



Port of Seattle Maritime Energy Use from Scope 1 & 2 Sources, 2005 - 2021

			2005	2015	2016	2017	2018	2019	2020	2021		
Scope 1	Stationary Source	Natural Gas	Fishermen's Terminal	22,635	15,209	17,373	20,899	19,348	19,093	18,944	19,607	therms
			Marine Maintenance	32,957	20,122	24,323	26,792	28,536	30,503	30,318	28,055	therms
			Pier 66 & Marina	-	49,701	48,927	57,522	98,491	116,012	95,458	90,851	therms
			Salmon Bay Marina	-	-	-	-	484	1,897	1,515	1,564	therms
			Shilshole Bay Marina	45,568	5,988	6,809	10,221	9,402	9,416	10,218	13,772	therms
			Terminal 91	95	9,867	17,340	27,524	30,713	40,640	13,701	8,670	therms
			Terminal 102	9,422	13,402	15,204	16,037	13,059	20,051	20,101	29,096	therms
			Terminal 117	1,082	-	-	-	-	-	-	-	therms
			TOTAL NATURAL GAS	111,760	114,289	129,975	158,995	200,033	237,612	190,255	191,615	therms
	Propane	T30 Remediation	TOTAL PROPANE	-	-	-	-	-	17,643	31,488	27,500	gallons
	Steam	Pier 66	TOTAL STEAM	5,037	-	-	-	-	-	-	-	kib
	Mobile Source	Mobile Fleet Fossil Fuel Use	Gasoline Delivered	51,004	51,908	55,867	61,038	68,951	63,898	53,129	53,172	gallons
			Business Miles Personal Vehicles	1,840	2,227	1,952	1,687	1,143	1,409	226	204	gallons
			TOTAL GASOLINE	52,844	54,135	57,819	62,725	70,094	65,307	53,355	53,376	gallons
			TOTAL DIESEL	39,433	32,638	27,971	30,109	35,165	30,243	6,227	3,400	gallons
TOTAL CNG			-	488	446	705	566	60	-	-	GGE	
TOTAL PROPANE		-	1,390	942	1,348	1,317	996	1,010	847	gallons		
Biogenic Fuel (1)		TOTAL BIODIESEL (B100)	-	3,960	3,785	3,891	5,165	4,740	-	-	gallons	
TOTAL RENEWABLE DIESEL (R99)	-	-	-	-	-	571	22,907	28,481	gallons			
Scope 2	Electricity	Fishermen's Terminal (2)	4,180,093	5,129,427	5,477,054	5,457,682	5,787,908	5,561,173	6,064,896	7,406,346	kWh	
		Marine Maintenance	605,268	444,841	484,697	484,203	468,484	451,313	451,754	448,362	kWh	
		Marine Maintenance - Parks	123,729	147,957	146,132	126,642	109,104	102,800	109,838	99,081	kWh	
		Maritime Industrial Center (3)	590,842	288,220	415,673	434,771	395,516	393,535	462,220	548,553	kWh	
		Pier 2 Uplands & CEM	-	4,331	4,926.00	3,620	3,801	2,415	2,602	3,868	kWh	
		Pier 28	30,944	-	-	-	-	-	-	-	kWh	
		Pier 48	427,111	-	-	-	-	-	-	-	kWh	
		Pier 66 & Marina	2,053,113	2,209,312	2,482,208	3,041,614	2,666,100	2,654,889	1,922,209	1,985,037	kWh	
		Pier 69	2,648,243	2,075,603	2,129,904	2,172,272	2,168,388	2,197,238	1,877,723	2,015,052	kWh	
		Salmon Bay Marina	-	-	-	-	187,120	433,440	411,080	434,052	kWh	
		Shilshole Bay Marina	843,126	3,083,057	3,326,580	2,637,053	3,507,559	3,483,707	5,354,110	6,192,733	kWh	
		Terminal 5 Southeast	104,920	101,520	95,480	93,520	97,280	92,160	61,720	77,108	kWh	
		Terminal 18	11,958	1,313	1,317	970	735	610	9,079	418	kWh	
		Terminal 34	-	36,089	34,241	30,243	29,374	33,495	41,293	42,868	kWh	
		Terminal 86	-	-	-	-	-	-	-	-	kWh	
		Terminal 91 (4)	6,351,024	2,598,937	2,266,410	3,013,347	2,542,720	2,293,240	1,312,224	6,734,616	kWh	
		Terminal 91 Cruise Shore Power	-	-	-	-	-	-	-	-	kWh	
		Terminal 102 & Marina, T104	1,305,769	1,149,071	1,192,704	1,200,469	1,003,382	917,588	844,662	1,030,647	kWh	
		Terminal 106	999,580	391,440	464,080	424,400	354,160	367,833	355,972	432,511	kWh	
		Terminal 108	2,880	-	-	-	-	-	-	-	kWh	
		Terminal 117	43,313	-	-	-	-	-	-	-	kWh	
		World Trade Center West (5)	1,380,640	1,320,720	1,320,720	1,277,360	1,271,360	1,296,560	1,113,280	1,066,000	kWh	
		Duwamish River Hub (6)	-	-	-	-	-	-	-	3,092	kWh	
		TOTAL ELECTRICITY	21,702,553	18,981,838	19,842,125	20,398,166	20,592,991	20,281,995	20,394,661	28,520,343	kWh	

