



CO2 Emissions from Scope 3 Sources at Port of Seattle Maritime 2005 - 2024

All units in tonnes

CONTROL	Staff Business Travel	Regional Flights	Scope 1-2		Scope 3										
			2005	2007	2011	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
			1	1	1	1	2	2	2	2	0	0.3	2	3	5
		Medium (intra-US) Haul Flights	82	82	82	82	69	69	98	98	13	8	65	77	105
		Long Haul Flights	16	16	16	16	15	15	25	25	3	-	26	23	31
		subtotal	100	100	100	100	86	86	125	125	15	8	93	103	141
	Tenant Natural Gas (1)	Terminal 91	-	-	114	51	89	122	136	193	73	46	174	-	-
		Mad Anthony's	-	-	-	-	-	-	-	-	-	-	-	-	-
	Tenant Steam (2)	Pier 66	-	-	-	-	-	-	-	-	-	-	-	-	-
	Tenant Electricity (3)	Fishermen's Terminal (4)	55	69	18	60	35	57	39	49	18	23	13	44	51
		Marine Maintenance	-	-	-	-	-	-	-	-	-	-	-	-	-
		Marine Maintenance - Parks	-	-	-	-	-	-	-	-	-	-	-	-	-
		Maritime Industrial Center (5)	13	21	5	17	8	11	7	8	3	4	2	6	8
		Pier 2 Uplands & CEM	-	-	-	-	-	-	-	-	-	-	-	-	-
		Pier 28	-	-	-	-	-	-	-	-	-	-	-	-	-
		Pier 48	-	1	-	-	-	-	-	-	-	-	-	-	-
		Pier 66 & Marina	22	20	6	26	15	23	17	22	7	12	5	13	13
		Pier 69	0	0	1	4	3	4	3	3	1	1	0	0	0
		Salmon Bay Marina (6)	-	-	-	-	-	-	-	-	-	-	1	1	5
		Shilshole Bay Marina	77	73	20	74	45	92	48	61	29	36	16	45	70
		Terminal 5 Southeast	-	-	-	-	-	-	-	-	-	0	0	-	-
		Terminal 18 (7)	-	-	-	-	-	-	-	-	0	0	-	-	-
		Terminal 34 (7)	-	-	-	-	-	-	-	-	-	-	-	-	-
		Terminal 86 (8)	198	209	60	171	118	183	127	143	84	98	42	98	140
		Terminal 91 (9)	306	399	96	414	215	424	247	341	92	103	91	143	250
		T31 Cruise Shore Power (10)	-	-	-	-	-	-	30	81	-	26	15	57	82
		Terminal 102 & Marina	4	4	1	3	1	2	1	2	1	1	1	2	3
		Terminal 106	-	-	-	-	-	-	-	-	-	-	-	-	-
		Terminal 108	-	-	-	-	-	-	-	-	-	-	-	-	-
		Terminal 117	-	-	-	-	-	-	-	-	-	-	-	-	-
		World Trade Center West (11)	-	-	-	-	-	-	-	-	-	-	-	-	-
		Duwamish River Hub (12)	-	-	-	-	-	-	-	-	-	-	-	-	-
		subtotal	676	797	207	767	439	796	520	710	234	304	186	409	622
INFLUENCE	Employee Commute (2)	P69 and Maritime work locations	1,007	1,021	1,282	1,345	1,392	1,305	1,335	1,254	560	324	807	871	775
	Solid Waste Mgmt (2)	Maritime solid waste off-site mgmt	139	139	139	139	185	188	190	198	93	101	117	128	117
	Maritime Supply Chain (2,13)	Ocean-going vessels	68,428	68,428	87,090	87,090	59,325	59,325	59,325	59,325	5,607	47,642	103,687	103,687	103,687
		Commercial harbor vessels	8,547	8,547	3,726	3,726	9,647	9,647	9,647	9,647	9,647	11,555	11,555	11,555	11,555
		Recreational vessels	7,900	7,900	6,854	6,854	6,793	6,793	6,793	6,793	6,793	7,277	7,277	7,277	7,277
		Locomotives	7,545	7,545	6,239	6,239	4,553	4,553	4,553	4,553	4,836	4,836	4,836	4,836	4,836
		Cargo-handling equipment	3,926	3,926	407	407	354	354	354	354	354	406	406	406	406
		Cruise buses on terminals	13	13	13	13	15	15	15	15	15	4	4	4	4
		subtotal	96,359	96,359	104,329	104,329	80,686	80,686	80,686	80,686	26,968	71,720	127,766	127,766	127,766
		TOTAL	98,280	98,416	106,169	106,732	82,878	83,183	82,993	83,167	27,944	72,504	129,144	129,277	129,421

