

Appendix E.2

Marine Vessel Criteria Pollutant and GHG Baseline Emissions

Total Emissions Over 3-Year Baseline Period

Sources	Total Emissions Over Baseline Period (lb)											
	Within SFBAAB (Sea Buoy - Valero Benicia Terminal)										CO ₂ e Within SFBAAB (Sea Buoy - Valero Benicia Terminal)	CO ₂ e Within CA Coastal Boundary - Sea Buoy
	NO _x	CO	ROG	PM ₁₀	PM _{2.5}	SO ₂	CH ₄	CO ₂	N ₂ O			
OGV - Main Engine	218,239	18,710	14,480	5,221	4,809	29,772	1,299	9,213,764	469	9,386,595	22,235,537	9,386,595
OGV - Auxiliary Engine	292,408	26,445	12,501	9,136	8,414	50,486	2,164	16,588,373	697	16,849,940	2,666,586	16,849,940
OGV - Auxiliary Boiler	74,692	7,568	4,162	7,568	7,378	115,501	1,135	36,702,931	2,845	37,608,850	0	37,608,850
Tugboats	85,823	25,437	6,739	4,248	4,248	62	112	5,485,412	247	5,564,409	0	5,564,409
Total	671,162	78,161	37,882	26,172	24,849	195,822	4,710	67,990,480	4,259	69,409,794	24,902,122	69,409,794
Emission Factor (lb/kbbl)	7.19	0.84	0.41	0.28	0.27	2.10	0.05	728	0.05	743	267	

Total crude delivered by marine vessel during 3-year baseline period: 93,361,985 barrels

Total annual average crude delivered by marine vessel during : 31,120,662 barrels

Annual Average Emissions Over Baseline Period

Sources	Annual Average Emissions Over Baseline Period (tons/year)											
	Within SFBAAB (Sea Buoy - Valero Benicia Terminal)										CO ₂ e Within SFBAAB (Sea Buoy - Valero Benicia Terminal)	CO ₂ e Within CA Coastal Boundary - Sea Buoy
	NO _x	CO	ROG	PM ₁₀	PM _{2.5}	SO ₂	CH ₄	CO ₂	N ₂ O			
OGV - Main Engine	36	3	2	1	1	5	0	1,536	0	1,564	3,706	
OGV - Auxiliary Engine	48.7	4.41	2.08	1.52	1.40	8.41	0.36	2,765	0.12	2,808	444	
OGV - Auxiliary Boiler	12.4	1.26	0.69	1.26	1.23	19.25	0.19	6,117	0.47	6,268	0	
Tugboats	14.3	4.24	1.12	0.71	0.71	0.01	0.02	914	0.04	927	0	
Total	111.9	13.03	6.31	4.36	4.14	32.64	0.79	11,332	0.71	11,568	4,150	

Average Emissions per Visit Over Baseline Period

Sources	Average Emissions Over Baseline Period (lb/visit)										
	Within SFBAAB (Sea Buoy - Valero Benicia Terminal)									CO ₂ e Within SFBAAB (Sea Buoy - Valero Benicia Terminal)	CO ₂ e Within CA Coastal Boundary - Sea Buoy
	NO _x	CO	ROG	PM ₁₀	PM _{2.5}	SO ₂	CH ₄	CO ₂	N ₂ O		
OGV - Main Engine	827	71	55	20	18	113	5	34,901	2	35,555	84,226
OGV - Auxiliary Engine	1,108	100	47	35	32	191	8	62,835	3	63,826	10,101
OGV - Auxiliary Boiler	283	29	16	29	28	438	4	139,026	11	142,458	0
Tugboats	325	96	26	16	16	0.2	0	20,778	1	21,077	0
OGV - Total	2,217	200	118	83	78	742	17	236,762	15	241,839	94,326

Projected Emissions Offset by Proposed Crude By Rail Project

	Emissions Offset by 25.55 MMbbls/year of Crude by Rail										CO ₂ e Within SFBAAB (Sea Buoy - Valero Benicia Terminal)	CO ₂ e Within CA Coastal Boundary - Sea Buoy	Total CO ₂ e: CA Coastal Waters - Valero Benicia Terminal
	Within SFBAAB (Sea Buoy - Valero Benicia Terminal)												
	NO _x	CO	ROG	PM ₁₀	PM _{2.5}	SO ₂	CH ₄	CO ₂	N ₂ O				
Emission Factor (lb/kbbl)	7.19	0.84	0.41	0.28	0.27	2.10	0.05	728	0.05	743	267	1,010	
Emissions (tpy)	91.8	10.7	5.18	3.58	3.40	26.8	0.6	9,303	0.6	9,498	3,407	12,905	

Note: - Greenhouse gases (GHGs) are calculated as carbon dioxide equivalent (CO₂e) = CO₂ + 21*CH₄ + 310*N₂O
 21 is the Global Warming Potential of CH₄
 310 is the Global Warming Potential of N₂O

GHG Emissions Factor

Baseline Period Crude Imported (bbls)	93,361,985	bbls
CO ₂ e Within BAAQMD Jurisdiction (Sea Buoy - Valero Benicia Terminal)	69,409,794	lb CO ₂ e
One-Way Distance: Sea Buoy - Valero Benicia Terminal	49.5	miles
CO ₂ e Within CA Coastal Boundary - Sea Buoy	24,902,122	lb CO ₂ e
One-Way Distance: CA Coastal Boundary - Sea Buoy	69.0	miles
Emission Factor for Travel within SFBAAB	3,407	MT CO ₂ e/MMbbl-kMiles
Emission Factor for Travel in Open Ocean	876	MT CO ₂ e/MMbbl-kMiles

Default or Average Tanker Ship Specifications

Ship/Tanker Type	Crude Capacity (barrels)	DWT	Average Aux Engine Rating of ships visiting the Valero Wharf (kW)	Average Max Speed of ships visiting the Valero Wharf (kW)
Handymax		0 to 49,999	2328	14.5
Panamax	500,000	50,000 to 79,999	2616	14.9
Aframax	750,000	80,000 to 119,999	2492	15.0
Suezmax	1,000,000	120,000 to 199,999	3277	15.6
VLCC	2,000,000	200,000 to 299,999	4,502	15.3
ULCC	4,000,000	300,000+	4,502	15.6

VLCC - VERY LARGE CRUDE CARRIER

ULCC - ULTRA LARGE CRUDE CARRIER

Crude Tanker Specific Cargo Capacity Estimate

Description	DWT ¹	Cargo tank capacity (m ³) ¹	Cargo capacity per DWT (m3/DWT)	Specific Cargo Capacity (bbl/DWT)
Suezmax Oil Tanker	166,300	185,447	1.1151	7.01
Oil Tanker	108,000	126,211	1.1686	7.35
Oil Tanker	114,000	126,210	1.1071	6.96
Oil Tanker	70,700	80,400	1.1372	7.15
Oil Tanker	52,600	58,691	1.1158	7.02
Oil Tanker	45,999	53,100	1.1544	7.26
Chemicals and Oil Products Tanker	46,764	52,969	1.1327	7.12
Oil and Chemical Tanker	47,400	53,100	1.1203	7.05
Alaskan class tankers	193,048	210,902	1.0925	6.87
Average				7.09

conversion factor:	264.172	gal/m3
conversion factor:	42	gal/bbl

Notes:

1. DWT and cargo tank capacity for oil tankers were obtained from the following websites--

<http://www.hb.hr/LinkClick.aspx?fileticket=RetQFnntemc%3D&tabid=74>

<http://www.nassco.com/products-and-services/comm-dc/bp-tanker-fact-sheet>

<http://www.marinetraffic.com/ais/shipdetails.aspx?MMSI=303656000>

Valero to the total cargo capacity of the oil tanker. It was assumed that the oil tanker carries maximum cargo capacity during each call.

3. Maximum cargo capacity = Average specific cargo capacity x DWT

Discharge Rate

DWT	Average Discharge Rate (bbl/hr)
0 -109,999	22707
110,000 - 169,999	22707
170,000 -	22707

Estimated from Quantity of crude oil discharged and recorded discharge time

POLB Air Emissions Inventory for 2011 -Tanker Specifications

Size	Average Model Year	Avg Age (2011 - Model year)	AVG DWT	Max Speed (knots)	Main Eng Rating (kW)	Aux Eng Rating (kW)
Handysize	2004	7	46,314	14.6	8,257	2,328
Panamax	2004	7	70,912	14.8	11,060	2,627
Aframax	2005	6	109,227	15.1	13,319	2,432
Suezmax	2005	6	178,271	15.3	18,587	5,056
VLCC	2003	8	298,571	15.3	25,288	4,502
ULCC	2004	7	311,294	15.6	28,625	4,502

Main Engine Emission Factors

Fuel Switching Regulation

Phase	Effective Date	% Sulfur Content for OGV		Comment
		MGO	MDO	
1	7/1/2009	1.5%	0.5%	No HFO to be used
	8/1/2012	1.0%	0.5%	
2	1/1/2014	0.1%	0.1%	

All main engines on oil tankers are slow speed, category 3 engines with displacement > 30 dm3 and power rating b/w 2,500 kw and 70,000 kW

Main Engine Emission Stand

Tier	For US Flagged Vessels (USEPA Standard for Category 3 Engines)			
	Effective Date	Speed (rpm)		
		Slow (n < 130)	Medium (130 ≤ n < 2000)	High (n ≥ 2000)
0				
1	2004	17	$45 \cdot n^{-0.2}$	9.8
2	2011	14.4	$44 \cdot n^{-0.23}$	7.7
3	2016	3.4	$9 \cdot n^{-0.2}$	1.96

Tier	For Foreign Flagged Vessels (MARPOL Annex VI - not based on category)			
	Effective Date	Speed (rpm)		
		Slow (n < 130)	Medium (130 ≤ n < 2000)	High (n ≥ 2000)
0				
I	2000	17	$45 \cdot n^{-0.2}$	9.8
II	2011	14.4	$44 \cdot n^{-0.23}$	7.7
III	2016	3.4	$9 \cdot n^{-0.2}$	1.96

Tier	For All Flagged Vessels (Combination of USEPA and MARPOL)			
	Effective Date	Speed (rpm)		
		Slow (n < 130)	Medium (130 ≤ n < 2000)	High (n ≥ 2000)
0	≤1999			
1	2000 - 2010	17	$45 \cdot n^{-0.2}$	9.8
2	2011 - 2015	14.4	$44 \cdot n^{-0.23}$	7.7
3	2016 -	3.4	$9 \cdot n^{-0.2}$	1.96

Main Engine Emission Factors

Main Engine Emission Factor (g/kW-hr)															
Engine Speed	RPM	Tier	Ship Built Year From	Ship Built Year To	Fuel	NO _x	CO	ROG	PM ₁₀	PM _{2.5}	SO ₂	CH ₄	CO ₂	N ₂ O	CO _{2e}
Slow	<130	0	0	1999	0.5%S MDO	18.1	1.1	0.78	0.38	0.35	1.9	0.07	588	0.029	598
Slow	<130	I	2000	2010	0.5%S MDO	17	1.1	0.78	0.38	0.35	1.9	0.07	588	0.029	598
Slow	<130	II	2011	2015	0.5%S MDO	14.4	1.1	0.78	0.38	0.35	1.9	0.07	588	0.029	598
Slow	<130	0	0	1999	0.1%S MDO	18.1	1.1	0.78	0.25	0.23	0.36	0.07	588	0.029	598
Slow	<130	I	2000	2010	0.1%S MDO	17	1.1	0.78	0.25	0.23	0.36	0.07	588	0.029	598
Slow	<130	II	2011	2015	0.1%S MDO	14.4	1.1	0.78	0.25	0.23	0.36	0.07	588	0.029	598
Slow	<130	III	2016	9999	0.1%S MDO	3.4	1.1	0.78	0.25	0.23	0.36	0.07	588	0.029	598

All emission factors, except Tier-based NO_x and N₂O from California ARB, May 2011, Appendix D, Emissions Estimation Methodology for Ocean-Going Vessels, Tables II-6 and II-7

Tier-based Nox emission factors are from on MARPOL Annex IV regulations

N₂O emission factor at 0.5% S or 0.1 % S = N₂O emission factor at 2.7% S in HFO (from POLB 2011 Emissions Inventory, Section 2, Table 2.6) x Fuel Correction Factor

(POLB 2011 Emissions Inventory, Section 2, Tables 2.17)

Low Load Adjustment Multipliers (Used when Load factor < 20%)

Load Factor (%)	NO _x	CO	ROG	PM ₁₀	PM _{2.5}	SO ₂	CH ₄	CO ₂	N ₂ O
2	4.63	9.7	21.18	7.29	7.29	1	21.18	1	4.63
3	2.92	6.49	11.68	4.33	4.33	1	11.68	1	2.92
4	2.21	4.86	7.71	3.09	3.09	1	7.71	1	2.21
5	1.83	3.9	5.61	2.44	2.44	1	5.61	1	1.83
6	1.6	3.26	4.35	2.04	2.04	1	4.35	1	1.6
7	1.45	2.8	3.52	1.79	1.79	1	3.52	1	1.45
8	1.35	2.45	2.95	1.61	1.61	1	2.95	1	1.35
9	1.27	2.18	2.52	1.48	1.48	1	2.52	1	1.27
10	1.22	1.97	2.18	1.38	1.38	1	2.18	1	1.22
11	1.17	1.79	1.96	1.3	1.3	1	1.96	1	1.17
12	1.14	1.64	1.76	1.24	1.24	1	1.76	1	1.14
13	1.11	1.52	1.6	1.19	1.19	1	1.6	1	1.11
14	1.08	1.41	1.47	1.15	1.15	1	1.47	1	1.08
15	1.06	1.32	1.36	1.11	1.11	1	1.36	1	1.06
16	1.05	1.24	1.26	1.08	1.08	1	1.26	1	1.05
17	1.03	1.17	1.18	1.06	1.06	1	1.18	1	1.03
18	1.02	1.11	1.11	1.04	1.04	1	1.11	1	1.02
19	1.01	1.05	1.05	1.02	1.02	1	1.05	1	1.01
20	1	1	1	1	1	1	1	1	1

POLB 2011 Emissions Inventory, Section 2, Table 2.9

Auxiliary Boiler Emissions Factors

Auxiliary Boiler Emission Factors (g/kW-hr)										
Fuel	NO _x	CO	ROG	PM ₁₀	PM _{2.5}	SO ₂	CH ₄	CO ₂	N ₂ O	CO ₂ e
2.7% S HFO	2.1	0.2	0.11	0.8	0.78	16.5	0.03	970	0.08	995
0.5%S MDO	1.97	0.20	0.11	0.20	0.195	3.05	0.03	970.00	0.08	993.9
0.1%S MDO	1.97	0.20	0.11	0.136	0.1326	0.61	0.03	970.00	0.08	993.9

All emission factors, except N2O from California ARB, May 2011, Appendix D, Emissions Estimation Methodology for Ocean-Going Vessels, Table II-9

N2O emission factor at 0.5% S or 0.1 % S = N2O emission factor at 2.7% S in HFO (from POLB 2011 Emissions Inventory, Section 2, Table 2.15) x Fuel Correction Factor (POLB 2011 Emissions Inventory, Section 2, Tables 2.17)

Auxiliary Boiler Emission Factors (kg/tonne)										
Fuel	NO _x	CO	ROG	PM ₁₀	PM _{2.5}	SO ₂	CH ₄	CO ₂	N ₂ O	CO ₂ e
2.7% S HFO	6.89	0.66	0.36	2.62	2.56	54.10	0.10	3180	0.26	3264
0.5%S MDO	6.47	0.66	0.36	0.66	0.64	10.0	0.10	3180	0.25	3259
0.1%S MDO	6.47	0.66	0.36	0.45	0.43	2.00	0.10	3180	0.25	3259

Fuel Correction factor

Actual fuel	S Content	NOx	CO	HC	PM10	PM2.5	SOx	CH4	CO2	N2O
HFO	1.50%	1	1	1	0.82	0.82	0.555	1	1	1
MDO	1.50%	0.94	1	1	0.47	0.47	0.555	1	1	0.94
MGO	0.50%	0.94	1	1	0.25	0.25	0.185	1	1	0.94
MGO	0.30%	0.94	1	1	0.21	0.21	0.111	1	1	0.94
MGO	0.20%	0.94	1	1	0.19	0.19	0.074	1	1	0.94
MGO	0.10%	0.94	1	1	0.17	0.17	0.037	1	1	0.94

POLB 2011 Emissions Inventory, Section 2, Tables 2.17

Auxiliary Boiler Emissions Factors

Fuel Consumption Rates (ARB OGV 2011 Appendix D, Table II-10)

Engine	Engine Speed	Mode	Fuel	Fuel Use Rate (g of fuel/kW-hr)
Auxiliary Engine	All	All	Marine Distillate	217
	All	All	HFO	227
Boiler	NA	All	HFO	305
Main	Slow	Transit	Marine Distillate	185
	Slow	Transit	HFO	195
	Medium	Transit	Marine Distillate	203
	Medium	Transit	HFO	213
	High	Transit	HFO	213
	Slow	Maneuvering	Marine Distillate	185
	Slow	Maneuvering	HFO	195
	Medium	Maneuvering	Marine Distillate	203
	Medium	Maneuvering	HFO	213
	High	Maneuvering	HFO	213

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Auxiliary Engine Emission Factors

Fuel Switching Regulation

Phase	Effective Date	Sulfur Content for OGV		Comment
		MGO	MDO	
1	7/1/2009	1.5%	0.5%	No HFO to be
	8/1/2012	1.0%	0.5%	
2	1/1/2014	0.1%	0.1%	

All auxiliary engines are assumed to be medium speed engines

According to USEPA's "Current Methodologies in Preparing Mobile Source Port-Related Emission Inventories, Final Report, April 2009", Table 2-2 - Auxiliary engines in OGVs are Category 2 engines

Auxiliary Engine Emission Standards

Tier	For Foreign Flagged			
	Effective Date	Speed (rpm)		
		Slow (n < 130)	Medium (130 ≤ n < 2000)	High (n ≥ 2000)
0				
I	2000	17	$45 \cdot n^{-0.2}$	9.8
II	2011	14.4	$44 \cdot n^{-0.23}$	7.7
III	2016	3.4	$9 \cdot n^{-0.2}$	1.96

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Auxiliary Engine Emission Factors
 USEPA Category 2 engine Standards

Tier	Effective Date	Displacement (L/cylinder)	Power (kW)	Speed (rpm)	Nox (g/kW-hr)	HC + Nox (g/kW-hr)	PM (g/kW-hr)
1	2004	≥ 2.5	≥ 37	rpm < 130	17	-	-
				130 ≤ rpm < 2,000	$45 \cdot n^{-0.2}$	-	-
				rpm ≥ 2,000	9.8	-	-
2	2007	5.0 ≤ Disp < 15	all	-	-	7.8	0.27
		15.0 ≤ Disp < 20	< 3,300	-	-	8.7	0.50
		15.0 ≤ Disp < 20	≥ 3,300	-	-	9.8	0.50
		20.0 ≤ Disp < 25	all	-	-	9.8	0.50
		25.0 ≤ Disp < 30	all	-	-	11.0	0.50
3	2013+	7.0 ≤ Disp < 15	< 2,000	-	-	6.2	0.14
			2,000 ≤ kW < 3,700	-	-	7.8	0.14
	2014+	15.0 ≤ Disp < 20	< 2,000	-	-	7	0.34
		20.0 ≤ Disp < 25	< 2,000	-	-	9.8	0.27
		25.0 ≤ Disp < 30	< 2,000	-	-	11.0	0.27
4	2017+	All	600 ≤ kW < 1,400	-	1.8	0.19 HC only	0.04
	2016+	All	1400 ≤ kW < 2,000	-	1.8	0.19 HC only	0.04
	2014+	All	2,000 ≤ kW < 3,700	-	1.8	0.19 HC only	0.04
	2014-2015	< 15.0	≥ 3,700	-	1.8	0.19 HC only	0.12
	2014-2015	15.0 ≤ Disp < 30		-	1.8	0.19 HC only	0.25
	2016+	All		-	1.8	0.19 HC only	0.06

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Auxiliary Engine Emission Factors

Auxiliary Engine Emission Factors for Foreign Flagged Ships (g/kW-hr)																
Engine Speed	RPM	Tier	Ship Built Year From	Ship Built Year To	Fuel	NO _x	CO	ROG	PM ₁₀	PM _{2.5}	SO ₂	CH ₄	CO ₂	N ₂ O	CO ₂ e	
Medium	130 - 2000	0	0	1999	0.5%S MDO	13.9	1.1	0.52	0.38	0.35	2.1	0.09	690	0.029	701	
Medium	130 - 2000	I	2000	2010	0.5%S MDO	12.2	1.1	0.52	0.38	0.35	2.1	0.09	690	0.029	701	
Medium	130 - 2000	II	2011	2015	0.5%S MDO	9.9	1.1	0.52	0.38	0.35	2.1	0.09	690	0.029	701	
Medium	130 - 2000	0	0	1999	0.1%S MDO	13.9	1.1	0.52	0.25	0.23	0.4	0.09	690	0.029	701	
Medium	130 - 2000	I	2000	2010	0.1%S MDO	12.2	1.1	0.52	0.25	0.23	0.4	0.09	690	0.029	701	
Medium	130 - 2000	II	2011	2015	0.1%S MDO	9.9	1.1	0.52	0.25	0.23	0.4	0.09	690	0.029	701	
Medium	130 - 2000	III	2016	9999	0.1%S MDO	2.6	1.1	0.52	0.25	0.23	0.4	0.09	690	0.029	701	

Engine Category 2
 speed (rpm) 500

All emission factors, except Tier-based NOx and N2O from California ARB, May 2011, Appendix D, Emissions Estimation Methodology for Ocean-Going Vessels, Table II-8

Tier-based NOx emission factors are

N2O emission factor at 0.5% S or 0.1 % S = N2O emission factor at 2.7% S in HFO (from POLB 2011 Emissions Inventory, Section 2, Table 2.11) x Fuel Correction Factor (POLB 2011 Emissions Inventory, Section 2, Tables 2.17)

Auxiliary Engine Emission Factors for US Flagged Ships (g/kW-hr)																
Engine Speed	RPM	Tier	Ship Built Year From	Ship Built Year To	Fuel	NO _x	CO	ROG	PM ₁₀	PM _{2.5}	SO ₂	CH ₄	CO ₂	N ₂ O	CO ₂ e	
Medium	130 - 2000	0	0	1999	0.5%S MDO	13.9	1.1	0.52	0.38	0.35	2.1	0.09	690	0.029	701	
Medium	130 - 2000	I	2000	2006	0.5%S MDO	12.2	1.1	0.52	0.38	0.35	2.1	0.09	690	0.029	701	
Medium	130 - 2000	II	2007	2013	0.5%S MDO	8.4	1.1	0.47	0.11	0.11	2.1	0.09	690	0.029	701	
Medium	130 - 2000	0	0	1999	0.1%S MDO	13.9	1.1	0.52	0.25	0.23	0.4	0.09	690	0.029	701	
Medium	130 - 2000	I	2000	2006	0.1%S MDO	12.2	1.1	0.52	0.25	0.23	0.4	0.09	690	0.029	701	
Medium	130 - 2000	II	2007	2013	0.1%S MDO	8.4	1.1	0.47	0.08	0.08	0.4	0.09	690	0.029	701	
Engine Category	2															
Displacement (dm ³ /cyl)	5 ≤ Disp < 30															
speed (rpm)	500															

All emission factors, except Tier-based NOx and N2O and Tier II ROG and PM, are from California ARB, May 2011, Appendix D, Emissions Estimation Methodology for Ocean-Going Vessels, Table II-8

Tier-based NOx and Tier II ROG and PM emission factors are from USEPA commercial marine engine regulations for Category 2 engines. The USEPA Tier II emission standards are based on engine displacement and as the engine displacement is not available, the emission factors are assumed to be an average of emission standards for all displacement categories under Category 2 engines. Tier II NOx and ROG emission factors assumed a 95% to 5% split for the combined NOx+HC standard. Tier 0, I and II NOx factors and Tier II ROG and PM factors are multiplied by fuel correction factor.

Tier II PM 2.5 emissions factors assumed equal to Tier II PM10 factors

N2O emission factor at 0.5% S or 0.1 % S = N2O emission factor at 2.7% S in HFO (from POLB 2011 Emissions Inventory, Section 2, Tables 2.5 and 2.6) x Fuel Correction Factor (POLB 2011 Emissions Inventory, Section 2, Tables 2.17)

Fuel Correction factor

Actual fuel	S Content	PM	NOx	SOx	CO	HC	CO2	N2O	CH4
HFO	1.50%	0.82	1	0.555	1	1	1	1	1
MDO	1.50%	0.47	0.94	0.555	1	1	1	0.94	1
MGO	0.50%	0.25	0.94	0.185	1	1	1	0.94	1
MGO	0.30%	0.21	0.94	0.111	1	1	1	0.94	1
MGO	0.20%	0.19	0.94	0.074	1	1	1	0.94	1
MGO	0.10%	0.17	0.94	0.037	1	1	1	0.94	1

POLB 2011 Emissions Inventory, Section 2, Tables 2.17

Auxiliary Boiler Emissions Factors

Auxiliary Boiler Emission Factors (g/kW-hr)										
Fuel	NO _x	CO	ROG	PM ₁₀	PM _{2.5}	SO ₂	CH ₄	CO ₂	N ₂ O	CO ₂ e
2.7% S HFO	2.1	0.2	0.11	0.8	0.78	16.5	0.03	970	0.08	995
0.5%S MDO	1.97	0.20	0.11	0.20	0.195	3.05	0.03	970.00	0.08	993.9
0.1%S MDO	1.97	0.20	0.11	0.136	0.1326	0.61	0.03	970.00	0.08	993.9

All emission factors, except N2O from California ARB, May 2011, Appendix D, Emissions Estimation Methodology for Ocean-Going Vessels, Table II-9

N2O emission factor at 0.5% S or 0.1 % S = N2O emission factor at 2.7% S in HFO (from POLB 2011 Emissions Inventory, Section 2, Table 2.15) x Fuel Correction Factor (POLB 2011 Emissions Inventory, Section 2, Tables 2.17)

Auxiliary Boiler Emission Factors (kg/tonne)										
Fuel	NO _x	CO	ROG	PM ₁₀	PM _{2.5}	SO ₂	CH ₄	CO ₂	N ₂ O	CO ₂ e
2.7% S HFO	6.89	0.66	0.36	2.62	2.56	54.10	0.10	3180	0.26	3264
0.5%S MDO	6.47	0.66	0.36	0.66	0.64	10.0	0.10	3180	0.25	3259
0.1%S MDO	6.47	0.66	0.36	0.45	0.43	2.00	0.10	3180	0.25	3259

Fuel Correction factor

Actual fuel	S Content	NOx	CO	HC	PM10	PM2.5	SOx	CH4	CO2	N2O
HFO	1.50%	1	1	1	0.82	0.82	0.555	1	1	1
MDO	1.50%	0.94	1	1	0.47	0.47	0.555	1	1	0.94
MGO	0.50%	0.94	1	1	0.25	0.25	0.185	1	1	0.94
MGO	0.30%	0.94	1	1	0.21	0.21	0.111	1	1	0.94
MGO	0.20%	0.94	1	1	0.19	0.19	0.074	1	1	0.94
MGO	0.10%	0.94	1	1	0.17	0.17	0.037	1	1	0.94

POLB 2011 Emissions Inventory, Section 2, Tables 2.17

Auxiliary Boiler Emissions Factors

Fuel Consumption Rates (ARB OGV 2011 Appendix D, Table II-10)

Engine	Engine Speed	Mode	Fuel	Fuel Use Rate (g of fuel/kW-hr)
Auxiliary Engine	All	All	Marine Distillate	217
	All	All	HFO	227
Boiler	NA	All	HFO	305
Main	Slow	Transit	Marine Distillate	185
	Slow	Transit	HFO	195
	Medium	Transit	Marine Distillate	203
	Medium	Transit	HFO	213
	High	Transit	HFO	213
	Slow	Maneuvering	Marine Distillate	185
	Slow	Maneuvering	HFO	195
	Medium	Maneuvering	Marine Distillate	203
	Medium	Maneuvering	HFO	213
	High	Maneuvering	HFO	213

**OGV and Tugboat Operation in SF Bay Area and Port of Benicia
 Speed Requirements per SF Bar Pilot - Steve Teague**

Segment	Speed	Distance	Time	Tug assist	
	knots	nm	hrs	Loaded (incoming)	Ballasted (outgoing)
CA Coastal Waters to Sea Buoy	0.937*Max Vessel Speed	60			
Sea buoy - Mile rock (1 mi west of GG Bridge)	12	10	0.83		
Mile rock (1 mi west of GG Bridge) - SPB Light #5	10	19	1.90	Tug 1	
SPB light #5 - SPB light #15	10	7	0.70		
SPB light #15 - Buoy 25	8	4.5	0.56		
Buoy 25 - Berth	5	2.5	0.50	Additional Tugs	Tugs
Berth - Sea Buoy (out)	12	43	3.58		
Total Round Trip		206	8.08		

Tug Operations and Typical Specs per Capt. Shawn Bennett at Bay Delta Maritime

Segment	Tug Requirement	Incoming - Loaded	Outgoing - Ballasted
Mile rock (1 mi west of GG Bridge) - Near Berth (assumed Buoy 25)	1 Tug	3.2	0.5
Near Berth (assumed Buoy 25) - Berth	Tug 1 and Additional Tugs as required per ship DWT	0.5	0.5

Tug Fleet Main Engine Operating in Bay Area	5000 HP
Tug Fleet Aux Engine Operating in Bay Area	150 HP
Tug Fleet Avg Age	10 years

Conclusion - typical tugboats are Class A

Bay Delta Maritime tugs are docked at SF Pier 17 and Valero dock in Port of Benicia

Nearest California Coastal Water Points per BAAQMD Regulation 2-2

Distance from 38°N and 124°W to GG bridge	73 nm
Distance from 37°N and 123.5°W to GG bridge	69 nm
Average Distance upto GG bridge	71 nm

Ocean Going Vessels Activity Data

	Mode of Operation						
	Cruise	Slow Cruise - 1	Slow Cruise - 2	Slow Cruise/ Maneuvering	Maneuvering/Mooring/Unmooring	Hotelling w/o Discharge	Hotelling /w Discharge
Segment Name	CA Coastal Waters to Sea Buoy	Pilot Sea Buoy ¹ - GG Bridge and Berth - Pilot Sea Buoy	GG Bridge - San Pablo Bay Light #15	San Pablo Bay Light #15 - Sea Buoy 25	Sea Buoy 25 - Berth	At Berth	At Berth
Speed (knots) ²	0.937*Max Vessel Speed	12	10	8	5	---	---
Round-trip distance (nm)	120	53.0	26.0	4.5	2.5	---	---
Round-Trip Time (hrs)		4.42	2.60	0.56	0.50	6	Crude delivered/ Discharge Rate
Main Engine Load Factor ²	82.3%	(12/Max Speed) ³	(10/Max Speed) ³	(8/Max Speed) ³	2%	0%	0%
Auxiliary Engine Load Factor ²	24%	24%	24%	33%	33%	26%	26%
Auxiliary Boiler Load Factor ²	0%	0%	0%	12%	12%	100%	100%
Reference	Distance from BAAQMD Reg 2-2 and vessel speed assumed as there are no vessel speed limitations imposed in this zone	Port of Richmond, 2005 Seaport Air Emissions Inventory, Table, 2-6		Distance measured using Google Earth from Valero Wharf	POLB, CARB, Port of Richmond Emissions Inventory	Assumed 3 hours before and after unloading the crude	

