's operations and activities, and their associated carbon footprint. EA published Carbon Footprint Reports biennially from CY 2009 through CY 2015, with each report summarizing two full CYs. Beginning with CY 2016, EA transitioned to annual reporting as an industry best practice of transparency. This is EA's seventh annual report and represents EA's Carbon Footprint Report for CY 2022.

Simplified GHG Emissions Calculator—EA has utilized the U.S. Environmental Protection Agency's (EPA's) Center for Corporate Climate Leadership Simplified GHG Emissions Calculator (SGEC)[2] since 2019. The SGEC is a spreadsheet-based, menu-driven tool for calculating GHG emissions. The tool is updated by EPA, as warranted, to improve utility and representativeness. For this assessment, EA employed the version released in August 2022.

Updates to the tool in 2022 that impact EA's carbon footprint calculations are discussed in ***Section 2.3*** (page 5).

1. Calculations in this report that rely on personnel totals (e.g., solid waste and wastewater) are completed using a normalized FTE total of 659. Normalized FTE is calculated as EA's total Occupational Safety and Health Administration labor hours reported in 2022 divided by 2,080 (the number of hours in a typical full-time year assuming 52 standard 40-hour work weeks): 1,371,201 hours ÷ 2,080 hours per FTE = 659 FTE.
2. EPA Center for Corporate Climate Leadership. Simplified GHG Gas Emissions Calculator. https://www.epa.gov/climateleadership/simplified-ghg-emissions-calculator. See also the companion guide: https://www.epa.gov/climateleadership/guide-greenhouse-gas-management-small-business-low-emitters.

2.0 GREENHOUSE GAS INVENTORY ASSESSMENT AND MANAGEMENT

2.1 Accounting Standards and Management Plan

This GHG analysis has been prepared in accordance with the GHG Protocol Corporate Accounting and Reporting Standard[3] (hereafter referred to as the "Standards"), developed and published by the World Business Council for Sustainable Development (WBCSD) and the World Resources Institute (WRI). These Standards are the most widely used international accounting tool for governments and businesses to identify, quantify, and manage GHG emissions. The Standards require accounting for the "Kyoto Protocol" GHG emissions: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), sulfur hexafluoride (SF_6), hydrofluorocarbons (HFC), perfluorocarbons (PFC), and nitrogen trifluoride (NF_3)—which are reported in terms of carbon dioxide equivalents (CO_2e). Other gases with global warming potential may be included; however, EA, as a professional services firm, does not use/generate them. This report accounts primarily for CO_2 emissions, which represent the majority of GHG emissions from most sources, but also includes CH_4 and N_2O (which together with CO_2 are referred to as the "Big Three").

As an aspect of continual improvement to further align with WRI and to ensure consistent analysis of data year to year, EA maintains a *Carbon Footprint Inventory Management Plan* (IMP). In conjunction with EA's use of EPA's SGEC to determine our carbon footprint, we use the Center for Corporate Climate Leadership's Simplified IMP Form (August 2020 version) for EA's IMP. The IMP details data collection procedures and quality control measures and identifies data and factors to be used to estimate GHG emissions associated with EA's business operations. It summarizes EA's operations, details data collected for each GHG scope area, quantifies emissions calculation methods utilized, and outlines data management methods and verification process controls calculations. The IMP is an internal "evergreen" document that is updated annually by EA's Carbon Footprint Work Group, or more often as best practices dictate. The IMP is used to ensure annual GHG accounting and reporting are relevant, complete, consistent, transparent, and accurate.

2.2 Emissions Scopes

EA accounts for direct and indirect GHG emissions from its business operations in accordance with defined GHG scopes delineated in the Standards:

- ***Scope 1: Direct GHG Emissions***—Direct GHG emissions from operations.
- ***Scope 2: Electricity Indirect GHG Emissions***—Indirect GHG emissions from purchased energy generated elsewhere.
- ***Scope 3: Other Indirect GHG Emissions***—Indirect GHG emissions from supply/delivery chain and other activities.

3. World Business Council for Sustainable Development (WBCSD) and World Resources Institute (WRI). 2004. *The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard. Revised Edition.* March. Available at: https://ghgprotocol.org/sites/default/files/standards/ghg-protocol-revised.pdf.

Scope 1 GHG emissions from EA's business operations include emissions from fleet vehicle operations, boat operations, portable power generators, emissions associated with combustion of fuels used for heating offices and other buildings, and emissions of refrigerants from building cooling systems. Emissions from energy use in residential "satellite offices" (i.e., officially designated home offices used by EA employees who do not work from an established commercial office) and remote telework are not included in Scope 1.

Scope 2 GHG emissions from EA's business operations are limited to emissions from power generating stations supplying electric energy and steam for building heat to EA's offices and other buildings. Emissions arising from energy use in residential "satellite offices" and remote telework are not included in Scope 2.

Scope 3 GHG emissions arise from other elements of EA's business operations, and the following have always been included in the carbon footprint calculation:

- Employee commutes to and from EA commercial office locations, and employee business travel using personal vehicles
- Employee business travel, inclusive of air, rail, rental car, public transit, and rideshare services
- Emissions arising from disposal of solid wastes, including recycling and composting, generated at EA offices and other work locations (e.g., temporary field/project offices)
- Emissions arising from potable water consumption and wastewater treatment
- Emissions arising from shipment of samples, work products, and other materials to and from EA offices and to client/project sites
- Emissions associated with elements of the supply/delivery chain and other activities

In fulfillment of a continual improvement target, beginning with CY 2021, EA elected to extend its Scope 3 emissions assessment to include fully quantifying its value chain GHG emissions. In accordance with GHG Protocol's *Corporate Value Chain (Scope 3) Accounting and Reporting Standard)*[4] and the *List of Corrections for Scope 3 Standard*[5], EA evaluated all 15 elements of the value chain, not otherwise included in Scope 1 and Scope 2 emissions, considered by WBCSD/WRI to represent a complete organization carbon footprint. Based on criteria outlined in the Scope 3 Standard, EA's Carbon Footprint Work Group determined that categories 10, 11, 13, 14, and 15 do not apply to EA's operations and have been omitted from EA's value chain emissions calculations.

