Boeing grant teaches students about stormwater stewardship

With support from a Boeing grant in 2022, EarthGen engaged 2,000 students across four Puget Sound school districts in its Stormwater Stewards program.

Why it matters: Middle and high school students learned about watersheds and the impact of stormwater runoff, investigated their local watersheds and then designed and implemented green stormwater infrastructure projects to improve water quality in their community. Students cared for and maintained these rain gardens as part of the program.

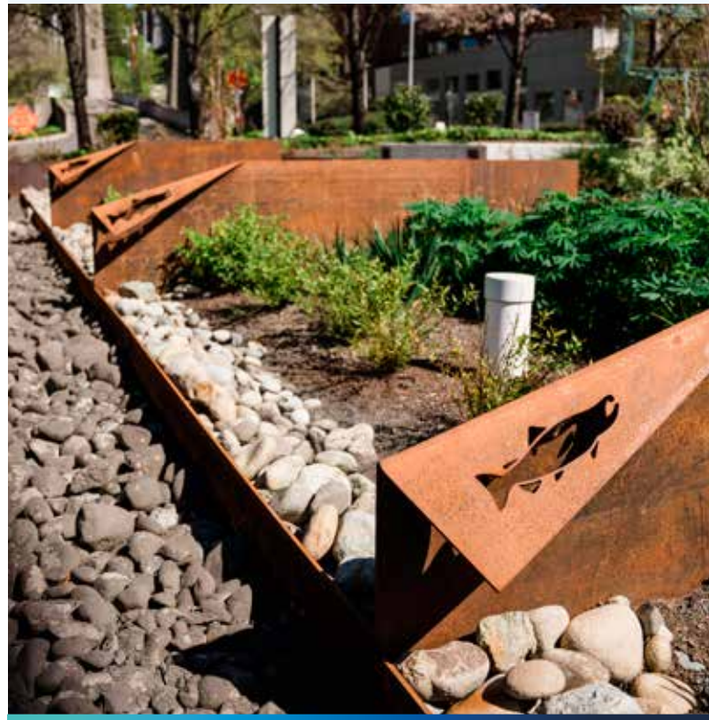
Middle school students plant in their rain garden in the Seattle suburb of Burien. (EarthGen photo)

Go deeper: A 2021 grant from Boeing helped EarthGen expand the Stormwater Stewards program into two additional Puget Sound school districts, which worked to add sustainable treatment for approximately 625,000 gallons of water.

Rain gardens under busy Seattle bridge filter water, protect salmon

The Aurora Bridge Bioswale project was designed to clean up polluted stormwater coming off this Seattle bridge. Runoff passes through a series of rain gardens below. The project serves as a model for others that The Nature Conservancy and its partners support, such as the I-5 Ship Canal stormwater park, which is currently being planned with funding from Boeing.

(Photo: Courtney Baxter/The Nature Conservancy)



Our Future

Boeing and Amideast partner to expand STEM access

At the UN Climate Change Conference COP27 held in Sharm El-Sheikh, Egypt, Amideast and Boeing announced an expanded partnership to support more Egyptian young people through STEM education with a focus on sustainability.

Go deeper: The expanded partnership will include STEM programs in robotics, graphics, animation, 3D printing, programming and web development; a STEM entrepreneurship competition; and a new STEM Program for Climate Sustainability, including advocacy efforts like STEM Talks and a sustainability podcast.

Why it matters: This grant from Boeing helps Amideast align STEM activities with Egypt's sustainable development strategy. In line with the UN Sustainable Development Goal (SDG) 4, Quality Education, STEM education fosters creativity and empowers young people to become critical thinkers and problem solvers who can address global challenges.