1. Per Alison Kirk of BAAQMD, emissions must be estimated from the point the pilot boards the ship at Sea Buoy

2. Vessel speed and load factor in cruise mode obtained from - California ARB, May 2011, Appendix D, Emissions Estimation Methodology for Ocean-Going Vessels

Operating Modes of Emission Sources			
Source	Operating Mode		
	Transit	Maneuvering	Hotelling
Main Engine	x	x	Not Used
Auxiliary Engine	x	x	x
Auxiliary Boiler	Operate if main Engine LF < 20%	x	x

Emission reduction technology control efficiency (Only for main engine)

2004 and newer main engines assumed to be equipped with fuel slide valves

Control Efficiency	NO _x	CO	ROG	PM ₁₀	PM _{2.5}	SO ₂	CH ₄	CO ₂	N ₂ O	CO _{2e}
		30%	0%	0%	25%	25%	0%	0%	0%	0%

POLB 2011 Emissions Inventory

Baseline Ocean Going Vessels Emissions

Date
12/10/09
12/13/09
12/25/09
12/29/09
12/31/09
1/10/10
1/28/10
1/29/10
2/7/10
2/5/10
2/4/10
2/9/10
2/11/10
2/13/10
2/21/10
2/22/10
2/24/10
3/6/10
3/10/10
3/9/10
3/14/10
3/23/10
2/24/10
3/30/10
4/11/10
4/5/10
4/16/10
4/14/10
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5/25/10
5/31/10
6/1/10
6/4/10
6/6/10
6/8/10
6/15/10
6/17/10
6/23/10
7/13/10
7/27/10
7/14/10
7/27/10
8/2/10
8/4/10
7/29/10
8/17/10
8/14/10
8/24/10
9/1/10
9/5/10
9/7/10
9/12/10
9/14/10
9/16/10

Baseline Ocean Going Vessels Emission

Date	Emissions: Sea Buoy - Valero Marine Terminal Main Engine Emissions (g/trip)									
	NO _x	CO	ROG	PM ₁₀	PM _{2.5}	SO ₂	CH ₄	CO ₂	N ₂ O	CO ₂ e
12/10/09	564613	39564	32120	13108	12073	59789	2883	18503110	963	18862224
12/13/09	582954	40773	32987	13520	12453	61825	2960	19133246	994	19503694
12/25/09	561549	39362	31976	13040	12010	59448	2870	18397614	958	18754838
12/29/09	290396	27758	20809	7060	6503	45424	1867	14057632	708	14316232
12/31/09	406015	40577	32842	10090	9294	61503	2947	19033619	989	19402242
1/10/10	555459	38961	31691	12903	11884	58770	2844	18187913	948	18541377
1/28/10	313993	29907	22324	7623	7021	49210	2003	15229052	765	15508334
1/29/10	390351	39105	31793	9714	8947	59014	2853	18263157	951	18617970
2/7/10	163815	15971	12543	4029	3711	25188	1126	7794989	399	7942384
2/5/10	582419	40735	32954	13508	12441	61770	2957	19116205	994	19486308
2/4/10	300349	28471	21114	7276	6702	47188	1895	14603296	732	14869990
2/9/10	299589	28442	21085	7260	6687	47067	1892	14566022	730	14832088
2/11/10	276744	26485	19905	6733	6201	43249	1786	13384498	674	13631081
2/13/10	307060	29121	21667	7446	6858	48207	1944	14918910	748	15191715
2/21/10	315423	30040	22419	7657	7053	49438	2012	15299624	769	15580166
2/22/10	282043	18201	14430	6100	5618	28395	1295	8787602	452	8954884
2/24/10	579524	40544	32818	13443	12381	61448	2945	19016501	989	19384816
3/6/10	276341	19076	15214	6377	5873	29535	1365	9140398	471	9315206
3/10/10	547933	38470	31347	12735	11729	57929	2813	17927423	935	18276259
3/9/10	534633	53209	43081	13277	12229	81062	3866	25086506	1303	25571593
3/14/10	581342	40664	32904	13484	12419	61650	2953	19079124	992	19448562
3/23/10	337245	32141	24027	8190	7544	52827	2156	16348619	822	16648676
2/24/10	456292	45301	36206	11299	10407	69494	3249	21506660	1112	21919606
3/30/10	546759	38393	31292	12708	11705	57798	2808	17887002	933	18235114
4/11/10	356722	22437	17089	7624	7022	36528	1534	11304361	572	11513746
4/5/10	578882	40502	32788	13428	12368	61376	2943	18994407	988	19362327
4/16/10	389551	39030	31740	9695	8929	58886	2848	18223817	949	18577925
4/14/10	307452	29554	22488	7501	6909	47849	2018	14807910	749	15082559
4/21/10	346685	33007	24698	8418	7753	54292	2216	16802099	845	17110553
4/27/10	427711	42616	34294	10612	9774	64952	3078	20100826	1042	20488576
4/29/10	573884	35903	26968	12225	11260	59046	2420	18273242	919	18609107
5/3/10	212946	20580	15882	5212	4801	32968	1425	10202878	519	10393681
5/13/10	306767	20220	16383	6689	6161	30505	1470	9440383	492	9623624
5/20/10	152625	14976	11905	3767	3469	23351	1068	7226406	372	7364145
5/21/10	294993	28015	20782	7150	6586	46334	1865	14339291	719	14601313
5/25/10	319658	30457	22822	7765	7152	50033	2048	15484019	779	15768519
5/31/10	407796	40744	32961	10133	9333	61786	2958	19121252	994	19491445
6/1/10	289986	27508	20431	7028	6473	45535	1834	14091909	707	14349487
6/4/10	269702	25618	19071	6540	6024	42313	1712	13094690	657	13334382
6/6/10	576766	36079	27093	12286	11316	59348	2431	18366796	924	18704327
6/8/10	226593	21843	16718	5537	5099	35187	1500	10889605	552	11092294
6/15/10	268044	25600	19219	6517	6002	41922	1725	12973842	653	13212559
6/17/10	294855	28024	20894	7153	6588	46235	1875	14308587	719	14570716
6/23/10	531412	37383	30573	12364	11388	56091	2744	17358572	907	17697212
7/13/10	293564	27964	20879	7127	6565	46004	1874	14237017	715	14498143
7/27/10	453467	30241	22666	10281	9469	49683	2034	15375573	774	15658094
7/14/10	296017	28133	20971	7181	6614	46421	1882	14365950	721	14629102
7/27/10	180253	17427	13418	4411	4063	27928	1204	8642968	439	8804430
8/2/10	418276	27958	21048	9494	8745	45752	1889	14158930	714	14419791
8/4/10	356942	34043	25480	8671	7987	55886	2287	17295322	870	17612999
7/29/10	252216	24188	18195	6138	5654	39378	1633	12186570	615	12411401
8/17/10	255137	24398	18366	6207	5717	39865	1648	12337130	622	12564489
8/14/10	432014	28851	21682	9801	9028	47285	1946	14633474	737	14902796
8/24/10	380890	38216	31160	9487	8738	57510	2796	17797773	928	18144246
9/1/10	311288	29718	22365	7570	6972	48649	2007	15055460	759	15332775
9/5/10	193586	18807	14570	4748	4373	29908	1308	9255747	472	9429453
9/7/10	285733	19116	14454	6493	5981	31219	1297	9661585	487	9839927
9/12/10	274807	26304	19777	6686	6158	42941	1775	13288991	670	13533869
9/14/10	333511	31861	23932	8109	7469	52151	2148	16139437	813	16436494
9/16/10	558249	39145	31822	12966	11942	59081	2856	18283988	952	18639174

Baseline Ocean Going Vessels Emission

Date	Emissions: Sea Buoy - Valero Marine Terminal Auxiliary Engine Emissions (g/trip)									
	NO _x	CO	ROG	PM ₁₀	PM _{2.5}	SO ₂	CH ₄	CO ₂	N ₂ O	CO _{2e}
12/10/09	211427	19055	9008	6583	6063	36378	1559	11952639	502	12141109
12/13/09	216328	19497	9217	6735	6203	37221	1595	12229711	514	12422551
12/25/09	210569	18978	8971	6556	6038	36230	1553	11904121	500	12091826
12/29/09	622062	56063	26503	19367	17838	107030	4587	35167075	1478	35721593
12/31/09	215743	19444	9192	6717	6187	37120	1591	12196623	513	12388941
1/10/10	208863	18824	8899	6503	5989	35936	1540	11807678	496	11993863
1/28/10	640666	57740	27295	19947	18372	110231	4724	36218831	1522	36789934
1/29/10	209475	18879	8925	6522	6007	36042	1545	11842283	498	12029014
2/7/10	150937	13603	6431	4699	4328	25970	1113	8532927	359	8667475
2/5/10	216415	19504	9220	6738	6206	37236	1596	12234604	514	12427521
2/4/10	227163	20473	9678	7073	6514	39085	1675	12842248	540	13044746
2/9/10	703689	63420	29980	21909	20179	121075	5189	39781722	1672	40409004
2/11/10	215453	19418	9179	6708	6178	37070	1589	12180215	512	12372274
2/13/10	235034	21182	10014	7318	6740	40439	1733	13287173	558	13496687
2/21/10	642933	57944	27392	20017	18437	110621	4741	36347003	1528	36920126
2/22/10	455155	36019	17027	12443	11461	68764	2947	22594009	950	22950274
2/24/10	215604	19431	9186	6713	6183	37096	1590	12188750	512	12380944
3/6/10	222329	20037	9472	6922	6376	38253	1639	12568948	528	12767137
3/10/10	206533	18614	8799	6430	5923	35535	1523	11675949	491	11860057
3/9/10	1258812	113451	53631	39192	36098	216588	9282	71164510	2991	72286641
3/14/10	216113	19477	9207	6729	6197	37184	1594	12217551	513	12410199
3/23/10	602792	54327	25682	18767	17286	103715	4445	34077717	1432	34615058
2/24/10	241930	21804	10307	7532	6938	41626	1784	13677027	575	13892688
3/30/10	206205	18584	8785	6420	5913	35479	1521	11657386	490	11841201
4/11/10	286412	22666	10715	7830	7212	43271	1854	14217553	598	14441737
4/5/10	215424	19415	9178	6707	6178	37065	1589	12178589	512	12370622
4/16/10	209155	18850	8911	6512	5998	35987	1542	11824190	497	12010636
4/14/10	582123	52464	24801	18124	16693	100159	4293	32909238	1383	33428155
4/21/10	1301259	117276	55440	40514	37315	223891	9595	73564172	3092	74724141
4/27/10	230199	20747	9808	7167	6601	39607	1697	13013843	547	13219047
4/29/10	356020	28174	13319	9733	8965	53787	2305	17672942	743	17951611
5/3/10	891654	80361	37989	27761	25569	153416	6575	50407982	2119	51202821
5/13/10	247100	19555	9244	6755	6222	37332	1600	12266117	516	12459531
5/20/10	706909	63710	30118	22009	20271	121629	5213	39963757	1680	40593910
5/21/10	695347	62668	29625	21649	19940	119640	5127	39310135	1652	39929982
5/25/10	262890	23693	11200	8185	7539	45232	1939	14861971	625	15096317
5/31/10	222025	20010	9459	6913	6367	38201	1637	12551741	528	12749659
6/1/10	958706	86404	40845	29849	27492	164952	7069	54198621	2278	55053231
6/4/10	631328	56899	26898	19656	18104	108625	4655	35690920	1500	36253698
6/6/10	357492	28291	13374	9773	9002	54010	2315	17745995	746	18025816
6/8/10	200465	18067	8541	6241	5749	34492	1478	11332933	476	11511632
6/15/10	252196	22729	10745	7852	7232	43392	1860	14257399	599	14482211
6/17/10	209606	18891	8930	6526	6011	36064	1546	11849687	498	12036534
6/23/10	201912	18197	8602	6286	5790	34740	1489	11414710	480	11594698
7/13/10	206692	18628	8806	6435	5927	35563	1524	11684957	491	11869206
7/27/10	228726	20614	9745	7121	6559	39354	1687	12930565	543	13134456
7/14/10	210238	18948	8957	6546	6029	36173	1550	11885405	500	12072815
7/27/10	184744	16650	7871	5752	5298	31786	1362	10444126	439	10608810
8/2/10	185953	16759	7922	5790	5332	31995	1371	10512518	442	10678280
8/4/10	692436	62406	29501	21558	19856	119139	5106	39145523	1645	39762775
7/29/10	930330	83846	39636	28965	26678	160070	6860	52594438	2210	53423753
8/17/10	242279	21835	10322	7543	6948	41686	1787	13696783	576	13912755
8/14/10	190357	17156	8110	5927	5459	32752	1404	10761455	452	10931143
8/24/10	210981	19015	8989	6569	6050	36301	1556	11927407	501	12115480
9/1/10	1192847	107506	50821	37138	34206	205238	8796	67435343	2834	68498671
9/5/10	708279	63834	30176	22052	20311	121865	5223	40041207	1683	40672581
9/7/10	126218	11375	5377	3930	3619	21717	931	7135485	300	7247998
9/12/10	214304	19314	9130	6672	6145	36873	1580	12115263	509	12306298
9/14/10	655439	59072	27925	20407	18796	112773	4833	37054017	1557	37638290
9/16/10	209645	18894	8932	6527	6012	36071	1546	11851863	498	12038745

Baseline Ocean Going Vessels Emission

Date	Emissions: Sea Buoy - Valero Marine Terminal Auxiliary Boiler Emissions (g/trip)									
	NO _x	CO	ROG	PM ₁₀	PM _{2.5}	SO ₂	CH ₄	CO ₂	N ₂ O	CO ₂ e
12/10/09	115624	11715	6443	11715	11422	178796	1757	56816353	4405	58218721
12/13/09	118257	11981	6590	11981	11682	182867	1797	58110087	4505	59544388
12/25/09	115163	11668	6417	11668	11376	178083	1750	56589808	4387	57986585
12/29/09	127587	12927	7110	12927	12604	197294	1939	62694563	4860	64242020
12/31/09	117943	11950	6572	11950	11651	182381	1792	57955587	4493	59386074
1/10/10	114247	11575	6366	11575	11286	176666	1736	56139488	4352	57525149
1/28/10	131847	13358	7347	13358	13024	203882	2004	64788085	5023	66387215
1/29/10	114576	11608	6385	11608	11318	177174	1741	56301070	4365	57690720
2/7/10	91760	9297	5113	9297	9064	141893	1395	45089618	3496	46202541
2/5/10	118304	11986	6592	11986	11687	182939	1798	58132934	4507	59567799
2/4/10	127929	12961	7129	12961	12637	197824	1944	62862877	4873	64414488
2/9/10	125945	12760	7018	12760	12441	194755	1914	61887652	4798	63415192
2/11/10	123008	12463	6855	12463	12151	190213	1869	60444541	4686	61936462
2/13/10	123942	12557	6907	12557	12244	191658	1884	60903598	4722	62406850
2/21/10	132294	13404	7372	13404	13069	204573	2011	65007611	5040	66612160
2/22/10	122804	12442	6843	12442	12131	189898	1866	60344352	4678	61833800
2/24/10	117868	11942	6568	11942	11643	182265	1791	57918826	4490	59348406
3/6/10	122866	12448	6847	12448	12137	189994	1867	60374848	4681	61865049
3/10/10	112995	11448	6297	11448	11162	174730	1717	55524408	4305	56894887
3/9/10	179051	18141	9977	18141	17687	276875	2721	87983283	6821	90154928
3/14/10	118141	11970	6583	11970	11671	182688	1795	58053306	4501	59486205
3/23/10	125599	12725	6999	12725	12407	194220	1909	61717788	4785	63241135
2/24/10	128750	13045	7175	13045	12718	199093	1957	63266277	4905	64827845
3/30/10	112819	11430	6287	11430	11145	174457	1715	55437733	4298	56806073
4/11/10	141074	14293	7861	14293	13936	218149	2144	69321835	5374	71032869
4/5/10	117771	11932	6563	11932	11634	182116	1790	57871381	4487	59299790
4/16/10	114404	11591	6375	11591	11301	176908	1739	56216590	4358	57604155
4/14/10	176122	17844	9814	17844	17398	272347	2677	86544202	6709	88680327
4/21/10	165015	16719	9195	16719	16301	255172	2508	81086642	6286	83088061
4/27/10	122606	12422	6832	12422	12112	189593	1863	60247343	4671	61734396
4/29/10	174524	17682	9725	17682	17240	269876	2652	85759129	6649	87875876
5/3/10	114048	11555	6355	11555	11266	176358	1733	56041844	4345	57425095
5/13/10	114239	11574	6366	11574	11285	176653	1736	56135532	4352	57521096
5/20/10	91060	9226	5074	9226	8995	140811	1384	44745793	3469	45850229
5/21/10	124537	12618	6940	12618	12302	192578	1893	61196109	4744	62706581
5/25/10	158116	16020	8811	16020	15619	244503	2403	77696303	6023	79614040
5/31/10	118326	11988	6594	11988	11689	182973	1798	58143773	4508	59578905
6/1/10	124113	12575	6916	12575	12260	191923	1886	60987876	4728	62493208
6/4/10	113708	11521	6336	11521	11233	175833	1728	55874884	4332	57254015
6/6/10	175238	17755	9765	17755	17311	270979	2663	86109783	6676	88235186
6/8/10	120599	12219	6720	12219	11913	186489	1833	59261147	4594	60723858
6/15/10	164746	16692	9180	16692	16274	254755	2504	80954116	6276	82952264
6/17/10	125205	12685	6977	12685	12368	193612	1903	61524443	4770	63043018
6/23/10	110513	11197	6158	11197	10917	170892	1680	54304605	4210	55644977
7/13/10	126728	12840	7062	12840	12519	195966	1926	62272578	4828	63809619
7/27/10	148236	15019	8260	15019	14643	229226	2253	72841594	5647	74639505
7/14/10	125565	12722	6997	12722	12404	194168	1908	61701197	4783	63224135
7/27/10	121505	12311	6771	12311	12003	187890	1847	59706171	4629	61179867
8/2/10	105988	10738	5906	10738	10470	163895	1611	52081226	4038	53366720
8/4/10	161519	16365	9001	16365	15956	249765	2455	79368494	6153	81327505
7/29/10	120767	12236	6730	12236	11930	186748	1835	59343424	4601	60808166
8/17/10	158389	16047	8826	16047	15646	244925	2407	77830309	6034	79751353
8/14/10	108350	10978	6038	10978	10703	167548	1647	53242077	4128	54556224
8/24/10	112542	11402	6271	11402	11117	174029	1710	55301689	4287	56666672
9/1/10	151526	15352	8444	15352	14968	234312	2303	74457948	5772	76295754
9/5/10	114326	11583	6371	11583	11294	176789	1737	56178668	4355	57565296
9/6/10	95611	9687	5328	9687	9445	147849	1453	46982202	3642	48141839
9/12/10	122383	12399	6820	12399	12089	189247	1860	60137452	4662	61621793
9/14/10	153081	15510	8530	15510	15122	236718	2326	75222323	5832	77078996
9/16/10	114667	11618	6390	11618	11327	177315	1743	56345803	4368	57736556

Baseline Ocean Going Vessels Emission

Date	Emissions: between California Coastal Water Boundary & Sea Buoy from Main Engines (g/trip)				Emissions: between California Coastal Water Boundary & Sea Buoy from Auxiliary Engines (g/trip)			
	CH ₄	CO ₂	N ₂ O	CO ₂ e	CH ₄	CO ₂	N ₂ O	CO ₂ e
12/10/09	5964	50096966	2471	50988147	152	1161541	49	1179856
12/13/09	6170	51826311	2556	52748255	157	1199899	50	1218819
12/25/09	5929	49807272	2456	50693299	151	1154824	49	1179034
12/29/09	3919	32919059	1624	33504660	877	6720336	282	6826303
12/31/09	6175	51866212	2558	52788866	157	1202563	51	1221525
1/10/10	5861	49231423	2428	50107206	149	1141473	48	1159472
1/28/10	4068	34170112	1685	34777968	910	6975735	293	7085729
1/29/10	5921	49737671	2453	50622460	150	1153211	48	1171395
2/7/10	1953	16404406	809	16696226	142	1088915	46	1106085
2/5/10	6164	51780549	2554	52701679	157	1200576	50	1219507
2/4/10	3681	30921870	1525	31471943	355	2719134	114	2762010
2/9/10	3893	32704938	1613	33286730	1177	9024925	379	9167231
2/11/10	3730	31334656	1545	31892072	300	2301372	97	2337660
2/13/10	3703	31102978	1534	31656272	349	2674302	112	2716471
2/21/10	4087	34329211	1693	34939898	914	7008215	295	7118721
2/22/10	2410	20240697	998	20600761	288	2209048	93	2243880
2/24/10	6132	51506757	2540	52423017	156	1194228	50	1213059
3/6/10	2599	21835374	1077	22223806	157	1200819	50	1219754
3/10/10	5776	48515075	2393	49378115	147	1123236	47	1140948
3/9/10	7156	60109324	2965	61178616	553	4238501	178	4305334
3/14/10	6152	51678724	2549	52598043	156	1198216	50	1217109
3/23/10	4334	36406984	1796	37054632	864	6621024	278	6725425
2/24/10	6988	58698432	2895	59742625	182	1395987	59	1417999
3/30/10	5762	48404078	2387	49265144	146	1120666	47	1138337
4/11/10	2630	22095346	1090	22488402	219	1679666	71	1706151
4/5/10	6125	51446087	2537	52361267	156	1192822	50	1211630
4/16/10	5908	49628987	2448	50511843	150	1150691	48	1168835
4/14/10	3948	33159395	1635	33749271	478	3662415	154	3720164
4/21/10	4349	36534417	1802	37184332	1427	10943659	460	11116220
4/27/10	6526	54814563	2703	55789666	170	1303619	55	1324175
4/29/10	4441	37302100	1840	37965672	289	2214809	93	2249732
5/3/10	2632	22112911	1091	22506280	864	6623786	278	6728230
5/13/10	3238	27202520	1342	27686429	169	1295053	54	1315473
5/20/10	1858	15608323	770	15885982	610	4675377	197	4749099
5/21/10	3833	32193797	1588	32766496	1159	8883875	373	9023957
5/25/10	4035	33892297	1672	34495211	293	2247760	94	2283202
5/31/10	6203	52108314	2570	53035274	162	1239258	52	1258799
6/1/10	3552	29834554	1471	30365284	1489	11416857	480	11596880
6/4/10	3414	28681256	1415	29191470	1032	7914590	333	8039388
6/6/10	4464	37494119	1849	38161106	290	2226210	94	2261313
6/8/10	2901	24369928	1202	24803447	211	1617661	68	1643169
6/15/10	3463	29093127	1435	29610668	270	2069433	87	2102064
6/17/10	3705	31123859	1535	31677525	308	2361263	99	2398496
6/23/10	5590	46952988	2316	47788240	142	1087070	46	1104211
7/13/10	3803	31943480	1575	32511726	302	2313599	97	2350080
7/27/10	3872	32522548	1604	33101096	261	2000477	84	2032021
7/14/10	3720	31249217	1541	31805113	309	2370773	100	2408156
7/27/10	2301	19329608	953	19673465	179	1374941	58	1396621
8/2/10	3663	30767909	1517	31315243	266	2041578	86	2073770
8/4/10	4650	39062028	1927	39756907	798	6119604	257	6216099
7/29/10	3506	29448242	1452	29972100	1332	10211244	429	10372256
8/17/10	3293	27657724	1364	28149731	257	1967330	83	1998352
8/14/10	3786	31804948	1569	32370730	275	2110390	89	2143667
8/24/10	5768	48451965	2390	49313882	150	1152302	48	1170471
9/1/10	3895	32717427	1614	33299441	1278	9800303	412	9954835
9/5/10	2617	21985075	1084	22376170	710	5443885	229	5529725
9/7/10	2394	20109436	992	20467165	178	1363640	57	1385142
9/12/10	3704	31109854	1534	31663271	298	2284861	96	2320889
9/14/10	4338	36438318	1797	37086524	745	5708564	240	5798577
9/16/10	5892	49495248	2441	50375725	150	1147590	48	1165685

Baseline Ocean Going Vessels Emissions

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Baseline Ocean Going Vessels Emission

Date	Emissions: Sea Buoy - Valero Marine Terminal Main Engine Emissions (g/trip)									
	NO _x	CO	ROG	PM ₁₀	PM _{2.5}	SO ₂	CH ₄	CO ₂	N ₂ O	CO _{2e}
10/2/10	389690	39043	31749	9698	8932	58909	2849	18230638	950	18584869
10/6/10	274085	26380	19959	6682	6154	42693	1791	13212469	668	13457145
10/5/10	299349	28616	21525	7281	6707	46785	1932	14478818	730	14745532
10/4/10	256780	24423	18242	6232	5740	40240	1637	12453332	626	12681699
10/16/10	438344	29073	21541	9909	9127	48223	1933	14923773	748	15196176
10/17/10	160374	15746	12401	3952	3640	24595	1113	7611468	391	7755996
10/19/10	280290	26811	20059	6812	6274	43848	1800	13569774	683	13819326
10/22/10	344359	23150	17637	7841	7222	37502	1583	11605788	587	11821132
10/23/10	224839	21578	16364	5481	5048	35035	1469	10842465	548	11043162
10/25/10	579253	40527	32806	13437	12376	61418	2944	19007187	988	19375335
10/27/10	229543	21954	16589	5588	5146	35821	1489	11085765	559	11290441
10/29/10	572536	40085	32491	13286	12237	60670	2916	18775918	977	19139922
11/1/10	308363	20319	16453	6723	6192	30671	1477	9491934	494	9676102
11/7/10	470619	33385	27725	11001	10132	49327	2488	15265401	803	15566526
11/17/10	371783	35642	26970	9057	8342	57980	2420	17943223	906	18274919
11/18/10	555728	38979	31704	12909	11890	58800	2845	18197176	948	18550807
11/19/10	283128	26981	20163	6875	6333	44355	1809	13726698	690	13978589
11/26/10	205591	19923	15362	5036	4638	31822	1379	9848172	501	10032440
11/30/10	403488	40340	32673	10030	9238	61102	2932	18909368	983	19275763
12/4/10	304861	20102	16299	6649	6124	30306	1463	9378832	488	9560969
12/14/10	257579	24698	18636	6273	5778	40196	1672	12439572	628	12669284
12/19/10	425281	28505	21515	9663	8901	46469	1931	14381002	725	14646447
12/19/10	381007	38227	31168	9489	8740	57529	2797	17803567	929	18150143
12/27/10	72782	7557	6641	1853	1707	10620	596	3286622	177	3354123
12/29/10	554625	38907	31652	12884	11867	58678	2841	18159198	946	18512148
3/4/11	473689	29439	21751	10051	9258	49013	1952	15168311	759	15444578
3/10/11	275784	26448	19890	6712	6182	43061	1785	13326148	672	13571978
2/26/11	403394	25459	19568	8640	7958	41179	1756	12743670	646	12980907
3/2/11	267081	17175	13693	5778	5322	26869	1229	8315382	428	8473844
3/7/11	286208	27157	20182	6937	6390	44933	1811	13905509	697	14159763
3/12/11	552695	38780	31561	12841	11827	58463	2832	18092739	943	18444498
3/17/11	553013	38801	31576	12848	11834	58498	2834	18103684	943	18455639
3/30/11	333517	31794	23781	8101	7461	52233	2134	16164725	813	16461502
3/27/11	565481	54814	42265	13851	12758	87522	3793	27085868	1378	27592720
4/6/11	389044	38982	31706	9683	8918	58806	2845	18198885	948	18525547
4/13/11	598685	57903	44446	14647	13490	92822	3989	28726031	1459	29262078
4/17/11	236111	22517	16852	5736	5283	36969	1512	11440933	575	11651066
4/16/11	391173	39182	31848	9734	8965	59144	2858	18303604	953	18659142
4/24/11	683804	65934	50295	16702	15383	106270	4514	32887907	1666	33499282
4/27/11	242646	23125	17284	5893	5427	38011	1551	11763317	591	11979201
5/2/11	405133	26914	20009	9166	8443	44516	1796	13776596	691	14028549
5/3/11	289787	27701	20769	7046	6490	45327	1864	14027583	706	14285648
5/5/11	866143	58622	44969	19774	18213	94025	4036	29098392	1478	29641177
5/9/11	232047	22138	16584	5638	5193	36321	1488	11240414	565	11446970
5/13/11	552001	38734	31529	12825	11813	58386	2830	18068866	942	18420197
5/21/11	920607	58524	44899	19741	18182	93860	4029	29047323	1475	29589193
5/23/11	224398	21640	16574	5484	5051	34837	1487	10781090	547	10981850
5/25/11	290749	27791	20832	7069	6511	45481	1870	14075018	709	14333929
5/28/11	553697	38846	31608	12863	11848	58574	2837	18127237	945	18479615
6/3/11	615363	59528	45712	15056	13868	95393	4102	29521683	1500	30072715
6/10/11	278014	26396	19642	6741	6209	43626	1763	13501168	678	13748215
6/22/11	466904	31101	23174	10574	9739	51255	2080	15862208	796	16152792
6/26/11	283427	27253	20580	6906	6361	44180	1847	13672596	691	13925499
6/28/11	262530	25299	19191	6404	5899	40854	1722	12643309	640	12877808
6/16/11	391691	39231	31883	9746	8977	59227	2861	18329095	955	18685090
7/4/11	228623	22112	16985	5594	5152	35440	1524	10967722	557	11172447
7/2/11	263237	25365	19238	6421	5914	40967	1726	12678114	642	12913235
7/5/11	482286	32103	23886	10919	10057	52972	2144	16393397	823	16693456
7/7/11	262700	25315	19202	6408	5902	40881	1723	12651669	640	12886318
7/8/11	301686	28786	21636	7334	6755	47169	1942	14597496	735	14866183