4. World Business Council for Sustainable Development (WBCSD) and World Resources Institute (WRI). 2011. *Corporate Value Chain (Scope 3) Accounting and Reporting Standard.* October. Available at: https://ghgprotocol.org/standards/scope-3-standard#supporting-documents.
5. World Business Council for Sustainable Development (WBCSD) and World Resources Institute (WRI). 2013. *List of Corrections for Scope 3 Standard.* May. Available at: https://ghgprotocol.org/standards/scope-3-standard#supporting-documents.

Scope 3 emissions within value chains are comprised of 8 upstream and 7 downstream categories of GHG emissions, identified in ***Table 1*** (below) with examples of EA's contributions to the category.

Table 1. Scope 3 Supply Chain Categories and Representative Emissions Sources

Scope 3 Category	Representative Emissions Sources
1 – Purchased Goods and Services	Vendors, service providers, and subcontractors.
2 – Capital Goods	Lab and equipment, boats and generators, and information technology equipment (e.g., computers, printers, scanners, etc.).
3 – Fuel and Energy-Related Activities	Fuel, purchased electricity, and transmission/distribution emissions associated with upstream production and transportation. Fuel consumption is accounted for in EA's Scope 1 emissions and purchased electricity is accounted for in Scope 2.
4 – Upstream Transportation/ Distribution	Transportation and distribution emissions associated with delivery of purchased goods and services.
5 – Waste Generated in Operations	Solid waste generated during day-to-day office and field operations; historically, accounted for in EA's Scope 3 emissions calculations along with offsets associated with recycling and compost activities.
6 – Employee Business Travel	Previously accounted for in EA's Scope 3 emissions calculations along with TerraPass carbon credits typically purchased to offset a component of EA's annual employee business travel emissions.
7 – Employee Commuting *Note: EA's calculates this category as Employee Commuting and Telework.*	Historically, employee commutes have been incorporated into EA's Scope 3 emissions calculations through comprehensive data obtained as part of a voluntary employee commuting survey. With an expanded hybrid workforce, EA also incorporates Scope 3 emissions associated with remote/telework.
8 – Upstream Leased Assets	Life-cycle emissions associated with construction of leased assets such as commercial office space, including refrigerant production.
9 – Downstream Transportation/ Distribution	Limited to transportation and delivery of products sold (i.e., technical reports prepared for clients), which have been previously accounted for in Scope 3 emissions.
10 – Processing of Sold Products	Not applicable to EA's operations.
11 – Use of Sold Products	Not applicable to EA's operations.
12 – End-of-Life Treatment of Sold Products	Waste treatment and disposal of products such as technical reports produced in hard copy and/or electronic (e.g., compact disc or universal serial bus) format.
13 – Downstream Leased Assets	Not applicable to EA's operations.
14 – Franchises	Not applicable to EA's operations.
15 – Investments	Not applicable to EA's operations.

2.3 Changes to Previous Year's Calculations

Calculations for Purchased Goods and Services, Fuel and Energy-Related Activities, and Product Transport categories within the value chain incorporate the following corrections and/or updates compared to CY 2021:

1. **Purchased Goods and Services**:
    a. During development of the CY 2022 Carbon Footprint Report, it was determined that the total subcontractor spend used for CY 2021 calculations was incorrectly input into the SGEC Tool, resulting in a CY 2021 calculation that was approximately 49% lower than reported.
    b. EA's total spend on subcontractor services increased by approximately 60% between CY 2021 and CY 2022.
    c. An April 2023 Supply Chain GHG emissions factor dataset was utilized to calculate CY 2022 emissions for this category. The Supply Chain GHG emissions datasets are comprised of GHG emission factors for 1,016 U.S. commodities as defined by the 2017 version of the North American Industry Classification System (NAICS). Emissions factors for the April 2023 version of the dataset (v.1.2) are built with GHG emission data representing CY 2019 whereas the previous datasets utilized by EA were built from emission data from CYs 2010 through 2016. Additionally, a combination of four NAICS codes for *Environmental Consulting Services* (541620); *Engineering Services* (541330); *Environmental Remediation Services* (562910); and *Research and Development in the Physical, Engineering, and Life Sciences, except Nanotechnology and Biotechnology* (541715) were used in lieu of the more generic *Miscellaneous Professional, Scientific, and Technical Services* code, which encompasses multiple NAICS categories (5412–5414 and 5416–5419). The use of these specific NAICS codes (541620, 541330, 562910, and 541715) more accurately represents the variety of subcontracted services provided to EA.
2. **Fuel and Energy-Related Activities:** An error resulting from conversion of therms of natural gas to kilowatt hours in the CY 2021 data was discovered while evaluating year-to-year data. The conversion error related to the amount of natural gas production that was consumed by EA in CY 2021 and led to under reporting CY 2021 emissions for this category by approximately 49%. This error has been corrected, resulting in a minimal fluctuation (approximately 1.2%) between CY 2021 and CY 2022.
3. **Product Transport (now Transpiration & Distribution):** Emissions for this category were inadvertently counted twice in the CY 2021 report. In the CY 2021 report, line items for both Shipping and Product Transport were included. As these categories both addressed EA's Transportation and Distribution, it resulted in duplicative totals being incorporated into EA's Scope 3 total. EA has combined Shipping and Product Transport into a single Transportation and Distribution category for CY 2022 and future reporting.

