

CO2 FROM SCOPE 3 SOURCES AT SEA-TAC AIRPORT (2015-2024)

All units in tonnes

			2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	
CONTROL	Staff Business Travel	Regional Flights	1	5	5	3	3	0	1	3	4	6	
		Medium (intra-US) Haul Flights	150	155	155	180	180	41	29	160	190	260	
		Long Haul Flights	41	36	36	35	35	9	5	44	38	52	
	Staff Commuting	Port employees at airport	4,086	4,299	4,400	6,889	4,232	2,045	3,325	3,805	2,140	4,412	
GUIDE	Aircraft	APU use at gate & cargo	40,243	43,488	43,906	53,792	133,963	36,326	111,364	121,703	119,851	109,904	
		Aircraft taxi/ground movement	183,790	169,789	171,419	180,592	200,284	131,621	220,494	236,708	249,183	259,318	
	GSE & Airfield Vehicles	Gas	14,896	16,149	16,363	17,257	18,199	11,721	15,129	16,214	17,068	17,779	
		Propane	41	44	45	47	49	32	41	44	46	48	
		Diesel	10,703	11,603	11,757	12,399	13,077	8,422	10,871	11,650	12,264	12,775	
	Tenants	Natural gas for cooking/heating	617	642	637	743	794	488	613	740	944	1,037	
		Electricity use	507	535	467	472	444	323	304	325	712	720	
		Commute travel	11,526	13,424	14,815	15,300	10,667	9,618	5,507	8,006	11,253	11,571	
	Passenger Ground Travel Contracted by Airport	Taxis outbound under contract	4,492	4,310	3,436	3,169	3,789	640	1,643	2,971	3,871	3,391	
		Limos under contract	4,879	5,185	4,784	4,878	4,744	1,156	1,377	2,380	2,618	2,672	
		TNCs pickup	0	2,538	5,382	7,431	12,037	2,902	6,040	9,403	10,801	10,584	
		Hotel & Parking Shuttles	7,574	7,524	7,396	7,435	7,801	3,209	4,904	6,151	6,206	5,989	
		Shared Ride Vans	1,750	1,496	1,095	797	1,044	85	185	276	338	349	
INFLUENCE	Aircraft	Approach	61,325	96,462	97,388	102,599	113,787	74,778	83,226	89,346	94,055	97,881	
		Take-offs	101,940	71,436	72,122	75,981	84,266	55,377	74,120	74,898	78,845	82,052	
		Climb-out	44,794	58,618	59,181	62,348	69,146	45,441	66,300	71,175	74,926	77,974	
	Passenger Ground Travel Non-Contracted	Curbside dropoff/pickup	109,213	112,320	107,625	104,682	87,762	59,432	126,413	103,456	99,891	98,269	
		Parking On-site and Off-site	60,969	52,233	58,567	64,052	53,810	20,525	44,557	45,467	36,133	50,769	
		Drop off Taxis	8,853	4,757	5,031	3,324	1,856	209	1,171	2,060	3,731	4,619	
		Drop off TNCs	4,041	7,849	11,443	14,729	23,020	5,248	3,965	10,046	10,831	11,196	
		Non-Contracted Limos	2,831	3,060	2,402	2,025	1,560	1,470	812	1,302	1,005	809	
		Rental Cars	19,105	17,718	19,070	19,464	21,083	7,139	14,257	15,899	18,076	18,385	
		Airporters	2,558	3,736	2,434	2,082	2,938	533	1,703	1,942	2,342	2,840	
		Buses & Shuttles	1,679	540	1,612	1,393	486	25	121	320	378	373	
		Light Rail	600	692	710	598	411	212	252	377	558	684	
		Public Transit Bus	603	652	669	733	459	253	386	436	462	929	
	Airport Waste	Municipal Solid Waste	1,012	1,129	1,162	1,100	1,125	569	852	1,037	9,334	9,546	
		Construction Waste	2,165	215	167	150	190	1,834	3,632	11	652	1,275	
	TOTAL			706,983	712,641	725,682	766,679	873,242	481,683	803,598	838,354	868,747	898,468
	Emissions from all jet fuel dispensed to airlines at SEA			5,322,820	5,663,867	5,965,419	6,210,511	6,508,848	3,756,792	5,144,700	5,808,037	6,483,731	6,704,574