Baseline Ocean Going Vessels Emission

Date	Emissions: Sea Buoy - Valero Marine Terminal Auxiliary Engine Emissions (g/trip)									
	NO _x	CO	ROG	PM ₁₀	PM _{2.5}	SO ₂	CH ₄	CO ₂	N ₂ O	CO _{2e}
10/2/10	209211	18855	8913	6514	5999	35996	1543	11827328	497	12013822
10/6/10	1012182	91223	43124	31513	29026	174153	7464	57221751	2405	58124030
10/5/10	230360	20761	9814	7172	6606	39635	1699	13022947	547	13228294
10/4/10	235013	21181	10013	7317	6739	40436	1733	13285993	558	13495488
10/16/10	2640958	238017	112517	82224	75733	454396	19474	149301504	6275	151655707
10/17/10	688967	62093	29353	21450	19757	118542	5080	38949445	1637	39563604
10/19/10	1009034	90939	42990	31415	28935	173612	7440	57043828	2397	57943302
10/22/10	162262	14624	6913	5052	4653	27918	1197	9173185	386	9317829
10/23/10	219000	19737	9330	6818	6280	37681	1615	12380752	520	12575973
10/25/10	215528	19425	9182	6710	6181	37083	1589	12184466	512	12376592
10/27/10	218904	19729	9326	6815	6277	37664	1614	12375322	520	12570457
10/29/10	213647	19255	9102	6652	6127	36759	1575	12078105	508	12268554
11/1/10	247744	19606	9268	6773	6238	37429	1604	12298074	517	12491992
11/7/10	184908	16665	7878	5757	5302	31815	1363	10453443	439	10618274
11/17/10	1002782	90376	42723	31221	28756	172536	7394	56690374	2383	57584274
11/18/10	208938	18831	8902	6505	5992	35949	1541	11811938	496	11998190
11/19/10	205202	18494	8743	6389	5884	35306	1513	11600697	488	11783618
11/26/10	622761	56126	26533	19389	17858	107150	4592	35206592	1480	35761734
11/30/10	220257	19851	9384	6858	6316	37897	1624	12451788	523	12648129
12/4/10	245953	19464	9201	6724	6193	37158	1593	12209185	513	12401701
12/14/10	204086	18393	8695	6354	5852	35114	1505	11537600	485	11719527
12/19/10	689643	62154	29382	21471	19776	118658	5085	38987649	1639	39602411
12/19/10	211029	19019	8991	6570	6052	36309	1556	11930140	501	12118256
12/27/10	462372	41671	19699	14396	13259	79555	3409	26139341	1099	26551509
12/29/10	208630	18803	8889	6496	5983	35896	1538	11794472	496	11980449
3/4/11	264223	20910	9885	7223	6653	39919	1711	13116103	551	13322919
3/10/11	222423	20046	9476	6925	6378	38269	1640	12574232	528	12772504
2/26/11	605294	47901	22644	16548	15241	91447	3919	30046953	1263	30520737
3/2/11	454524	35969	17004	12426	11445	68669	2943	22562683	948	22918454
3/7/11	218918	19730	9327	6816	6278	37666	1614	12376097	520	12571244
3/12/11	208089	18754	8866	6479	5967	35803	1534	11763907	494	11949402
3/17/11	208178	18762	8869	6481	5970	35819	1535	11768941	495	11954515
3/30/11	218171	19663	9295	6793	6256	37538	1609	12333886	518	12528368
3/27/11	876192	78967	37330	27280	25126	150755	6461	49533843	2082	50314898
4/6/11	208952	18832	8902	6506	5992	35852	1541	11812724	496	11998989
4/13/11	917250	82667	39079	28558	26303	157819	6764	51854956	2179	52672611
4/17/11	689005	62097	29355	21452	19758	118548	5081	38951555	1637	39565747
4/16/11	215202	19395	9169	6700	6171	37027	1587	12166026	511	12357862
4/24/11	1036788	93441	44172	32280	29731	178387	7645	58612838	2463	59537052
4/27/11	703561	63409	29975	21905	20175	121053	5188	39774469	1672	40401637
5/2/11	2485892	224042	105911	77396	71286	427716	18331	140535172	5907	142751147
5/3/11	223189	20115	9509	6949	6400	38401	1646	12617557	530	12816512
5/5/11	927840	83622	39530	28888	26607	159642	6842	52453679	2205	53280775
5/9/11	679951	61281	28969	21170	19498	116990	5014	38439713	1616	39045835
5/13/11	207895	18737	8857	6473	5962	35770	1533	11752928	494	11938249
5/21/11	1055129	83499	39472	28845	26568	159408	6832	52376909	2201	53202794
5/23/11	835055	75260	35577	25999	23946	143677	6158	47208255	1984	47952640
5/25/11	223759	20166	9533	6967	6417	38499	1650	12649816	532	12849279
5/28/11	208370	18779	8878	6487	5975	35851	1536	11779773	495	11965518
6/3/11	946564	85309	40328	29470	27144	162863	6980	53512162	2249	54355948
6/10/11	214140	19299	9123	6667	6141	36844	1579	12105980	509	12296869
6/22/11	225661	20338	9614	7026	6471	38827	1664	12757290	536	12958449
6/26/11	232081	20916	9888	7226	6655	39931	1711	13120276	551	13327158
6/28/11	979337	88263	41724	30491	28084	168502	7222	55364963	2327	56237964
6/16/11	215415	19414	9178	6707	6177	37064	1588	12178051	512	12370076
7/4/11	596103	53724	25397	18559	17094	102564	4396	33699572	1416	34230951
7/2/11	219259	19761	9341	6826	6288	37725	1617	12395405	521	12590857
7/5/11	231391	20854	9858	7204	6635	39813	1706	13081267	550	13287534
7/7/11	979820	88306	41745	30506	28098	168585	7225	55392237	2328	56265668
7/8/11	226249	20391	9639	7044	6488	38928	1668	12790552	538	12992235

Baseline Ocean Going Vessels Emission

Date	Emissions: Sea Buoy - Valero Marine Terminal Auxiliary Boiler Emissions (g/trip)									
	NO _x	CO	ROG	PM ₁₀	PM _{2.5}	SO ₂	CH ₄	CO ₂	N ₂ O	CO ₂ e
10/2/10	114433	11594	6377	11594	11304	176954	1739	56231238	4359	57619164
10/6/10	125732	12739	7006	12739	12420	194426	1911	61783060	4790	63308019
10/5/10	148915	15088	8298	15088	14710	230275	2263	73174893	5673	74981030
10/4/10	114324	11583	6371	11583	11293	176785	1737	56177428	4355	57564026
10/16/10	130110	13182	7250	13182	12853	201195	1977	63934334	4957	65512392
10/17/10	87419	8857	4871	8857	8636	135180	1329	42956491	3330	44016763
10/19/10	130452	13217	7269	13217	12887	201725	1983	64102773	4970	65684988
9/32/78	93278	9451	5198	9451	9214	144240	1418	45835624	3553	46966961
10/23/10	143466	14536	7995	14536	14172	221848	2180	70497249	5465	72237295
10/25/10	117827	11938	6566	11938	11639	182202	1791	57898825	4489	59327911
10/27/10	131504	13324	7328	13324	12990	203351	1999	64619289	5010	66214253
10/29/10	116816	11836	6510	11836	11540	180639	1775	57402190	4450	58819019
11/1/10	114503	11601	6381	11601	11311	177063	1740	56265585	4362	57654358
10/13/78	101378	10271	5649	10271	10015	156767	1541	49816163	3862	51045749
11/17/10	188975	19146	10531	19146	18668	292222	2872	92860096	7199	95152113
11/18/10	114287	11579	6369	11579	11290	176728	1737	56159380	4354	57545533
11/19/10	126095	12776	7027	12776	12456	194988	1916	61961772	4804	63491142
11/26/10	125693	12735	7004	12735	12417	194366	1910	61764155	4788	63288647
11/7/10	117400	11895	6542	11895	11597	181541	1784	57688765	4472	59112666
12/4/10	113721	11522	6337	11522	11234	175852	1728	55881047	4332	57260330
12/14/10	116825	11836	6510	11836	11540	180652	1775	57406261	4450	58823189
12/19/10	150019	15199	8360	15199	14820	231982	2280	73717530	5715	75537061
12/19/10	112567	11405	6273	11405	11120	174068	1711	55314131	4288	56679420
12/27/10	60632	6143	3379	6143	5989	93759	921	29793864	2310	30529250
12/29/10	114121	11562	6359	11562	11273	176472	1734	56077826	4347	57461965
3/4/11	129311	13101	7206	13101	12774	199961	1965	63542018	4926	65110392
3/10/11	126297	12796	7038	12796	12476	195300	1919	62060947	4811	63592765
2/26/11	120126	12171	6694	12171	11867	185758	1826	59028661	4576	60485634
3/2/11	90628	9182	5050	9182	8953	140142	1377	44533388	3452	45632582
3/7/11	123514	12514	6883	12514	12201	190995	1877	60693062	4705	62191117
3/12/11	113831	11533	6343	11533	11245	176023	1730	55935109	4336	57315726
3/17/11	113879	11538	6346	11538	11249	176097	1731	55958612	4338	57339809
3/30/11	124653	12630	6946	12630	12314	192758	1894	61253218	4749	62765099
3/27/11	163015	16516	9084	16516	16103	252079	2477	80103717	6210	82080875
4/6/11	114295	11580	6369	11580	11291	176740	1737	56163051	4354	57549294
4/13/11	170473	17272	9500	17272	16840	263612	2591	83768619	6494	85836235
4/17/11	124322	12596	6928	12596	12281	192245	1889	61090156	4736	62598012
4/16/11	114752	11626	6395	11626	11336	177448	1744	56387927	4372	57779721
4/24/11	193774	19633	10798	19633	19142	299642	2945	95217997	7382	97568213
4/27/11	126826	12850	7067	12850	12528	196117	1927	62320645	4831	63858872
5/2/11	122838	12446	6845	12446	12134	189952	1867	60361343	4680	61851211
5/3/11	127216	12889	7089	12889	12567	196720	1933	62512294	4846	64055252
5/5/11	172529	17480	9614	17480	17043	266790	2622	84778465	6573	86871008
5/9/11	122764	12438	6841	12438	12127	189837	1866	60324808	4677	61813774
5/13/11	113727	11522	6337	11522	11234	175861	1728	55883843	4332	57263195
5/21/11	172274	17454	9600	17454	17018	266396	2618	84653207	6563	86742657
5/23/11	128289	12998	7149	12998	12673	198380	1950	63039771	4887	64595749
5/25/11	127526	12921	7106	12921	12598	197200	1938	62664815	4858	64211537
5/28/11	113982	11548	6352	11548	11260	176256	1732	56009192	4342	57391638
6/3/11	176770	17910	9850	17910	17462	273349	2686	86862699	6734	89006685
6/10/11	120955	12255	6740	12255	11948	187039	1838	59435741	4608	60902762
6/22/11	127711	12939	7117	12939	12616	197486	1941	62755731	4865	64304698
6/26/11	128879	13058	7182	13058	12731	199293	1959	63329677	4910	64892810
6/28/11	121838	12344	6789	12344	12036	188405	1852	59869949	4641	61347688
6/16/11	114864	11638	6401	11638	11347	177620	1746	56442667	4376	57835812
7/4/11	130444	13216	7269	13216	12886	201713	1982	64098826	4969	65680944
7/2/11	122077	12368	6803	12368	12059	188773	1855	59986939	4651	61467565
7/5/11	130800	13252	7289	13252	12921	202263	1988	64273458	4983	65859886
7/7/11	121896	12350	6793	12350	12041	188494	1853	59898051	4644	61376483
7/8/11	146473	14840	8162	14840	14469	226498	2226	71974885	5580	73751403

Baseline Ocean Going Vessels Emission

Date	Emissions: between California Coastal Water Boundary & Sea Buoy from Main Engines (g/trip)				Emissions: between California Coastal Water Boundary & Sea Buoy from Auxiliary Engines (g/trip)			
	CH ₄	CO ₂	N ₂ O	CO ₂ e	CH ₄	CO ₂	N ₂ O	CO ₂ e
10/2/10	5910	49647832	2449	50531023	150	1151128	48	1169279
10/6/10	4036	33898238	1672	34501258	1349	10343132	435	10506223
10/5/10	3864	32461446	1601	33038907	260	1994065	84	2025508
10/4/10	3137	26350594	1300	26819347	352	2699085	113	2741645
10/16/10	3762	31603345	1559	32165541	4143	31764671	1335	32265540
10/17/10	2314	19441003	959	19786842	774	5931897	249	6025432
10/19/10	3906	32808979	1618	33392622	1484	11376587	478	11555975
10/22/10	2999	25188440	1242	25636520	218	1671357	70	1697712
10/23/10	2891	24288153	1198	24720218	225	1727648	73	1754890
10/25/10	6129	51481180	2539	52396985	156	1193635	50	1212457
10/27/10	2789	23429056	1156	23845839	243	1860152	78	1889483
10/29/10	6053	50846108	2508	51750615	154	1178911	50	1197500
11/1/10	3256	27353137	1349	27839725	170	1302223	55	1322757
11/7/10	4905	41205064	2032	41938065	124	953993	40	969035.2
11/17/10	4786	40203835	1983	40919026	840	6436552	271	6538044
11/18/10	5864	49256860	2429	50133096	149	1142063	48	1160071
11/19/10	3666	30795800	1519	31343630	296	2271963	95	2307788
11/26/10	2737	22992680	1134	23401699	599	4595558	193	4668021
11/30/10	6134	51522945	2541	52439492	160	1225337	51	1244658
12/4/10	3217	27022691	1333	27503401	168	1286491	54	1306777
12/14/10	3466	29110515	1436	29628365	279	2138020	90	2171732
12/19/10	3837	32230789	1590	32804147	733	5622226	236	5710877
12/19/10	5770	48467970	2390	49330173	150	1152682	48	1170858
12/27/10	833	6998578	345	7123076.3	273	2096381	88	2129437
12/29/10	5851	49152572	2424	50026953	149	1139645	48	1157615
3/4/11	3767	31644649	1561	32207579	382	2925490	123	2971619
3/10/11	3871	32514262	1604	33092662	311	2382557	100	2420126
2/26/11	2749	23087807	1139	23498518	444	3404832	143	3458520
3/2/11	1786	15001932	740	15268803	289	2212382	93	2247268
3/7/11	3505	29438227	1452	29961907	338	2588669	109	2629487
3/12/11	5830	48970073	2415	49841207	148	1135413	48	1153316
3/17/11	5833	49000127	2417	49871796	148	1136110	48	1154024
3/30/11	4285	35995463	1775	36635791	312	2388448	100	2426110
3/27/11	7706	64727917	3192	65879369	686	5259655	221	5342590
4/6/11	5900	49560109	2444	50441740	150	1149094	48	1167213
4/13/11	8176	68681528	3387	69903312	731	5603214	235	5691566
4/17/11	3055	25663716	1266	26120251	981	7517770	316	7636311
4/16/11	5934	49849413	2459	50736190	155	1185536	50	1204230
4/24/11	9367	78685369	3881	80085112	802	6149953	258	6246926
4/27/11	3142	26390500	1302	26859964	1008	7730669	325	7852567
5/2/11	3472	29164206	1438	29683012	3823	29313081	1232	29775293
5/3/11	3911	32848332	1620	33432675	315	2412543	101	2450585
5/5/11	8283	69576587	3431	70814293	738	5654288	238	5743445
5/9/11	3001	25211666	1243	25660160	963	7385349	310	7501802
5/13/11	5822	48904516	2412	49774484	148	1133893	48	1151773
5/21/11	8268	69453644	3425	70689162	736	5645278	237	5734294
5/23/11	2872	24125132	1190	24554297	826	6331790	266	6431631
5/25/11	3924	32959983	1626	33546312	316	2420744	102	2458914
5/28/11	5841	49064807	2420	49937626	148	1137610	48	1155548
6/3/11	8402	70580722	3481	71836291	727	5570566	234	5658403
6/10/11	3402	28578514	1409	29086901	328	2513070	106	2552696
6/22/11	4207	35335315	1743	35963899	338	2589066	109	2629890
6/26/11	4177	35085911	1730	35710059	312	2391903	101	2429619
6/28/11	3861	32429129	1599	33006014	1291	9894872	416	10050896
6/16/11	5943	49919836	2462	50807866	155	1187211	50	1205931
7/4/11	3050	25617424	1263	26073136	583	4468613	188	4539075
7/2/11	3871	32518967	1604	33097451	289	2216908	93	2251864
7/5/11	4348	36524019	1801	37173749	349	2676163	112	2718362
7/7/11	3863	32450708	1600	33027978	1291	9901457	416	10057584
7/8/11	3803	31941937	1575	32510155	256	1962153	82	1993092

Baseline Ocean Going Vessels Emissions

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Baseline Ocean Going Vessels Emission

Date	Emissions: Sea Buoy - Valero Marine Terminal Main Engine Emissions (g/trip)									
	NO _x	CO	ROG	PM ₁₀	PM _{2.5}	SO ₂	CH ₄	CO ₂	N ₂ O	CO ₂ e
7/10/11	427246	28352	21029	9661	8898	46984	1887	14540405	729	14805974
7/17/11	327122	30983	22987	7926	7301	51408	2063	15909436	797	16199886
7/20/11	427873	28392	21058	9675	8911	47054	1890	14562088	730	14828044
7/21/11	314193	29783	22136	7617	7015	49345	1987	15271114	766	15550193
7/23/11	651381	62834	47972	15913	14657	101199	4305	31318331	1587	31900833
7/26/11	288782	27396	20351	6999	6447	45343	1826	14032509	704	14289028
8/10/11	254722	24555	18791	6224	5732	39557	1686	12241748	621	12469595
8/13/11	371627	35628	26945	9053	8338	57963	2418	17938009	906	18269540
8/21/11	257738	24756	18806	6285	5789	40136	1688	12421012	628	12651165
8/7/11	305325	29172	21920	7425	6839	47738	1967	14773623	744	15045596
8/1/11	368306	24479	18258	8340	7682	40440	1639	12515259	628	12744437
8/3/11	205130	19926	15430	5030	4633	31697	1385	9809265	500	9993313
8/25/11	283462	27112	20350	6894	6350	44320	1826	13715738	691	13968235
8/27/11	353763	33842	25493	8608	7929	55260	2288	17101529	862	17416829
8/29/11	247244	23766	18084	6032	5556	38479	1623	11908120	603	12128984
9/1/11	257569	24740	18795	6281	5785	40109	1687	12412689	628	12642694
9/5/11	520681	59477	45694	15042	13854	95272	4101	29484252	1498	30034745
9/11/11	202615	19559	14964	4952	4561	31455	1343	9734619	494	9915889
9/17/11	532008	35355	26296	12038	11088	58446	2360	18087356	908	18418253
9/21/11	581388	56299	43322	14233	13109	90054	3888	27869473	1417	28390336
9/20/11	231488	22251	16877	5645	5199	36056	1515	11158229	564	11364916
10/2/11	519672	34553	25727	11762	10834	57069	2309	17661240	886	17984540
10/3/11	265585	25272	18937	6451	5942	41591	1699	12871277	647	13107606
10/8/11	534692	52668	41453	13183	12142	81955	3720	25362999	1303	25845062
10/12/11	454138	52078	40323	13147	12109	82846	3619	25638541	1307	26119565
10/15/11	306164	29054	21520	7418	6832	48115	1931	14890356	746	15162208
10/16/11	253962	17083	13035	5785	5328	27643	1170	8554641	433	8713508
10/17/11	428325	28422	21079	9685	8920	47105	1892	14577678	731	14843911
10/19/11	410116	25462	18771	8697	8011	42468	1685	13142707	657	13381780
10/24/11	582047	40710	32937	13499	12434	61729	2956	19103391	993	19473264
10/25/11	387665	25778	19203	8775	8083	42566	1723	13173181	661	13414377
10/26/11	222187	21434	16428	5431	5002	34484	1474	10672021	541	10870836
10/30/11	420753	27930	20730	9516	8764	46259	1860	14316021	718	14577593
11/4/11	161081	18519	14371	4666	4298	29342	1290	9080479	463	9251225
11/1/11	424284	41637	32897	10462	9636	65035	2952	20126685	1034	20509213
11/16/11	564127	54735	42285	13825	12734	87248	3795	27000901	1375	27506768
11/18/11	464802	30014	23365	10021	9230	46998	2097	14544576	745	14819471
11/21/11	133128	15435	12180	3874	3569	24088	1093	7454710	383	7596397
11/22/11	267495	25674	19340	6513	5999	41741	1736	12917800	652	13156331
11/25/11	321596	30470	22623	7794	7179	50526	2030	15636566	784	15922156
11/24/11	315686	30240	22755	7683	7077	49309	2042	15259817	769	15541190
12/1/11	312358	29899	22550	7603	7003	48771	2024	15093330	761	15371802
12/5/11	438924	29111	21568	9922	9139	48287	1936	14943693	749	15216455
12/11/11	342712	22874	17254	7782	7167	37486	1548	11600849	585	11814600
12/22/11	388945	25873	19380	8816	8120	42650	1739	13199036	663	13441244
12/24/11	909117	61443	46996	20739	19102	98800	4218	30575855	1551	31145186
1/4/12	314953	29853	22186	7635	7032	49467	1991	15308601	768	15588348
12/31/11	248666	23685	17682	6037	5560	38970	1587	12060256	606	12281437
1/11/12	200328	19186	14488	4878	4493	31265	1300	9675677	488	9854321
1/14/12	692600	66708	50770	16906	15572	107729	4556	33339372	1688	33958286
1/14/12	444485	29427	21768	10045	9252	48948	1954	15148005	758	15424083
1/28/12	306723	29058	21512	7428	6841	48215	1931	14921394	747	15193653
1/30/12	432547	28652	21218	9778	9006	47614	1904	14735406	738	15004134
2/5/12	302502	28887	21611	7351	6771	47353	1939	14654500	737	14923756

Baseline Ocean Going Vessels Emission

Date	Emissions: Sea Buoy - Valero Marine Terminal Auxiliary Engine Emissions (g/trip)									
	NO _x	CO	ROG	PM ₁₀	PM _{2.5}	SO ₂	CH ₄	CO ₂	N ₂ O	CO _{2e}
7/10/11	1045838	94256	44558	32561	29991	179944	7712	59124469	2485	60056750
7/17/11	246722	22236	10511	7681	7075	42450	1819	13947951	586	14167884
7/20/11	2590399	233460	110363	80650	74283	445697	19101	146443235	6155	148752369
7/21/11	239190	21557	10191	7447	6859	41154	1764	13522128	568	13735346
7/23/11	985798	88845	42000	30692	28269	169614	7269	55730220	2342	56608981
7/26/11	220418	19865	9391	6863	6321	37925	1625	12460938	524	12657424
8/10/11	537434	48436	22897	16733	15412	92469	3963	30382807	1277	30861887
8/13/11	833167	75089	35497	25940	23892	143352	6144	47101495	1980	47844197
8/21/11	672432	60603	28649	20936	19283	115697	4958	38014668	1598	38614088
8/7/11	233827	21074	9962	7280	6705	40232	1724	13218945	556	13427383
8/1/11	605436	54565	25794	18850	17362	104170	4464	34227183	1439	34766881
8/3/11	658844	59379	28070	20513	18893	113359	4858	37246515	1565	37833822
8/25/11	219677	19798	9359	6839	6299	37797	1620	12419013	522	12614838
8/27/11	340793	30714	14519	10610	9773	58636	2513	19266107	810	19569898
8/29/11	197976	17843	8435	6164	5677	34063	1460	11192219	470	11368699
9/1/11	672087	60572	28634	20925	19273	115637	4956	37995156	1597	38594268
9/5/11	768470	85350	40347	29484	27157	162940	6983	53537546	2250	54381732
9/11/11	889782	80192	37909	27703	25516	153093	6561	50302110	2114	51095280
9/17/11	222406	20044	9476	6924	6378	38267	1640	12573300	528	12771557
9/21/11	896516	80799	38196	27912	25709	154252	6611	50682841	2130	51482014
9/20/11	986677	88924	42037	30719	28294	169765	7276	55779906	2344	56659450
10/2/11	218452	19688	9307	6801	6264	37586	1611	12349767	519	12544499
10/3/11	195000	17574	8308	6071	5592	33551	1438	11023970	463	11197798
10/8/11	274109	24704	11678	8534	7860	47162	2021	15496205	651	15740551
10/12/11	680970	75632	35753	26127	24065	144388	6188	47441665	1994	48189731
10/15/11	715337	64470	30477	22271	20513	123079	5275	40440235	1700	41077901
10/16/11	155687	14031	6633	4847	4465	26787	1148	8801491	370	8940274
10/17/11	2594176	233801	110524	80767	74391	446347	19129	146656767	6164	148969268
10/19/11	202493	16025	7575	5536	5099	30593	1311	10051835	422	10210333
10/24/11	216311	19495	9216	6735	6203	37218	1595	12228711	514	12421535
10/25/11	2404328	216691	102436	74857	68947	413682	17729	135924077	5713	138067344
10/26/11	828776	74694	35310	25803	23766	142597	6111	46853269	1969	47592057
10/30/11	223769	20167	9534	6967	6417	38501	1650	12650336	532	12849808
11/4/11	153417	17039	8055	5886	5422	32529	1394	10688232	449	10856765
11/1/11	697026	62820	29697	21701	19988	119928	5140	39405040	1656	40026383
11/16/11	879587	79273	37474	27385	25223	151339	6486	49725768	2090	50509850
11/18/11	342209	27081	12802	9355	8617	51701	2216	16987341	714	17255200
11/21/11	133211	14795	6994	5111	4708	28245	1211	9280515	390	9426852
11/22/11	217274	19582	9257	6765	6231	37384	1602	12283162	516	12476844
11/25/11	723041	65164	30805	22511	20734	124404	5332	40875763	1718	41520297
11/24/11	925673	83426	39438	28820	26545	159269	6826	52331128	2199	53156291
12/1/11	624005	56239	26586	19428	17894	107365	4601	35276936	1483	35833187
12/5/11	231186	20836	9850	7198	6630	39777	1705	13069648	549	13275731
12/11/11	198081	17852	8439	6167	5680	34081	1461	11198123	471	11374697
12/22/11	218435	19686	9306	6801	6264	37583	1611	12348778	519	12543495
12/24/11	967765	87220	41231	30131	27752	166511	7136	54710721	2299	55573406
1/4/12	221590	19971	9441	6899	6354	38126	1634	12527152	527	12724681
12/31/11	716968	64617	30546	22322	20560	123360	5287	40532429	1704	41171549
1/11/12	609300	54913	25959	18970	17472	104834	4493	34445592	1448	34988734
1/14/12	1041987	93909	44394	32441	29880	179281	7683	58906769	2476	59835617
1/14/12	698120	62918	29743	21735	20019	120117	5148	39466888	1659	40089206
1/28/12	173867	15670	7408	5413	4986	29915	1282	9829257	413	9984246
1/30/12	683437	61595	29118	21278	19598	117590	5040	38636793	1624	39246022
2/5/12	230986	20818	9841	7192	6624	39743	1703	13058366	549	13264272

Baseline Ocean Going Vessels Emission

Date	Emissions: Sea Buoy - Valero Marine Terminal Auxiliary Boiler Emissions (g/trip)									
	NO _x	CO	ROG	PM ₁₀	PM _{2.5}	SO ₂	CH ₄	CO ₂	N ₂ O	CO ₂ e
7/10/11	127648	12933	7113	12933	12610	197389	1940	62724820	4863	64273024
7/17/11	129814	13152	7234	13152	12824	200738	1973	63788894	4945	65363362
7/20/11	127713	12940	7117	12940	12616	197490	1941	62756808	4865	64305801
7/21/11	126030	12769	7023	12769	12450	194886	1915	61929530	4801	63458104
7/23/11	183303	18572	10214	18572	18107	283452	2786	90073130	6983	92296358
7/26/11	124317	12595	6928	12595	12281	192238	1889	61087979	4736	62595781
8/10/11	127154	12883	7086	12883	12561	196625	1932	62482049	4844	64024261
8/13/11	189307	19180	10549	19180	18701	292735	2877	93023165	7212	95319207
8/21/11	140429	14228	7825	14228	13872	217153	2134	69005350	5350	70708572
8/7/11	151074	15306	8419	15306	14924	233614	2296	74236097	5755	76068428
8/1/11	113388	11488	6318	11488	11201	175338	1723	55717420	4320	57092664
8/3/11	120889	12248	6736	12248	11942	186936	1837	59403222	4605	60869441
8/25/11	125345	12700	6985	12700	12382	193828	1905	61593158	4775	63113430
8/27/11	192639	19518	10735	19518	19030	297888	2928	94660447	7339	96996901
8/29/11	128450	13014	7158	13014	12689	198629	1952	63118779	4893	64676707
9/1/11	140359	14221	7821	14221	13865	217044	2133	68970706	5347	70673074
9/5/11	176995	17933	9863	17933	17484	273697	2690	86973267	6743	89119983
9/11/11	127551	12923	7108	12923	12600	197239	1938	62677017	4859	64224041
9/17/11	125545	12720	6996	12720	12402	194136	1908	61691107	4783	63213797
9/21/11	166780	16898	9294	16898	16475	257901	2535	81953929	6354	83976754
9/20/11	141052	14291	7860	14291	13934	218117	2144	69311419	5373	71022197
10/2/11	123423	12505	6878	12505	12192	190856	1876	60648724	4702	62145684
10/3/11	111716	11319	6225	11319	11036	172752	1698	54895682	4256	56250644
10/8/11	145603	14752	8114	14752	14383	225153	2213	71547508	5547	73313478
10/12/11	156212	15827	8705	15827	15431	241559	2374	76760804	5951	78655451
10/15/11	127892	12958	7127	12958	12634	197766	1944	62844574	4872	64395733
10/16/11	89653	9083	4996	9083	8856	138634	1363	44054206	3415	45141573
10/17/11	127916	12960	7128	12960	12636	197803	1944	62856390	4873	64407841
10/19/11	105076	10646	5855	10646	10380	162484	1597	51633049	4003	52907481
10/24/11	118248	11980	6589	11980	11681	182852	1797	58105417	4505	59539602
10/25/11	119014	12058	6632	12058	11757	184037	1809	58481948	4534	59925428
10/26/11	127348	12902	7096	12902	12580	196924	1935	62577054	4851	64121610
10/30/11	126111	12777	7027	12777	12458	195013	1917	61969575	4804	63499137
11/4/11	124285	12592	6926	12592	12277	192189	1889	61072337	4735	62579753
11/1/11	129956	13167	7242	13167	12838	200958	1975	63858760	4951	65434952
11/16/11	164204	16637	9150	16637	16221	253917	2496	80687842	6255	82679418
11/18/11	157186	15926	8759	15926	15527	243065	2389	77239259	5988	79145715
11/21/11	108320	10975	6036	10975	10700	167501	1646	53227317	4126	54541099
11/22/11	123512	12514	6883	12514	12201	190993	1877	60692363	4705	62190400
11/25/11	126505	12817	7049	12817	12497	195621	1923	62162942	4819	63697277
11/24/11	168522	17074	9391	17074	16647	260594	2561	82809488	6420	84853431
12/1/11	146211	14814	8148	14814	14443	226093	2222	71846138	5570	73619478
12/5/11	130083	13180	7249	13180	12850	201155	1977	63921362	4956	65499099
12/11/11	128655	13035	7169	13035	12709	198945	1955	63219303	4901	64779712
12/22/11	141508	14337	7885	14337	13979	218822	2151	69535496	5391	71251804
12/24/11	180085	18246	10035	18246	17790	278474	2737	88491440	6860	90675628
1/4/12	126147	12781	7029	12781	12461	195068	1917	61987089	4806	63517084
12/31/11	129132	13083	7196	13083	12756	199684	1962	63454010	4919	65020212
1/11/12	110610	11207	6164	11207	10927	171042	1681	54352467	4214	55694020
1/14/12	194088	19664	10815	19664	19173	300128	2950	95372498	7394	97726528
1/14/12	129766	13147	7231	13147	12819	200664	1972	63765331	4943	65339217
1/28/12	124493	12613	6937	12613	12298	192511	1892	61174612	4743	62684553
1/30/12	127162	12884	7086	12884	12562	196637	1933	62485789	4844	64028093
2/5/12	131500	13323	7328	13323	12990	203345	1998	64617366	5010	66212283