Note: Taking the above changes in data into account, EA has recalculated CY 2021 data and included revised values in tables that provided year-over-year comparisons. Additionally, ***Appendix A*** *presents the corrected data against the original data for comparison purposes.*

3.0 2022 CARBON FOOTPRINT REPORTING

3.1 Reporting Overview

Under EPA's Mandatory GHG Reporting Rule at 40 Code of Federal Regulations Part 98, most GHG sources are only required to report to EPA if their direct emissions (i.e., Scope 1) exceed 25,000 metric tons of carbon dioxide equivalents ($MTCO_2e$) per year. Since 2009, EA has calculated and publicly reported its GHG emissions (carbon footprint) by means of data collection to build the emissions estimate *from the bottom up*. Over the years prior to expansion of EA's analysis of Scope 3 supply chain emissions, the company's total gross GHG emissions (i.e., excluding offsets) have consistently ranged between 4,000 and 5,000 $MTCO_2e$, resulting in EA being considered a minor GHG source with respect to the Mandatory Reporting Rule (MRR). With inclusion of supply chain emissions, as discussed in ***Section 2.2*** (page 2) and ***Table 1*** (page 4), EA's total gross GHG emissions have increased significantly; however, direct (Scope 1) emissions remain well under the 25,000-$MTCO_2e$ threshold for mandatory reporting to EPA.

This report is intended to provide an accurate assessment of GHG emissions from EA's operations as a company and the associated carbon footprint. To achieve this objective, this report incorporates actual utility data for EA's corporate headquarters location (Hunt Valley, Maryland), which represents approximately 30% of commercial office space leased by EA, as well as office-specific data from much of the remainder of EA's nationwide commercial offices. Where office-specific data were not available, data were extrapolated using the headquarters-based data set. Prior to 2016, assessments of company-wide emissions were reliant on extrapolating data from EA's leased headquarters space as well as regional energy use intensity and related factors. Since that time, reports build on the practice of collecting and incorporating verified data from additional EA commercial offices, when and where office-specific data are available.

3.2 Changes in SGEC Reporting Tool

As previously noted, EA has analyzed its carbon footprint since 2009, and resultant gross GHG emissions remained consistent as measured in total and on a *per employee* basis. In 2019, after confirming data comparability using overall emissions calculations, EA transitioned to the use of EPA's SGEC to determine its carbon footprint.

The principal differences between EA's previous calculations (2018 and earlier) and the SGEC tool included the following:

- Accounting for GHG emissions from commercial refrigerant (HFC) losses, which had not previously been included in EA's calculations
- Accounting for GHG emissions from water, wastewater, and solid waste, which are not included in the SGEC tool

As the SGEC tool is periodically updated by EPA, solid waste was incorporated in the August 2022 version (*Note: EPA's updates are now designated by release date rather than version number*). Previous versions of the SGEC tool did not include calculations related to emissions associated with solid waste or associated recycling and composting offsets. Instead, EA added those calculations as a customized tab and estimated contributions using emissions factors from EPA's Waste Reduction Model (WARM)[6]. The 2022 version of the SGEC tool incorporates calculations for solid waste, recycling, and composting as separate waste streams while applying lower emissions factors for recycling and composting (compared to landfilled and combusted waste) to generate a single overall line item for solid waste-related emissions. As a result, EA's carbon footprint no longer includes a line item dedicated to offsets associated with recycling and composting.

EA's emissions from water and wastewater, which together contribute less than 0.5% of the total GHG emissions, will continue to be incorporated as a customized entry in the SGEC tool.

Appendix B provides the full Emissions Summary using EPA's Center for Corporate Climate Leadership SGEC.

3.3 Impact of the COVID-19 Pandemic on EA's 2022 Carbon Footprint

From the outset of the global Novel Coronavirus Disease 2019 (COVID-19) pandemic in early 2020, EA's workforce was deemed "essential" for providing critical services to federal, state, municipal government agencies, as well as private sector clients in such diverse industries as chemical and specialty gas manufacturing, electric power generation, food production, and healthcare. As such, EA's operations remained fully operational/at capacity throughout CY 2020, CY 2021, and CY 2022. That said, from mid-March through June 2020, the majority of EA's workforce transitioned to a 100% remote setting to comply with individual state and local safety directives. For the balance of CY 2020, and the total of CY 2021 and CY 2022, the majority of employees continued to operate in a hybrid work environment, splitting time between home offices and/or project sites and EA commercial offices based on individual job functions and personal preference.

As a result, EA's carbon footprint experienced significant reductions in GHG emissions associated with Employee Commuting, Employee Business Travel, Natural Gas, and Purchased Electricity.

- Consistent with previous years, EA's ***Employee Commuting*** emissions were estimated based on voluntary feedback obtained through an annual employee survey. In addition to information on personnel's typical miles traveled roundtrip for their commutes and estimated fuel efficiency for personal vehicles, the 2022 survey (completed in June 2023) requested information on the number of days employees were working from home versus continuing to commute to their designated EA office. These data allowed EA's Carbon Footprint Work Group to assess Employee Commuting emissions taking into consideration the hybrid work environment sustained by the majority of EA's workforce

6. U.S. Environmental Protection Agency (EPA). 2019. WARM Tool, Version 15. Available at: https://www.epa.gov/warm/versions-waste-reduction-model-warm#15. May.