Boeing and Amideast have supported

22,000+

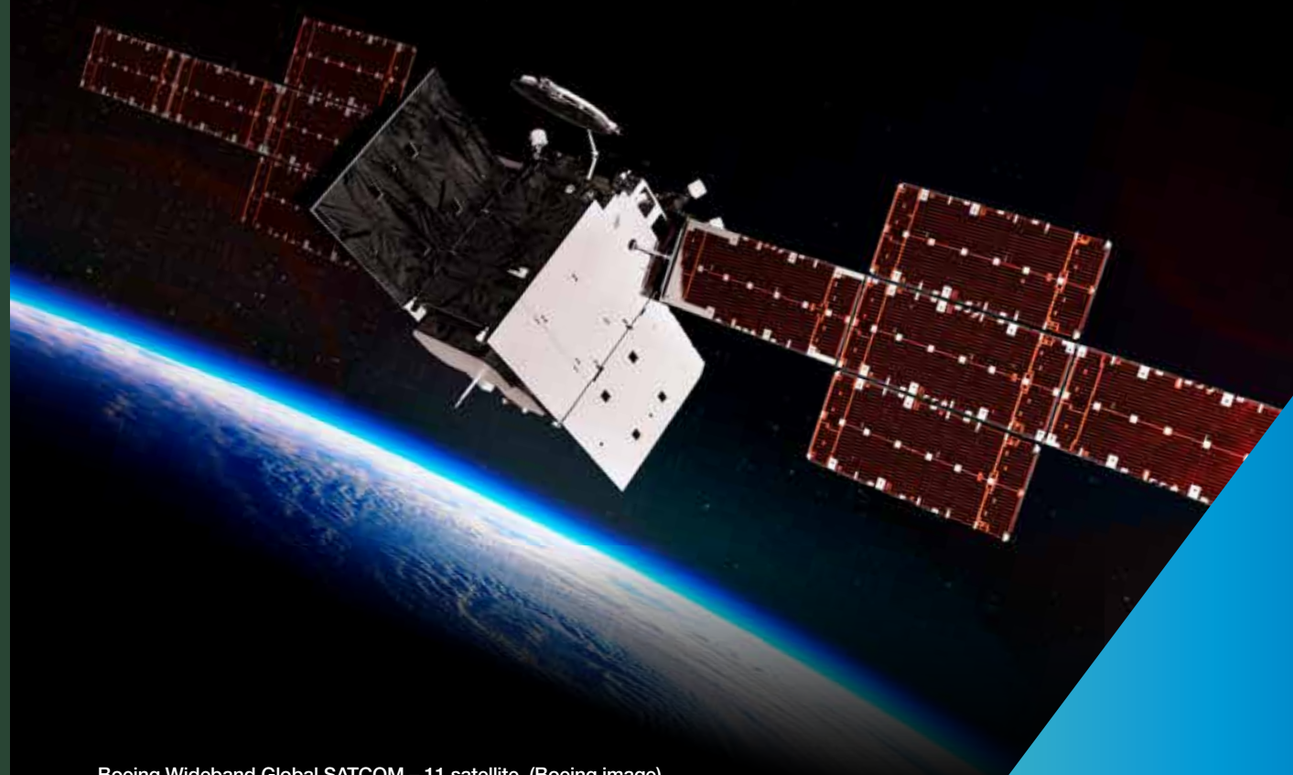
students in Egypt since 2007

Kuljit Ghata-Aura, Boeing president in the Middle East, Türkiye and Africa, and Shahinaz Ahmed, Amideast country director in Egypt (pictured, center), announce an expanded partnership between Boeing and Amideast. (Boeing photo)

REPORTING

This Sustainability Report has been prepared in alignment with the GRI 2021 Standards. The GRI Index below indicates the location of each GRI disclosure within this Sustainability Report, on our external website or other Boeing reports, or it states the information directly. In the SASB Index and TCFD Index, we have aligned our disclosures with the recommended disclosures and metrics in the SASB Aerospace & Defense Standard and the TCFD framework. We will continue to evaluate our disclosure approach moving forward to ensure we are providing relevant information in an efficient and effective manner.

All data within Key ESG Data, GRI, SASB and TCFD indexes is for the period from Jan. 1, 2022, through Dec. 31, 2022, unless otherwise noted.



Boeing Wideband Global SATCOM – 11 satellite. (Boeing image)

Key ESG Data

Environmental Data

	2022		2021		2020	
Energy[1]	Megawatt hours	Terajoules	Megawatt hours	Terajoules	Megawatt hours	Terajoules
Natural gas	1,928,000	6,941	1,712,000	6,163	1,686,000	6,070
Jet kerosene	861,000	3,100	804,000	2,894	544,000	1,958
Fuel oil #2	127,000	457	153,000	551	149,000	536
Motor gasoline	24,000	86	21,000	76	21,000	76
Propane	11,000	40	10,000	36	12,000	43
Liquefied petroleum gas	2,000	7	1,000	4	–	–
Total nonrenewable fuels	**2,953,000**	**10,631**	**2,701,000**	**9,724**	**2,412,000**	**8,683**
Sustainable aviation fuel	9,000	32	4,000	14	2,000	7
Total renewable fuels	**9,000**	**32**	**4,000**	**14**	**2,000**	**7**
Purchased nonrenewable electricity	1,350,000	4,860	1,482,000	5,335	1,686,000	6,070
Purchased renewable electricity[2]	720,000	2,592	574,000	2,066	392,000	1,411
Total purchased electricity	**2,070,000**	**7,452**	**2,056,000**	**7,402**	**2,078,000**	**7,481**
Total energy use	**5,033,000**	**18,119**	**4,761,000**	**17,410**	**4,492,000**	**16,171**

1. Data represents 100% of the company.
2. Renewable electricity data excludes any renewable energy that is part of the grid by default, in alignment with SASB and other frameworks. Notably, Boeing operates in a number of grids that rely significantly on renewable sources.
   • Boeing did not sell any electricity, heating or cooling energy.