Baseline Ocean Going Vessels Emission

Date	Emissions: between California Coastal Water Boundary & Sea Buoy from Main Engines (g/trip)				Emissions: between California Coastal Water Boundary & Sea Buoy from Auxiliary Engines (g/trip)			
	CH ₄	CO ₂	N ₂ O	CO ₂ e	CH ₄	CO ₂	N ₂ O	CO ₂ e
7/10/11	3665	30788224	1518	31335919	1631	12502312	525	12699450
7/17/11	3950	33177266	1636	33767460	372	2852654	120	2897635
7/20/11	3671	30834328	1521	31382843	4042	30991728	1303	31480409
7/21/11	3791	31840537	1570	32406952	357	2737719	115	2780888
7/23/11	8919	74923160	3695	76255976	792	6068711	255	6164403
7/26/11	3537	29708257	1465	30236741	341	2612414	110	2653607
8/10/11	3284	27584205	1360	28074904	545	4175388	175	4241226
8/13/11	4945	41535696	2049	42274580	722	5538073	233	5625398
8/21/11	3312	27819202	1372	28314081	688	5270975	222	5354088
8/7/11	3944	33126055	1634	33715338	265	2034892	86	2066978
8/1/11	3105	26085395	1287	26549431	923	7075504	297	7187071
8/3/11	2799	23514356	1160	23932656	638	4891114	206	4968238
8/25/11	3823	32114320	1584	32685605	308	2358634	99	2395825
8/27/11	4564	38335750	1891	39017709	301	2308521	97	2344922
8/29/11	3175	26665907	1315	27140270	213	1636603	69	1662409
9/1/11	3310	27800439	1371	28294984	687	5267420	221	5350477
9/5/11	8391	70487605	3476	71741517	722	5533289	233	5620538
9/11/11	2708	22746994	1122	23151643	932	7148378	300	7261095
9/17/11	4685	39352835	1941	40052887	341	2611224	110	2652398
9/21/11	7930	66615377	3285	67800406	705	5408761	227	5494047
9/20/11	3107	26097848	1287	26562106	1070	8201404	345	8330725
10/2/11	4574	38421628	1895	39105115	333	2549434	107	2589634
10/3/11	3192	26814973	1323	27291988	278	2133441	90	2167081
10/8/11	8256	69352262	3420	70585977	215	1649360	69	1675367
10/12/11	7291	61240636	3020	62330053	649	4972967	209	5051382
10/15/11	3980	33436117	1649	34030916	1203	9226693	388	9372181
10/16/11	2150	18061157	891	18382449	207	1588219	67	1613262
10/17/11	3675	30867475	1522	31416580	4047	31025044	1304	31514251
10/19/11	3265	27424692	1353	27912553	359	2750228	116	2793594
10/24/11	6160	51745360	2552	52665864	156	1199761	50	1218679
10/25/11	3319	27881218	1375	28377200	3655	28023543	1178	28465422
10/26/11	2843	23879247	1178	24304038	817	6267256	263	6366079
10/30/11	3608	30311062	1495	30850269	348	2665422	112	2707451
11/4/11	2629	22080304	1089	22473093	177	1355165	57	1376533
11/1/11	5710	47963052	2366	48816272	510	3907237	164	3968847
11/16/11	7680	64511096	3182	65658692	668	5124432	215	5205234
11/18/11	5014	42115254	2077	42864447	262	2005015	84	2036631
11/21/11	2154	18092027	892	18413869	145	1110387	47	1127896
11/22/11	3751	31512517	1554	32073097	301	2309152	97	2345563
11/25/11	3882	32605842	1608	33185871	1097	8413529	354	8546194
11/24/11	4368	36692995	1810	37345731	996	7632342	321	7752690
12/1/11	4055	34062150	1680	34668086	690	5292100	222	5375547
12/5/11	3767	31645625	1561	32208573	363	2782778	117	2826657
12/11/11	2818	23671210	1167	24092300	223	1706075	72	1732976
12/22/11	3209	26951465	1329	27430908	253	1942495	82	1973125
12/24/11	8706	73132383	3607	74433343	770	5901487	248	5994543
1/4/12	3800	31919042	1574	32486853	331	2539528	107	2579572
12/31/11	3221	27059918	1335	27541290	1034	7926764	333	8051755
1/11/12	2581	21684124	1069	22069866	829	6352013	267	6452172
1/14/12	9498	79784911	3935	81204214	831	6373687	268	6474188
1/14/12	3762	31598703	1558	32160816	1118	8570955	360	8706103
1/28/12	3893	32700346	1613	33282056	294	2255914	95	2291486
1/30/12	3659	30734667	1516	31281410	1087	8336591	350	8468043
2/5/12	4086	34323950	1693	34934543	329	2520920	106	2560670

Baseline Ocean Going Vessels Emissions

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Baseline Ocean Going Vessels Emission

Date	Emissions: Sea Buoy - Valero Marine Terminal Main Engine Emissions (g/trip)									
	NO _x	CO	ROG	PM ₁₀	PM _{2.5}	SO ₂	CH ₄	CO ₂	N ₂ O	CO ₂ e
2/12/12	333198	22397	16994	7582	6983	36334	1525	11244458	568	11452687
2/8/12	390603	39129	31810	9720	8953	59054	2855	18275534	952	18630569
2/10/12	287351	19244	14499	6526	6011	31418	1301	9723092	490	9902375
2/20/12	422516	28044	20811	9555	8801	46456	1868	14377020	721	14639676
2/27/12	720552	72771	60697	18051	16626	107866	5447	33381810	1756	34040551
2/29/12	390056	39078	31774	9707	8941	58967	2851	18248674	951	18603228
3/2/12	267579	18370	14548	6159	5673	28697	1306	8880987	456	9049906
3/4/12	207605	13587	11144	4531	4174	20619	1000	6380942	333	6505059
3/6/12	289822	27705	20771	7047	6490	45333	1864	14029327	706	14287423
3/9/12	141824	13880	10948	3494	3218	21765	983	6735710	346	6863485
3/11/12	598501	57947	44574	14651	13494	92718	4000	28693675	1459	29229826
3/16/12	571685	58889	50837	14479	13336	84149	4562	26041833	1393	26569528
3/18/12	592324	60813	52204	14974	13792	87437	4685	27059450	1443	27605313
3/20/12	428558	49274	38353	12424	11443	78018	3442	24144604	1233	24599101
3/21/12	388133	38897	31645	9661	8898	58661	2840	18154070	946	18506928
3/23/12	1180375	115653	91152	29084	26788	181126	8180	56053695	2877	57117211
3/28/12	219355	21067	16001	5349	4927	34161	1436	10571910	535	10767780
4/1/12	1074792	105806	84159	26551	24455	164304	7553	50847857	2619	51818430
4/12/12	828092	82800	67820	20631	19003	125000	6086	38684159	2018	39437566
4/11/12	695595	66987	50967	16978	15638	108207	4574	33487264	1695	34108812
4/18/12	272893	26126	19650	6640	6116	42636	1763	13194624	665	13437817
4/21/12	316272	30537	23358	7730	7120	49101	2096	15195458	771	15478409
4/22/12	179429	12374	9879	4140	3813	19177	887	5934916	306	6048420
4/24/12	160488	15494	11894	3925	3615	24894	1067	7703935	391	7847593
4/25/12	307123	29318	21917	7462	6873	48089	1967	14882354	748	15155679
4/30/12	314533	21180	16130	7164	6599	34252	1448	10599968	537	10796700
5/3/12	439054	29192	21736	9938	9153	48216	1951	14921458	749	15194603
5/3/12	293981	27920	20715	7126	6563	46173	1859	14289364	716	14550495
5/5/12	408894	40848	33034	10160	9358	61961	2965	19175271	996	19546432
5/11/12	328517	31031	23015	7956	7328	51659	2065	15986998	801	16278555
5/12/12	296712	28347	21227	7212	6643	46431	1905	14369048	723	14633208
5/21/12	386880	38779	31561	9631	8870	58462	2832	18092438	943	18444191
5/25/12	452120	30042	22339	10230	9422	49674	2005	15372775	771	15653967
5/29/12	240408	27279	20749	6924	6377	44175	1862	13671146	692	13924661
6/3/12	267180	25593	19271	6503	5990	41726	1729	12912963	651	13151127
6/7/12	259594	24827	18697	6316	5818	40556	1678	12550940	633	12782289
6/12/12	276092	26424	19862	6717	6187	43145	1782	13352365	673	13598374
6/12/12	169815	16513	12823	4167	3838	26213	1151	8112289	414	8264743
6/15/12	367246	35220	26670	8948	8242	57257	2393	17719380	895	18047083
6/17/12	132383	12987	10292	3265	3008	20277	924	6275241	323	6394647
6/17/12	388893	24732	19064	8345	7687	39597	1711	12254350	623	12483436
6/15/12	208671	16155	15453	5125	4720	20183	1387	6246104	356	6385577
6/16/12	383364	27646	23637	9043	8330	39619	2121	12261065	654	12508344
6/23/12	209964	23933	18374	6062	5583	38446	1649	11898126	604	12120012
5/31/12	379183	25262	18828	8588	7910	41622	1690	12880774	647	13116779
6/25/12	282097	27006	20440	6870	6328	43994	1834	13615046	687	13866681
7/6/12	275659	30975	23092	7898	7274	51026	2072	15791312	793	16080683
7/13/12	292719	28083	21281	7134	6571	45625	1910	14119776	713	14381020
7/16/12	434327	28812	21356	9819	9044	47775	1917	14785027	741	15054956
7/18/12	513154	34529	26188	11680	10758	55948	2350	17314521	875	17635244
7/20/12	425590	28200	20897	9622	8862	46838	1875	14495002	726	14759448
7/22/12	291252	27690	20657	7067	6509	45661	1854	14130825	710	14389985
7/25/12	256148	24679	18864	6257	5763	39796	1693	12315678	624	12544740
8/23/12	467844	44415	32657	11322	10428	73629	2931	22786091	1140	23201076
8/29/12	246400	23757	17992	6009	5535	38353	1615	11869257	600	12089311
8/29/12	302063	19929	16175	6590	6070	30014	1452	9288457	484	9468970
9/1/12	189706	18409	14280	4652	4285	29307	1282	9069896	462	9240126
9/2/12	345980	40174	31883	10084	9288	62494	2861	19340126	995	19708780
9/4/12	264886	25440	19173	6450	5941	41322	1721	12788213	646	13024457
9/6/12	312662	29641	22035	7580	6981	49101	1978	15195507	762	15473239

Baseline Ocean Going Vessels Emission

Date	Emissions: Sea Buoy - Valero Marine Terminal Auxiliary Engine Emissions (g/trip)									
	NO _x	CO	ROG	PM ₁₀	PM _{2.5}	SO ₂	CH ₄	CO ₂	N ₂ O	CO _{2e}
2/12/12	767198	69144	32686	23886	22000	132002	5657	43372067	1823	44055963
2/8/12	209576	18888	8929	6525	6010	36059	1545	11847975	498	12034796
2/10/12	225051	20283	9588	7007	6454	38722	1660	12722857	535	12923472
2/20/12	1036286	93395	44151	32264	29717	178300	7641	58584432	2462	59508198
2/27/12	211694	19079	9019	6591	6071	36423	1561	11967718	503	12156426
2/29/12	214744	19354	9149	6686	6158	36948	1583	12140114	510	12331540
3/2/12	204101	18395	8696	6355	5853	35117	1505	11538469	485	11720409
3/4/12	168950	13370	6320	4619	4254	25525	1094	8386708	352	8518951
3/6/12	223455	20139	9520	6957	6408	38447	1648	12632586	531	12831778
3/9/12	128051	11541	5456	3987	3672	22032	944	7239100	304	7353247
3/11/12	924035	83279	39368	28769	26498	158987	6814	52238528	2196	53062231
3/16/12	183619	16549	7823	5717	5265	31593	1354	10380540	436	10544222
3/18/12	184845	16659	7875	5755	5301	31804	1363	10449837	439	10614611
3/20/12	650983	72301	34179	24977	23005	138029	5916	45352518	1906	46067641
3/21/12	208588	18799	8887	6494	5982	35889	1538	11792113	496	11978053
3/23/12	307976	27756	13121	9589	8832	52989	2271	17410817	732	17885353
3/28/12	214786	19358	9151	6687	6159	36956	1584	12142531	510	12333996
4/1/12	290770	26206	12388	9053	8338	50029	2144	16438148	691	16697347
4/12/12	234212	21108	9979	7292	6716	40298	1727	13240714	556	13449495
4/11/12	1045723	94246	44553	32558	29987	179924	7711	59117936	2485	60050114
4/18/12	213169	19212	9082	6637	6113	36677	1572	12051087	506	12241110
4/21/12	1432970	129147	61051	44614	41092	246553	10567	81010242	3405	82287621
4/22/12	489848	44148	20870	15251	14047	84282	3612	27692642	1164	28129303
4/24/12	451076	40653	19218	14044	12935	77611	3326	25500706	1072	25902804
4/25/12	168133	15153	7163	5235	4821	28929	1240	9505101	399	9654979
4/30/12	733532	66110	31252	22838	21035	126210	5409	41468848	1743	42122733
5/3/12	820952	73989	34976	25560	23542	141251	6054	46410973	1951	47142786
5/3/12	693238	62478	29535	21583	19879	119277	5112	39190859	1647	39808825
5/5/12	216895	19548	9241	6753	6220	37318	1599	12261769	515	12455114
5/11/12	213368	19230	9090	6643	6119	36712	1573	12062356	507	12252557
5/12/12	163752	14758	6977	5098	4696	28175	1207	9257431	389	9403403
5/21/12	208086	18754	8865	6479	5967	35803	1534	11763769	494	11949261
5/25/12	839581	75667	35770	26140	24076	144456	6191	47464081	1995	48212500
5/29/12	476959	52973	25042	18300	16855	101131	4334	33228664	1397	33752618
6/3/12	583731	52609	24870	18174	16739	100435	4304	33000134	1387	33520484
6/7/12	510897	46045	21767	15906	14651	87904	3767	28882590	1214	29338014
6/12/12	598445	53935	25497	18632	17161	102967	4413	33831953	1422	34365419
6/12/12	152030	13702	6477	4733	4360	26158	1121	8594752	361	8730275
6/15/12	992146	89417	42270	30890	28451	170706	7316	56089089	2357	56973509
6/17/12	328783	29632	14008	10236	9428	56570	2424	18587143	781	18880227
6/17/12	787326	62306	29454	21524	19825	118948	5098	39083065	1643	39699331
6/15/12	111641	10062	4756	3476	3201	19209	823	6311421	265	6410941
6/16/12	160503	14465	6838	4997	4603	27616	1184	9073732	381	9216807
6/23/12	429693	47724	22560	16486	15185	91109	3905	29935725	1258	30407755
5/31/12	509457	45915	21705	15862	14609	87656	3757	28801188	1210	29255329
6/25/12	1103443	99448	47012	34355	31643	189855	8137	62381033	2622	63364664
7/6/12	498488	55364	26172	19126	17616	105695	4530	34728512	1460	35276115
7/13/12	596112	53725	25397	18559	17094	102565	4396	33700060	1416	34231447
7/16/12	2621967	236305	111708	81633	75188	451128	19334	148227908	6230	150565183
7/18/12	635935	57314	27094	19799	18236	109417	4689	35951358	1511	36518244
7/20/12	675132	60846	28764	21020	19360	116161	4978	38167279	1604	38769105
7/22/12	724135	65263	30852	22545	20765	124593	5340	40937584	1721	41583092
7/25/12	537677	48458	22908	16740	15419	92511	3965	30396541	1278	30875837
8/23/12	406152	36604	17304	12645	11647	69881	2995	22961003	965	23323055
8/29/12	199817	18009	8513	6221	5730	34380	1473	11296257	475	11474377
8/29/12	244269	19331	9138	6678	6151	36904	1582	12125590	510	12316788
9/1/12	131852	11883	5618	4105	3781	22686	972	7454004	313	7571539
9/2/12	550287	61117	28892	21113	19446	116679	5001	38337243	1611	38941749
9/4/12	255635	23039	10891	7959	7331	43984	1885	14451834	607	14679712
9/6/12	220356	19860	9388	6861	6319	37914	1625	12457402	524	12653832

Baseline Ocean Going Vessels Emission

Date	Emissions: Sea Buoy - Valero Marine Terminal Auxiliary Boiler Emissions (g/trip)									
	NO _x	CO	ROG	PM ₁₀	PM _{2.5}	SO ₂	CH ₄	CO ₂	N ₂ O	CO ₂ e
2/12/12	138801	14063	7735	14063	13711	214636	2109	68205231	5288	69888705
2/8/12	114630	11614	6388	11614	11324	177258	1742	56327648	4367	57717954
2/10/12	110630	11209	6165	11209	10928	171073	1681	54362219	4214	55704014
2/20/12	126516	12818	7050	12818	12498	195638	1923	62168292	4820	63702760
2/27/12	103444	10481	5764	10481	10219	159961	1572	50831185	3941	52085825
2/29/12	114512	11602	6381	11602	11312	177076	1740	56269969	4362	57658851
3/2/12	114838	11635	6399	11635	11344	177580	1745	56430084	4375	57822918
3/4/12	83814	8492	4670	8492	8279	129606	1274	41185085	3193	42201635
3/6/12	127401	12908	7099	12908	12585	197007	1936	62603381	4853	64148588
3/9/12	75045	7603	4182	7603	7413	116045	1140	36876009	2859	37786200
3/11/12	172492	17476	9612	17476	17039	266733	2621	84760328	6571	86852422
3/16/12	88324	8949	4922	8949	8725	136580	1342	43401331	3365	44472583
3/18/12	90420	9161	5039	9161	8932	139821	1374	44431293	3445	45527968
3/20/12	149546	15152	8333	15152	14773	231250	2273	73484974	5697	75298765
3/21/12	114099	11560	6358	11560	11271	176437	1734	56066813	4347	57450680
3/23/12	150148	15213	8367	15213	14832	232182	2282	73781097	5720	75602198
3/28/12	140764	14262	7844	14262	13905	217671	2139	69169861	5362	70877144
4/1/12	139425	14126	7769	14126	13773	215600	2119	68511683	5311	70202721
4/12/12	114367	11587	6373	11587	11298	176852	1738	56198558	4357	57585677
4/11/12	194770	19734	10853	19734	19240	301183	2960	95707589	7420	98069889
4/18/12	121765	12337	6785	12337	12028	188292	1851	59834028	4639	61310880
4/21/12	179194	18155	9985	18155	17702	277097	2723	88053749	6826	90227134
4/22/12	89898	9108	5010	9108	8881	139014	1366	44174900	3425	45265246
4/24/12	83317	8441	4643	8441	8230	128838	1266	40941218	3174	41951749
4/25/12	125263	12691	6980	12691	12374	193701	1904	61552687	4772	63071959
4/30/12	132865	13462	7404	13462	13125	205456	2019	65288351	5062	66899829
5/3/12	123424	12505	6878	12505	12192	190856	1876	60648863	4702	62145827
5/3/12	124164	12580	6919	12580	12265	192002	1887	61012821	4730	62518768
5/5/12	118562	12012	6607	12012	11712	183338	1802	58259774	4517	59697769
5/11/12	121762	12337	6785	12337	12028	188287	1850	59832376	4639	61309187
5/12/12	122166	12377	6808	12377	12068	188911	1857	60030735	4654	61512442
5/21/12	113830	11533	6343	11533	11245	176021	1730	55934462	4336	57315063
5/25/12	126083	12774	7026	12774	12455	194969	1916	61955613	4803	63484831
5/29/12	139304	14114	7763	14114	13761	215413	2117	68452239	5307	70141810
6/3/12	120082	12166	6692	12166	11862	185690	1825	59007028	4575	60463468
6/7/12	107970	10939	6017	10939	10666	166959	1641	53055045	4113	54364575
6/12/12	122963	12458	6852	12458	12147	190144	1869	60422554	4684	61913933
6/12/12	88509	8968	4932	8968	8743	136867	1345	43492474	3372	44565976
6/15/12	186978	18944	10419	18944	18470	289133	2842	91878522	7123	94146312
6/17/12	71729	7267	3997	7267	7086	110918	1090	35246749	2733	36116726
6/17/12	148893	15085	8297	15085	14708	230241	2263	73164281	5672	74970157
6/15/12	62020	6284	3456	6284	6127	95905	943	30475843	2363	31228062
6/16/12	88268	8943	4919	8943	8719	136494	1341	43373885	3363	44444460
6/23/12	125803	12746	7010	12746	12427	194536	1912	61818188	4793	63344014
5/31/12	127188	12886	7088	12886	12564	196678	1933	62498906	4845	64041534
6/25/12	140401	14225	7824	14225	13869	217110	2134	68991411	5349	70694290
7/6/12	130014	13173	7245	13173	12843	201048	1976	63887493	4953	65464394
7/13/12	140326	14217	7820	14217	13862	216993	2133	68954514	5346	70656482
7/16/12	129216	13092	7200	13092	12764	199813	1964	63494983	4922	65062196
7/18/12	194515	19708	10839	19708	19215	300789	2956	95582375	7410	97941585
7/20/12	125704	12736	7005	12736	12418	194382	1910	61769199	4789	63293816
7/22/12	124192	12583	6921	12583	12268	192045	1887	61026527	4731	62532813
7/25/12	126899	12857	7071	12857	12536	196231	1929	62356675	4834	63895792
8/23/12	194440	19700	10835	19700	19208	300673	2955	95545462	7407	97903760
8/29/12	122183	12379	6809	12379	12070	188938	1857	60039344	4655	61521264
8/29/12	112960	11445	6295	11445	11159	174677	1717	55507381	4303	56877441
9/1/12	82657	8375	4606	8375	8165	127817	1256	40616554	3149	41619071
9/2/12	126609	12828	7055	12828	12507	195782	1924	62214162	4823	63749761
9/4/12	124656	12630	6946	12630	12314	192762	1894	61254458	4749	62766369
9/6/12	125477	12713	6992	12713	12395	194032	1907	61658039	4780	63179912

Baseline Ocean Going Vessels Emission

Date	Emissions: between California Coastal Water Boundary & Sea Buoy from Main Engines (g/trip)				Emissions: between California Coastal Water Boundary & Sea Buoy from Auxiliary Engines (g/trip)			
	CH ₄	CO ₂	N ₂ O	CO ₂ e	CH ₄	CO ₂	N ₂ O	CO ₂ e
2/12/12	3099	26027699	1284	26490709	828	6345327	267	6445381
2/8/12	5925	49771864	2455	50657261	151	1154003	49	1172200
2/10/12	2595	21795419	1075	22183140	316	2424910	102	2463146
2/20/12	3624	30440833	1501	30982349	1612	12361246	520	12556159
2/27/12	9188	77178198	3806	78551130	118	901647	38	915864
2/29/12	5916	49697659	2451	50581736	154	1181927	50	1200564
3/2/12	2357	19797824	976	20150010	153	1175494	49	1194029
3/4/12	1535	12893335	636	13122696	100	765541	32	777611.8
3/6/12	3911	32852437	1620	33436853	315	2412845	101	2450891
3/9/12	1788	15022727	741	15289968	144	1103343	46	1120741
3/11/12	8165	68588066	3383	69808187	709	5435243	228	5520946
3/16/12	7131	59901564	2954	60967160	93	711809	30	723032.6
3/18/12	7416	62296802	3072	63405007	95	727792	31	739268.3
3/20/12	6862	57638011	2843	58663341	607	4650463	195	4723792
3/21/12	5885	49436298	2438	50315726	150	1146223	48	1164297
3/23/12	15541	130542650	6438	132864888	199	1525086	64	1549133
3/28/12	2819	23678213	1168	24099427	220	1684263	71	1710820
4/1/12	14082	118289293	5834	120393555	183	1405629	59	1427793
4/12/12	10674	89658720	4422	91253670	137	1047452	44	1063969
4/11/12	9541	80141366	3953	81567010	835	6403970	269	6504949
4/18/12	3677	30887736	1523	31437201	296	2268548	95	2304318
4/21/12	4342	36475114	1799	37123974	1148	8802866	370	8941670
4/22/12	1626	13658460	674	13901432	434	3329814	140	3382319
4/24/12	2052	17235055	850	17541651	620	4756012	200	4831005
4/25/12	4150	34860267	1719	35480400	252	1931684	81	1962143
4/30/12	2920	24526280	1210	24962581	780	5979294	251	6073576
5/3/12	3864	32461324	1601	33038782	1250	9582453	403	9733550
5/3/12	3819	32081240	1582	32651937	1155	8852815	372	8992407
5/5/12	6221	52257549	2577	53187165	158	1211636	51	1230741
5/11/12	3730	31332697	1545	31890078	325	2492878	105	2532186
5/12/12	4006	33652061	1660	34250702	243	1864735	78	1894138
5/21/12	5865	49266029	2430	50142428	149	1142275	48	1160287
5/25/12	3982	33447604	1650	34042607	1288	9873599	415	10029287
5/29/12	3670	30825129	1520	31373481	598	4584090	193	4656372
6/3/12	3598	30224770	1491	30762442	805	6170304	259	6267598
6/7/12	3320	27885420	1375	28381477	733	5618636	236	5707231
6/12/12	3721	31259021	1542	31815091	832	6381444	268	6482067
6/12/12	2253	18925076	933	19261736	181	1389951	58	1411868
6/15/12	4726	39699204	1958	40405418	829	6355761	267	6455980
6/17/12	1650	13863388	684	14110005	364	2793335	117	2837381
6/17/12	3238	27201196	1342	27685082	551	4224026	178	4290631
6/15/12	1957	16437737	811	16730150	50	380572	16	386572.6
6/16/12	3923	32955045	1625	33541286	100	762986	32	775016.4
6/23/12	3191	26800602	1322	27277361	520	3985591	168	4048437
5/31/12	3441	28905717	1426	29419925	766	5869746	247	5962301
6/25/12	3520	29569640	1458	30095657	1155	8857403	372	8997067
7/6/12	4181	35120859	1732	35745628	897	6873788	289	6982174
7/13/12	3792	31849327	1571	32415899	636	4874803	205	4951670
7/16/12	3727	31308342	1544	31865290	4105	31468162	1323	31964355
7/18/12	4821	40496680	1997	41217080	522	4003987	168	4067122
7/20/12	3599	30231232	1491	30769018	1070	8200037	345	8329336
7/22/12	3659	30735391	1516	31282146	1060	8126362	342	8254499
7/25/12	3304	27754259	1369	28247982	554	4248019	179	4315003
8/23/12	6836	57419484	2832	58440926	638	4894614	206	4971793
8/29/12	3674	30864024	1522	31413068	274	2100269	88	2133386
8/29/12	3186	26758644	1320	27234657	166	1273921	54	1294008
9/1/12	2395	20118361	992	20476249	161	1235767	52	1255253
9/2/12	5484	46064179	2272	46883620	486	3725092	157	3783829
9/4/12	3827	32145645	1585	32717487	357	2740194	115	2783402
9/6/12	3772	31682207	1563	32245805	329	2520685	106	2560432

Baseline Ocean Going Vessels Emissions

Date	
9/7/12	
9/14/12	
9/18/12	
9/23/12	
9/24/12	
9/28/12	
10/1/12	
10/2/12	
10/9/12	
10/3/12	
10/12/12	
10/13/12	
10/16/12	
10/19/12	
10/14/12	
10/27/12	
10/28/12	
10/31/12	
11/2/12	
11/5/12	
11/12/12	
11/9/12	
11/14/12	
11/19/12	
11/24/12	
11/25/12	
11/21/12	
12/2/12	
12/3/12	
12/9/12	
SUM	264
3-year Average (Yearly)	88
Average crude delivered per call (bbls/call)	
Maximum crude delivered per call (bbls/call)	
Minimum crude delivered per call (bbls/call)	

Baseline Ocean Going Vessels Emission

Date	Emissions: Sea Buoy - Valero Marine Terminal Main Engine Emissions (g/trip)									
	NO _x	CO	ROG	PM ₁₀	PM _{2.5}	SO ₂	CH ₄	CO ₂	N ₂ O	CO ₂ e
9/7/12	284469	27059	20209	6904	6359	44579	1814	13796104	693	14049096
9/14/12	458608	28891	21836	9791	9018	47041	1960	14557960	735	14826896
9/18/12	403675	26819	19941	9134	8413	44353	1790	13726213	689	13977268
9/23/12	267371	30064	22446	7663	7058	49466	2014	15308476	769	15589237
9/24/12	310449	29453	21803	7521	6927	48798	1957	15101724	757	15377347
9/28/12	154692	15176	11991	3814	3513	23713	1076	7338560	377	7478023
10/1/12	371153	35583	26928	9042	8328	57879	2417	17912147	904	18243289
10/2/12	250554	24146	18269	6109	5627	39014	1640	12073725	611	12297440
10/9/12	274706	26119	19537	6670	6143	43046	1753	13321587	669	13565937
10/3/12	1080533	106342	84540	26689	24582	165219	7587	51130929	2633	52106555
10/12/12	215482	20823	15908	5266	4850	33449	1428	10351633	525	10544401
10/13/12	308614	29233	21637	7473	6883	48517	1942	15014708	752	15288631
10/16/12	243981	23530	17831	5951	5481	37968	1600	11750161	595	11968084
10/19/12	394697	25670	20268	8543	7868	39681	1819	12280349	632	12514586
10/14/12	381539	27522	23543	9002	8291	39420	2113	12199567	651	12445704
10/27/12	204565	23339	17953	5909	5442	37430	1611	11583717	589	11799995
10/28/12	312124	29572	21908	7560	6963	49055	1966	15181329	761	15458415
10/31/12	556533	39032	31741	12927	11906	58890	2849	18224890	949	18579017
11/2/12	572472	65118	49598	16500	15198	105091	4451	32522956	1647	33126997
11/5/12	312402	29635	21932	7568	6970	49109	1968	15198084	761	15475426
11/12/12	292087	27916	20921	7101	6540	45694	1878	14140998	712	14401087
11/9/12	291199	27620	20511	7057	6500	45729	1841	14151797	710	14410442
11/14/12	283161	18757	15340	6191	5703	28041	1377	8677975	454	8847526
11/19/12	295520	19523	15886	6452	5943	29331	1426	9077144	473	9253864
11/24/12	355915	33992	25518	8653	7970	55666	2290	17227216	867	17544188
11/25/12	617354	43033	34591	14291	13163	65657	3104	20319061	1053	20710722
11/21/12	557410	39093	31791	12947	11925	58983	2853	18253734	951	18608419
12/2/12	250137	24010	18150	6095	5614	39006	1629	12071384	610	12294560
12/3/12	312523	29646	21940	7571	6973	49129	1969	15204040	762	15481487
12/9/12	299052	28392	21050	7248	6675	46981	1889	14539497	729	14805090
SUM		264								
3-year Average (Yearly)		88								
Average crude delivered per call (bbls/call)										
Maximum crude delivered per call (bbls/call)										
Minimum crude delivered per call (bbls/call)										