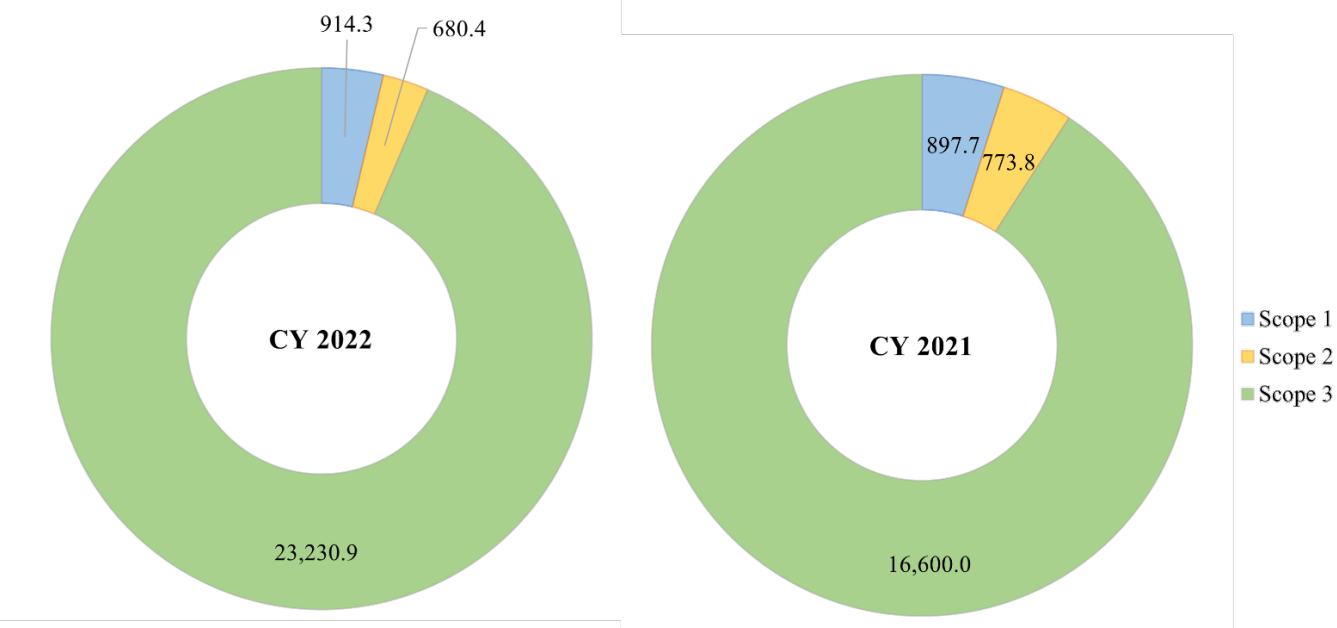
after state and local safety directives were lifted nationwide. Despite a roughly 11% increase in headcount, EA calculated a reduction in Employee Commuting emissions based on responses received as part of the CY 2022 Commuter Survey, which indicated: (1) an increase in utilization of public transportation (e.g., bus, rail, bicycle, walking); (2) an increase in carpools rather than single occupancy vehicles; and (3) fewer telecommute days per week on average, signaling a reduction in the emissions from telecommuting overall.

- Commencing in mid-March 2020, all non-essential ***Employee Business Travel*** (e.g., vendor meetings, outside training, industry conferences, etc.) was prohibited by EA. This prohibition extended through the end of the CY, resulting in a dramatic decrease in EA's 2020 GHG emissions associated with Employee Business Travel. The prohibition was lifted by EA in June 2021; as a result, the quantity of Business Travel-related emissions gradually increased during the balance of CY 2021 and throughout CY 2022 as industry organizations, conference planners, and individual clients provided opportunities for in-person conferences and meetings.

- EA's ***Natural Gas and Purchased Electricity***-related emissions in CY 2022 continued to be below levels observed pre-pandemic due to ongoing decreased occupancy and use of EA's nationwide leased office spaces as much of EA's workforce continued to perform their duties in a hybrid work environment. Emissions are based on a combination of actual or estimated electricity usage, and Subregion Output Emissions Factors from EPA's Emissions & Generation Resource Integrated Database (eGRID)[7].

Figure 1 provides a comparison of EA's Scope 1, 2, and 3 emissions (represented as $MTCO_2e$) for CYs 2022 and 2021.

Figure 1. Comparison of Total $MTCO_{2e}$ by Scope – CYs 2022 and 2021



7. Emissions & Generation Resource Integrated Database (eGRID). 2021. *eGRID 2021 Summary Tables 2021*. Available at: https://www.epa.gov/egrid/summary-data.

3.4 Carbon Offsets

Carbon offsets are reduction credits that can reduce net emissions through activities such as recycling, composting, etc. Offsets, including Renewable Energy Certificates (RECs)[8], are used to compensate for an organization's Scope 2 emissions. They do not account or take credit for emissions that were prevented as a result of limiting or eliminating a specific emissions-generating activity.

In 2022, EA offset approximately 948.6 $MTCO_2e$ through purchased carbon offsets that fall into two categories:

1. ***Air Travel Offsets***—EA purchased 150 $MTCO_2e$ of verified offsets from TerraPass[9] to partially neutralize the impact of business air travel. All TerraPass carbon offsets, which support U.S.-based projects, have been verified by independent third parties and standards including the Gold Standard, Verified Carbon Standard, Climate Action Reserve, and American Carbon Registry.

2. ***RECs***—A REC is a tradeable asset that represents the environmental attribute of 1 megawatt hour (MWh) of renewable electricity. RECs are sold separately from actual power generated to consumers who want to invest in responsible renewable energy projects. To offset 2022's Scope 2 emissions, EA has matched 100% of traditional (non-renewable) electricity with 2,500 MWh of Sterling Green™ renewable wind energy through the purchase of Green-e Certified RECs from Sterling Planet[10]. Purchase of these RECs avoids emissions of approximately 798.6 $MTCO_2e$[11] of carbon emissions while advancing energy security and independence.

Copies of EA's 2022 certificates for purchased offsets are provided in ***Appendix C.***

8. RECs are tradeable assets that represent the environmental attributes of 1 MWh of renewable electricity. RECs are sold separately from actual power generated to consumers who want to "green" their existing power sources by contributing to the use of renewable energy sources.
9. https://www.terrapass.com/.
10. https://www.sterlingplanet.com/.
11. Sterling Planet documentation calculates the purchased RECs' 2,500 MWh (2,500,000 kilowatt hours [kWh]) as equivalent to the offset of 2,384,268 pounds of CO_2e, based on an eGRID 2012 GHG annual non-baseload output emission factor of 1.54936 pounds of CO_2 avoided per kWh. However, EA has calculated avoided emissions using the company-wide emissions factor of 0.319 $MTCO_2e$/MWh (0.704 pounds per kWh) based on an average, more up-to-date, eGRID 2022 factor for all EA office locations.

