

Energy Use from Scope 3 Sources

Port of Seattle Maritime 2005, 2015, 2019

LEVEL OF INFLUENCE	SOURCE TYPE	SOURCE DETAIL	2005	2007*	2015	2019	UNITS
CONTROL	Staff Business Travel	Regional Flights	8,169	8,169	8,169	16,216	seat-miles/gal Jet A Fuel
		Medium (intra-US) Haul Flights	631,281	631,281	631,281	750,716	seat-miles/gal Jet A Fuel
		Long Haul Flights	118,050	118,050	118,050	181,773	seat-miles/gal Jet A Fuel
GUIDE	Tenant Natural Gas	Multiple locations	-	-	-	-	therms
	Tenant Steam (1)	Pier 66	-	-	-	-	klbs
	Tenant Electricity	Fishermen's Terminal (2)	2,672,519	3,355,174	2,508,794	2,598,150	kWh
		Marine Maintenance	-	-	-	-	kWh
		Marine Maintenance - Parks	-	-	-	-	kWh
		Maritime Industrial Center (3)	614,958	1,000,984	721,780	413,465	kWh
		Pier 2 Uplands & CEM	-	-	-	-	kWh
		Pier 28	-	-	-	-	kWh
		Pier 48	-	54,240	-	-	kWh
		Pier 66 & Marina	1,045,051	977,233	1,090,915	1,165,074	kWh
		Pier 69	18,612	3,796	166,952	164,580	kWh
		Salmon Bay Marina	-	-	-	-	kWh
Shilshole Bay Marina		3,728,173	3,541,512	3,101,025	3,240,445	kWh	
Terminal 5 Southeast	-	-	-	-	kWh		
Terminal 18	-	-	-	-	kWh		

		Terminal 34	-	-	-	-	kWh
		Terminal 86 (4)	9,590,358	10,129,624	7,176,901	7,590,623	kWh
		Terminal 91 (5)	14,819,055	19,300,354	17,392,884	18,103,662	kWh
		T91 Cruise Shore Power (6)	-	-	-	4,281,856	kWh
		Terminal 102 & Marina, T104	206,111	214,889	106,014	97,666	kWh
		Terminal 106	-	-	-	-	kWh
		Terminal 108	-	-	-	-	kWh
		Terminal 117	-	-	-	-	kWh
		World Trade Center West	-	-	-	-	kWh
		subtotal	32,694,837	38,577,806	32,265,265	37,655,521	kWh
INFLUENCE	Employee Commute	direct calculation of CO2	921	921	1,062	800	tonnes CO2
	Solid Waste Mgmt (1)	direct calculation of CO2	139	139	139	198	tonnes CO2
	Maritime Supply Chain (1)	direct calculation of CO2	93,208	93,208	104,329	74,231	tonnes CO2
		subtotal	94,268	94,268	105,530	75,229	tonnes CO2

Notes:

*2007 is the baseline year for the Port of Seattle's Scope 3 greenhouse gas emission reduction targets.

(1) Emissions from this category are expressed in tonnes CO2e; this is assumed proxy for CO2 value.

(2) Fishermen's Terminal 2005 Scope 3 kWh adjusted to 39% of total due to data anomalies.

(3) Maritime Industrial Center 2005 Scope 2 kWh adjusted to 51% of total due to data anomalies.

(4) Terminal 86 values for 2005, 2007, and 2015 estimated based on 2017 actuals proportional to annual cargo throughput.

(5) Terminal 91 Scope 3 kWh adjusted to 56% of total for 2005 and 87% of total for 2015 due to data anomalies.

(6) Terminal 91 Cruise Shore Power - 2019 is the only year for which data is available.