Baseline Ocean Going Vessels Emission

Date	Emissions: Sea Buoy - Valero Marine Terminal Auxiliary Engine Emissions (g/trip)									
	NO _x	CO	ROG	PM ₁₀	PM _{2.5}	SO ₂	CH ₄	CO ₂	N ₂ O	CO _{2e}
9/7/12	711275	64104	30304	22145	20397	122380	5245	40210595	1690	40844641
9/14/12	691484	54722	25868	18904	17411	104469	4477	34325471	1443	34866719
9/18/12	1000782	90196	42638	31159	28699	172192	7380	56577327	2378	57469445
9/23/12	486982	54086	25568	18684	17209	103256	4425	33926922	1426	34461885
9/24/12	723110	65170	30808	22513	20736	124416	5332	40879639	1718	41524234
9/28/12	466020	42000	19855	14509	13364	80182	3436	26345573	1107	26760993
10/1/12	1000995	90215	42647	31165	28705	172228	7381	56589333	2378	57481640
10/2/12	202392	18241	8623	6301	5804	34823	1492	11441830	481	11622246
10/9/12	199913	18017	8517	6224	5733	34396	1474	11301692	475	11479898
10/3/12	291993	26316	12440	9091	8373	50240	2153	16507274	694	16767563
10/12/12	439553	39615	18727	13685	12605	75628	3241	24849303	1044	25241130
10/13/12	699284	63023	29793	21772	20053	120317	5156	39532659	1662	40156014
10/16/12	198317	17873	8449	6174	5687	34122	1462	11211465	471	11388249
10/19/12	299607	23710	11208	8191	7544	45264	1940	14872589	625	15107102
10/14/12	160147	14433	6823	4986	4592	27554	1181	9053606	381	9196365
10/27/12	421311	46793	22120	16165	14889	89332	3828	29351791	1234	29814613
10/28/12	1056664	95232	45019	32898	30301	181807	7792	59736467	2511	60678398
10/31/12	209164	18851	8911	6512	5998	35988	1542	11824684	497	12011137
11/2/12	825375	91670	43335	31668	29168	175006	7500	57501996	2417	58408695
11/5/12	726653	65490	30959	22624	20838	125026	5358	41079958	1727	41727712
11/12/12	522888	47125	22277	16280	14994	89967	3856	29560485	1242	30026598
11/9/12	221828	19992	9451	6906	6361	38167	1636	12540628	527	12738370
11/14/12	232604	18408	8702	6359	5857	35142	1506	11546554	485	11728621
11/19/12	240332	19019	8991	6570	6052	36309	1556	11930133	501	12118248
11/24/12	705181	63555	30044	21955	20222	121332	5200	39866069	1676	40494682
11/25/12	226200	20386	9637	7043	6487	38919	1668	12787804	537	12989444
11/21/12	209184	18853	8912	6513	5999	35992	1542	11825804	497	12012275
12/2/12	565341	50952	24086	17601	16212	97271	4169	31960498	1343	32464454
12/3/12	727163	65536	30981	22640	20852	125114	5362	41108760	1728	41756968
12/9/12	702713	63332	29939	21878	20151	120907	5182	39726551	1670	40352964
SUM		264								
3-year Average (Yearly)		88								
Average crude delivered per call (bbls/call)										
Maximum crude delivered per call (bbls/call)										
Minimum crude delivered per call (bbls/call)										

Baseline Ocean Going Vessels Emission

Date	Emissions: Sea Buoy - Valero Marine Terminal Auxiliary Boiler Emissions (g/trip)									
	NO _x	CO	ROG	PM ₁₀	PM _{2.5}	SO ₂	CH ₄	CO ₂	N ₂ O	CO ₂ e
9/7/12	122091	12370	6803	12370	12061	188795	1855	59993960	4651	61474759
9/14/12	142417	14429	7936	14429	14069	220227	2164	69981900	5425	71709227
9/18/12	122396	12401	6820	12401	12091	189268	1860	60144163	4663	61628670
9/23/12	127167	12884	7086	12884	12562	196645	1933	62488212	4844	64030576
9/24/12	129203	13090	7200	13090	12763	199793	1964	63488800	4922	65055860
9/28/12	102688	10404	5722	10404	10144	158792	1561	50459563	3912	51705029
10/1/12	188631	19112	10511	19112	18634	291691	2867	92691188	7186	94979036
10/2/12	123679	12531	6892	12531	12217	191251	1880	60774204	4712	62274261
10/9/12	114382	11589	6374	11589	11299	176875	1738	56205860	4357	57593160
10/3/12	140008	14185	7802	14185	13831	216502	2128	68798228	5334	70496338
10/12/12	105153	10654	5860	10654	10387	162603	1598	51670818	4006	52946182
10/13/12	125169	12682	6975	12682	12365	193555	1902	61506424	4768	63024555
10/16/12	121312	12291	6760	12291	11984	187591	1844	59611313	4621	61082668
10/19/12	137915	13973	7685	13973	13624	213265	2096	67769777	5254	69442503
10/14/12	88077	8924	4908	8924	8701	136198	1339	43279915	3355	44348170
10/27/12	123409	12503	6877	12503	12191	190834	1876	60641777	4701	62138566
10/28/12	130118	13183	7251	13183	12854	201209	1977	63938556	4957	65516717
10/31/12	114408	11592	6375	11592	11302	176916	1739	56218894	4358	57606515
11/2/12	189119	19161	10539	19161	18682	292445	2874	92930815	7205	95224578
11/5/12	129801	13151	7233	13151	12822	200718	1973	63782494	4945	65356803
11/12/12	127884	12957	7126	12957	12633	197753	1944	62840556	4872	64391616
11/9/12	125072	12672	6970	12672	12355	193405	1901	61458912	4765	62975870
11/14/12	107669	10909	6000	10909	10636	166495	1636	52907422	4102	54213308
11/19/12	111182	11265	6196	11265	10983	171927	1690	54633692	4236	55982187
11/24/12	166599	16879	9284	16879	16457	257621	2532	81864743	6347	83885367
11/25/12	123560	12519	6885	12519	12206	191068	1878	60715988	4707	62214609
11/21/12	114419	11593	6376	11593	11303	176932	1739	56224126	4359	57611876
12/2/12	118581	12014	6608	12014	11714	183367	1802	58269114	4517	59707340
12/3/12	129905	13162	7239	13162	12833	200879	1974	63833645	4949	65409217
12/9/12	125780	12744	7009	12744	12425	194500	1912	61806749	4792	63332292
SUM		264								
3-year Average (Yearly)		88								
Average crude delivered per call (bbls/call)										
Maximum crude delivered per call (bbls/call)										
Minimum crude delivered per call (bbls/call)										

Baseline Ocean Going Vessels Emission

Date	Emissions: between California Coastal Water Boundary & Sea Buoy from Main Engines (g/trip)				Emissions: between California Coastal Water Boundary & Sea Buoy from Auxiliary Engines (g/trip)			
	CH ₄	CO ₂	N ₂ O	CO ₂ e	CH ₄	CO ₂	N ₂ O	CO ₂ e
9/7/12	3572	30003912	1480	30537655	1035	7932960	333	8058048
9/14/12	3910	32846612	1620	33430924	665	5095060	214	5175399
9/18/12	3459	29057082	1433	29573982	1539	11799340	496	11985393
9/23/12	4053	34041975	1679	34647552	869	6659990	280	6765005
9/24/12	4037	33912625	1673	34515901	1221	9358186	393	9505747
9/28/12	2034	17085627	843	17389565	410	3145859	132	3195463
10/1/12	4778	40133778	1979	40847723	838	6425336	270	6526651
10/2/12	3738	31398954	1549	31957514	279	2136670	90	2170362
10/9/12	3305	27757979	1369	28251768	288	2208468	93	2243291
10/3/12	14161	118955580	5867	121071694	184	1413546	59	1435835
10/12/12	3002	25214837	1244	25663387	570	4370482	184	4439396
10/13/12	3917	32905654	1623	33491017	1184	9080312	382	9223491
10/16/12	3637	30552445	1507	31095946	271	2079066	87	2111849
10/19/12	4226	35499945	1751	36131458	220	1690075	71	1716724
10/14/12	3903	32787203	1617	33370459	99	760199	32	772186.3
10/27/12	3106	26086936	1287	26551000	506	3879460	163	3940632
10/28/12	3827	32149113	1586	32721018	1661	12736911	535	12937748
10/31/12	5873	49332964	2433	50210554	149	1143827	48	1161863
11/2/12	9265	77824711	3838	79209144	821	6295942	265	6395217
11/5/12	4063	34129859	1683	34736999	1228	9418131	396	9566638
11/12/12	3942	33115284	1633	33704376	739	5666066	238	5755410
11/9/12	3567	29961888	1478	30494884	344	2634718	111	2676262
11/14/12	2973	24975021	1232	25419305	155	1189006	50	1207755
11/19/12	3112	26141260	1289	26606290	162	1244528	52	1264152
11/24/12	4631	38896500	1918	39588434	753	5771848	243	5862859
11/25/12	6558	55083637	2717	56063526	167	1277161	54	1297300
11/21/12	5882	49411138	2437	50290118	149	1143982	48	1162021
12/2/12	3423	28749343	1418	29260768	753	5773907	243	5864951
12/3/12	4065	34143285	1684	34750664	1229	9421836	396	9570401
12/9/12	3886	32645140	1610	33225868	1175	9008423	379	9150469
SUM		264						
3-year Average (Yearly)		88						
Average crude delivered per call (bbls/call)								
Maximum crude delivered per call (bbls/call)								
Minimum crude delivered per call (bbls/call)								

Baseline Ocean Going Vessels Emissions

1. IMO # obtained by searching ship name on www.marinetraffic.com
2. DWT obtained by searching IMO # in POLB Air Emissions Inventory OGV Appendices or in www.marinetraffic.com
3. MY obtained by searching IMO # in POLB Air Emissions Inventories' OGV Appendices or in www.marinetraffic.com
4. Ship Category based on IMO classification by DWT
5. Assumed number of main engines by ship category

Ship Category	Number of Main Engines
Handymax	1
Panamax	1
Aframax	1
Suezmax	2
VLCCS	2
ULCCS	2

#####

Horsepower = 9070 + 0.101*DWT
 kW = 0.746*(9070 + 0.101 * DWT)

7. Average number of Auxiliary engines on tankers = 2.7, per California ARB 2005 Oceangoing Ship Survey Summary Of Results, Appendix C, Table 9

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9. Auxiliary Boiler rating for ships for which data was not available was assumed equal to the average of auxiliary boiler rating for similar category (DWT) of ships provided in POLB 2011 Emissions Inventory, Section 2, Table 2.16

Tugboat Specifications and Assumptions

Tug requirements - Sec C.3, Benicia Port Information and Terminal Regulations Manual

Vessel Size	SIZE	MOORING*	MOORING*	UNMOORING*	UNMOORING*
DWT		Class A	Class B	Class A	Class B
0	30,000	0	2	0	2
30,000	65,000	1	1	1	1
65,000	130,000	2	1	2	0
130,000	195,000	4	0	3	0
195,000	999,999	4	0	3	1

[http://portal.harleymarine.com/vessels/sms/Shared%20Documents/SF%20Bay%20Area%20Terminal%20Guidlines/Valero%20Benicia,%20Ca/Valero%20Benicia%20Terminal%20Manual%20\(Final%20July%2027%202012\)%20v1%201.pdf](http://portal.harleymarine.com/vessels/sms/Shared%20Documents/SF%20Bay%20Area%20Terminal%20Guidlines/Valero%20Benicia,%20Ca/Valero%20Benicia%20Terminal%20Manual%20(Final%20July%2027%202012)%20v1%201.pdf)

Main Engine Assumptions

Tug Class	Average Power per Engine ¹	Number of Main Engines	Assumed Model Year	Useful Life ²	Emission Factor x FCF									Assumed Date of MY
	HP				NOx	CO	HC	PM10	PM2.5	SO2 at 15 ppm	CH4	CO2	N2O	
A	2172	2	2001	21	6.93	1.97	0.49	0.29	0.29	0.01	0.01	486.39	0.02	7/1/2001
B	1563	2	2001	21	6.93	1.97	0.49	0.29	0.29	0.01	0.01	486.39	0.02	7/1/2001
C	1388	2	2001	21	6.93	1.97	0.49	0.29	0.29	0.01	0.01	486.39	0.02	7/1/2001
D	754	2	2001	21	6.93	1.97	0.49	0.29	0.29	0.01	0.01	486.39	0.02	7/1/2001

1 - Revised PORT OF OAKLAND 2005 SEAPORT AIR EMISSIONS INVENTORY, Table 3-6

2 - Port of Richmond 2005 Emissions Inventory, Appendix A, Table 4

Aux Engine Assumptions

Tug Class	Average Power per Engine ¹	Number of Aux Engines	Assumed Model Year	Useful Life ²	Emission Factor x FCF									Assumed Date of MY
	HP				NOx	CO	HC	PM10	PM2.5	SO2 at 15 ppm	CH4	CO2	N2O	
A	128	2	2001	23	6.93	2.78	0.58	0.26	0.26	0.01	0.01	486.39	0.02	7/1/2001
B	110	2	2001	23	6.93	3.59	0.85	0.46	0.46	0.01	0.02	486.39	0.02	7/1/2001
C	92	2	2001	23	6.93	3.59	0.85	0.46	0.46	0.01	0.02	486.39	0.02	7/1/2001
D	110	2	2001	23	6.93	3.59	0.85	0.46	0.46	0.01	0.02	486.39	0.02	7/1/2001

1 - Revised PORT OF OAKLAND 2005 SEAPORT AIR EMISSIONS INVENTORY, Table 3-6

2 - Port of Richmond 2005 Emissions Inventory, Appendix A, Table 4

Crude by Rail Project
Marine Vessel Criteria Pollutant and GHG Baseline Emissions
3/17/2014

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Fuel Correction factor for ULSD

Engine Power (HP)		MY		NOx	CO	HC	PM10	PM2.5	SO2 at 15 ppm	CH4	CO2	N2O
0	24	0	1994	0.93	1	0.72	0.72	0.72	1	0.72	1	0.93
25	50	0	1998	0.93	1	0.72	0.72	0.72	1	0.72	1	0.93
51	100	0	1997	0.93	1	0.72	0.72	0.72	1	0.72	1	0.93
101	175	0	1996	0.93	1	0.72	0.72	0.72	1	0.72	1	0.93
176	5000	0	1995	0.93	1	0.72	0.72	0.72	1	0.72	1	0.93
0	24	1995	2010	0.948	1	0.72	0.8	0.8	1	0.72	1	0.948
25	50	1999	2010	0.948	1	0.72	0.8	0.8	1	0.72	1	0.948
51	100	1998	2010	0.948	1	0.72	0.8	0.8	1	0.72	1	0.948
101	175	1997	2010	0.948	1	0.72	0.8	0.8	1	0.72	1	0.948
176	5000	1996	2010	0.948	1	0.72	0.8	0.8	1	0.72	1	0.948
0	5000	2011	9999	0.948	1	0.72	0.852	0.852	1	0.72	1	0.948

Ref - CARB 2007, Appendix B Emissions Estimation Methodology for Commercial Harbor Craft Operating in California and POLB 2011 Air Emissions Inventory

Deterioration Factor

HP Range		NOx	CO	HC	PM10	PM2.5	SO2 at 15 ppm	CH4	CO2	N2O
25	50	0.06	0.41	0.51	0.31	0.31	0	0	0	0
51	250	0.14	0.16	0.28	0.44	0.44	0	0	0	0
251	5000	0.21	0.25	0.44	0.67	0.67	0	0	0	0

Ref - CARB 2007, Appendix B Emissions Estimation Methodology for Commercial Harbor Craft Operating in California

Operation Mode	Tug in-Transit	Tug Assist/Mooring/Unmooring
Load Factor	Tug Base - Vessel	Vessel - Vessel Berth
Main	0.5	0.31
Auxiliary	0.43	0.43

Ref - Port of Richmond 2005 Emissions Inventory, Appendix A, Table 2

Tug Mooring/Unmooring Activity rate	Tug in-Transit ¹	Tug Mooring/Unmooring ²
(hrs/one-way trip)	Tug Base - Vessel (in/out)	Vessel - Vessel Berth
Main	0.5	0.5
Auxiliary	0.5	0.5

1. Assumption
2. Assumed equal to time for maneuvering mode

Tug Assisting Activity rate	Tug in-Transit ¹	Tug Assist ²
(hrs/one-way trip)	Tug Base - Vessel	Vessel - Vessel Berth
Main	2	3.2
Auxiliary	2	3.2

1. Assumption
2. Based on conversation with SF Bar Pilot

Tugboat Zero Hour Emissions Factors

Engine Type	Year		Engine Power (HP)		Zero Hour Emission Factor (g/HP-hr)								
	Min	Max	Min	Max	NOx	CO	HC	PM10	PM2.5	SO2 at 15 ppm	CH4	CO2	N2O
Main	0	1997	25	50	8.14	3.65	1.84	0.72	0.72	0.006	0.0368	486	0.023
Main	1998	1999	25	50	8.14	3.65	1.8	0.72	0.72	0.006	0.036	486	0.023
Main	2000	2004	25	50	7.31	3.65	1.8	0.72	0.72	0.006	0.036	486	0.023
Main	2005	2008	25	50	5.32	3.73	1.8	0.3	0.3	0.006	0.036	486	0.023
Main	2009	2020	25	50	5.32	3.73	1.8	0.22	0.22	0.006	0.036	486	0.023
Main	0	1996	51	120	15.34	3.5	1.44	0.8	0.8	0.006	0.0288	486	0.023
Main	1997	1999	51	120	10.33	2.55	0.99	0.66	0.66	0.006	0.0198	486	0.023
Main	2000	2004	51	120	7.31	2.55	0.99	0.66	0.66	0.006	0.0198	486	0.023
Main	2005	2008	51	120	5.32	3.73	0.99	0.3	0.3	0.006	0.0198	486	0.023
Main	2009	2020	51	120	5.32	3.73	0.99	0.22	0.22	0.006	0.0198	486	0.023
Main	0	1970	121	175	16.52	3.21	1.32	0.73	0.73	0.006	0.0264	486	0.023
Main	1971	1978	121	175	15.34	3.21	1.1	0.63	0.63	0.006	0.022	486	0.023
Main	1979	1983	121	175	14.16	3.21	1	0.52	0.52	0.006	0.02	486	0.023
Main	1984	1986	121	175	12.98	3.14	0.94	0.52	0.52	0.006	0.0188	486	0.023
Main	1987	1995	121	175	12.98	3.07	0.88	0.52	0.52	0.006	0.0176	486	0.023
Main	1996	1999	121	175	9.64	1.97	0.68	0.36	0.36	0.006	0.0136	486	0.023
Main	2000	2003	121	175	7.31	1.97	0.68	0.36	0.36	0.006	0.0136	486	0.023
Main	2004	2012	121	175	5.1	3.73	0.68	0.22	0.22	0.006	0.0136	486	0.023
Main	2013	2020	121	175	3.8	3.73	0.68	0.09	0.09	0.006	0.0136	486	0.023
Main	0	1970	176	250	16.52	3.21	1.32	0.73	0.73	0.006	0.0264	486	0.023
Main	1971	1978	176	250	15.34	3.21	1.1	0.63	0.63	0.006	0.022	486	0.023
Main	1979	1983	176	250	14.16	3.21	1	0.52	0.52	0.006	0.02	486	0.023
Main	1984	1986	176	250	12.98	3.14	0.94	0.52	0.52	0.006	0.0188	486	0.023
Main	1987	1994	176	250	12.98	3.07	0.88	0.52	0.52	0.006	0.0176	486	0.023
Main	1995	1999	176	250	9.64	1.97	0.68	0.36	0.36	0.006	0.0136	486	0.023
Main	2000	2003	176	250	7.31	1.97	0.68	0.36	0.36	0.006	0.0136	486	0.023
Main	2004	2013	176	250	5.1	3.73	0.68	0.15	0.15	0.006	0.0136	486	0.023
Main	2014	2020	176	250	3.99	3.73	0.68	0.08	0.08	0.006	0.0136	486	0.023
Main	0	1970	251	500	16.52	3.07	1.26	0.7	0.7	0.006	0.0252	486	0.023
Main	1971	1978	251	500	15.34	3.07	1.05	0.6	0.6	0.006	0.021	486	0.023
Main	1979	1983	251	500	14.16	3.07	0.95	0.5	0.5	0.006	0.019	486	0.023
Main	1984	1986	251	500	12.98	3.07	0.9	0.5	0.5	0.006	0.018	486	0.023
Main	1987	1994	251	500	12.98	2.99	0.84	0.5	0.5	0.006	0.0168	486	0.023
Main	1995	1999	251	500	9.64	1.97	0.68	0.36	0.36	0.006	0.0136	486	0.023
Main	2000	2003	251	500	7.31	1.97	0.68	0.36	0.36	0.006	0.0136	486	0.023
Main	2004	2013	251	500	5.1	3.73	0.68	0.15	0.15	0.006	0.0136	486	0.023
Main	2014	2020	251	500	3.99	3.73	0.68	0.08	0.08	0.006	0.0136	486	0.023
Main	0	1970	501	750	16.52	3.07	1.26	0.7	0.7	0.006	0.0252	486	0.023
Main	1971	1978	501	750	15.34	3.07	1.05	0.6	0.6	0.006	0.021	486	0.023
Main	1979	1983	501	750	14.16	3.07	0.95	0.5	0.5	0.006	0.019	486	0.023
Main	1984	1986	501	750	12.98	3.07	0.9	0.5	0.5	0.006	0.018	486	0.023
Main	1987	1994	501	750	12.98	2.99	0.84	0.5	0.5	0.006	0.0168	486	0.023
Main	1995	1999	501	750	9.64	1.97	0.68	0.36	0.36	0.006	0.0136	486	0.023
Main	2000	2006	501	750	7.31	1.97	0.68	0.36	0.36	0.006	0.0136	486	0.023
Main	2007	2012	501	750	5.1	3.73	0.68	0.15	0.15	0.006	0.0136	486	0.023
Main	2013	2020	501	750	3.99	3.73	0.68	0.08	0.08	0.006	0.0136	486	0.023
Main	0	1970	751	1900	16.52	3.07	1.26	0.7	0.7	0.006	0.0252	486	0.023

Tugboat Zero Hour Emissions Factors

Engine Type	Year		Engine Power (HP)		Zero Hour Emission Factor (g/HP-hr)								
	Min	Max	Min	Max	NOx	CO	HC	PM10	PM2.5	SO2 at 15 ppm	CH4	CO2	N2O
Main	1971	1978	751	1900	15.34	3.07	1.05	0.6	0.6	0.006	0.021	486	0.023
Main	1979	1983	751	1900	14.16	3.07	0.95	0.5	0.5	0.006	0.019	486	0.023
Main	1984	1986	751	1900	12.98	3.07	0.9	0.5	0.5	0.006	0.018	486	0.023
Main	1987	1998	751	1900	12.98	2.99	0.84	0.5	0.5	0.006	0.0168	486	0.023
Main	1999	1999	751	1900	9.64	1.97	0.68	0.36	0.36	0.006	0.0136	486	0.023
Main	2000	2006	751	1900	7.31	1.97	0.68	0.36	0.36	0.006	0.0136	486	0.023
Main	2007	2011	751	1900	5.53	3.73	0.68	0.2	0.2	0.006	0.0136	486	0.023
Main	2012	2016	751	1900	4.09	3.73	0.68	0.08	0.08	0.006	0.0136	486	0.023
Main	2017	2020	751	1900	1.3	3.73	0.18	0.03	0.03	0.006	0.0036	486	0.023
Main	0	1970	1901	3300	16.52	3.07	1.26	0.7	0.7	0.006	0.0252	486	0.023
Main	1971	1978	1901	3300	15.34	3.07	1.05	0.6	0.6	0.006	0.021	486	0.023
Main	1979	1983	1901	3300	14.16	3.07	0.95	0.5	0.5	0.006	0.019	486	0.023
Main	1984	1986	1901	3300	12.98	3.07	0.9	0.5	0.5	0.006	0.018	486	0.023
Main	1987	1998	1901	3300	12.98	2.99	0.84	0.5	0.5	0.006	0.0168	486	0.023
Main	1999	1999	1901	3300	9.64	1.97	0.68	0.36	0.36	0.006	0.0136	486	0.023
Main	2000	2006	1901	3300	7.31	1.97	0.68	0.36	0.36	0.006	0.0136	486	0.023
Main	2007	2012	1901	3300	5.53	3.73	0.68	0.2	0.2	0.006	0.0136	486	0.023
Main	2013	2015	1901	3300	4.37	3.73	0.68	0.1	0.1	0.006	0.0136	486	0.023
Main	2016	2020	1901	3300	1.3	3.73	0.18	0.03	0.03	0.006	0.0036	486	0.023
Main	0	1970	3301	5000	16.52	3.07	1.26	0.7	0.7	0.006	0.0252	486	0.023
Main	1971	1978	3301	5000	15.34	3.07	1.05	0.6	0.6	0.006	0.021	486	0.023
Main	1979	1983	3301	5000	14.16	3.07	0.95	0.5	0.5	0.006	0.019	486	0.023
Main	1984	1986	3301	5000	12.98	3.07	0.9	0.5	0.5	0.006	0.018	486	0.023
Main	1987	1998	3301	5000	12.98	2.99	0.84	0.5	0.5	0.006	0.0168	486	0.023
Main	1999	1999	3301	5000	9.64	1.97	0.68	0.36	0.36	0.006	0.0136	486	0.023
Main	2000	2006	3301	5000	7.31	1.97	0.68	0.36	0.36	0.006	0.0136	486	0.023
Main	2007	2013	3301	5000	5.53	3.73	0.68	0.2	0.2	0.006	0.0136	486	0.023
Main	2014	2015	3301	5000	4.94	3.73	0.68	0.25	0.25	0.006	0.0136	486	0.023
Main	2016	2020	3301	5000	1.3	3.73	0.18	0.03	0.03	0.006	0.0036	486	0.023

Tugboat Zero Hour Emissions Factors

Engine Type	Year		Engine Power (HP)		Zero Hour Emission Factor (g/HP-hr)								
	Min	Max	Min	Max	NOx	CO	HC	PM10	PM2.5	SO2 at 15 ppm	CH4	CO2	N2O
Auxiliary	0	1997	25	50	6.9	5.15	2.19	0.64	0.64	0.006	0.0438	486	0.023
Auxiliary	1998	1999	25	50	6.9	5.15	2.14	0.64	0.64	0.006	0.0428	486	0.023
Auxiliary	2000	2004	25	50	6.9	5.15	2.14	0.64	0.64	0.006	0.0428	486	0.023
Auxiliary	2005	2008	25	50	5.32	3.73	2.14	0.3	0.3	0.006	0.0428	486	0.023
Auxiliary	2009	2020	25	50	5.32	3.73	2.14	0.22	0.22	0.006	0.0428	486	0.023
Auxiliary	0	1996	51	120	13	4.94	1.71	0.71	0.71	0.006	0.0342	486	0.023
Auxiliary	1997	1999	51	120	8.75	3.59	1.18	0.58	0.58	0.006	0.0236	486	0.023
Auxiliary	2000	2004	51	120	7.31	3.59	1.18	0.58	0.58	0.006	0.0236	486	0.023
Auxiliary	2005	2008	51	120	5.32	3.73	1.18	0.3	0.3	0.006	0.0236	486	0.023
Auxiliary	2009	2020	51	120	5.32	3.73	1.18	0.22	0.22	0.006	0.0236	486	0.023
Auxiliary	0	1970	121	175	14	4.53	1.57	0.65	0.65	0.006	0.0314	486	0.023
Auxiliary	1971	1978	121	175	13	4.53	1.31	0.55	0.55	0.006	0.0262	486	0.023
Auxiliary	1979	1983	121	175	12	4.53	1.19	0.46	0.46	0.006	0.0238	486	0.023
Auxiliary	1984	1986	121	175	11	4.43	1.12	0.46	0.46	0.006	0.0224	486	0.023
Auxiliary	1987	1995	121	175	11	4.33	1.05	0.46	0.46	0.006	0.021	486	0.023
Auxiliary	1996	1999	121	175	8.17	2.78	0.81	0.32	0.32	0.006	0.0162	486	0.023
Auxiliary	2000	2003	121	175	7.31	2.78	0.81	0.32	0.32	0.006	0.0162	486	0.023
Auxiliary	2004	2012	121	175	5.1	3.73	0.81	0.22	0.22	0.006	0.0162	486	0.023
Auxiliary	2013	2020	121	175	3.8	3.73	0.81	0.09	0.09	0.006	0.0162	486	0.023
Auxiliary	0	1970	176	250	14	4.53	1.57	0.65	0.65	0.006	0.0314	486	0.023
Auxiliary	1971	1978	176	250	13	4.53	1.31	0.55	0.55	0.006	0.0262	486	0.023
Auxiliary	1979	1983	176	250	12	4.53	1.19	0.46	0.46	0.006	0.0238	486	0.023
Auxiliary	1984	1986	176	250	11	4.43	1.12	0.46	0.46	0.006	0.0224	486	0.023
Auxiliary	1987	1994	176	250	11	4.33	1.05	0.46	0.46	0.006	0.021	486	0.023
Auxiliary	1995	1999	176	250	8.17	2.78	0.81	0.32	0.32	0.006	0.0162	486	0.023
Auxiliary	2000	2003	176	250	7.31	2.78	0.81	0.32	0.32	0.006	0.0162	486	0.023
Auxiliary	2004	2013	176	250	5.1	3.73	0.81	0.15	0.15	0.006	0.0162	486	0.023
Auxiliary	2014	2020	176	250	3.99	3.73	0.81	0.08	0.08	0.006	0.0162	486	0.023
Auxiliary	0	1970	251	500	14	4.33	1.5	0.62	0.62	0.006	0.03	486	0.023
Auxiliary	1971	1978	251	500	13	4.33	1.25	0.53	0.53	0.006	0.025	486	0.023
Auxiliary	1979	1983	251	500	12	4.33	1.13	0.45	0.45	0.006	0.0226	486	0.023
Auxiliary	1984	1986	251	500	11	4.33	1.07	0.45	0.45	0.006	0.0214	486	0.023
Auxiliary	1987	1994	251	500	11	4.22	1	0.45	0.45	0.006	0.02	486	0.023
Auxiliary	1995	1999	251	500	8.17	2.78	0.81	0.32	0.32	0.006	0.0162	486	0.023
Auxiliary	2000	2003	251	500	7.31	2.78	0.81	0.32	0.32	0.006	0.0162	486	0.023
Auxiliary	2004	2013	251	500	5.1	3.73	0.81	0.15	0.15	0.006	0.0162	486	0.023
Auxiliary	2014	2020	251	500	3.99	3.73	0.81	0.08	0.08	0.006	0.0162	486	0.023
Auxiliary	0	1970	501	750	14	4.33	1.5	0.62	0.62	0.006	0.03	486	0.023
Auxiliary	1971	1978	501	750	13	4.33	1.25	0.53	0.53	0.006	0.025	486	0.023
Auxiliary	1979	1983	501	750	12	4.33	1.13	0.45	0.45	0.006	0.0226	486	0.023
Auxiliary	1984	1986	501	750	11	4.33	1.07	0.45	0.45	0.006	0.0214	486	0.023
Auxiliary	1987	1994	501	750	11	4.22	1	0.45	0.45	0.006	0.02	486	0.023
Auxiliary	1995	1999	501	750	8.17	2.78	0.81	0.32	0.32	0.006	0.0162	486	0.023
Auxiliary	2000	2006	501	750	7.31	2.78	0.81	0.32	0.32	0.006	0.0162	486	0.023
Auxiliary	2007	2012	501	750	5.1	3.73	0.81	0.15	0.15	0.006	0.0162	486	0.023
Auxiliary	2013	2020	501	750	3.99	3.73	0.81	0.08	0.08	0.006	0.0162	486	0.023