4.0 SUMMARY OF EA'S 2022 CARBON FOOTPRINT

In CY 2022, with the expansion of Scope 3 value chain emissions described in ***Table 1*** (page 4), EA's total operational carbon footprint has been estimated at a gross total of 24,825.0 $MTCO_2e$ of GHG emissions from its operations. Approximately 3.8% (948.6 $MTCO_2e$) of these emissions was offset, resulting in net GHG emissions from operations of 23,876.4 $MTCO_2e$ (***Appendix B***). Approximately ***93.6% of EA's gross carbon footprint is resultant of Scope 3 sources—consistent with industry research***[12], which suggests total Scope 3 emissions can represent between 65% and 95% of reporting companies' total GHG emissions.

In 2022, EA's top three emissions sources were:

1. ***Purchased Goods and Services*** (Scope 3, Category 1; 18,085.4 $MTCO_2e$)
2. ***Fuel and Energy-Related Activities*** (Scope 3, Category 3; 3,008.5 $MTCO_2e$)
3. ***Employee Business Travel*** (Scope 3, Category 6; 1,019.3 $MTCO_2e$)

Table 2 summarizes EA's carbon footprint trends in $MTCO_2e$ and FTEs for the past 5 years.

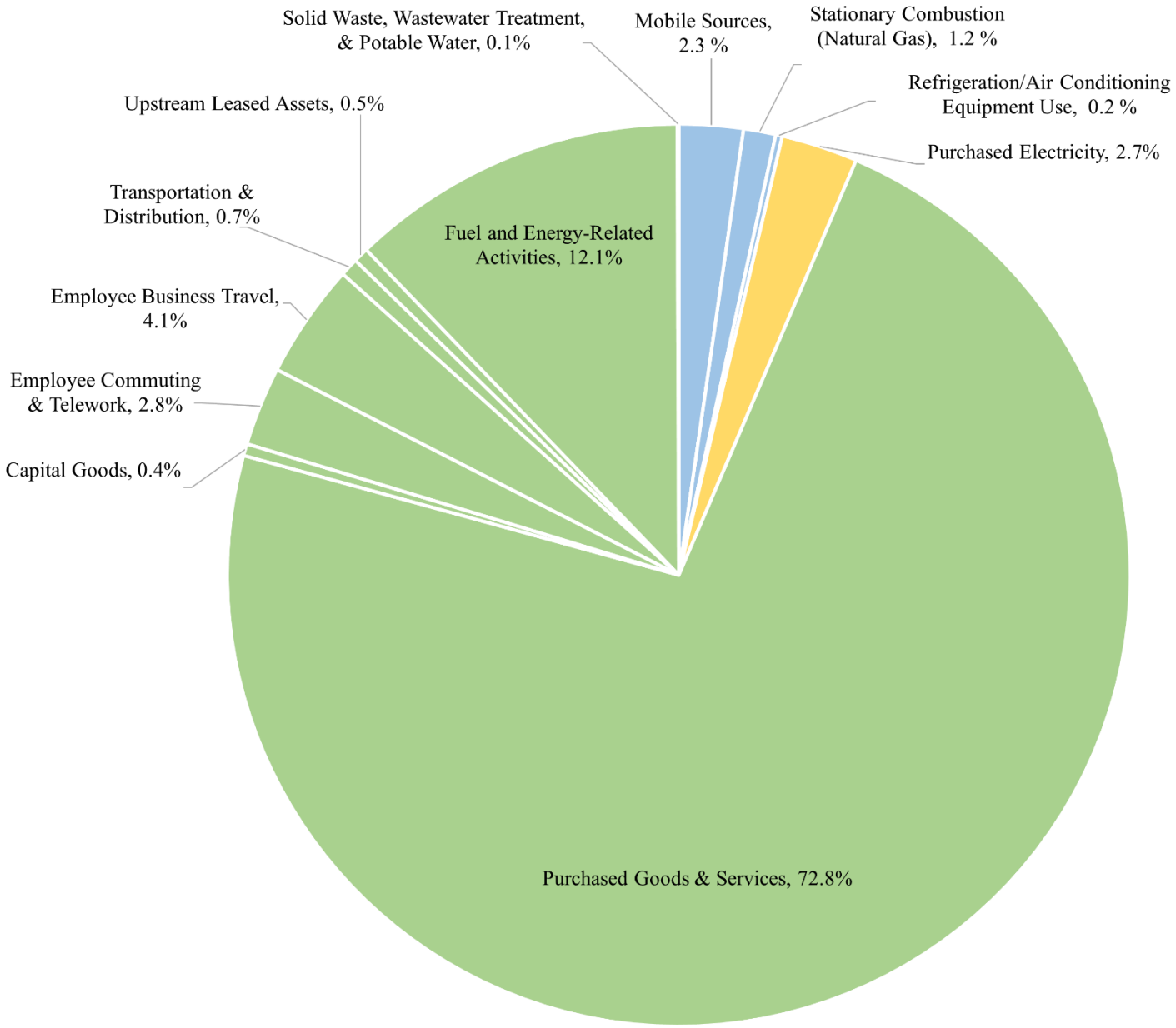
Table 2. Carbon Footprint Trends for the Last 5 Years

Calendar Year	2022	2021	2020	2019	2018
Gross Emissions*	24,825.0	18,271.5	2,829.3	4,690.6	4,379.6
Carbon Offsets*	-948.6	-1,026.3	-1,241.0	-1,230.7	-1,252.4
Net Emissions*	23,876.4	17245.2	1,588.3	3,459.9	3,127.2
Number of FTE Employees	659	592	585	540	511
* Results reported in $MTCO_2e$.					

