

2023 United Airlines Environmental Performance Data

Greenhouse Gas Emissions

	2023	2022	2021	2020	2019
	metric tons CO ₂ e	metric tons CO ₂ e	metric tons CO ₂ e	metric tons CO ₂ e	metric tons CO ₂ e
Direct (Scope 1) emissions	36,590,472	30,400,715	21,375,325*	15,485,363	34,413,872*
Mainline aircraft direct emissions	36,454,532	30,263,431	21,253,385	15,392,492	34,263,909
Conventional jet fuel	36,454,016	30,263,216	21,253,316*	15,392,491*	34,263,908*
Sustainable aviation fuel - CH ₄ and N ₂ O	517	215	68*	45*	82*
Mainline vehicles (diesel, gasoline, CNG, LPG) ²	52,976	47,447	38,242	24,766	65,161
Facilities (natural gas combustion, engine test cells)	82,964	89,837	81,997	70,797	80,573
Dry ice from catering	0	0	1,720	2,015	4,147

	2023	2022	2021	2020	2019
	metric tons CO ₂ e	metric tons CO ₂ e	metric tons CO ₂ e	metric tons CO ₂ e	metric tons CO ₂ e
Biogenic emissions - outside of scopes	67,395	26,806	5,745*	5,976*	13,852*
Mainline aircraft emissions - CO ₂ from sustainable aviation fuel	67,395	26,806	5,745*	5,976*	13,852*

	2023	2022	2021	2020	2019
	metric tons CO ₂ e	metric tons CO ₂ e	metric tons CO ₂ e	metric tons CO ₂ e	metric tons CO ₂ e
Indirect (Scope 2) emissions	144,019	149,252	160,794	175,087	189,682
Electricity consumption (location-based)	160,340	166,757	183,311	196,066	201,690
Electricity consumption (market-based)	143,991	149,251	160,794	175,087	189,682
Steam consumption	28	0	0	0	0

	2023	2022	2021	2020	2019
	metric tons CO ₂ e	metric tons CO ₂ e	metric tons CO ₂ e	metric tons CO ₂ e	metric tons CO ₂ e
Other Indirect (Scope 3) emissions	12,671,510	13,343,676	11,926,943*	8,982,191*	17,481,978*
3: Mainline aircraft fuel production	7,391,936	7,250,196	5,106,045*	4,701,874*	10,010,679*
Conventional jet fuel	7,377,946	7,246,478	5,104,506*	3,752,824*	8,356,884*
Sustainable aviation fuel	13,990	3,718	1,538*	1,491*	13,653*
4: Regional aircraft direct emissions and fuel production	4,873,562	5,587,322	1,259,152*	94,7558*	7,050,476*
Regional aircraft and bus-operated flights flown under capacity purchase agreement - direct emissions	4,048,183	4,504,664	5,294,725	4,053,434	7,025,889
Regional vehicles (diesel, gasoline, CNG, LPG) ²	12,799	14,533	15,481	13,658	24,588
Regional aircraft flown under capacity purchase agreement - fuel production	789,189	1,030,688	1,202,863*	908,708*	1,640,141*
Regional aircraft flown on an at-risk basis - fuel production	23,391	37,437	56,289*	38,849*	0*
7: Employee commuting	125,795	111,108	52,278	80,980	176,205
14: Regional aircraft flown on an at-risk basis	122,425	163,902	243,553	0	
15: Ownership stake in Azul Brazilian Airlines	156,432	229,912	199,099	132,220	244,605
15: United Airlines Ventures investments³	1,361	1,236	162	24	12

	2023	2022	2021	2020	2019
	metric tons CO ₂ e	metric tons CO ₂ e	metric tons CO ₂ e	metric tons CO ₂ e	metric tons CO ₂ e
Gross GHG emissions	49,406,001	43,893,642	33,463,063*	24,647,396*	52,085,532*
Carbon offsets	0	0	0	0	0
Net GHG emissions	49,406,001	43,893,642	33,463,063*	24,647,396*	52,085,532*

Efficient numbers

	2023	2022	2021	2020	2019
Revenue passenger-miles (RPM - millions) - consolidated	244,585	206,791	128,979	73,883	239,360
Metric tons CO ₂ e per million RTKs - Mainline + Regional ⁴	1,056.9	1,097.7	1,106.6**	1,337.7*	1,246.6*
Revenue tonnes-kilometers (RTKs - millions) - Mainline + Regional	46,361	39,526	25,212	15,934	42,760
Available seat-miles (ASMs - millions) - Mainline + Regional	291,566	247,858	178,684	122,804	284,999
Metric tons CO ₂ e per million ASMs - Mainline + Regional	168.9	176.2	186.2**	199.6*	181.8*

Energy consumption

	2023	2022	2021	2020	2019
Conventional jet fuel - Mainline aircraft (gallons - millions)	3,779	3,139	2,205	1,600	3,562
Sustainable aviation fuel - Mainline aircraft (gallons - millions)	7	3	1	1	1
Lifecycle reduction from SAF	77.9%	86.9%	83.4%	79.3%	62.0%
Emissions reductions from SAF (metric tons CO ₂ e)	11,308	3,419	987	1,220	8,517
Conventional jet fuel - Regional aircraft (gallons - millions)	418	466	523	404	729
Electricity (MWh)	434,790	435,259	447,714	477,751	489,197
Natural gas (MM BTUs)	1,481,604	1,628,722	1,494,698	1,264,964	1,432,250