CO2 Emissions from Scope 3 Sources

Port of Seattle Maritime 2005, 2015, 2019

All units in tonnes

LEVEL OF INFLUENCE	SOURCE TYPE	SOURCE DETAIL	2005	2007*	2015	2019	
CONTROL	Staff Business Travel	Regional Flights	1	1	1	2	
		Medium (intra-US) Haul Flights	82	82	82	98	
		Long Haul Flights	16	16	16	25	
		subtotal	100	100	100	125	
GUIDE	Tenant Natural Gas	Multiple locations	-	-	-	-	
	Tenant Steam (1)	Pier 66	-	-	-	-	
	Tenant Electricity	Fishermen's Terminal (2)		55	69	60	55
		Marine Maintenance					-
		Marine Maintenance - Parks					-
		Maritime Industrial Center (3)		13	21	17	9
		Pier 2 Uplands & CEM					-
		Pier 28					-
		Pier 48		-	1	-	-
		Pier 66 & Marina		22	20	26	25
		Pier 69		0	0	4	3
		Salmon Bay Marina		-	-	-	-
		Shilshole Bay Marina		77	73	74	68
		Terminal 5 Southeast					-
		Terminal 18					-
		Terminal 34					-
		Terminal 86 (4)		198	209	171	160
Terminal 91 (5)		306	398	414	381		

		T91 Cruise Shore Power (6)	-	-	-	90
		Terminal 102 & Marina	4	4	3	2
		Terminal 106				-
		Terminal 108				-
		Terminal 117				-
		World Trade Center West				-
		subtotal	676	797	767	792
INFLUENCE	Employee Commute	P69 and Maritime work locations	921	921	1,062	800
	Solid Waste Mgmt (1)	Maritime solid waste off-site mgmt	139	139	139	198
	Maritime Supply Chain (1)	Ocean-going vessels	70,890	70,890	87,090	58,539
		Commercial harbor vessels	2,967	2,967	3,726	4,083
		Recreational vessels	7,867	7,867	6,854	6,701
		Locomotives	7,545	7,545	6,239	4,540
		Cargo-handling equipment	3,926	3,926	407	354
		Cruise buses on terminals	13	13	13	15
	subtotal	93,208	93,208	104,329	74,231	
		TOTAL	95,044	95,165	106,397	76,146

Notes:

*2007 is the baseline year for the Port of Seattle's Scope 3 greenhouse gas emission reduction targets.

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(3) Maritime Industrial Center 2005 Scope 2 kWh adjusted to 51% of total due to data anomalies.

(4) Terminal 86 values for 2005, 2007, and 2015 estimated based on 2017 actuals proportional to annual cargo throughput.

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Scope 3 Emission Factors

Year	Fuel	Emission Factor	Original Units	Converted Emission Factor	Converted Units	Citation
2015	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
2015	Jet-A in Medium Haul Flights	75.0000	seat-mile/gallon	0.00013000	tonnes CO2/seat-mile	http://www.wsj.com/articles/SB10001424052748704901104575423261677748380
2015	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	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
2010	SCL Retail Electricity	45.57	lb CO2/MWh (2)	0.00002066	tonnes CO2/kWh	SCL correspondence & SCL retail factors found at https://www.theclimateregistry.org/our-members/cris-public-reports/

Year	Fuel	Emission Factor	Original Units	Converted Emission Factor	Converted Units	Citation
2011	SCL Retail Electricity	13.77	lb CO2/MWh (2)	0.00000625	tonnes CO2/kWh	SCL correspondence & SCL retail factors found at https://www.theclimateregistry.org/our-members/cris-public-reports/
2012	SCL Retail Electricity	25.62	lb CO2/MWh (2)	0.00001162	tonnes CO2/kWh	SCL correspondence & SCL retail factors found at https://www.theclimateregistry.org/our-members/cris-public-reports/
2013	SCL Retail Electricity	33.23	lb CO2/MWh (2)	0.00001507	tonnes CO2/kWh	SCL correspondence & SCL retail factors found at https://www.theclimateregistry.org/our-members/cris-public-reports/
2014	SCL Retail Electricity	20.08	lb CO2/MWh (2)	0.00000911	tonnes CO2/kWh	SCL correspondence & SCL retail factors found at https://www.theclimateregistry.org/our-members/cris-public-reports/
2015	SCL Retail Electricity	52.44	lb CO2/MWh (2)	0.00002379	tonnes CO2/kWh	SCL correspondence & SCL retail factors found at https://www.theclimateregistry.org/our-members/cris-public-reports/
2016	SCL Retail Electricity	31.22	lb CO2/MWh (2)	0.00001416	tonnes CO2/kWh	SCL correspondence & SCL retail factors found at https://www.theclimateregistry.org/our-members/cris-public-reports/
2017	SCL Retail Electricity (3)	46.37	lb CO2/MWh (2)	0.00002103	tonnes CO2/kWh	SCL retail factors found at https://www.theclimateregistry.org/our-members/cris-public-reports/