ENERGY USE FROM SCOPE 3 SOURCES AT SEA-TAC AIRPORT (2015-2024)

			2015	2016	2017	2018	2019	2020	2021	2022	2023	2024		
CONTROL	Staff Business Travel	Regional Flights	7,525	34,404	34,404	20,792	20,792	516	4,533	18,470	28,718	43,077		
		Medium (intra-US) Haul Flights	1,153,430	1,194,290	1,194,290	1,386,732	1,386,732	314,575	220,345	1,232,677	1,461,538	2,000,000		
		Long Haul Flights	297,691	259,303	259,303	248,634	248,634	64,951	39,144	314,491	272,821	373,333		
	Staff Commuting	4,086	4,229	4,400	6,889	4,232	2,045	3,325	3,038	2,140	2,140	4,431		
GUIDE	Aircraft	APU use at gate & cargo	Jet-A	4,127,453	4,460,347	4,503,136	5,537,123	13,739,804	3,725,746	11,421,899	12,482,399	12,292,443	11,272,221	
		Aircraft taxi/ground movement	→	183,790	169,789	171,419	180,562	200,284	131,621	220,872	236,708	249,183	259,318	
	GSE & Airfield Vehicles	gasoline	403,717	436,257	440,445	425,311	2,072,835	287,215	1,723,147	1,846,697	1,944,018	2,034,998	2,034,998	
		propane	7,099	7,671	7,745	8,160	8,634	5,510	7,178	7,692	8,098	8,356	8,356	
		diesel	376,831	407,204	411,113	419,159	1,280,764	283,060	1,064,699	1,141,038	1,201,171	1,251,207	1,251,207	
	Tenants	Natural gas for cooking/heating	116,237	120,951	120,119	140,051	149,721	92,000	115,531	139,457	177,870	195,432	195,432	
		Electricity use	32,311,241	34,080,499	29,775,468	28,730,618	27,425,683	20,136,951	24,132,864	25,961,624	24,749,798	25,044,205	25,044,205	
		Commute travel	11,526	13,424	14,815	15,300	10,667	9,618	4,712	8,006	8,006	11,253	11,571	
		Airline eGSE electricity use	→	→	→	1,317,784	836,346	445,885	477,093	414,685	361,532	381,149	381,149	
	Passenger Ground Travel Contracted by Airport	Taxis outbound under contract	4,492	4,310	3,436	3,169	3,789	640	1,643	2,971	3,871	3,291	3,291	
		Limos under contract	4,879	5,185	4,784	4,878	4,744	1,156	1,377	2,380	2,618	2,618	2,618	
		Pickup TNCs	0	2,538	5,382	7,431	12,037	2,902	6,039	9,403	10,801	10,584	10,584	
		Hotel & Parking Shuttles	7,574	7,524	7,396	7,435	7,801	3,209	4,904	6,151	6,206	5,989	5,989	
		Shared Ride Vans	1,750	1,488	1,095	797	1,044	83	182	338	338	338	349	
INFLUENCE	Aircraft	Approach	61,325	96,462	97,388	102,599	113,787	74,778	94,591	89,346	94,055	97,881	97,881	
		Take-offs	101,940	71,436	72,122	75,981	84,166	55,377	70,050	74,988	78,845	83,051	83,051	
		Climb-out	44,794	58,618	59,181	62,348	69,146	45,441	57,481	71,175	74,926	77,974	77,974	
	Passenger Ground Travel Non-Contracted	Curbside dropoff/pickup	109,213	112,200	107,625	104,682	87,762	59,432	107,342	103,456	99,891	98,269	98,269	
		Parking On-site and Off-site	60,969	52,233	58,567	64,052	53,810	20,525	37,774	45,467	36,133	50,769	50,769	
		Drop off Taxis	8,853	4,757	5,031	3,324	1,856	269	2,060	2,060	3,771	4,619	4,619	
		Drop off TNCs	4,041	7,849	11,443	14,729	23,020	5,248	6,883	10,086	10,831	11,196	11,196	
		Non-Contracted Limos	2,831	3,060	2,402	2,025	1,560	1,470	812	1,302	1,005	2,026	809	
		Rental Cars	19,109	17,718	19,070	19,464	21,083	7,139	12,145	15,899	18,076	18,076	18,385	
		Airporters	2,558	3,736	2,434	2,082	2,938	533	1,703	1,942	2,342	2,840	2,840	
		Buses & Shuttles	1,679	500	1,612	1,393	486	25	124	320	376	376	373	
		Light Rail	600	692	710	598	411	213	252	377	558	377	684	
		Public Transit Bus	603	652	669	733	459	253	386	436	462	462	929	
		Airport Waste	Municipal Solid Waste	1,012	1,129	1,162	1,158	1,125	589	852	1,037	934	934	934
			Construction Waste	2,165	245	167	21	350	3,834	6,822	11	652	652	1,275