Figure 2 (page 12) and ***Table 3*** (page 13) summarize the findings of EA's CY 2022 Carbon Footprint Report.

12. https://www.cnbc.com/2021/08/18/apple-amazon-exxon-and-the-toughest-carbon-emissions-to-capture.html.

Figure 2. Emission Sources Expressed by Percentage of Total 2022 Carbon Footprint



Note: Emissions categories that account for approximately 0.1% of EA's total emissions are not included above. These categories are Fire Suppression/Purchased Gases (Scope 1) and End-of-Life Treatment of Sold Products (Scope 3).

Scope 1: Direct GHG Emissions
Scope 2: Electricity Indirect GHG Emissions
Scope 3: Other Indirect GHG Emissions

Table 3. Summary of Emissions and Offsets Contributing to EA's 2022 Carbon Footprint

Emissions Sources	2022 $MTCO_2e$	% of 2022 Total Footprint	2021 $MTCO_2e$ (Revised)
Scope 1: Direct GHG Emissions			
Mobile Sources	569.5	2.3	575.6
Stationary Combustion (Natural Gas)	286.5	1.2	287.2
Refrigeration/Air Conditioning Equipment Use	58.3	0.2	34.9
Fire Suppression	0.0	0.0	0.0
Purchased Gases	0.0	0.0	0.0
Scope 2: Electricity Indirect GHG Emissions			
Purchased Electricity	680.4	2.7	773.8
Scope 3: Other Indirect GHG Emissions			
Purchased Goods and Services	18,085.4	72.8	11,452.5
Capital Goods	106.1	0.4	128.0
Employee Commuting and Telework[a]	702.0	2.8	831.3
Employee Business Travel[b]	1,019.3	4.1	771.0
Solid Waste Disposal	1.9	0.0	1.7
Transportation and Distribution[c]	162.1	0.7	201.1
End-of-Life Treatment of Sold Products	0.5	0.0	0.5
Potable Water	4.3	0.0	4.7
Product Transport[d]			0
Upstream Leased Assets	133.3	0.5	152.9
Fuel and Energy-Related Activities	3,008.5	12.1	3,048.0
Wastewater Treatment	7.5	0.0	8.3
Total Emissions (All Scopes)	***24,825.5***	***100.0***	***18,271.5***
Carbon Offsets[e]			
Air Travel Offsets (Purchased)	(150.0)		(150.0)
Renewable Energy Certificates (Purchased)[f]	(798.6)		(876.3)
Total Reduction	***(948.6)***	***(3.8)***	***(1,026.3)***
NET EMISSIONS[d]	***23,876.9***		***17,245.2***

Notes:
(a) The 2022 emissions determinations include the addition of emissions associated with telework, which was not previously accounted for in EA's emissions calculations.
(b) Air, rail, and rental car travel data provided by EA's corporate travel agent, Safe Harbors.
(c) Transportation and Distribution collectively captures Upstream Transportation/Distribution (Scope 3 Category 4) and Downstream Transportation/Distribution (Scope 3 Category 9).
(d) Replaced by Transportation & Distribution beginning with CY 2022 reporting.
(e) Offsets result in a decrease in net emissions and are denoted by parentheses. Net emissions represent the sum of EA's Scope 1, 2, and 3 emissions less earned/purchased offsets.
(f) 1 REC = 1 MWh = 1,000 kWh. EA used approximately 2,130.1 MWh of purchased electricity in 2022. Based on EPA e-GRID regional factors, the SGEC estimates that 0.319 MTCO2e are emitted for each 1 MWh used by EA in 2022, for an aggregate Scope 2: Purchased Electricity emissions total of 680.4 MTCO2e in 2022. EA purchases RECs in advance of calculating the company's carbon footprint for the year by estimating RECs needed based on the previous year's data. Based on 2021 electrical energy use (2,194.98 MWh), EA purchased 2,500 MWh (2,500,000 kWh) of RECs in 2022, resulting in carbon offsets for 798.6 MTCO2e, offsetting 117.4% of EA's Scope 2 emissions.