Tugboat Zero Hour Emissions Factors

Engine Type	Year		Engine Power (HP)		Zero Hour Emission Factor (g/HP-hr)								
	Min	Max	Min	Max	NOx	CO	HC	PM10	PM2.5	SO2 at 15 ppm	CH4	CO2	N2O
Auxiliary	0	1970	751	1900	14	4.33	1.5	0.62	0.62	0.006	0.03	486	0.023
Auxiliary	1971	1978	751	1900	13	4.33	1.25	0.53	0.53	0.006	0.025	486	0.023
Auxiliary	1979	1983	751	1900	12	4.33	1.13	0.45	0.45	0.006	0.0226	486	0.023
Auxiliary	1984	1986	751	1900	11	4.33	1.07	0.45	0.45	0.006	0.0214	486	0.023
Auxiliary	1987	1998	751	1900	11	4.22	1	0.45	0.45	0.006	0.02	486	0.023
Auxiliary	1999	1999	751	1900	8.17	2.78	0.81	0.32	0.32	0.006	0.0162	486	0.023
Auxiliary	2000	2006	751	1900	7.31	2.78	0.81	0.32	0.32	0.006	0.0162	486	0.023
Auxiliary	2007	2011	751	1900	5.53	3.73	0.81	0.2	0.2	0.006	0.0162	486	0.023
Auxiliary	2012	2016	751	1900	4.09	3.73	0.81	0.08	0.08	0.006	0.0162	486	0.023
Auxiliary	2017	2020	751	1900	1.3	3.73	0.18	0.03	0.03	0.006	0.0036	486	0.023
Auxiliary	0	1970	1901	3300	14	4.33	1.5	0.62	0.62	0.006	0.03	486	0.023
Auxiliary	1971	1978	1901	3300	13	4.33	1.25	0.53	0.53	0.006	0.025	486	0.023
Auxiliary	1979	1983	1901	3300	12	4.33	1.13	0.45	0.45	0.006	0.0226	486	0.023
Auxiliary	1984	1986	1901	3300	11	4.33	1.07	0.45	0.45	0.006	0.0214	486	0.023
Auxiliary	1987	1998	1901	3300	11	4.22	1	0.45	0.45	0.006	0.02	486	0.023
Auxiliary	1999	1999	1901	3300	8.17	2.78	0.81	0.32	0.32	0.006	0.0162	486	0.023
Auxiliary	2000	2006	1901	3300	7.31	2.78	0.81	0.32	0.32	0.006	0.0162	486	0.023
Auxiliary	2007	2012	1901	3300	5.53	3.73	0.81	0.2	0.2	0.006	0.0162	486	0.023
Auxiliary	2013	2015	1901	3300	4.37	3.73	0.81	0.1	0.1	0.006	0.0162	486	0.023
Auxiliary	2016	2020	1901	3300	1.3	3.73	0.18	0.03	0.03	0.006	0.0036	486	0.023
Auxiliary	0	1970	3301	5000	14	4.33	1.5	0.62	0.62	0.006	0.03	486	0.023
Auxiliary	1971	1978	3301	5000	13	4.33	1.25	0.53	0.53	0.006	0.025	486	0.023
Auxiliary	1979	1983	3301	5000	12	4.33	1.13	0.45	0.45	0.006	0.0226	486	0.023
Auxiliary	1984	1986	3301	5000	11	4.33	1.07	0.45	0.45	0.006	0.0214	486	0.023
Auxiliary	1987	1998	3301	5000	11	4.22	1	0.45	0.45	0.006	0.02	486	0.023
Auxiliary	1999	1999	3301	5000	8.17	2.78	0.81	0.32	0.32	0.006	0.0162	486	0.023
Auxiliary	2000	2006	3301	5000	7.31	2.78	0.81	0.32	0.32	0.006	0.0162	486	0.023
Auxiliary	2007	2013	3301	5000	5.53	3.73	0.81	0.2	0.2	0.006	0.0162	486	0.023
Auxiliary	2014	2015	3301	5000	4.94	3.75	0.81	0.25	0.25	0.006	0.0162	486	0.023
Auxiliary	2016	2020	3301	5000	1.3	3.75	0.18	0.03	0.03	0.006	0.0036	486	0.023

Ref - CARB 2007, Appendix B Emissions Estimation Methodology for Commercial Harbor Craft Operating in California

Baseline Tugboat Emissions

Date	Class A Tug Mooring/Unmooring Emissions (g/trip)									
	NOx	CO	HC	PM10	PM2.5	SO2	CH4	CO2	N2O	CO2e
12/10/09	14024	4138	1085	676	676	10	19	909261	41	922355
12/13/09	14025	4139	1085	676	676	10	19	909261	41	922355
12/25/09	14029	4140	1085	677	677	10	19	909261	41	922355
12/29/09	14031	4141	1086	677	677	10	19	909261	41	922355
12/31/09	14031	4141	1086	677	677	10	19	909261	41	922355
1/10/10	14035	4142	1086	677	677	10	19	909261	41	922355
1/28/10	14041	4144	1087	678	678	10	19	909261	41	922355
1/29/10	14041	4144	1087	678	678	10	19	909261	41	922355
2/7/10	14045	4146	1088	679	679	10	19	909261	41	922355
2/5/10	14044	4145	1088	679	679	10	19	909261	41	922355
2/4/10	14043	4145	1088	679	679	10	19	909261	41	922355
2/9/10	14045	4146	1088	679	679	10	19	909261	41	922355
2/11/10	14046	4146	1088	679	679	10	19	909261	41	922355
2/13/10	14047	4146	1088	679	679	10	19	909261	41	922355
2/21/10	14049	4147	1088	679	679	10	19	909261	41	922355
2/22/10	14050	4147	1088	679	679	10	19	909261	41	922355
2/24/10	14050	4148	1089	679	679	10	19	909261	41	922355
3/6/10	14054	4149	1089	680	680	10	19	909261	41	922355
3/10/10	14055	4149	1089	680	680	10	19	909261	41	922355
3/9/10	14055	4149	1089	680	680	10	19	909261	41	922355
3/14/10	14057	4150	1090	680	680	10	19	909261	41	922355
3/23/10	14060	4151	1090	681	681	10	19	909261	41	922355
2/24/10	14050	4148	1089	679	679	10	19	909261	41	922355
3/30/10	14062	4152	1090	681	681	10	19	909261	41	922355
4/11/10	14066	4153	1091	682	682	10	19	909261	41	922355
4/5/10	14064	4152	1091	681	681	10	19	909261	41	922355
4/16/10	14068	4154	1091	682	682	10	19	909261	41	922355
4/14/10	14067	4153	1091	682	682	10	19	909261	41	922355
4/21/10	14070	4154	1091	682	682	10	19	909261	41	922355
4/27/10	14072	4155	1092	682	682	10	19	909261	41	922355
4/29/10	14073	4155	1092	682	682	10	19	909261	41	922355
5/3/10	14074	4156	1092	683	683	10	19	909261	41	922355
5/13/10	14077	4157	1093	683	683	10	19	909261	41	922355
5/20/10	14080	4158	1093	683	683	10	19	909261	41	922355
5/21/10	14080	4158	1093	683	683	10	19	909261	41	922355
5/25/10	14082	4158	1093	684	684	10	19	909261	41	922355
5/31/10	14084	4159	1094	684	684	10	19	909261	41	922355
6/1/10	14084	4159	1094	684	684	10	19	909261	41	922355
6/4/10	14085	4159	1094	684	684	10	19	909261	41	922355
6/6/10	14086	4160	1094	684	684	10	19	909261	41	922355
6/8/10	14086	4160	1094	684	684	10	19	909261	41	922355
6/15/10	14089	4161	1094	685	685	10	19	909261	41	922355
6/17/10	14090	4161	1094	685	685	10	19	909261	41	922355
6/23/10	14092	4162	1095	685	685	10	19	909261	41	922355
7/13/10	14099	4164	1096	686	686	10	19	909261	41	922355
7/27/10	14103	4166	1096	686	686	10	19	909261	41	922355
7/14/10	14099	4164	1096	686	686	10	19	909261	41	922355
7/27/10	14103	4166	1096	686	686	10	19	909261	41	922355
8/2/10	14106	4166	1097	687	687	10	19	909261	41	922355
8/4/10	14106	4167	1097	687	687	10	19	909261	41	922355
7/29/10	14104	4166	1097	687	687	10	19	909261	41	922355
8/17/10	14111	4168	1098	687	687	10	19	909261	41	922355
8/14/10	14110	4168	1097	687	687	10	19	909261	41	922355
8/24/10	14113	4169	1098	688	688	10	19	909261	41	922355
9/1/10	14116	4170	1098	688	688	10	19	909261	41	922355
9/5/10	14117	4170	1099	688	688	10	19	909261	41	922355
9/7/10	14118	4171	1099	688	688	10	19	909261	41	922355

Baseline Tugboat Emissions

Date	Class B Tug Mooring/Unmooring Emissions (g/trip)									
	NOx	CO	HC	PM10	PM2.5	SO2	CH4	CO2	N2O	CO2e
12/10/09	10201	3104	818	514	514	8	14	661603	30	671141
12/13/09	10202	3104	818	514	514	8	14	661603	30	671141
12/25/09	10205	3105	819	514	514	8	14	661603	30	671141
12/29/09	10206	3105	819	514	514	8	14	661603	30	671141
12/31/09	10206	3105	819	514	514	8	14	661603	30	671141
1/10/10	10209	3106	819	515	515	8	14	661603	30	671141
1/28/10	10213	3108	820	515	515	8	14	661603	30	671141
1/29/10	10214	3108	820	515	515	8	14	661603	30	671141
2/7/10	10216	3109	820	516	516	8	14	661603	30	671141
2/5/10	10215	3109	820	516	516	8	14	661603	30	671141
2/4/10	10215	3109	820	516	516	8	14	661603	30	671141
2/9/10	10216	3109	820	516	516	8	14	661603	30	671141
2/11/10	10217	3109	820	516	516	8	14	661603	30	671141
2/13/10	10217	3109	820	516	516	8	14	661603	30	671141
2/21/10	10219	3110	821	516	516	8	14	661603	30	671141
2/22/10	10220	3110	821	516	516	8	14	661603	30	671141
2/24/10	10220	3110	821	516	516	8	14	661603	30	671141
3/6/10	10223	3111	821	517	517	8	14	661603	30	671141
3/10/10	10224	3112	821	517	517	8	14	661603	30	671141
3/9/10	10223	3111	821	517	517	8	14	661603	30	671141
3/14/10	10225	3112	822	517	517	8	14	661603	30	671141
3/23/10	10227	3113	822	517	517	8	14	661603	30	671141
2/24/10	10220	3110	821	516	516	8	14	661603	30	671141
3/30/10	10229	3113	822	518	518	8	14	661603	30	671141
4/11/10	10232	3114	823	518	518	8	14	661603	30	671141
4/5/10	10230	3114	822	518	518	8	14	661603	30	671141
4/16/10	10233	3115	823	518	518	8	14	661603	30	671141
4/14/10	10232	3115	823	518	518	8	14	661603	30	671141
4/21/10	10234	3115	823	518	518	8	14	661603	30	671141
4/27/10	10236	3116	823	518	518	8	14	661603	30	671141
4/29/10	10236	3116	823	519	519	8	14	661603	30	671141
5/3/10	10237	3116	823	519	519	8	14	661603	30	671141
5/13/10	10240	3117	824	519	519	8	14	661603	30	671141
5/20/10	10241	3118	824	519	519	8	14	661603	30	671141
5/21/10	10242	3118	824	519	519	8	14	661603	30	671141
5/25/10	10243	3118	824	519	519	8	14	661603	30	671141
5/31/10	10244	3119	825	520	520	8	14	661603	30	671141
6/1/10	10244	3119	825	520	520	8	14	661603	30	671141
6/4/10	10245	3119	825	520	520	8	14	661603	30	671141
6/6/10	10246	3119	825	520	520	8	14	661603	30	671141
6/8/10	10246	3119	825	520	520	8	14	661603	30	671141
6/15/10	10248	3120	825	520	520	8	14	661603	30	671141
6/17/10	10248	3120	825	520	520	8	14	661603	30	671141
6/23/10	10250	3121	825	520	520	8	14	661603	30	671141
7/13/10	10255	3123	826	521	521	8	14	661603	30	671141
7/27/10	10259	3124	827	522	522	8	14	661603	30	671141
7/14/10	10255	3123	826	521	521	8	14	661603	30	671141
7/27/10	10259	3124	827	522	522	8	14	661603	30	671141
8/2/10	10260	3124	827	522	522	8	14	661603	30	671141
8/4/10	10261	3124	827	522	522	8	14	661603	30	671141
7/29/10	10259	3124	827	522	522	8	14	661603	30	671141
8/17/10	10264	3126	828	522	522	8	14	661603	30	671141
8/14/10	10263	3125	827	522	522	8	14	661603	30	671141
8/24/10	10266	3126	828	523	523	8	14	661603	30	671141
9/1/10	10268	3127	828	523	523	8	14	661603	30	671141
9/5/10	10269	3127	828	523	523	8	14	661603	30	671141
9/7/10	10269	3127	828	523	523	8	14	661603	30	671141

Baseline Tugboat Emissions

Date	Class A Tug Assist Emissions (g/trip)									
	NOx	CO	HC	PM10	PM2.5	SO2	CH4	CO2	N2O	CO2e
12/10/09	68794	20325	5323	3314	3314	51	91	4460719	201	4524956
12/13/09	68799	20327	5324	3315	3315	51	91	4460719	201	4524956
12/25/09	68819	20334	5327	3318	3318	51	91	4460719	201	4524956
12/29/09	68826	20336	5328	3319	3319	51	91	4460719	201	4524956
12/31/09	68830	20337	5328	3319	3319	51	91	4460719	201	4524956
1/10/10	68847	20343	5331	3321	3321	51	91	4460719	201	4524956
1/28/10	68877	20353	5335	3325	3325	51	91	4460719	201	4524956
1/29/10	68879	20354	5336	3326	3326	51	91	4460719	201	4524956
2/7/10	68894	20359	5338	3328	3328	51	91	4460719	201	4524956
2/5/10	68891	20358	5337	3327	3327	51	91	4460719	201	4524956
2/4/10	68889	20357	5337	3327	3327	51	91	4460719	201	4524956
2/9/10	68898	20360	5338	3328	3328	51	91	4460719	201	4524956
2/11/10	68901	20362	5339	3329	3329	51	91	4460719	201	4524956
2/13/10	68904	20363	5340	3329	3329	51	91	4460719	201	4524956
2/21/10	68918	20367	5342	3331	3331	51	91	4460719	201	4524956
2/22/10	68920	20368	5342	3331	3331	51	91	4460719	201	4524956
2/24/10	68923	20369	5342	3332	3332	51	91	4460719	201	4524956
3/6/10	68940	20375	5345	3334	3334	51	91	4460719	201	4524956
3/10/10	68947	20377	5346	3335	3335	51	91	4460719	201	4524956
3/9/10	68945	20377	5346	3334	3334	51	91	4460719	201	4524956
3/14/10	68954	20380	5347	3336	3336	51	91	4460719	201	4524956
3/23/10	68969	20385	5349	3338	3338	51	91	4460719	201	4524956
2/24/10	68923	20369	5342	3332	3332	51	91	4460719	201	4524956
3/30/10	68981	20389	5351	3339	3339	51	91	4460719	201	4524956
4/11/10	69001	20396	5354	3342	3342	51	91	4460719	201	4524956
4/5/10	68991	20392	5352	3340	3340	51	91	4460719	201	4524956
4/16/10	69010	20399	5355	3343	3343	51	91	4460719	201	4524956
4/14/10	69006	20398	5355	3343	3343	51	91	4460719	201	4524956
4/21/10	69018	20402	5356	3344	3344	51	91	4460719	201	4524956
4/27/10	69028	20405	5358	3345	3345	51	91	4460719	201	4524956
4/29/10	69032	20406	5358	3346	3346	51	91	4460719	201	4524956
5/3/10	69039	20409	5359	3347	3347	51	91	4460719	201	4524956
5/13/10	69056	20415	5362	3349	3349	51	91	4460719	201	4524956
5/20/10	69067	20419	5364	3351	3351	51	91	4460719	201	4524956
5/21/10	69069	20419	5364	3351	3351	51	91	4460719	201	4524956
5/25/10	69076	20422	5365	3352	3352	51	91	4460719	201	4524956
5/31/10	69086	20425	5367	3353	3353	51	91	4460719	201	4524956
6/1/10	69088	20426	5367	3353	3353	51	91	4460719	201	4524956
6/4/10	69093	20427	5368	3354	3354	51	91	4460719	201	4524956
6/6/10	69096	20429	5368	3354	3354	51	91	4460719	201	4524956
6/8/10	69100	20430	5369	3355	3355	51	91	4460719	201	4524956
6/15/10	69112	20434	5370	3356	3356	51	91	4460719	201	4524956
6/17/10	69115	20435	5371	3357	3357	51	91	4460719	201	4524956
6/23/10	69125	20438	5372	3358	3358	51	91	4460719	201	4524956
7/13/10	69159	20450	5377	3363	3363	51	91	4460719	201	4524956
7/27/10	69183	20458	5381	3366	3366	51	91	4460719	201	4524956
7/14/10	69161	20451	5378	3363	3363	51	91	4460719	201	4524956
7/27/10	69183	20458	5381	3366	3366	51	91	4460719	201	4524956
8/2/10	69193	20462	5382	3367	3367	51	91	4460719	201	4524956
8/4/10	69197	20463	5383	3368	3368	51	91	4460719	201	4524956
7/29/10	69186	20459	5381	3366	3366	51	91	4460719	201	4524956
8/17/10	69219	20471	5386	3371	3371	51	91	4460719	201	4524956
8/14/10	69214	20469	5386	3370	3370	51	91	4460719	201	4524956
8/24/10	69231	20475	5388	3372	3372	51	91	4460719	201	4524956
9/1/10	69244	20479	5390	3374	3374	51	91	4460719	201	4524956
9/5/10	69251	20482	5391	3375	3375	51	91	4460719	201	4524956
9/7/10	69254	20483	5392	3375	3375	51	91	4460719	201	4524956

Baseline Tugboat Emissions

Date	Total Tug Emissions (g/trip)									
	NOx	CO	HC	PM10	PM2.5	SO2	CH4	CO2	N2O	CO2e
12/10/09	166962	49294	12916	8047	8047	123	220	10825547	488	10981440
12/13/09	166975	49298	12917	8048	8048	123	220	10825547	488	10981440
12/25/09	167024	49315	12925	8055	8055	123	220	10825547	488	10981440
12/29/09	135155	40004	10489	6541	6541	99	179	8759366	395	8885517
12/31/09	167049	49324	12929	8058	8058	123	220	10825547	488	10981440
1/10/10	167090	49338	12935	8063	8063	123	220	10825547	488	10981440
1/28/10	135255	40039	10504	6554	6554	99	179	8759366	395	8885517
1/29/10	167169	49365	12946	8074	8074	123	220	10825547	488	10981440
2/7/10	135288	40050	10509	6558	6558	99	179	8759366	395	8885517
2/5/10	167198	49375	12951	8078	8078	123	220	10825547	488	10981440
2/4/10	135278	40047	10508	6557	6557	99	179	8759366	395	8885517
2/9/10	117421	34870	9155	5717	5717	86	156	7602447	343	7711948
2/11/10	135301	40055	10511	6560	6560	99	179	8759366	395	8885517
2/13/10	135308	40057	10512	6561	6561	99	179	8759366	395	8885517
2/21/10	135335	40066	10516	6564	6564	99	179	8759366	395	8885517
2/22/10	167268	49399	12961	8087	8087	123	220	10825547	488	10981440
2/24/10	167276	49402	12962	8088	8088	123	220	10825547	488	10981440
3/6/10	167317	49416	12968	8093	8093	123	220	10825547	488	10981440
3/10/10	167334	49422	12971	8096	8096	123	220	10825547	488	10981440
3/9/10	177553	52532	13792	8612	8612	130	234	11487150	518	11652581
3/14/10	167350	49427	12973	8098	8098	123	220	10825547	488	10981440
3/23/10	135435	40100	10531	6578	6578	99	179	8759366	395	8885517
2/24/10	167276	49402	12962	8088	8088	123	220	10825547	488	10981440
3/30/10	167416	49450	12983	8106	8106	123	220	10825547	488	10981440
4/11/10	167466	49467	12991	8113	8113	123	220	10825547	488	10981440
4/5/10	167441	49458	12987	8110	8110	123	220	10825547	488	10981440
4/16/10	167486	49474	12994	8116	8116	123	220	10825547	488	10981440
4/14/10	167478	49471	12992	8115	8115	123	220	10825547	488	10981440
4/21/10	135532	40134	10545	6591	6591	99	179	8759366	395	8885517
4/27/10	167532	49490	13000	8122	8122	123	220	10825547	488	10981440
4/29/10	167540	49492	13002	8123	8123	123	220	10825547	488	10981440
5/3/10	135572	40147	10551	6596	6596	99	179	8759366	395	8885517
5/13/10	135605	40159	10556	6600	6600	99	179	8759366	395	8885517
5/20/10	135628	40167	10560	6603	6603	99	179	8759366	395	8885517
5/21/10	117713	34970	9198	5756	5756	86	156	7602447	343	7711948
5/25/10	135645	40173	10562	6606	6606	99	179	8759366	395	8885517
5/31/10	167672	49538	13021	8140	8140	123	220	10825547	488	10981440
6/1/10	135669	40181	10566	6609	6609	99	179	8759366	395	8885517
6/4/10	117753	34984	9204	5762	5762	86	156	7602447	343	7711948
6/6/10	167697	49546	13025	8143	8143	123	220	10825547	488	10981440
6/8/10	135692	40189	10569	6612	6612	99	179	8759366	395	8885517
6/15/10	135715	40197	10573	6615	6615	99	179	8759366	395	8885517
6/17/10	135722	40199	10574	6616	6616	99	179	8759366	395	8885517
6/23/10	167767	49570	13035	8153	8153	123	220	10825547	488	10981440
7/13/10	135809	40229	10587	6627	6627	99	179	8759366	395	8885517
7/27/10	135855	40245	10594	6633	6633	99	179	8759366	395	8885517
7/14/10	135812	40230	10587	6628	6628	99	179	8759366	395	8885517
7/27/10	135855	40245	10594	6633	6633	99	179	8759366	395	8885517
8/2/10	135875	40252	10597	6636	6636	99	179	8759366	395	8885517
8/4/10	135882	40254	10598	6637	6637	99	179	8759366	395	8885517
7/29/10	135862	40247	10595	6634	6634	99	179	8759366	395	8885517
8/17/10	135925	40269	10604	6643	6643	99	179	8759366	395	8885517
8/14/10	135915	40266	10603	6641	6641	99	179	8759366	395	8885517
8/24/10	168023	49658	13073	8186	8186	123	220	10825547	488	10981440
9/1/10	135976	40286	10611	6649	6649	99	179	8759366	395	8885517
9/5/10	135989	40291	10613	6651	6651	99	179	8759366	395	8885517
9/7/10	135996	40293	10614	6652	6652	99	179	8759366	395	8885517

Baseline Tugboat Emissions

Date	Class A Tug Mooring/Unmooring Emissions (g/trip)									
	NOx	CO	HC	PM10	PM2.5	SO2	CH4	CO2	N2O	CO2e
9/12/10	14120	4171	1099	689	689	10	19	909261	41	922355
9/14/10	14120	4172	1099	689	689	10	19	909261	41	922355
9/16/10	14121	4172	1099	689	689	10	19	909261	41	922355
10/2/10	14127	4174	1100	690	690	10	19	909261	41	922355
10/6/10	14128	4174	1100	690	690	10	19	909261	41	922355
10/5/10	14128	4174	1100	690	690	10	19	909261	41	922355
10/4/10	14127	4174	1100	690	690	10	19	909261	41	922355
10/16/10	14132	4175	1101	690	690	10	19	909261	41	922355
10/17/10	14132	4175	1101	690	690	10	19	909261	41	922355
10/19/10	14133	4176	1101	690	690	10	19	909261	41	922355
10/22/10	14134	4176	1101	690	690	10	19	909261	41	922355
10/23/10	14134	4176	1101	691	691	10	19	909261	41	922355
10/25/10	14135	4176	1101	691	691	10	19	909261	41	922355
10/27/10	14135	4177	1101	691	691	10	19	909261	41	922355
10/29/10	14136	4177	1101	691	691	10	19	909261	41	922355
11/1/10	14137	4177	1101	691	691	10	19	909261	41	922355
11/7/10	14139	4178	1102	691	691	10	19	909261	41	922355
11/17/10	14143	4179	1102	692	692	10	19	909261	41	922355
11/18/10	14143	4179	1102	692	692	10	19	909261	41	922355
11/19/10	14143	4179	1102	692	692	10	19	909261	41	922355
11/26/10	14146	4180	1103	692	692	10	19	909261	41	922355
11/30/10	14147	4181	1103	692	692	10	19	909261	41	922355
12/4/10	14149	4181	1103	692	692	10	19	909261	41	922355
12/14/10	14152	4182	1104	693	693	10	19	909261	41	922355
12/19/10	14154	4183	1104	693	693	10	19	909261	41	922355
12/19/10	14154	4183	1104	693	693	10	19	909261	41	922355
12/27/10	14157	4184	1104	693	693	10	19	909261	41	922355
12/29/10	14157	4184	1104	694	694	10	19	909261	41	922355
3/4/11	14180	4192	1108	697	697	10	19	909261	41	922355
3/10/11	14182	4193	1108	697	697	10	19	909261	41	922355
2/26/11	14178	4191	1108	696	696	10	19	909261	41	922355
3/2/11	14179	4192	1108	696	696	10	19	909261	41	922355
3/7/11	14181	4192	1108	697	697	10	19	909261	41	922355
3/12/11	14183	4193	1108	697	697	10	19	909261	41	922355
3/17/11	14184	4193	1108	697	697	10	19	909261	41	922355
3/30/11	14189	4195	1109	698	698	10	19	909261	41	922355
3/27/11	14188	4195	1109	698	698	10	19	909261	41	922355
4/6/11	14191	4196	1110	698	698	10	19	909261	41	922355
4/13/11	14194	4197	1110	698	698	10	19	909261	41	922355
4/17/11	14195	4197	1110	699	699	10	19	909261	41	922355
4/16/11	14195	4197	1110	699	699	10	19	909261	41	922355
4/24/11	14197	4198	1110	699	699	10	19	909261	41	922355
4/27/11	14198	4198	1111	699	699	10	19	909261	41	922355
5/2/11	14200	4199	1111	699	699	10	19	909261	41	922355
5/3/11	14201	4199	1111	699	699	10	19	909261	41	922355
5/5/11	14201	4199	1111	699	699	10	19	909261	41	922355
5/9/11	14203	4200	1111	700	700	10	19	909261	41	922355
5/13/11	14204	4200	1111	700	700	10	19	909261	41	922355
5/21/11	14207	4201	1112	700	700	10	19	909261	41	922355
5/23/11	14208	4201	1112	700	700	10	19	909261	41	922355
5/25/11	14208	4202	1112	700	700	10	19	909261	41	922355
5/28/11	14209	4202	1112	700	700	10	19	909261	41	922355
6/3/11	14211	4203	1113	701	701	10	19	909261	41	922355
6/10/11	14214	4204	1113	701	701	10	19	909261	41	922355
6/22/11	14218	4205	1113	702	702	10	19	909261	41	922355
6/26/11	14219	4205	1114	702	702	10	19	909261	41	922355
6/28/11	14220	4206	1114	702	702	10	19	909261	41	922355

Baseline Tugboat Emissions

Date	Class B Tug Mooring/Unmooring Emissions (g/trip)									
	NOx	CO	HC	PM10	PM2.5	SO2	CH4	CO2	N2O	CO2e
9/12/10	10270	3128	829	523	523	8	14	661603	30	671141
9/14/10	10271	3128	829	523	523	8	14	661603	30	671141
9/16/10	10271	3128	829	523	523	8	14	661603	30	671141
10/2/10	10275	3130	829	524	524	8	14	661603	30	671141
10/6/10	10276	3130	829	524	524	8	14	661603	30	671141
10/5/10	10276	3130	829	524	524	8	14	661603	30	671141
10/4/10	10276	3130	829	524	524	8	14	661603	30	671141
10/16/10	10279	3131	830	524	524	8	14	661603	30	671141
10/17/10	10279	3131	830	524	524	8	14	661603	30	671141
10/19/10	10280	3131	830	524	524	8	14	661603	30	671141
10/22/10	10280	3131	830	525	525	8	14	661603	30	671141
10/23/10	10281	3131	830	525	525	8	14	661603	30	671141
10/25/10	10281	3132	830	525	525	8	14	661603	30	671141
10/27/10	10282	3132	830	525	525	8	14	661603	30	671141
10/29/10	10282	3132	830	525	525	8	14	661603	30	671141
11/1/10	10283	3132	830	525	525	8	14	661603	30	671141
11/7/10	10284	3133	831	525	525	8	14	661603	30	671141
11/17/10	10287	3134	831	525	525	8	14	661603	30	671141
11/18/10	10287	3134	831	525	525	8	14	661603	30	671141
11/19/10	10287	3134	831	526	526	8	14	661603	30	671141
11/26/10	10289	3134	831	526	526	8	14	661603	30	671141
11/30/10	10290	3135	832	526	526	8	14	661603	30	671141
12/4/10	10291	3135	832	526	526	8	14	661603	30	671141
12/14/10	10294	3136	832	526	526	8	14	661603	30	671141
12/19/10	10295	3136	832	527	527	8	14	661603	30	671141
12/19/10	10295	3136	832	527	527	8	14	661603	30	671141
12/27/10	10297	3137	833	527	527	8	14	661603	30	671141
12/29/10	10297	3137	833	527	527	8	14	661603	30	671141
3/4/11	10314	3143	835	529	529	8	14	661603	30	671141
3/10/11	10315	3144	835	529	529	8	14	661603	30	671141
2/26/11	10312	3143	835	529	529	8	14	661603	30	671141
3/2/11	10313	3143	835	529	529	8	14	661603	30	671141
3/7/11	10315	3143	835	529	529	8	14	661603	30	671141
3/12/11	10316	3144	835	529	529	8	14	661603	30	671141
3/17/11	10317	3144	836	530	530	8	14	661603	30	671141
3/30/11	10320	3145	836	530	530	8	14	661603	30	671141
3/27/11	10320	3145	836	530	530	8	14	661603	30	671141
4/6/11	10322	3146	836	530	530	8	14	661603	30	671141
4/13/11	10324	3147	837	530	530	8	14	661603	30	671141
4/17/11	10325	3147	837	531	531	8	14	661603	30	671141
4/16/11	10325	3147	837	531	531	8	14	661603	30	671141
4/24/11	10327	3148	837	531	531	8	14	661603	30	671141
4/27/11	10327	3148	837	531	531	8	14	661603	30	671141
5/2/11	10329	3148	837	531	531	8	14	661603	30	671141
5/3/11	10329	3148	837	531	531	8	14	661603	30	671141
5/5/11	10329	3149	838	531	531	8	14	661603	30	671141
5/9/11	10330	3149	838	531	531	8	14	661603	30	671141
5/13/11	10331	3149	838	531	531	8	14	661603	30	671141
5/21/11	10333	3150	838	532	532	8	14	661603	30	671141
5/23/11	10334	3150	838	532	532	8	14	661603	30	671141
5/25/11	10334	3150	838	532	532	8	14	661603	30	671141
5/28/11	10335	3151	838	532	532	8	14	661603	30	671141
6/3/11	10337	3151	839	532	532	8	14	661603	30	671141
6/10/11	10338	3152	839	532	532	8	14	661603	30	671141
6/22/11	10341	3153	839	533	533	8	14	661603	30	671141
6/26/11	10342	3153	840	533	533	8	14	661603	30	671141
6/28/11	10343	3153	840	533	533	8	14	661603	30	671141