Local air quality

	2023	2022	2021	2020	2019
	tons	tons	tons	tons	tons
NO _x emissions from mainline aircraft	10,356	14,948	10,813	7,660	14,720
NO _x emissions (old)	11,554	16,144	11,626	8,565	16,410

Mainline aircraft (jet fuel)	10,356	14,948	10,813	7,660	14,720
Vehicles (diesel, gasoline, CNG, LPG) ²	1,197	1,196	813	905	2,035
Facilities (Natural gas combustion, engine test cells)	156	153	121	130	148

	2023 tons	2022 tons	2021 tons	2020 tons	2019 tons
SO ₂ emissions from mainline aircraft	1,250	1,413	1,022	730	1,426
SO ₂ emissions (old)	1,251	1,414	1,022	731	1,427
Mainline aircraft (jet fuel)	1,250	1,413	1,022	730	1,426
Vehicles (diesel, gasoline, CNG, LPG)	0	0	0	0	0
Facilities (Natural gas combustion, engine test cells)	1	1	1	1	1

	2023 tons	2022 tons	2021 tons	2020 tons	2019 tons
CO emissions from mainline aircraft	9,027	7,805	5,503	3,743	8,010
CO emissions (old)	16,089	16,759	10,507	9,207	21,153
Mainline aircraft (jet fuel)	9,027	7,805	5,503	3,743	8,010
Vehicles (diesel, gasoline, CNG, LPG) ²	6,977	8,864	4,921	5,388	8,175
Facilities (Natural gas combustion, engine test cells)	85	91	83	76	83

Waste management

	2023 metric tons	2022 metric tons	2021 metric tons	2020 metric tons	2019 metric tons
Waste – total	59,025	25,176	31,407	26,667	53,832
Hazardous and non-hazardous waste generation	19,303	22,399	24,253	15,602	26,621
Catering – Municipal waste	37,014	2,776	10,367	11,066	27,210
Hazardous	Moved to new category	Moved to new category	Moved to new category	Moved to new category	Moved to new category
Non-hazardous/other waste	Moved to new category	Moved to new category	Moved to new category	Moved to new category	Moved to new category
Recycling – total	9,209	6,112	5,818	4,468	8,332
Non-catering – recycled	5,047	5,255	4,446	3,302	4,489
Catering – recycled	4,158	857	1,372	1,166	3,843

Water consumption

	2023 millions of gallons	2022 millions of gallons	2021 millions of gallons	2020 millions of gallons	2019 millions of gallons
Billed water consumption ⁵	429	329	661	484	521

The data presented herein reflecting United's 2023 GHG emissions footprint has been internally validated by United Airlines Internal Audit Department and externally verified by our third-party verification partner ERM CVS. United obtains this third-party verification of our Selected Information on an annual basis. ERM Certification and Verification Services (ERM CVS, a wholly owned subsidiary of the ERM Group, a global market leader in sustainability services) conducts our emissions verification and provides an ISO 14064-3 limited assurance on our GHG emissions for reporting. <https://crreport.united.com/documents/United-Airlines-2023-GHG-ERM-CVS-Assurance-Report.pdf>

Footnotes:

1. United accounts emissions reductions associated with the use and combustion of sustainable aviation fuel (SAF) to be a Scope 1 reduction, as it is in-sector and a sustainable alternative to the conventional jet fuel usage that is accounted in the gross emissions of this Scope. This is an interpretation of the GHG Protocol, until such time that an accepted GHG accounting methodology is developed to reflect in-sector reductions associated to biogenic products.
2. United changed to a more straightforward methodology to determine GHG emissions from GSE starting with 2018 reporting, but has not restated prior years; this change also re-allocated GHG emissions between Mainline and Regional GSE
3. United Airlines Ventures investments in Alder Fuels, Archer Aviation, Boom, Clear, Fulcrum BioEnergy, Heart Aerospace, and ZeroAvia (some of which may not have developed GHG inventories yet)
4. Intensity metric is used to track United's progress against our SBTi near term target it includes Scope 1, Scope 2, and Scope 3 category 3 and 4 emissions
5. Does not account for all United locations or locations shared with other companies (e.g., airport terminals) and as a result may change considerably from year to year

*This data point has been added or updated to reflect the change in our GHG accounting methodology made in 2023 as referenced in our 2023 Corporate Responsibility Report and accurately tracking against our SBTi validated mid-term goal.

**This calculation has been updated since the publishing of United's Form 10K to include Scope 3 Categories 3 & 4 for comparability with the 2023 emissions disclosures which include these emission categories. Inclusion of these Scope 3 emission categories reflects a change in our GHG accounting methodology as referenced in our Corporate Responsibility Report and accurately tracking against our SBTi-validated mid-term goal.

Totals may not add up due to rounding.

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