Appendix A

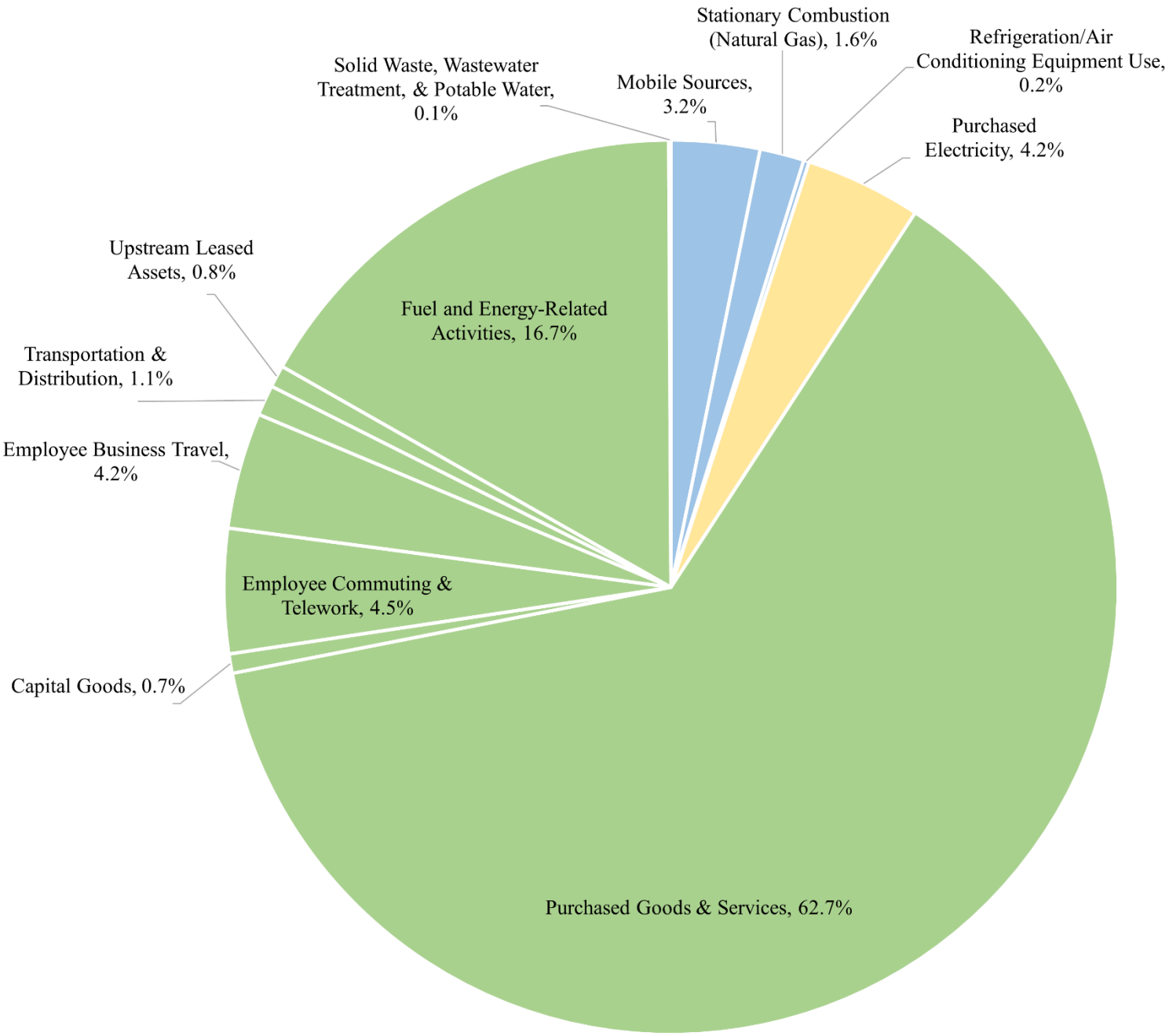
Revised 2021 Data

Table A-1. Summary of Emissions and Offsets Contributing to EA's 2021 Carbon Footprint ***(Original 2021 data as reported in August 2022 compared to Revised 2021 data)***

Emissions Sources	Original 2021 $MTCO_2e$	Revised 2021 $MTCO_2e$
Scope 1: Direct GHG Emissions		
Mobile Sources	575.6	575.6
Stationary Combustion (Natural Gas)	287.2	287.2
Refrigeration/Air Conditioning Equipment Use	34.9	34.9
Fire Suppression	0.0	0.0
Purchased Gases	0.0	0.0
Scope 2: Electricity Indirect GHG Emissions		
Purchased Electricity	773.8	773.8
Scope 3: Other Indirect GHG Emissions		
Purchased Goods and Services	5,641.2	***11,452.5***
Capital Goods	128.0	128.0
Employee Commuting and Telework	831.3	831.3
Employee Business Travel	771.0	771.0
Solid Waste Disposal	1.7	1.7
Transportation and Distribution	201.1	201.1
End-of-Life Treatment of Sold Products	0.5	0.5
Potable Water	4.7	4.7
Product Transport	201.1	***0***
Upstream Leased Assets	152.9	152.9
Fuel and Energy-Related Activities	2,021.0	***3,048.0***
Wastewater Treatment	8.3	8.3
Total Emissions (All Scopes)	**11,634.3**	***18,271.5***
Carbon Offsets		
Air Travel Offsets (Purchased)	(150.0)	(150.0)
Renewable Energy Certificates (Purchased)	(876.3)	(876.3)
Total Reduction	**(1,026.3)**	**(1,026.3)**
NET EMISSIONS	**10,608.0**	***17,245.2***

Cells highlighted in light blue with italicized data indicate corrected data.

Figure A-1. Emission Sources Expressed by Percentage of Total 2021 Carbon Footprint (Revised)



Note: Emissions categories that account for approximately 0.1% of EA's total emissions are not included above. These categories are Fire Suppression/Purchased Gases (Scope 1) and End-of-Life Treatment of Sold Products (Scope 3).

Scope 1: Direct GHG Emissions
Scope 2: Electricity Indirect GHG Emissions
Scope 3: Other Indirect GHG Emissions

Appendix B

Center for Corporate Climate Leadership Simplified Greenhouse Gas Emissions Calculator – Emissions Summary

Back to Intro

EPA CENTER FOR CORPORATE CLIMATE LEADERSHIP
U.S. Environmental Protection Agency

Emissions Summary

Guidance

The total GHG emissions from each source category are provided below. You may also use this summary sheet to fill out the *Annual GHG Inventory Summary and Goal Tracking Form* (.xls) as this calculator only quantifies one year of emissions at a time.

https://www.epa.gov/climateleadership/target-setting

By entering the data below into the appropriate cell of the *Annual GHG Inventory Summary and Goal Tracking Form*, you will be able to compare multiple years of data.

If you have multiple Calculator files covering sub-sets of your inventory for a particular reporting period, sum each of the emission categories (e.g. Stationary Combustion) to an organizational total, which then can be entered into the *Annual GHG Inventory Summary and Goal Tracking Form*.

(A) Enter organization information into the orange cells. Other cells on this sheet will be automatically calculated from the data entered in the sheets in this workbook. Blue cells indicate required emission sources if applicable. Green cells indicate scope 3 emission sources and offsets, which organizations may optionally include in its inventory.

(B) The "Go To Sheet" buttons can be used to navigate to the data entry sheets.