Baseline Tugboat Emissions

Date	Class A Tug Assist Emissions (g/trip)									
	NOx	CO	HC	PM10	PM2.5	SO2	CH4	CO2	N2O	CO2e
9/12/10	69263	20486	5393	3376	3376	51	91	4460719	201	4524956
9/14/10	69266	20487	5393	3377	3377	51	91	4460719	201	4524956
9/16/10	69270	20488	5394	3377	3377	51	91	4460719	201	4524956
10/2/10	69297	20497	5398	3381	3381	51	91	4460719	201	4524956
10/6/10	69304	20500	5399	3382	3382	51	91	4460719	201	4524956
10/5/10	69302	20499	5399	3382	3382	51	91	4460719	201	4524956
10/4/10	69300	20499	5398	3381	3381	51	91	4460719	201	4524956
10/16/10	69321	20505	5401	3384	3384	51	91	4460719	201	4524956
10/17/10	69322	20506	5402	3384	3384	51	91	4460719	201	4524956
10/19/10	69326	20507	5402	3385	3385	51	91	4460719	201	4524956
10/22/10	69331	20509	5403	3385	3385	51	91	4460719	201	4524956
10/23/10	69332	20510	5403	3386	3386	51	91	4460719	201	4524956
10/25/10	69336	20511	5404	3386	3386	51	91	4460719	201	4524956
10/27/10	69339	20512	5404	3386	3386	51	91	4460719	201	4524956
10/29/10	69343	20513	5405	3387	3387	51	91	4460719	201	4524956
11/1/10	69348	20515	5405	3388	3388	51	91	4460719	201	4524956
11/7/10	69358	20518	5407	3389	3389	51	91	4460719	201	4524956
11/17/10	69375	20524	5410	3391	3391	51	91	4460719	201	4524956
11/18/10	69377	20525	5410	3391	3391	51	91	4460719	201	4524956
11/19/10	69378	20525	5410	3392	3392	51	91	4460719	201	4524956
11/26/10	69390	20529	5412	3393	3393	51	91	4460719	201	4524956
11/30/10	69397	20532	5413	3394	3394	51	91	4460719	201	4524956
12/4/10	69404	20534	5414	3395	3395	51	91	4460719	201	4524956
12/14/10	69421	20540	5416	3397	3397	51	91	4460719	201	4524956
12/19/10	69429	20543	5418	3398	3398	51	91	4460719	201	4524956
12/19/10	69429	20543	5418	3398	3398	51	91	4460719	201	4524956
12/27/10	69443	20547	5420	3400	3400	51	91	4460719	201	4524956
12/29/10	69446	20549	5420	3401	3401	51	91	4460719	201	4524956
3/4/11	69557	20587	5437	3415	3415	51	91	4460719	201	4524956
3/10/11	69567	20590	5438	3416	3416	51	91	4460719	201	4524956
2/26/11	69547	20583	5435	3414	3414	51	91	4460719	201	4524956
3/2/11	69553	20585	5436	3415	3415	51	91	4460719	201	4524956
3/7/11	69562	20588	5437	3416	3416	51	91	4460719	201	4524956
3/12/11	69570	20591	5439	3417	3417	51	91	4460719	201	4524956
3/17/11	69579	20594	5440	3418	3418	51	91	4460719	201	4524956
3/30/11	69601	20602	5443	3421	3421	51	91	4460719	201	4524956
3/27/11	69596	20600	5442	3420	3420	51	91	4460719	201	4524956
4/6/11	69613	20606	5445	3423	3423	51	91	4460719	201	4524956
4/13/11	69625	20610	5447	3424	3424	51	91	4460719	201	4524956
4/17/11	69631	20612	5448	3425	3425	51	91	4460719	201	4524956
4/16/11	69630	20612	5447	3425	3425	51	91	4460719	201	4524956
4/24/11	69643	20616	5449	3427	3427	51	91	4460719	201	4524956
4/27/11	69648	20618	5450	3427	3427	51	91	4460719	201	4524956
5/2/11	69657	20621	5452	3428	3428	51	91	4460719	201	4524956
5/3/11	69659	20621	5452	3429	3429	51	91	4460719	201	4524956
5/5/11	69662	20623	5452	3429	3429	51	91	4460719	201	4524956
5/9/11	69669	20625	5453	3430	3430	51	91	4460719	201	4524956
5/13/11	69676	20627	5454	3431	3431	51	91	4460719	201	4524956
5/21/11	69689	20632	5456	3433	3433	51	91	4460719	201	4524956
5/23/11	69693	20633	5457	3433	3433	51	91	4460719	201	4524956
5/25/11	69696	20634	5457	3434	3434	51	91	4460719	201	4524956
5/28/11	69701	20636	5458	3434	3434	51	91	4460719	201	4524956
6/3/11	69711	20640	5460	3436	3436	51	91	4460719	201	4524956
6/10/11	69723	20644	5461	3437	3437	51	91	4460719	201	4524956
6/22/11	69744	20651	5464	3440	3440	51	91	4460719	201	4524956
6/26/11	69750	20653	5465	3441	3441	51	91	4460719	201	4524956
6/28/11	69754	20654	5466	3441	3441	51	91	4460719	201	4524956

Baseline Tugboat Emissions

Date	Total Tug Emissions (g/trip)									
	NOx	CO	HC	PM10	PM2.5	SO2	CH4	CO2	N2O	CO2e
9/12/10	136012	40299	10617	6654	6654	99	179	8759366	395	8885517
9/14/10	136019	40301	10618	6655	6655	99	179	8759366	395	8885517
9/16/10	168118	49690	13088	8199	8199	123	220	10825547	488	10981440
10/2/10	168184	49713	13097	8208	8208	123	220	10825547	488	10981440
10/6/10	136092	40326	10629	6665	6665	99	179	8759366	395	8885517
10/5/10	136089	40325	10628	6664	6664	99	179	8759366	395	8885517
10/4/10	136086	40324	10628	6664	6664	99	179	8759366	395	8885517
10/16/10	136126	40338	10634	6669	6669	99	179	8759366	395	8885517
10/17/10	136129	40339	10634	6670	6670	99	179	8759366	395	8885517
10/19/10	136136	40341	10635	6670	6670	99	179	8759366	395	8885517
10/22/10	136146	40345	10637	6672	6672	99	179	8759366	395	8885517
10/23/10	136149	40346	10637	6672	6672	99	179	8759366	395	8885517
10/25/10	168279	49746	13112	8220	8220	123	220	10825547	488	10981440
10/27/10	136162	40350	10639	6674	6674	99	179	8759366	395	8885517
10/29/10	168295	49751	13114	8222	8222	123	220	10825547	488	10981440
11/1/10	136179	40356	10642	6676	6676	99	179	8759366	395	8885517
11/7/10	168332	49764	13119	8227	8227	123	220	10825547	488	10981440
11/17/10	168374	49778	13126	8233	8233	123	220	10825547	488	10981440
11/18/10	168378	49780	13126	8233	8233	123	220	10825547	488	10981440
11/19/10	136239	40377	10651	6684	6684	99	179	8759366	395	8885517
11/26/10	136263	40385	10654	6687	6687	99	179	8759366	395	8885517
11/30/10	168427	49797	13134	8240	8240	123	220	10825547	488	10981440
12/4/10	136289	40394	10658	6691	6691	99	179	8759366	395	8885517
12/14/10	136323	40405	10663	6695	6695	99	179	8759366	395	8885517
12/19/10	136339	40411	10666	6697	6697	99	179	8759366	395	8885517
12/19/10	168506	49823	13145	8250	8250	123	220	10825547	488	10981440
12/27/10	136366	40420	10670	6701	6701	99	179	8759366	395	8885517
12/29/10	168547	49838	13151	8256	8256	123	220	10825547	488	10981440
3/4/11	136590	40497	10703	6730	6730	99	179	8759366	395	8885517
3/10/11	136610	40504	10706	6733	6733	99	179	8759366	395	8885517
2/26/11	168790	49921	13188	8288	8288	123	220	10825547	488	10981440
3/2/11	168807	49927	13190	8290	8290	123	220	10825547	488	10981440
3/7/11	136600	40500	10705	6732	6732	99	179	8759366	395	8885517
3/12/11	168848	49941	13196	8295	8295	123	220	10825547	488	10981440
3/17/11	168869	49948	13199	8298	8298	123	220	10825547	488	10981440
3/30/11	136676	40527	10716	6742	6742	99	179	8759366	395	8885517
3/27/11	168910	49962	13205	8304	8304	123	220	10825547	488	10981440
4/6/11	168951	49976	13212	8309	8309	123	220	10825547	488	10981440
4/13/11	168980	49986	13216	8313	8313	123	220	10825547	488	10981440
4/17/11	136736	40547	10725	6750	6750	99	179	8759366	395	8885517
4/16/11	168993	49990	13218	8314	8314	123	220	10825547	488	10981440
4/24/11	169026	50002	13223	8319	8319	123	220	10825547	488	10981440
4/27/11	136770	40559	10730	6754	6754	99	179	8759366	395	8885517
5/2/11	136786	40565	10732	6757	6757	99	179	8759366	395	8885517
5/3/11	136790	40566	10733	6757	6757	99	179	8759366	395	8885517
5/5/11	169071	50017	13229	8325	8325	123	220	10825547	488	10981440
5/9/11	136810	40573	10736	6760	6760	99	179	8759366	395	8885517
5/13/11	169104	50029	13234	8329	8329	123	220	10825547	488	10981440
5/21/11	169137	50040	13239	8334	8334	123	220	10825547	488	10981440
5/23/11	136857	40589	10743	6766	6766	99	179	8759366	395	8885517
5/25/11	136863	40591	10744	6767	6767	99	179	8759366	395	8885517
5/28/11	169166	50050	13244	8337	8337	123	220	10825547	488	10981440
6/3/11	169191	50058	13247	8341	8341	123	220	10825547	488	10981440
6/10/11	136917	40609	10752	6774	6774	99	179	8759366	395	8885517
6/22/11	136957	40623	10758	6779	6779	99	179	8759366	395	8885517
6/26/11	136970	40628	10760	6781	6781	99	179	8759366	395	8885517
6/28/11	136977	40630	10761	6782	6782	99	179	8759366	395	8885517

Baseline Tugboat Emissions

Date	Class A Tug Mooring/Unmooring Emissions (g/trip)									
	NOx	CO	HC	PM10	PM2.5	SO2	CH4	CO2	N2O	CO2e
6/16/11	14216	4204	1113	701	701	10	19	909261	41	922355
7/4/11	14222	4206	1114	702	702	10	19	909261	41	922355
7/2/11	14221	4206	1114	702	702	10	19	909261	41	922355
7/5/11	14222	4206	1114	702	702	10	19	909261	41	922355
7/7/11	14223	4207	1114	702	702	10	19	909261	41	922355
7/8/11	14223	4207	1114	702	702	10	19	909261	41	922355
7/10/11	14224	4207	1114	702	702	10	19	909261	41	922355
7/17/11	14227	4208	1115	703	703	10	19	909261	41	922355
7/20/11	14228	4208	1115	703	703	10	19	909261	41	922355
7/21/11	14228	4208	1115	703	703	10	19	909261	41	922355
7/23/11	14229	4209	1115	703	703	10	19	909261	41	922355
7/26/11	14230	4209	1115	703	703	10	19	909261	41	922355
8/10/11	14235	4211	1116	704	704	10	19	909261	41	922355
8/13/11	14236	4211	1116	704	704	10	19	909261	41	922355
8/21/11	14239	4212	1117	704	704	10	19	909261	41	922355
8/7/11	14234	4210	1116	704	704	10	19	909261	41	922355
8/1/11	14232	4210	1116	703	703	10	19	909261	41	922355
8/3/11	14232	4210	1116	704	704	10	19	909261	41	922355
8/25/11	14240	4213	1117	705	705	10	19	909261	41	922355
8/27/11	14241	4213	1117	705	705	10	19	909261	41	922355
8/29/11	14241	4213	1117	705	705	10	19	909261	41	922355
9/1/11	14243	4213	1117	705	705	10	19	909261	41	922355
9/5/11	14244	4214	1117	705	705	10	19	909261	41	922355
9/11/11	14246	4215	1118	705	705	10	19	909261	41	922355
9/17/11	14248	4215	1118	706	706	10	19	909261	41	922355
9/21/11	14249	4216	1118	706	706	10	19	909261	41	922355
9/20/11	14249	4216	1118	706	706	10	19	909261	41	922355
10/2/11	14253	4217	1119	706	706	10	19	909261	41	922355
10/3/11	14254	4217	1119	706	706	10	19	909261	41	922355
10/8/11	14255	4218	1119	707	707	10	19	909261	41	922355
10/12/11	14257	4218	1119	707	707	10	19	909261	41	922355
10/15/11	14258	4219	1119	707	707	10	19	909261	41	922355
10/16/11	14258	4219	1119	707	707	10	19	909261	41	922355
10/17/11	14258	4219	1120	707	707	10	19	909261	41	922355
10/19/11	14259	4219	1120	707	707	10	19	909261	41	922355
10/24/11	14261	4220	1120	707	707	10	19	909261	41	922355
10/25/11	14261	4220	1120	707	707	10	19	909261	41	922355
10/26/11	14262	4220	1120	707	707	10	19	909261	41	922355
10/30/11	14263	4220	1120	708	708	10	19	909261	41	922355
11/4/11	14265	4221	1120	708	708	10	19	909261	41	922355
11/1/11	14264	4221	1120	708	708	10	19	909261	41	922355
11/16/11	14269	4222	1121	708	708	10	19	909261	41	922355
11/18/11	14270	4223	1121	708	708	10	19	909261	41	922355
11/21/11	14271	4223	1121	709	709	10	19	909261	41	922355
11/22/11	14271	4223	1121	709	709	10	19	909261	41	922355
11/25/11	14272	4223	1122	709	709	10	19	909261	41	922355
11/24/11	14272	4223	1121	709	709	10	19	909261	41	922355
12/1/11	14274	4224	1122	709	709	10	19	909261	41	922355
12/5/11	14275	4225	1122	709	709	10	19	909261	41	922355
12/11/11	14278	4225	1122	709	709	10	19	909261	41	922355
12/22/11	14281	4227	1123	710	710	10	19	909261	41	922355
12/24/11	14282	4227	1123	710	710	10	19	909261	41	922355
1/4/12	14286	4228	1124	711	711	10	19	909261	41	922355
12/31/11	14284	4228	1123	710	710	10	19	909261	41	922355
1/11/12	14288	4229	1124	711	711	10	19	909261	41	922355
1/14/12	14289	4229	1124	711	711	10	19	909261	41	922355
1/14/12	14289	4229	1124	711	711	10	19	909261	41	922355

Baseline Tugboat Emissions

Date	Class B Tug Mooring/Unmooring Emissions (g/trip)									
	NOx	CO	HC	PM10	PM2.5	SO2	CH4	CO2	N2O	CO2e
6/16/11	10340	3152	839	533	533	8	14	661603	30	671141
7/4/11	10344	3154	840	533	533	8	14	661603	30	671141
7/2/11	10344	3154	840	533	533	8	14	661603	30	671141
7/5/11	10345	3154	840	533	533	8	14	661603	30	671141
7/7/11	10345	3154	840	533	533	8	14	661603	30	671141
7/8/11	10345	3154	840	533	533	8	14	661603	30	671141
7/10/11	10346	3154	840	533	533	8	14	661603	30	671141
7/17/11	10348	3155	840	534	534	8	14	661603	30	671141
7/20/11	10348	3155	840	534	534	8	14	661603	30	671141
7/21/11	10349	3155	840	534	534	8	14	661603	30	671141
7/23/11	10349	3155	841	534	534	8	14	661603	30	671141
7/26/11	10350	3156	841	534	534	8	14	661603	30	671141
8/10/11	10354	3157	841	535	535	8	14	661603	30	671141
8/13/11	10354	3157	841	535	535	8	14	661603	30	671141
8/21/11	10356	3158	842	535	535	8	14	661603	30	671141
8/7/11	10353	3157	841	534	534	8	14	661603	30	671141
8/1/11	10351	3156	841	534	534	8	14	661603	30	671141
8/3/11	10352	3156	841	534	534	8	14	661603	30	671141
8/25/11	10357	3158	842	535	535	8	14	661603	30	671141
8/27/11	10358	3159	842	535	535	8	14	661603	30	671141
8/29/11	10358	3159	842	535	535	8	14	661603	30	671141
9/1/11	10359	3159	842	535	535	8	14	661603	30	671141
9/5/11	10360	3159	842	535	535	8	14	661603	30	671141
9/11/11	10362	3160	842	536	536	8	14	661603	30	671141
9/17/11	10363	3160	843	536	536	8	14	661603	30	671141
9/21/11	10364	3161	843	536	536	8	14	661603	30	671141
9/20/11	10364	3161	843	536	536	8	14	661603	30	671141
10/2/11	10367	3162	843	536	536	8	14	661603	30	671141
10/3/11	10367	3162	843	536	536	8	14	661603	30	671141
10/8/11	10369	3162	844	537	537	8	14	661603	30	671141
10/12/11	10370	3163	844	537	537	8	14	661603	30	671141
10/15/11	10370	3163	844	537	537	8	14	661603	30	671141
10/16/11	10371	3163	844	537	537	8	14	661603	30	671141
10/17/11	10371	3163	844	537	537	8	14	661603	30	671141
10/19/11	10371	3163	844	537	537	8	14	661603	30	671141
10/24/11	10373	3164	844	537	537	8	14	661603	30	671141
10/25/11	10373	3164	844	537	537	8	14	661603	30	671141
10/26/11	10373	3164	844	537	537	8	14	661603	30	671141
10/30/11	10374	3164	844	537	537	8	14	661603	30	671141
11/4/11	10375	3165	845	537	537	8	14	661603	30	671141
11/1/11	10375	3164	844	537	537	8	14	661603	30	671141
11/16/11	10378	3166	845	538	538	8	14	661603	30	671141
11/18/11	10379	3166	845	538	538	8	14	661603	30	671141
11/21/11	10380	3166	845	538	538	8	14	661603	30	671141
11/22/11	10380	3166	845	538	538	8	14	661603	30	671141
11/25/11	10381	3166	845	538	538	8	14	661603	30	671141
11/24/11	10380	3166	845	538	538	8	14	661603	30	671141
12/1/11	10382	3167	846	538	538	8	14	661603	30	671141
12/5/11	10383	3167	846	539	539	8	14	661603	30	671141
12/11/11	10385	3168	846	539	539	8	14	661603	30	671141
12/22/11	10387	3169	846	539	539	8	14	661603	30	671141
12/24/11	10388	3169	846	539	539	8	14	661603	30	671141
1/4/12	10391	3170	847	540	540	8	14	661603	30	671141
12/31/11	10390	3170	847	539	539	8	14	661603	30	671141
1/11/12	10392	3171	847	540	540	8	14	661603	30	671141
1/14/12	10393	3171	847	540	540	8	14	661603	30	671141
1/14/12	10393	3171	847	540	540	8	14	661603	30	671141

Baseline Tugboat Emissions

Date	Class A Tug Assist Emissions (g/trip)									
	NOx	CO	HC	PM10	PM2.5	SO2	CH4	CO2	N2O	CO2e
6/16/11	69733	20647	5463	3438	3438	51	91	4460719	201	4524956
7/4/11	69764	20658	5467	3442	3442	51	91	4460719	201	4524956
7/2/11	69761	20656	5467	3442	3442	51	91	4460719	201	4524956
7/5/11	69766	20658	5468	3443	3443	51	91	4460719	201	4524956
7/7/11	69769	20659	5468	3443	3443	51	91	4460719	201	4524956
7/8/11	69771	20660	5468	3443	3443	51	91	4460719	201	4524956
7/10/11	69774	20661	5469	3444	3444	51	91	4460719	201	4524956
7/17/11	69786	20665	5471	3445	3445	51	91	4460719	201	4524956
7/20/11	69791	20667	5471	3446	3446	51	91	4460719	201	4524956
7/21/11	69793	20668	5472	3446	3446	51	91	4460719	201	4524956
7/23/11	69796	20669	5472	3447	3447	51	91	4460719	201	4524956
7/26/11	69801	20670	5473	3447	3447	51	91	4460719	201	4524956
8/10/11	69827	20679	5477	3451	3451	51	91	4460719	201	4524956
8/13/11	69832	20681	5478	3451	3451	51	91	4460719	201	4524956
8/21/11	69846	20686	5480	3453	3453	51	91	4460719	201	4524956
8/7/11	69822	20677	5476	3450	3450	51	91	4460719	201	4524956
8/1/11	69812	20674	5475	3449	3449	51	91	4460719	201	4524956
8/3/11	69815	20675	5475	3449	3449	51	91	4460719	201	4524956
8/25/11	69852	20688	5481	3454	3454	51	91	4460719	201	4524956
8/27/11	69856	20689	5481	3455	3455	51	91	4460719	201	4524956
8/29/11	69859	20690	5482	3455	3455	51	91	4460719	201	4524956
9/1/11	69864	20692	5482	3456	3456	51	91	4460719	201	4524956
9/5/11	69871	20694	5483	3457	3457	51	91	4460719	201	4524956
9/11/11	69881	20698	5485	3458	3458	51	91	4460719	201	4524956
9/17/11	69891	20701	5486	3459	3459	51	91	4460719	201	4524956
9/21/11	69898	20704	5487	3460	3460	51	91	4460719	201	4524956
9/20/11	69897	20703	5487	3460	3460	51	91	4460719	201	4524956
10/2/11	69917	20710	5490	3463	3463	51	91	4460719	201	4524956
10/3/11	69919	20711	5490	3463	3463	51	91	4460719	201	4524956
10/8/11	69927	20714	5492	3464	3464	51	91	4460719	201	4524956
10/12/11	69934	20716	5493	3465	3465	51	91	4460719	201	4524956
10/15/11	69939	20718	5493	3466	3466	51	91	4460719	201	4524956
10/16/11	69941	20718	5494	3466	3466	51	91	4460719	201	4524956
10/17/11	69942	20719	5494	3466	3466	51	91	4460719	201	4524956
10/19/11	69946	20720	5494	3466	3466	51	91	4460719	201	4524956
10/24/11	69954	20723	5496	3468	3468	51	91	4460719	201	4524956
10/25/11	69956	20723	5496	3468	3468	51	91	4460719	201	4524956
10/26/11	69958	20724	5496	3468	3468	51	91	4460719	201	4524956
10/30/11	69964	20726	5497	3469	3469	51	91	4460719	201	4524956
11/4/11	69973	20729	5499	3470	3470	51	91	4460719	201	4524956
11/1/11	69968	20728	5498	3469	3469	51	91	4460719	201	4524956
11/16/11	69993	20736	5502	3473	3473	51	91	4460719	201	4524956
11/18/11	69997	20737	5502	3473	3473	51	91	4460719	201	4524956
11/21/11	70002	20739	5503	3474	3474	51	91	4460719	201	4524956
11/22/11	70004	20740	5503	3474	3474	51	91	4460719	201	4524956
11/25/11	70009	20742	5504	3475	3475	51	91	4460719	201	4524956
11/24/11	70007	20741	5504	3475	3475	51	91	4460719	201	4524956
12/1/11	70019	20745	5505	3476	3476	51	91	4460719	201	4524956
12/5/11	70026	20747	5506	3477	3477	51	91	4460719	201	4524956
12/11/11	70036	20751	5508	3478	3478	51	91	4460719	201	4524956
12/22/11	70055	20757	5511	3481	3481	51	91	4460719	201	4524956
12/24/11	70058	20758	5511	3481	3481	51	91	4460719	201	4524956
1/4/12	70077	20765	5514	3484	3484	51	91	4460719	201	4524956
12/31/11	70070	20763	5513	3483	3483	51	91	4460719	201	4524956
1/11/12	70089	20769	5516	3485	3485	51	91	4460719	201	4524956
1/14/12	70094	20771	5516	3486	3486	51	91	4460719	201	4524956
1/14/12	70094	20771	5516	3486	3486	51	91	4460719	201	4524956

Baseline Tugboat Emissions

Date	Total Tug Emissions (g/trip)									
	NOx	CO	HC	PM10	PM2.5	SO2	CH4	CO2	N2O	CO2e
6/16/11	169244	50077	13255	8348	8348	123	220	10825547	488	10981440
7/4/11	136997	40637	10764	6784	6784	99	179	8759366	395	8885517
7/2/11	136990	40635	10763	6783	6783	99	179	8759366	395	8885517
7/5/11	137000	40638	10764	6785	6785	99	179	8759366	395	8885517
7/7/11	137007	40640	10765	6786	6786	99	179	8759366	395	8885517
7/8/11	137010	40641	10766	6786	6786	99	179	8759366	395	8885517
7/10/11	137017	40644	10767	6787	6787	99	179	8759366	395	8885517
7/17/11	137040	40652	10770	6790	6790	99	179	8759366	395	8885517
7/20/11	137050	40655	10772	6791	6791	99	179	8759366	395	8885517
7/21/11	137053	40656	10772	6792	6792	99	179	8759366	395	8885517
7/23/11	169397	50129	13278	8368	8368	123	220	10825547	488	10981440
7/26/11	137070	40662	10775	6794	6794	99	179	8759366	395	8885517
8/10/11	137120	40679	10782	6801	6801	99	179	8759366	395	8885517
8/13/11	169484	50159	13291	8379	8379	123	220	10825547	488	10981440
8/21/11	137157	40692	10788	6806	6806	99	179	8759366	395	8885517
8/7/11	137110	40676	10781	6799	6799	99	179	8759366	395	8885517
8/1/11	137090	40669	10778	6797	6797	99	179	8759366	395	8885517
8/3/11	137097	40671	10779	6798	6798	99	179	8759366	395	8885517
8/25/11	137170	40696	10790	6807	6807	99	179	8759366	395	8885517
8/27/11	169541	50179	13299	8387	8387	123	220	10825547	488	10981440
8/29/11	137184	40701	10792	6809	6809	99	179	8759366	395	8885517
9/1/11	137194	40704	10793	6810	6810	99	179	8759366	395	8885517
9/5/11	169578	50191	13305	8392	8392	123	220	10825547	488	10981440
9/11/11	137227	40716	10798	6815	6815	99	179	8759366	395	8885517
9/17/11	137247	40723	10801	6817	6817	99	179	8759366	395	8885517
9/21/11	169644	50214	13315	8401	8401	123	220	10825547	488	10981440
9/20/11	137257	40726	10803	6819	6819	99	179	8759366	395	8885517
10/2/11	137297	40740	10808	6824	6824	99	179	8759366	395	8885517
10/3/11	137300	40741	10809	6824	6824	99	179	8759366	395	8885517
10/8/11	169715	50238	13325	8410	8410	123	220	10825547	488	10981440
10/12/11	169731	50244	13328	8412	8412	123	220	10825547	488	10981440
10/15/11	119195	35481	9420	5953	5953	86	156	7602447	343	7711948
10/16/11	137344	40756	10815	6830	6830	99	179	8759366	395	8885517
10/17/11	137347	40757	10816	6831	6831	99	179	8759366	395	8885517
10/19/11	119207	35485	9422	5954	5954	86	156	7602447	343	7711948
10/24/11	169781	50261	13335	8418	8418	123	220	10825547	488	10981440
10/25/11	137374	40766	10820	6834	6834	99	179	8759366	395	8885517
10/26/11	137377	40768	10820	6835	6835	99	179	8759366	395	8885517
10/30/11	137390	40772	10822	6836	6836	99	179	8759366	395	8885517
11/4/11	137407	40778	10825	6839	6839	99	179	8759366	395	8885517
11/1/11	169814	50272	13340	8423	8423	123	220	10825547	488	10981440
11/16/11	169876	50293	13349	8431	8431	123	220	10825547	488	10981440
11/18/11	137454	40794	10832	6845	6845	99	179	8759366	395	8885517
11/21/11	137464	40797	10833	6846	6846	99	179	8759366	395	8885517
11/22/11	137467	40798	10834	6847	6847	99	179	8759366	395	8885517
11/25/11	137477	40802	10835	6848	6848	99	179	8759366	395	8885517
11/24/11	137474	40801	10835	6847	6847	99	179	8759366	395	8885517
12/1/11	137497	40809	10838	6851	6851	99	179	8759366	395	8885517
12/5/11	137511	40813	10840	6852	6852	99	179	8759366	395	8885517
12/11/11	137531	40820	10843	6855	6855	99	179	8759366	395	8885517
12/22/11	137567	40833	10849	6860	6860	99	179	8759366	395	8885517
12/24/11	170032	50347	13372	8452	8452	123	220	10825547	488	10981440
1/4/12	137611	40848	10855	6866	6866	99	179	8759366	395	8885517
12/31/11	137597	40843	10853	6864	6864	99	179	8759366	395	8885517
1/11/12	137634	40856	10859	6869	6869	99	179	8759366	395	8885517
1/14/12	170119	50377	13385	8463	8463	123	220	10825547	488	10981440
1/14/12	137644	40859	10860	6870	6870	99	179	8759366	395	8885517