- (1) Emissions associated with burning fuel from biogenic sources are not accounted for in the Port of Seattle Maritime Inventory. The Inventory tracks the gallons of biogenic fuels used in operations.
- (2) Fishermen's Terminal 2005 Scope 2 kWh adjusted to 61% of total due to data anomalies.
- (3) Maritime Industrial Center 2005 Scope 2 kWh adjusted to 49% of total due to data anomalies.
- (4) Terminal 91 Scope 2 kWh adjusted to 44% of total for 2005 and 13% of total for 2015 and 2018 due to data anomalies.
- (5) World Trade Center West: 2010 actuals used as proxy for 2005, 2007 and 2011; 2016 actual used as proxy for 2015.
- (6) Duwamish River Hub is a new property rented by Port of Seattle starting in 2021.



Port of Seattle Maritime CO₂ Emissions from Scope 1 & Scope 2 Sources, 2005 - 2021

All units in tonnes

		2005	2015	2016	2017	2018	2019	2020	2021	
Scope 1	Stationary Source	Stationary Source								
		Natural Gas								
		Fishermen's Terminal	120	81	92	111	103	101	101	104
		Marine Maintenance	175	107	129	142	151	162	161	149
		Pier 66 & Marina	-	264	259	305	522	616	506	482
		Salmon Bay Marina	-	-	-	-	3	10	8	8
		Shilshole Bay Marina	242	32	36	54	50	50	54	73
		Terminal 91	1	52	92	146	163	216	73	46
		Terminal 102	50	71	81	85	69	106	107	154
	Terminal 117	6	-	-	-	-	-	-	-	
	subtotal	593	606	689	843	1,061	1,261	1,009	1,017	
	Propane									
	Terminal 30 Remediation	-	-	-	-	-	101	180	157	
	Steam (1)									
	Pier 66	348	-	-	-	-	-	-	-	
	Mobile Source	Mobile Fleet Fossil Fuel Use								
		Gasoline used in fleet	464	476	508	551	615	573	468	469
Diesel used in fleet		403	333	286	307	359	309	64	35	
CNG used in fleet		-	3	3	5	4	0	-	-	
Propane used in fleet		-	8	5	8	8	6	6	5	
subtotal	867	820	802	871	986	888	538	508		
Biogenic Fuel Use										
Biodiesel (B100 equivalent)	-	37	36	37	49	45	-	-		
*emissions not counted toward total Renewable Diesel (R99)	-	-	-	-	-	6	234	291		
Scope 2	Electricity									
Fishermen's Terminal (2)	86	122	78	115	84	81	114	140		
Marine Maintenance	13	11	7	10	7	7	9	8		
Marine Maintenance - Parks	3	4	2	3	2	1	2	2		
Maritime Industrial Center (3)	12	7	6	9	6	6	9	10		
Pier 2 Uplands & CEM	-	0	0	0	0	0	0	0		
Pier 28	1	-	-	-	-	-	-	-		
Pier 48	9	-	-	-	-	-	-	-		
Pier 66 & Marina	42	53	35	64	39	39	36	37		
Pier 69	55	49	30	46	32	32	35	38		
Salmon Bay Marina	-	-	-	-	3	6	8	8		
Shilshole Bay Marina	17	73	47	55	51	51	101	117		
Terminal 5 Southeast	2	2	1	2	1	1	1	1		
Terminal 18	0	0	0	0	0	0	0	0		
Terminal 34	-	1	0	1	0	0	1	1		
Terminal 86	-	-	-	-	-	-	-	-		
Terminal 91 (4)	131	62	32	63	37	33	25	127		
Terminal 91 Cruise Shore Power	-	-	-	-	-	-	-	-		
Terminal 102 & Marina, T104	27	27	17	25	15	13	16	19		
Terminal 106	21	9	7	9	5	5	7	8		
Terminal 108	0	-	-	-	-	-	-	-		
Terminal 117	1	-	-	-	-	-	-	-		
World Trade Center West (5)	29	31	19	27	18	-	21	20		
Duwamish River Hub (6)	-	-	-	-	-	-	-	0		
subtotal	448	452	281	429	299	276	385	538		
TOTAL		2,255	1,878	1,772	2,143	2,346	2,526	2,112	2,220	

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 (4) Terminal 91 Scope 2 kWh adjusted to 44% of total for 2005 and 13% of total for 2015 and 2018 due to data anomalies.
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Port of Seattle EMISSION FACTORS USED FOR PORT OF SEATTLE MARITIME GHG INVENTORY: 2021
 Updated: 8/8/2022