Organizational Information:

Organization Name:	EA Engineering, Science, and Technology, Inc., PBC
Organization Address:	225 Schilling Cir Hunt Valley, 21031
Inventory Reporting Period:	*Calendar Year 2022*
Start:	*1/1/2022*
End:	*12/31/2022*
Name of Preparer:	EA Carbon Footprint Work Group (Lead: John Kumm, PE, BCEE, CC-P)
Phone Number of Preparer:	410-584-7000
Date Prepared:	Aug-23

Summary of Organization's Emissions:

Scope 1 Emissions

Go To Sheet	Stationary Combustion	286.5	CO_2-e (metric tons)
Go To Sheet	Mobile Sources	569.5	CO_2-e (metric tons)
Go To Sheet	Refrigeration / AC Equipment Use	58.3	CO_2-e (metric tons)
Go To Sheet	Fire Suppression	0	CO_2-e (metric tons)
Go To Sheet	Purchased Gases	0	CO_2-e (metric tons)

Location-Based Scope 2 Emissions

Go To Sheet	Purchased and Consumed Electricity	680.4	CO_2-e (metric tons)
Go To Sheet	Purchased and Consumed Steam	4	CO_2-e (metric tons)

Market-Based Scope 2 Emissions

Go To Sheet	Purchased and Consumed Electricity	680	CO_2-e (metric tons)
Go To Sheet	Purchased and Consumed Steam	4	CO_2-e (metric tons)

Total organization Emissions

Total Scope 1 & Location-Based Scope 2	1,599	CO_2-e (metric tons)
Total Scope 1 & Market-Based Scope 2	1,599	CO_2-e (metric tons)

Reductions

Go To Sheet	Offsets	948.6	CO_2-e (metric tons)

Net Scope 1 and 2 Location-Based Emissions	651	CO_2-e (metric tons)
Net Scope 1 and 2 Market-Based Emissions	651	CO_2-e (metric tons)

Scope 3 Emissions

Go To Sheet	Employee Business Travel	1,019.3	CO_2-e (metric tons)
Go To Sheet	Employee Commuting	498.7	CO_2-e (metric tons)
	Employee Commuting - Home Office Emissions	203.3	
	Upstream Leased Assets	133.3	
	Transportation and Distribution	162.1	
	Waste	1.9	CO_2-e (metric tons)
	Portable Water	4.3	
	Wastewater Treatment	7.5	
	Fuel & Energy Related Activities (Upstream Fuel Production)	3,008.5	
	End-of Life-Treatment of Sold Products (Paper Products)	0.5	
	Capital Goods	106.1	
	Purchased Goods and Services	18,085.4	

Go To Sheet

Required Supplemental Information

Go To Sheet	Biomass CO_2 Emissions from Stationary Sources	0	CO_2-e (metric tons)
Go To Sheet	Biomass CO_2 Emissions from Mobile Sources	0	CO_2-e (metric tons)

Total	**24,825.5**	CO2-e (metric tons)
Net Emissions	**23,876.9**	CO2-e (metric tons)

Appendix C

Copies of 2022 Renewable Energy Certificates and Carbon Offsets

CERTIFICATE

OF ENVIRONMENTAL STEWARDSHIP

STERLING PLANET

CERTIFIES THAT

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC., PBC

HAS MATCHED **100%** OF ELECTRICITY USE WITH

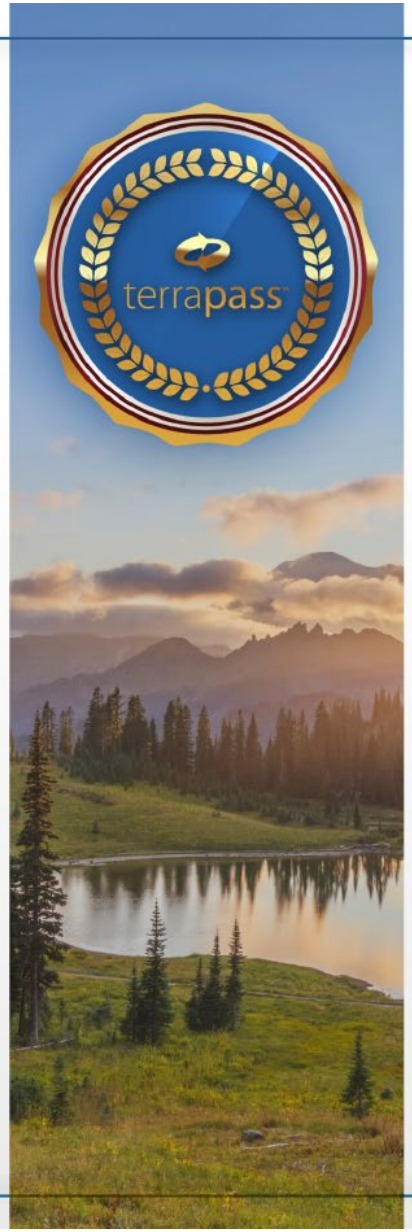
2,500,000 KILOWATT-HOURS OF STERLING GREEN™ WIND RENEWABLE ENERGY

TERM OF DELIVERY: 1.1.2022 – 12.31.2022
DATE OF CERTIFICATE ISSUANCE: 9.2.2022
SERIAL NUMBER: 20220825000001

STERLING PLANET CHAIRMAN

THIS PURCHASE OF RENEWABLE ENERGY CERTIFICATES (RECS) AVOIDS ~ 2,384,268 POUNDS OF CARBON DIOXIDE EMISSIONS AND ALSO ADVANCES THE U.S. ECONOMY, ENERGY SECURITY AND ENERGY INDEPENDENCE.

Green-e Energy CERTIFIED



CERTIFICATE
OF SUSTAINABILITY

PROUDLY PRESENTED TO

EA Engineering, Science, and Technology, Inc., PBC

150mT OF CARBON OFFSETS FROM THE BUSINESS CARBON OFFSET PACKAGE

powered by terrapass™

NTEB0HAH-tpus-672734
CERTIFICATE NUMBER

12/07/2022
DATE