	2022		2021		2020	
Emissions[1]	Tons CO_2e	Metric tons CO_2e	Tons CO_2e	Metric tons CO_2e	Tons CO_2e	Metric tons CO_2e
Scope 1 GHG[2,3]	708,000	642,000	675,000	612,000	611,000	554,000
Scope 2 GHG — location-based[2,3]	859,000	779,000	830,000	753,000	840,000	762,000
Scope 2 GHG — market-based[2,3]	442,000	401,000	493,000	447,000	580,000	526,000
Scope 3 GHG — business travel	205,000	186,000	97,000	88,000	101,000	92,000
Scope 3 GHG — use of sold products (Commercial Airplanes)[3,6]	400,000,000	363,000,000	306,000,000	278,000,000	246,000,000	223,000,000
Scope 3 GHG — use of sold products (Defense, Space & Security)[3,6]	24,000,000	22,000,000	24,000,000	22,000,000	22,000,000	20,000,000
Total calculated GHG excluding sold products	**1,355,000**	**1,229,000**	**1,264,000**	**1,147,000**	**1,292,000**	**1,172,000**
Core metrics sites GHG — location-based[4]	724,000	657,000	702,000	637,000	713,000	647,000
Core metrics sites GHG — market-based[4]	323,000	293,000	376,000	341,000	452,000	410,000
GHG Intensity[5]	$0.00002		$0.00002		$0.00002	

1. Emissions (Enterprise Scope 1, Scope 2, and Scope 3 Categories 6 and 11) data is verified by an accredited independent third party to the level of limited assurance, see assurance statements.
2. Scope 1 and Scope 2 data represents 100% of the company.
3. For Scopes 1, 2 and 3, we calculate emissions from CO_2, CH_4, N_2O, HFCs, PFCs, SF_6 and NF_3 for this data set.
4. Core metrics sites data represents emissions of CO_2, CH_4 and N_2O where we track a subset of emissions from natural gas combustion and purchased electricity associated with sites that represent the majority (70%) of Boeing operations.
5. GHG intensity includes Scope 1 and Scope 2 (market-based) GHG (CO_2, CH_4, N_2O, HFCs, PFCs, SF_6 and NF_3).
6. Use of sold products emissions are based on estimated lifetime emissions of Boeing Commercial Airplanes and Boeing Defense Services product deliveries in 2022, including direct emissions from combustion of fuel (335M tonnes) and indirect emissions from production of fuel (50M tonnes).

Environmental Data

	2022			2021			2020		
Water[1]	Kilogallons	Megaliters	Total water withdrawal from water-stressed areas[2]	Kilogallons	Megaliters	Total water withdrawal from water-stressed areas[2]	Kilogallons	Megaliters	Total water withdrawal from water-stressed areas[2]
OFF-SITE WATER SOURCES									
Surface water withdrawal	687,256	2,601	—%	639,501	2,421	—%	639,167	2,420	—%
Combination of surface water and groundwater withdrawal	405,788	1,536	22%	366,460	1,387	21%	423,353	1,603	22%
Groundwater withdrawal	110,671	419	31%	89,855	340	30%	83,596	316	31%
Reclaimed water (not withdrawn)	2,585	10	—%	3,114	12	—%	2,778	11	—%
Total water withdrawal	**1,203,715**	**4,556**	**10%**	**1,095,816**	**4,148**	**10%**	**1,148,894**	**4,350**	**10%**
ON-SITE WATER SOURCES[3]									
On-site well water use	2,243	8	100%	4,755	18	100%	2,352	9	100%
On-site water reclamation	10,321	39	—%	9,576	36	—%	10,508	40	—%

Boeing does not use seawater.

1. Water data represents approximately 84% of operations by square footage.
2. Water-stressed areas are those with high or extremely high water stress in the World Resources Institute Aqueduct Model.
3. Two locations have on-site water sources — Palmdale (well) and Portland (reclamation).

	2022	2021	2020
Waste[1]	Metric tons	Metric tons	Metric tons
Hazardous waste incinerated for energy recovery	661	590	747
Hazardous waste incinerated without energy recovery	701	843	1,019
Hazardous waste sent to landfill	2,473	1,977	2,143
Hazardous waste otherwise disposed	3,435	2,651	1,744
Percentage of hazardous waste recycled	0.1%	1.0%	0.4%
Total hazardous waste generated[2]	**7,276**	**6,122**	**5,674**
Nonhazardous waste incinerated for energy recovery	155	286	147
Nonhazardous waste incinerated without energy recovery	81	365	76
Nonhazardous waste sent to landfill	151	149	343
Nonhazardous waste otherwise disposed	7,339	11,138	6,294
Percentage of nonhazardous waste recycled	0.5%	0.4%	1.2%
Total nonhazardous waste generated	**7,765**	**11,981**	**6,943**

1. Waste data represents approximately 83% of operations by square footage.
2. Hazardous waste is determined from U.S. EPA hazardous manifest or equivalent government shipping documents, with profile waste designations determining the type of waste and Management codes determining the disposal method.