Scope 1 & 2 Emission Factors

Scope	Year	Fuel	Emission Factor	Original Units	Converted Emission Factor	Converted Units	Citation	Notes
1	All	Natural Gas in Boilers	53.0600	kg CO2/MMBTU	0.00530600	tonnes CO2/therm	https://www.theclimaterestory.org/wp-content/uploads/2021/05/2021-Default-Emission-Factor-Documnt.pdf	
	All	Gasoline in Vehicles	8.7800	kg CO2/gallon	0.00878000	tonnes CO2/gallon	https://www.theclimaterestory.org/wp-content/uploads/2021/05/2021-Default-Emission-Factor-Documnt.pdf	
	All	Diesel in Vehicles (1)	10.2100	kg CO2/gallon	0.01021000	tonnes CO2/gallon	https://www.theclimaterestory.org/wp-content/uploads/2021/05/2021-Default-Emission-Factor-Documnt.pdf	
	All	Natural Gas in Vehicles	0.0545	kg CO2/scf	0.00690352	tonnes CO2/GGE	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.theclimaterestory.org/wp-content/uploads/2021/05/2021-Default-Emission-Factor-Documnt.pdf	
2	2005-201	Steam (2)	156	Lbs. CO2e/MMBtu	0.069084097	tonnes CO2e/klb	Calculated using data from EnWave	
	2010	SCL Retail Electricity	45.57	lb CO2/MWh (2)	0.00002066	tonnes CO2/kWh	SCL correspondence & SCL retail factors found at https://www.theclimaterestory.org/our-members/cris-public-reports/	
	2011	SCL Retail Electricity	13.77	lb CO2/MWh (2)	0.00000625	tonnes CO2/kWh	SCL correspondence & SCL retail factors found at https://www.theclimaterestory.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.theclimaterestory.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.theclimaterestory.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.theclimaterestory.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.theclimaterestory.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.theclimaterestory.org/our-members/cris-public-reports/	
	2017	SCL Retail Electricity	46.37	lb CO2/MWh (2)	0.00002103	tonnes CO2/kWh	SCL retail factors found at https://www.theclimaterestory.org/our-members/cris-public-reports/	
	2018	SCL Retail Electricity	32.05	lb CO2/MWh (2)	0.00001454	tonnes CO2/kWh	SCL retail factors found at https://www.theclimaterestory.org/our-members/cris-public-reports/ . 2018 EF found at https://www.theclimaterestory.org/wp-content/uploads/2021/05/2021-Default-Emission-Factor-Documnt.pdf?mc_cid=4b45d12237&mc_eid=5f138d1baa	
	2019	SCL Retail Electricity (3)	41.57	lb CO2/MWh (2)	0.00001886	tonnes CO2/kWh	SCL retail factor for 2019, found at: https://www.theclimaterestory.org/our-members/cris-public-reports/	2019-2021 electricity use uses 2019 SCL retail electricity emissions factor as the most recent published emissions factor

Notes:

- (1) The emission factor for Renewable Diesel as a vehicle fuel is 0 because combustion of the fuel is considered to produce biogenic CO2 emissions. These emissions are not included in the total emissions estimate, because they are considered to be part of the natural carbon cycle and so are excluded under UNFCCC guidelines.
- (2) Enwave Seattle provides an emission factor for CO2e, not CO2.
- (3) SCL emissions factors converted from lb CO2/MWh to tonnes CO2 as follows: (lb CO2/MWh)*(0.0004536 MT/lb)*1 MWh/1000kWh or value*0.000454/1000

Scope 3 Emission Factors

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/SB1000142405274870490110457542326167748380
	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	https://www.theclimaterestory.org/wp-content/uploads/2021/05/2021-Default-Emission-Factor-Documnt.pdf	
All	Diesel in Vehicles	10.2100	kg CO2/gallon	0.01021000	tonnes CO2/gallon	https://www.theclimaterestory.org/wp-content/uploads/2021/05/2021-Default-Emission-Factor-Documnt.pdf	
All	Propane	5.72	kg CO2/gallon	0.00572000	tonnes CO2/gallon	https://www.theclimaterestory.org/wp-content/uploads/2021/05/2021-Default-Emission-Factor-Documnt.pdf	
All	Natural Gas in Boilers	53.0600	kg CO2/MMBTU	0.00530600	tonnes CO2/therm	https://www.theclimaterestory.org/wp-content/uploads/2021/05/2021-Default-Emission-Factor-Documnt.pdf	

Biogenic Emission Factors

Scope	Year	Fuel	Emission Factor	Original Units	Converted Emission Factor	Converted Units	Citation
1	All	Renewable Diesel (2)	10.2100	kg CO2/gallon	0.01021000	tonnes CO2/gallon	https://www.theclimaterestory.org/wp-content/uploads/2021/05/2021-Default-Emission-Factor-Documnt.pdf
	All	B100 Diesel in Vehicles (1)	9.4500	kg CO2/gallon	0.00945000	tonnes CO2/gallon	https://www.theclimaterestory.org/wp-content/uploads/2021/05/2021-Default-Emission-Factor-Documnt.pdf

Notes:

- (1) B100 is not currently used by POS Maritime. When biofuel blends are used, a composite emission factor calculation will be performed in the applicable worksheet. For example, B20 used in fleet vehicles is accounted for as 80% Diesel in Tab 3-Mobile Fleet Fossil Fuel Use and 20% B100 in Tab 4 - Biogenic Fuel Use.