Baseline Tugboat Emissions

Date	Class A Tug Mooring/Unmooring Emissions (g/trip)									
	NOx	CO	HC	PM10	PM2.5	SO2	CH4	CO2	N2O	CO2e
1/28/12	14294	4231	1125	712	712	10	19	909261	41	922355
1/30/12	14295	4231	1125	712	712	10	19	909261	41	922355
2/5/12	14297	4232	1125	712	712	10	19	909261	41	922355
2/12/12	14299	4233	1126	712	712	10	19	909261	41	922355
2/8/12	14298	4232	1125	712	712	10	19	909261	41	922355
2/10/12	14299	4233	1126	712	712	10	19	909261	41	922355
2/20/12	14302	4234	1126	713	713	10	19	909261	41	922355
2/27/12	14305	4235	1126	713	713	10	19	909261	41	922355
2/29/12	14305	4235	1126	713	713	10	19	909261	41	922355
3/2/12	14306	4235	1127	713	713	10	19	909261	41	922355
3/4/12	14307	4235	1127	713	713	10	19	909261	41	922355
3/6/12	14307	4236	1127	713	713	10	19	909261	41	922355
3/9/12	14308	4236	1127	714	714	10	19	909261	41	922355
3/11/12	14309	4236	1127	714	714	10	19	909261	41	922355
3/16/12	14311	4237	1127	714	714	10	19	909261	41	922355
3/18/12	14312	4237	1127	714	714	10	19	909261	41	922355
3/20/12	14312	4237	1128	714	714	10	19	909261	41	922355
3/21/12	14313	4237	1128	714	714	10	19	909261	41	922355
3/23/12	14313	4238	1128	714	714	10	19	909261	41	922355
3/28/12	14315	4238	1128	714	714	10	19	909261	41	922355
4/1/12	14316	4239	1128	715	715	10	19	909261	41	922355
4/12/12	14320	4240	1129	715	715	10	19	909261	41	922355
4/11/12	14320	4240	1129	715	715	10	19	909261	41	922355
4/18/12	14322	4241	1129	715	715	10	19	909261	41	922355
4/21/12	14323	4241	1129	716	716	10	19	909261	41	922355
4/22/12	14324	4241	1129	716	716	10	19	909261	41	922355
4/24/12	14324	4241	1129	716	716	10	19	909261	41	922355
4/25/12	14325	4242	1129	716	716	10	19	909261	41	922355
4/30/12	14326	4242	1130	716	716	10	19	909261	41	922355
5/3/12	14327	4243	1130	716	716	10	19	909261	41	922355
5/3/12	14327	4243	1130	716	716	10	19	909261	41	922355
5/5/12	14328	4243	1130	716	716	10	19	909261	41	922355
5/11/12	14330	4243	1130	716	716	10	19	909261	41	922355
5/12/12	14331	4244	1130	716	716	10	19	909261	41	922355
5/21/12	14334	4245	1131	717	717	10	19	909261	41	922355
5/25/12	14335	4245	1131	717	717	10	19	909261	41	922355
5/29/12	14336	4246	1131	717	717	10	19	909261	41	922355
6/3/12	14338	4246	1131	717	717	10	19	909261	41	922355
6/7/12	14340	4247	1132	718	718	10	19	909261	41	922355
6/12/12	14341	4247	1132	718	718	10	19	909261	41	922355
6/12/12	14341	4247	1132	718	718	10	19	909261	41	922355
6/15/12	14342	4248	1132	718	718	10	19	909261	41	922355
6/17/12	14343	4248	1132	718	718	10	19	909261	41	922355
6/17/12	14343	4248	1132	718	718	10	19	909261	41	922355
6/15/12	14342	4248	1132	718	718	10	19	909261	41	922355
6/16/12	14343	4248	1132	718	718	10	19	909261	41	922355
6/23/12	14345	4249	1132	718	718	10	19	909261	41	922355
5/31/12	14337	4246	1131	717	717	10	19	909261	41	922355
6/25/12	14346	4249	1133	718	718	10	19	909261	41	922355
7/6/12	14350	4250	1133	719	719	10	19	909261	41	922355
7/13/12	14352	4251	1133	719	719	10	19	909261	41	922355
7/16/12	14353	4251	1134	719	719	10	19	909261	41	922355
7/18/12	14354	4252	1134	720	720	10	19	909261	41	922355
7/20/12	14355	4252	1134	720	720	10	19	909261	41	922355
7/22/12	14355	4252	1134	720	720	10	19	909261	41	922355
7/25/12	14356	4252	1134	720	720	10	19	909261	41	922355
8/23/12	14366	4256	1136	721	721	10	19	909261	41	922355

Baseline Tugboat Emissions

Date	Class B Tug Mooring/Unmooring Emissions (g/trip)									
	NOx	CO	HC	PM10	PM2.5	SO2	CH4	CO2	N2O	CO2e
1/28/12	10397	3172	848	540	540	8	14	661603	30	671141
1/30/12	10397	3172	848	540	540	8	14	661603	30	671141
2/5/12	10399	3173	848	541	541	8	14	661603	30	671141
2/12/12	10400	3173	848	541	541	8	14	661603	30	671141
2/8/12	10399	3173	848	541	541	8	14	661603	30	671141
2/10/12	10400	3173	848	541	541	8	14	661603	30	671141
2/20/12	10402	3174	849	541	541	8	14	661603	30	671141
2/27/12	10404	3175	849	541	541	8	14	661603	30	671141
2/29/12	10405	3175	849	541	541	8	14	661603	30	671141
3/2/12	10405	3175	849	542	542	8	14	661603	30	671141
3/4/12	10406	3175	849	542	542	8	14	661603	30	671141
3/6/12	10406	3175	849	542	542	8	14	661603	30	671141
3/9/12	10407	3176	849	542	542	8	14	661603	30	671141
3/11/12	10407	3176	849	542	542	8	14	661603	30	671141
3/16/12	10409	3176	850	542	542	8	14	661603	30	671141
3/18/12	10409	3176	850	542	542	8	14	661603	30	671141
3/20/12	10410	3177	850	542	542	8	14	661603	30	671141
3/21/12	10410	3177	850	542	542	8	14	661603	30	671141
3/23/12	10410	3177	850	542	542	8	14	661603	30	671141
3/28/12	10412	3177	850	542	542	8	14	661603	30	671141
4/1/12	10413	3178	850	543	543	8	14	661603	30	671141
4/12/12	10416	3179	851	543	543	8	14	661603	30	671141
4/11/12	10415	3179	851	543	543	8	14	661603	30	671141
4/18/12	10417	3179	851	543	543	8	14	661603	30	671141
4/21/12	10418	3179	851	543	543	8	14	661603	30	671141
4/22/12	10418	3180	851	543	543	8	14	661603	30	671141
4/24/12	10419	3180	851	543	543	8	14	661603	30	671141
4/25/12	10419	3180	851	543	543	8	14	661603	30	671141
4/30/12	10420	3180	851	544	544	8	14	661603	30	671141
5/3/12	10421	3180	851	544	544	8	14	661603	30	671141
5/3/12	10421	3180	851	544	544	8	14	661603	30	671141
5/5/12	10421	3181	852	544	544	8	14	661603	30	671141
5/11/12	10423	3181	852	544	544	8	14	661603	30	671141
5/12/12	10423	3181	852	544	544	8	14	661603	30	671141
5/21/12	10425	3182	852	544	544	8	14	661603	30	671141
5/25/12	10426	3182	852	544	544	8	14	661603	30	671141
5/29/12	10427	3183	852	545	545	8	14	661603	30	671141
6/3/12	10429	3183	853	545	545	8	14	661603	30	671141
6/7/12	10430	3184	853	545	545	8	14	661603	30	671141
6/12/12	10431	3184	853	545	545	8	14	661603	30	671141
6/12/12	10431	3184	853	545	545	8	14	661603	30	671141
6/15/12	10432	3184	853	545	545	8	14	661603	30	671141
6/17/12	10432	3184	853	545	545	8	14	661603	30	671141
6/17/12	10432	3184	853	545	545	8	14	661603	30	671141
6/15/12	10432	3184	853	545	545	8	14	661603	30	671141
6/16/12	10432	3184	853	545	545	8	14	661603	30	671141
6/23/12	10434	3185	853	545	545	8	14	661603	30	671141
5/31/12	10428	3183	853	545	545	8	14	661603	30	671141
6/25/12	10434	3185	853	545	545	8	14	661603	30	671141
7/6/12	10437	3186	854	546	546	8	14	661603	30	671141
7/13/12	10439	3187	854	546	546	8	14	661603	30	671141
7/16/12	10439	3187	854	546	546	8	14	661603	30	671141
7/18/12	10440	3187	854	546	546	8	14	661603	30	671141
7/20/12	10440	3187	854	546	546	8	14	661603	30	671141
7/22/12	10441	3187	855	546	546	8	14	661603	30	671141
7/25/12	10442	3188	855	546	546	8	14	661603	30	671141
8/23/12	10449	3190	856	547	547	8	14	661603	30	671141

Baseline Tugboat Emissions

Date	Class A Tug Assist Emissions (g/trip)									
	NOx	CO	HC	PM10	PM2.5	SO2	CH4	CO2	N2O	CO2e
1/28/12	70117	20779	5520	3489	3489	51	91	4460719	201	4524956
1/30/12	70121	20780	5521	3490	3490	51	91	4460719	201	4524956
2/5/12	70131	20784	5522	3491	3491	51	91	4460719	201	4524956
2/12/12	70143	20788	5524	3492	3492	51	91	4460719	201	4524956
2/8/12	70136	20785	5523	3492	3492	51	91	4460719	201	4524956
2/10/12	70139	20786	5523	3492	3492	51	91	4460719	201	4524956
2/20/12	70156	20792	5526	3494	3494	51	91	4460719	201	4524956
2/27/12	70168	20796	5528	3496	3496	51	91	4460719	201	4524956
2/29/12	70172	20798	5528	3496	3496	51	91	4460719	201	4524956
3/2/12	70175	20799	5529	3497	3497	51	91	4460719	201	4524956
3/4/12	70179	20800	5529	3497	3497	51	91	4460719	201	4524956
3/6/12	70182	20801	5530	3498	3498	51	91	4460719	201	4524956
3/9/12	70187	20803	5530	3498	3498	51	91	4460719	201	4524956
3/11/12	70190	20804	5531	3499	3499	51	91	4460719	201	4524956
3/16/12	70199	20807	5532	3500	3500	51	91	4460719	201	4524956
3/18/12	70202	20808	5533	3500	3500	51	91	4460719	201	4524956
3/20/12	70206	20809	5533	3501	3501	51	91	4460719	201	4524956
3/21/12	70207	20810	5533	3501	3501	51	91	4460719	201	4524956
3/23/12	70211	20811	5534	3501	3501	51	91	4460719	201	4524956
3/28/12	70219	20814	5535	3503	3503	51	91	4460719	201	4524956
4/1/12	70226	20816	5536	3503	3503	51	91	4460719	201	4524956
4/12/12	70245	20823	5539	3506	3506	51	91	4460719	201	4524956
4/11/12	70243	20822	5539	3506	3506	51	91	4460719	201	4524956
4/18/12	70255	20826	5541	3507	3507	51	91	4460719	201	4524956
4/21/12	70260	20828	5541	3508	3508	51	91	4460719	201	4524956
4/22/12	70262	20828	5542	3508	3508	51	91	4460719	201	4524956
4/24/12	70265	20830	5542	3509	3509	51	91	4460719	201	4524956
4/25/12	70267	20830	5542	3509	3509	51	91	4460719	201	4524956
4/30/12	70275	20833	5544	3510	3510	51	91	4460719	201	4524956
5/3/12	70280	20835	5544	3511	3511	51	91	4460719	201	4524956
5/3/12	70280	20835	5544	3511	3511	51	91	4460719	201	4524956
5/5/12	70284	20836	5545	3511	3511	51	91	4460719	201	4524956
5/11/12	70294	20839	5546	3512	3512	51	91	4460719	201	4524956
5/12/12	70296	20840	5547	3513	3513	51	91	4460719	201	4524956
5/21/12	70311	20845	5549	3515	3515	51	91	4460719	201	4524956
5/25/12	70318	20848	5550	3516	3516	51	91	4460719	201	4524956
5/29/12	70325	20850	5551	3516	3516	51	91	4460719	201	4524956
6/3/12	70333	20853	5552	3518	3518	51	91	4460719	201	4524956
6/7/12	70340	20855	5553	3518	3518	51	91	4460719	201	4524956
6/12/12	70348	20858	5554	3520	3520	51	91	4460719	201	4524956
6/12/12	70348	20858	5554	3520	3520	51	91	4460719	201	4524956
6/15/12	70354	20860	5555	3520	3520	51	91	4460719	201	4524956
6/17/12	70357	20861	5556	3521	3521	51	91	4460719	201	4524956
6/17/12	70357	20861	5556	3521	3521	51	91	4460719	201	4524956
6/15/12	70354	20860	5555	3520	3520	51	91	4460719	201	4524956
6/16/12	70355	20860	5555	3521	3521	51	91	4460719	201	4524956
6/23/12	70367	20865	5557	3522	3522	51	91	4460719	201	4524956
5/31/12	70328	20851	5551	3517	3517	51	91	4460719	201	4524956
6/25/12	70371	20866	5558	3523	3523	51	91	4460719	201	4524956
7/6/12	70389	20872	5560	3525	3525	51	91	4460719	201	4524956
7/13/12	70401	20876	5562	3527	3527	51	91	4460719	201	4524956
7/16/12	70406	20878	5563	3527	3527	51	91	4460719	201	4524956
7/18/12	70410	20879	5564	3528	3528	51	91	4460719	201	4524956
7/20/12	70413	20880	5564	3528	3528	51	91	4460719	201	4524956
7/22/12	70416	20881	5565	3529	3529	51	91	4460719	201	4524956
7/25/12	70422	20883	5565	3529	3529	51	91	4460719	201	4524956
8/23/12	70471	20900	5573	3536	3536	51	91	4460719	201	4524956

Baseline Tugboat Emissions

Date	Total Tug Emissions (g/trip)									
	NOx	CO	HC	PM10	PM2.5	SO2	CH4	CO2	N2O	CO2e
1/28/12	119499	35585	9465	5993	5993	86	156	7602447	343	7711948
1/30/12	137698	40878	10868	6877	6877	99	179	8759366	395	8885517
2/5/12	137718	40884	10871	6880	6880	99	179	8759366	395	8885517
2/12/12	137741	40892	10875	6883	6883	99	179	8759366	395	8885517
2/8/12	170222	50412	13401	8477	8477	123	220	10825547	488	10981440
2/10/12	137734	40890	10874	6882	6882	99	179	8759366	395	8885517
2/20/12	137768	40902	10879	6886	6886	99	179	8759366	395	8885517
2/27/12	170301	50439	13412	8487	8487	123	220	10825547	488	10981440
2/29/12	170309	50442	13414	8488	8488	123	220	10825547	488	10981440
3/2/12	170317	50445	13415	8489	8489	123	220	10825547	488	10981440
3/4/12	170325	50447	13416	8490	8490	123	220	10825547	488	10981440
3/6/12	137818	40919	10886	6893	6893	99	179	8759366	395	8885517
3/9/12	137828	40922	10888	6894	6894	99	179	8759366	395	8885517
3/11/12	170354	50457	13420	8494	8494	123	220	10825547	488	10981440
3/16/12	170375	50464	13423	8497	8497	123	220	10825547	488	10981440
3/18/12	170383	50467	13425	8498	8498	123	220	10825547	488	10981440
3/20/12	170391	50470	13426	8499	8499	123	220	10825547	488	10981440
3/21/12	170395	50472	13426	8500	8500	123	220	10825547	488	10981440
3/23/12	170404	50474	13428	8501	8501	123	220	10825547	488	10981440
3/28/12	137891	40944	10897	6903	6903	99	179	8759366	395	8885517
4/1/12	170441	50487	13433	8506	8506	123	220	10825547	488	10981440
4/12/12	170486	50503	13440	8512	8512	123	220	10825547	488	10981440
4/11/12	170482	50501	13439	8511	8511	123	220	10825547	488	10981440
4/18/12	137961	40968	10907	6912	6912	99	179	8759366	395	8885517
4/21/12	170523	50515	13445	8516	8516	123	220	10825547	488	10981440
4/22/12	137975	40973	10909	6914	6914	99	179	8759366	395	8885517
4/24/12	119751	35672	9503	6027	6027	86	156	7602447	343	7711948
4/25/12	137985	40976	10911	6915	6915	99	179	8759366	395	8885517
4/30/12	138001	40982	10913	6917	6917	99	179	8759366	395	8885517
5/3/12	138011	40985	10915	6919	6919	99	179	8759366	395	8885517
5/3/12	119777	35681	9507	6030	6030	86	156	7602447	343	7711948
5/5/12	170581	50535	13454	8524	8524	123	220	10825547	488	10981440
5/11/12	138038	40994	10919	6922	6922	99	179	8759366	395	8885517
5/12/12	138041	40996	10919	6922	6922	99	179	8759366	395	8885517
5/21/12	170647	50558	13464	8533	8533	123	220	10825547	488	10981440
5/25/12	138085	41011	10926	6928	6928	99	179	8759366	395	8885517
5/29/12	138098	41015	10928	6930	6930	99	179	8759366	395	8885517
6/3/12	138115	41021	10930	6932	6932	99	179	8759366	395	8885517
6/7/12	138128	41025	10932	6934	6934	99	179	8759366	395	8885517
6/12/12	138145	41031	10935	6936	6936	99	179	8759366	395	8885517
6/12/12	138145	41031	10935	6936	6936	99	179	8759366	395	8885517
6/15/12	170750	50593	13479	8546	8546	123	220	10825547	488	10981440
6/17/12	138161	41037	10937	6938	6938	99	179	8759366	395	8885517
6/17/12	170759	50596	13480	8548	8548	123	220	10825547	488	10981440
6/15/12	170750	50593	13479	8546	8546	123	220	10825547	488	10981440
6/16/12	170754	50595	13480	8547	8547	123	220	10825547	488	10981440
6/23/12	138181	41044	10940	6941	6941	99	179	8759366	395	8885517
5/31/12	138105	41017	10929	6931	6931	99	179	8759366	395	8885517
6/25/12	138188	41046	10941	6942	6942	99	179	8759366	395	8885517
7/6/12	138225	41059	10947	6947	6947	99	179	8759366	395	8885517
7/13/12	138248	41067	10950	6950	6950	99	179	8759366	395	8885517
7/16/12	138258	41070	10952	6951	6951	99	179	8759366	395	8885517
7/18/12	170886	50640	13500	8564	8564	123	220	10825547	488	10981440
7/20/12	138272	41075	10954	6953	6953	99	179	8759366	395	8885517
7/22/12	138278	41077	10955	6954	6954	99	179	8759366	395	8885517
7/25/12	138288	41080	10956	6955	6955	99	179	8759366	395	8885517
8/23/12	138385	41114	10971	6968	6968	99	179	8759366	395	8885517

Baseline Tugboat Emissions

Date	Class A Tug Mooring/Unmooring Emissions (g/trip)									
	NOx	CO	HC	PM10	PM2.5	SO2	CH4	CO2	N2O	CO2e
8/29/12	14368	4257	1136	721	721	10	19	909261	41	922355
8/29/12	14368	4257	1136	721	721	10	19	909261	41	922355
9/1/12	14369	4257	1136	722	722	10	19	909261	41	922355
9/2/12	14370	4257	1136	722	722	10	19	909261	41	922355
9/4/12	14370	4257	1136	722	722	10	19	909261	41	922355
9/6/12	14371	4257	1136	722	722	10	19	909261	41	922355
9/7/12	14372	4258	1136	722	722	10	19	909261	41	922355
9/14/12	14374	4258	1137	722	722	10	19	909261	41	922355
9/18/12	14375	4259	1137	722	722	10	19	909261	41	922355
9/23/12	14377	4260	1137	723	723	10	19	909261	41	922355
9/24/12	14377	4260	1137	723	723	10	19	909261	41	922355
9/28/12	14379	4260	1137	723	723	10	19	909261	41	922355
10/1/12	14380	4260	1138	723	723	10	19	909261	41	922355
10/2/12	14380	4261	1138	723	723	10	19	909261	41	922355
10/9/12	14383	4261	1138	723	723	10	19	909261	41	922355
10/3/12	14381	4261	1138	723	723	10	19	909261	41	922355
10/12/12	14384	4262	1138	723	723	10	19	909261	41	922355
10/13/12	14384	4262	1138	724	724	10	19	909261	41	922355
10/16/12	14385	4262	1138	724	724	10	19	909261	41	922355
10/19/12	14386	4263	1139	724	724	10	19	909261	41	922355
10/14/12	14384	4262	1138	724	724	10	19	909261	41	922355
10/27/12	14389	4264	1139	724	724	10	19	909261	41	922355
10/28/12	14389	4264	1139	724	724	10	19	909261	41	922355
10/31/12	14390	4264	1139	724	724	10	19	909261	41	922355
11/2/12	14391	4264	1139	724	724	10	19	909261	41	922355
11/5/12	14392	4265	1139	725	725	10	19	909261	41	922355
11/12/12	14394	4265	1140	725	725	10	19	909261	41	922355
11/9/12	14393	4265	1140	725	725	10	19	909261	41	922355
11/14/12	14395	4266	1140	725	725	10	19	909261	41	922355
11/19/12	14397	4266	1140	725	725	10	19	909261	41	922355
11/24/12	14399	4267	1140	725	725	10	19	909261	41	922355
11/25/12	14399	4267	1140	725	725	10	19	909261	41	922355
11/21/12	14398	4267	1140	725	725	10	19	909261	41	922355
12/2/12	14401	4268	1141	726	726	10	19	909261	41	922355
12/3/12	14402	4268	1141	726	726	10	19	909261	41	922355
12/9/12	14404	4269	1141	726	726	10	19	909261	41	922355

Baseline Tugboat Emissions

Date	Class B Tug Mooring/Unmooring Emissions (g/trip)										
	NOx	CO	HC	PM10	PM2.5	SO2	CH4	CO2	N2O	CO2e	
8/29/12	10450	3191	856	548	548	8	14	661603	30	671141	
8/29/12	10450	3191	856	548	548	8	14	661603	30	671141	
9/1/12	10451	3191	856	548	548	8	14	661603	30	671141	
9/2/12	10451	3191	856	548	548	8	14	661603	30	671141	
9/4/12	10452	3191	856	548	548	8	14	661603	30	671141	
9/6/12	10452	3192	856	548	548	8	14	661603	30	671141	
9/7/12	10453	3192	856	548	548	8	14	661603	30	671141	
9/14/12	10454	3192	857	548	548	8	14	661603	30	671141	
9/18/12	10455	3193	857	548	548	8	14	661603	30	671141	
9/23/12	10457	3193	857	549	549	8	14	661603	30	671141	
9/24/12	10457	3193	857	549	549	8	14	661603	30	671141	
9/28/12	10458	3193	857	549	549	8	14	661603	30	671141	
10/1/12	10459	3194	857	549	549	8	14	661603	30	671141	
10/2/12	10459	3194	857	549	549	8	14	661603	30	671141	
10/9/12	10461	3194	858	549	549	8	14	661603	30	671141	
10/3/12	10459	3194	857	549	549	8	14	661603	30	671141	
10/12/12	10461	3195	858	549	549	8	14	661603	30	671141	
10/13/12	10462	3195	858	549	549	8	14	661603	30	671141	
10/16/12	10462	3195	858	549	549	8	14	661603	30	671141	
10/19/12	10463	3195	858	549	549	8	14	661603	30	671141	
10/14/12	10462	3195	858	549	549	8	14	661603	30	671141	
10/27/12	10465	3196	858	550	550	8	14	661603	30	671141	
10/28/12	10466	3196	858	550	550	8	14	661603	30	671141	
10/31/12	10466	3196	858	550	550	8	14	661603	30	671141	
11/2/12	10467	3197	858	550	550	8	14	661603	30	671141	
11/5/12	10468	3197	859	550	550	8	14	661603	30	671141	
11/12/12	10469	3197	859	550	550	8	14	661603	30	671141	
11/9/12	10469	3197	859	550	550	8	14	661603	30	671141	
11/14/12	10470	3198	859	550	550	8	14	661603	30	671141	
11/19/12	10471	3198	859	550	550	8	14	661603	30	671141	
11/24/12	10472	3198	859	551	551	8	14	661603	30	671141	
11/25/12	10473	3199	859	551	551	8	14	661603	30	671141	
11/21/12	10472	3198	859	551	551	8	14	661603	30	671141	
12/2/12	10474	3199	860	551	551	8	14	661603	30	671141	
12/3/12	10475	3199	860	551	551	8	14	661603	30	671141	
12/9/12	10476	3200	860	551	551	8	14	661603	30	671141	

Baseline Tugboat Emissions

Date	Class A Tug Assist Emissions (g/trip)									
	NOx	CO	HC	PM10	PM2.5	SO2	CH4	CO2	N2O	CO2e
8/29/12	70481	20904	5574	3537	3537	51	91	4460719	201	4524956
8/29/12	70481	20904	5574	3537	3537	51	91	4460719	201	4524956
9/1/12	70486	20905	5575	3538	3538	51	91	4460719	201	4524956
9/2/12	70488	20906	5575	3538	3538	51	91	4460719	201	4524956
9/4/12	70491	20907	5576	3538	3538	51	91	4460719	201	4524956
9/6/12	70495	20908	5576	3539	3539	51	91	4460719	201	4524956
9/7/12	70496	20909	5576	3539	3539	51	91	4460719	201	4524956
9/14/12	70508	20913	5578	3541	3541	51	91	4460719	201	4524956
9/18/12	70515	20915	5579	3542	3542	51	91	4460719	201	4524956
9/23/12	70523	20918	5580	3543	3543	51	91	4460719	201	4524956
9/24/12	70525	20919	5581	3543	3543	51	91	4460719	201	4524956
9/28/12	70532	20921	5582	3544	3544	51	91	4460719	201	4524956
10/1/12	70537	20923	5582	3545	3545	51	91	4460719	201	4524956
10/2/12	70539	20923	5583	3545	3545	51	91	4460719	201	4524956
10/9/12	70551	20927	5584	3546	3546	51	91	4460719	201	4524956
10/3/12	70540	20924	5583	3545	3545	51	91	4460719	201	4524956
10/12/12	70556	20929	5585	3547	3547	51	91	4460719	201	4524956
10/13/12	70557	20930	5586	3547	3547	51	91	4460719	201	4524956
10/16/12	70563	20932	5586	3548	3548	51	91	4460719	201	4524956
10/19/12	70568	20933	5587	3549	3549	51	91	4460719	201	4524956
10/14/12	70559	20930	5586	3547	3547	51	91	4460719	201	4524956
10/27/12	70581	20938	5589	3550	3550	51	91	4460719	201	4524956
10/28/12	70583	20939	5589	3551	3551	51	91	4460719	201	4524956
10/31/12	70588	20940	5590	3551	3551	51	91	4460719	201	4524956
11/2/12	70591	20941	5591	3552	3552	51	91	4460719	201	4524956
11/5/12	70597	20943	5591	3552	3552	51	91	4460719	201	4524956
11/12/12	70608	20947	5593	3554	3554	51	91	4460719	201	4524956
11/9/12	70603	20946	5592	3553	3553	51	91	4460719	201	4524956
11/14/12	70612	20948	5594	3554	3554	51	91	4460719	201	4524956
11/19/12	70620	20951	5595	3555	3555	51	91	4460719	201	4524956
11/24/12	70629	20954	5596	3557	3557	51	91	4460719	201	4524956
11/25/12	70630	20955	5596	3557	3557	51	91	4460719	201	4524956
11/21/12	70624	20953	5595	3556	3556	51	91	4460719	201	4524956
12/2/12	70642	20959	5598	3558	3558	51	91	4460719	201	4524956
12/3/12	70644	20960	5598	3559	3559	51	91	4460719	201	4524956
12/9/12	70654	20963	5600	3560	3560	51	91	4460719	201	4524956

Baseline Tugboat Emissions

Date	Total Tug Emissions (g/trip)									
	NOx	CO	HC	PM10	PM2.5	SO2	CH4	CO2	N2O	CO2e
8/29/12	138405	41121	10974	6971	6971	99	179	8759366	395	8885517
8/29/12	138405	41121	10974	6971	6971	99	179	8759366	395	8885517
9/1/12	138415	41124	10975	6972	6972	99	179	8759366	395	8885517
9/2/12	171076	50705	13528	8589	8589	123	220	10825547	488	10981440
9/4/12	138425	41127	10977	6973	6973	99	179	8759366	395	8885517
9/6/12	138432	41130	10978	6974	6974	99	179	8759366	395	8885517
9/7/12	138435	41131	10978	6975	6975	99	179	8759366	395	8885517
9/14/12	138458	41139	10982	6978	6978	99	179	8759366	395	8885517
9/18/12	138472	41143	10984	6979	6979	99	179	8759366	395	8885517
9/23/12	138488	41149	10986	6982	6982	99	179	8759366	395	8885517
9/24/12	120194	35824	9569	6085	6085	86	156	7602447	343	7711948
9/28/12	138505	41155	10989	6984	6984	99	179	8759366	395	8885517
10/1/12	171196	50746	13546	8605	8605	123	220	10825547	488	10981440
10/2/12	138518	41160	10991	6986	6986	99	179	8759366	395	8885517
10/9/12	138542	41168	10994	6989	6989	99	179	8759366	395	8885517
10/3/12	171204	50749	13547	8606	8606	123	220	10825547	488	10981440
10/12/12	138552	41171	10996	6990	6990	99	179	8759366	395	8885517
10/13/12	120249	35843	9577	6093	6093	86	156	7602447	343	7711948
10/16/12	138565	41176	10998	6992	6992	99	179	8759366	395	8885517
10/19/12	138575	41179	10999	6993	6993	99	179	8759366	395	8885517
10/14/12	171250	50764	13554	8612	8612	123	220	10825547	488	10981440
10/27/12	138602	41188	11003	6997	6997	99	179	8759366	395	8885517
10/28/12	138605	41189	11003	6997	6997	99	179	8759366	395	8885517
10/31/12	171320	50788	13564	8622	8622	123	220	10825547	488	10981440
11/2/12	171328	50791	13565	8623	8623	123	220	10825547	488	10981440
11/5/12	120315	35866	9587	6101	6101	86	156	7602447	343	7711948
11/12/12	138655	41207	11011	7004	7004	99	179	8759366	395	8885517
11/9/12	138645	41203	11009	7002	7002	99	179	8759366	395	8885517
11/14/12	138662	41209	11012	7005	7005	99	179	8759366	395	8885517
11/19/12	138679	41215	11014	7007	7007	99	179	8759366	395	8885517
11/24/12	138695	41220	11017	7009	7009	99	179	8759366	395	8885517
11/25/12	171423	50824	13579	8635	8635	123	220	10825547	488	10981440
11/21/12	171406	50818	13577	8633	8633	123	220	10825547	488	10981440
12/2/12	138722	41229	11021	7013	7013	99	179	8759366	395	8885517
12/3/12	120397	35894	9599	6112	6112	86	156	7602447	343	7711948
12/9/12	120414	35900	9602	6115	6115	86	156	7602447	343	7711948