EMISSION FACTORS USED FOR SCOPE 3 SOURCES AT SEA-TAC AIRPORT: 2024

Scope	Year	Fuel	Emission Factor	Original Units	Converted Emission Factor	Converted Units	Citation
3	All	Jet-A in Regional Flights	70.0000	seat-mile/gallon	0.00013929	tonnes CO2/seat-mile	https://en.wikipedia.org/wiki/Fuel_economy_in_aircraft
	All	Jet-A in Medium Haul Flights	75.0000	seat-mile/gallon	0.00013000	tonnes CO2/seat-mile	http://www.wsj.com/articles/SB10001424052748704901104575423261677748380
	All	Jet-A in Long Haul Flights	70.0000	seat-mile/gallon	0.00013929	tonnes CO2/seat-mile	https://en.wikipedia.org/wiki/Fuel_economy_in_aircraft
	All	Gasoline in Vehicles	8.7800	kg CO2/gallon	0.00878000	tonnes CO2/gallon	https://www.epa.gov/sites/production/files/2018-03/documents/emission-factors_mar_2018_0.pdf
	All	Diesel in Vehicles	10.2100	kg CO2/gallon	0.01021000	tonnes CO2/gallon	https://www.epa.gov/sites/production/files/2018-03/documents/emission-factors_mar_2018_0.pdf
	All	Propane in Vehicles	5.72	kg CO2/gallon	0.00572000	tonnes CO2/gallon	https://www.epa.gov/sites/production/files/2018-03/documents/emission-factors_mar_2018_0.pdf
	All	Natural Gas in Boilers	53.0600	kg CO2/MMBTU	0.00530600	tonnes CO2/therm	https://www.epa.gov/sites/production/files/2018-03/documents/emission-factors_mar_2018_0.pdf
	2019	BPA electricity	655.41	lbs CO2e/MWh	0.00001570	tonnes CO2/kWh	BPA correspondence using eGRID/TCR methodology
	2020	BPA Electricity	0.0128	tonnes CO2/MWh	0.00001282	tonnes CO2/kWh	BPA correspondence using eGRID/TCR methodology
	2021	BPA Electricity	0.0126	tonnes CO2/MWh	0.00001260	tonnes CO2/kWh	BPA correspondence using eGRID/TCR methodology
	2022	BPA Electricity	0.0125	tonnes CO2/MWh	0.00001250	tonnes CO2/kWh	BPA correspondence using eGRID/TCR methodology
	2023	BPA Electricity	63.41	lbs CO2/MWh	0.00002876	tonnes CO2/kWh	BPA correspondence using eGRID/TCR methodology
	2024	BPA Electricity	74.49	lbs CO2/MWh	0.00003379	tonnes CO2/kWh	BPA correspondence using eGRID/TCR methodology
	All	Jet-A	9.7500	kg CO2/gallon	0.00975000	tonnes CO2/gallon	https://www.epa.gov/sites/production/files/2018-03/documents/emission-factors_mar_2018_0.pdf