(1) In 2022, natural gas use in the Terminal 91 cruise building was reassigned as Scope 3 based on new metering information.
(2) Emissions from this category are expressed in tonnes CO2e; this is assumed proxy for CO2 value.
(3) As updated annual emission factors become available from Seattle City Light, they are applied to prior years' inventories. In 2022, emissions were recalculated for 2019 (using the 2019 emission factor), and 2020 and 2021 (using the 2020 emission factor).
(4) Fishermen's Terminal 2005 Scope 3 kWh adjusted to 39% of total due to data anomalies.
(5) Maritime Industrial Center 2005 Scope 2 kWh adjusted to 51% of total due to data anomalies.
(6) Salmon Bay Marina was purchased by POS in 2018.
(7) Starting in 2022, Terminal 18 and Pier 34 are omitted from the inventory because they are Northwest Seaport Alliance facilities.
(8) Terminal 86 values for 2005, 2007, 2011, and 2015 were estimated based on 2017 actuals and annual cargo throughput.
(9) Terminal 91 Scope 3 kWh adjusted to 56% of total for 2005, 87% of total for 2015 and 2018, and 88% for 2021 due to data anomalies. (Proportions based on representative years).
(10) Terminal 91 Cruise Shore Power - 2018 and 2019 are the only year for which data is available. There was no cruise season in 2020 due to COVID-19 restrictions.
(11) World Trade Center West was newly added to the GHG inventory in 2018 with adjustments in prior years' inventories.
(12) Duwamish River Hub is new property the Port rents, added in 2021.
(13) The Maritime Supply Chain emissions for 2022/2023 were calculated using the 2021 Puget Sound Emissions Inventory results for all categories except for Ocean-Going vessels, which are based on 2022 data



Energy Use from Scope 3 Sources at Port of Seattle Maritime 2005 - 2024

			2005	2007	2011	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024		
CONTROL	Staff Business Travel	Regional Flights	8,169	8,169	8,169	8,169	11,168	11,168	16,216	16,216	258	2,394	14,956	21,538	35,897	seat-miles/gal Jet A Fuel	
		Medium (Intra-US) Haul Flights	631,281	631,281	631,281	631,281	532,852	532,852	750,716	750,716	96,567	62,654	498,245	592,308	807,692	seat-miles/gal Jet A Fuel	
		Long Haul Flights	118,050	118,050	118,050	118,050	109,186	109,186	181,773	181,773	19,277	-	187,773	165,128	222,564	seat-miles/gal Jet A Fuel	
INFLUENCE	Tenant Natural Gas (1)	Terminal 91	-	-	21,391	9,688	16,722	22,917	25,663	36,405	13,701	8,670	32,852	-	-	therms	
		Terminal 92	-	-	-	-	-	-	-	-	-	-	-	-	-	therms	
	Tenant Steam (2)	Pier 66	-	-	-	-	-	-	-	-	-	-	-	-	-	kibs	
	Tenant Electricity	Fishermen's Terminal (3)	2,672,519	3,355,174	2,957,506	2,508,794	2,485,026	2,730,594	2,699,000	2,598,150	2,059,581	2,233,681	2,790,149	3,066,188	3,559,044	kWh	
		Marine Maintenance														kWh	
		Marine Maintenance - Parks														kWh	
		Maritime Industrial Center (4)	614,958	1,000,984	829,272	721,780	532,927	512,629	475,484	413,465	300,180	356,247	392,059	442,732	557,783	kWh	
		Pier 2 Uplands & CEM														kWh	
		Pier 2B														kWh	
		Pier 4B		54,240												kWh	
		Pier 66 & Marina	1,045,051	977,233	915,369	1,090,915	1,050,376	1,081,585	1,182,750	1,165,074	745,452	1,106,172	1,091,215	929,757	920,187	kWh	
		Pier 69	18,612	3,796	160,992	166,952	184,612	187,504	176,328	164,580	83,232	131,729	5,392	5,256	4,480	kWh	
		Salmon Bay Marina (5)												228,956	81,847	365,350	kWh
		Shilshole Bay Marina	3,728,173	3,541,512	3,210,450	3,101,025	3,147,752	4,387,781	3,312,374	3,240,445	3,200,956	3,383,048	3,276,525	3,127,371	4,865,494	kWh	
		Terminal 5 Southeast												79,510		kWh	
		Terminal 18 (6)									18,590	27,409				kWh	
		Terminal 34 (6)														kWh	
		Terminal 86 (7)	9,590,358	10,129,624	9,548,117	7,176,901	8,366,709	8,679,486	8,762,063	7,590,623	9,429,451	9,315,587	8,876,188	6,828,237	9,822,995	kWh	
		Terminal 91 (8)	14,819,055	19,300,354	15,382,199	17,392,884	15,167,510	20,165,609	17,016,667	18,103,662	10,359,168	9,828,040	19,109,815	10,003,602	17,487,200	kWh	
		T91 Cruise Shore Power (9)							2,076,982	4,281,856	2,498,115	3,154,961	3,979,276	5,716,412		kWh	
		Terminal 102 & Marina, T104	206,111	214,889	120,857	106,014	88,672	113,857	95,430	97,666	107,034	86,899	244,808		123,901	219,196	kWh
		Terminal 106															kWh
		Terminal 108															kWh
	Terminal 117															kWh	
	World Trade Center West (10)															kWh	
	Duwamish River Hub (11)															kWh	
			subtotal	32,694,837	38,577,806	33,124,762	32,265,265	31,023,584	37,859,045	35,797,079	37,655,521	26,303,644	28,966,928	39,249,578	28,588,167	43,518,141	kWh
	INFLUENCE	Employee Commute (2)	direct calculation of CO2	1,007	1,021	1,282	1,345	1,392	1,305	1,335	1,254	560	324	807	871	775	tonnes CO2
			Solid Waste Mgmt (2)	139	139	139	139	185	190	198	93	101	117	128	117	117	tonnes CO2
		Maritime Supply Chain (2)	direct calculation of CO2	96,359	96,359	104,329	104,329	80,686	80,686	80,686	80,686	26,968	71,720	127,766	127,766	127,766	tonnes CO2
			subtotal	97,505	97,519	105,749	105,813	82,264	82,179	82,212	82,138	27,621	72,146	128,573	128,765	128,658	tonnes CO2

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 (3) FT 2005 Scope 3 kWh adjusted to 39% of total due to data anomalies.
 (4) MIC 2005 Scope 2 kWh adjusted to 51% of total due to data anomalies.
 (5) Salmon Bay Marina was purchased by POS in 2018.
 (6) Starting in 2022, Terminal 18 and Pier 34 are omitted from the inventory because they are NWSA facilities.
 (7) T86 values for 2005, 2007, 2011, and 2015 were estimated based on 2017 actuals and annual cargo throughput.
 (8) T91 Scope 3 kWh adjusted to 56% of total for 2005, 87% of total for 2015 and 2018, and 88% for 2021 due to data anomalies. (Proportions based on representative years.)
 (9) T91 Cruise Shore Power - 2018 and 2019 are the only year for which data is available. There was no cruise season in 2020 due to COVID-19 restrictions.

EMISSION FACTORS USED FOR POS MARITIME GHG INVENTORY

Scope	Year	Fuel	Emission Factor	Original Units	Converted Emission Factor	Converted Units	Citation
3	2015	Jet-A in Regional Flights	70.0000	seat-mile/gallon	0.000139286	tonnes CO2/seat-mile	https://en.wikipedia.org/wiki/Fuel_economy_in_aircraft
	2015	Jet-A in Medium Haul Flights	75.0000	seat-mile/gallon	0.00013	tonnes CO2/seat-mile	http://www.wsj.com/articles/SB10001424052748704901104575423261677748380
	2015	Jet-A in Long Haul Flights	70.0000	seat-mile/gallon	0.000139286	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	2023-Default-Emission-Factors-Final.pdf (theclimateregistry.org)
	All	Diesel in Vehicles	10.2100	kg CO2/gallon	0.01021000	tonnes CO2/gallon	2023-Default-Emission-Factors-Final.pdf (theclimateregistry.org)
	All	Propane	5.72	kg CO2/gallon	0.00572000	tonnes CO2/gallon	2023-Default-Emission-Factors-Final.pdf (theclimateregistry.org)
	All	Natural Gas in Boilers	53.0600	kg CO2/MMBTU	0.00530600	tonnes CO2/therm	2023-Default-Emission-Factors-Final.pdf (theclimateregistry.org)