Appendix B1
Air Emissions

Appendix B1
Criteria Pollutants and GHG Emission Calculations Supporting Tables

Construction Tables

Operational Tables

Conformity Analysis Tables

Table B1.1 **YTI Construction Schedule - Proposed Project**

Proposed Project	Start Year	Duration (days)	Duration (months)	Hr/Day	2015 5	6	7	8	9	10	11	12	2016 1	2
PHASE 1: Berth 217-220 Dredging, Wharf Improvements, TICTF Expansion														
Mobilization/Prep/Coordination	2015	20	1.00											
Sheet Piling 1	2015	35	1.75	8				1	1					
Sheet Piling 2	2015	35	1.75	8						1	1			
Dredging - Ocean Disposal	2015	4	0.20	24								0		
Dredging - Upland Disposal	2015	12	0.60	24								1		
Crane Rail Extension	2015	50	2.50	8		1	1	1						
TICTF Expansion	2015	60	3.00	8								1	1	1
PHASE 1: Crane Removal, Relocation, Delivery														
2 LAHD Crane Relocation (B217-220)	2015	10	0.50	8			1							
2 YTI Crane Relocation/Realignment (B217-220)	2015	10	0.5	8								1		
4 New YTI Crane Delivery (B217-220)	2015	7	0.4	8								1		
6 Crane Height Raising and Boom Extension (4 cranes at B212-213, 2 cr	2015	120	6.0	8								1	1	1
PHASE 2: Berth 214-216 Dredging, Wharf & Backland Improvements														
Sheet and King Pile Installation 1	2016	50	2.50	8										
Sheet and King Pile Installation 2	2016	50	2.50	8										
Dredging - Ocean Disposal	2016	6	0.30	24										
Dredging - Upland Disposal	2016	17	0.85	24										
Concrete Runway	2015	10	0.50	8		1								
Cold plane and ac overlay	2015	8	0.40	8			1							
Slurry seal	2015	30	1.50	8				1						1
Striping	2015	20	1.00	8			1	1						
Final Inspections/Project closeout	2016	10	0.50											

Table B1.2 **YTI Construction Schedule - Alternative 2 (No Federal Action), NEPA Baseline**

Alternative 2 - No Fed Action - NEPA Baseline	Start Year	Duration (days)	Duration (months)	Hr/Day	2015 5	6	7	8	9	10	11	12	2016 1	2
PHASE 1: Berth 217-220 Dredging, Wharf Improvements, TICTF Expansion														
Mobilization/Prep/Coordination	2015	20	1.00											
Sheet Piling 1	2015	35	1.75	8										
Sheet Piling 2	2015	35	1.75	8										
Dredging - Ocean Disposal	2015	4	0.20	24										
Dredging - Upland Disposal	2015	12	0.60	24										
Crane Rail Extension	2015	50	2.50	8										
TICTF Expansion	2015	60	3.00	8										
PHASE 1: Crane Removal, Relocation, Delivery														
2 LAHD Crane Relocation (B217-220)	2015	10	0.50	8										
2 YTI Crane Relocation/Realignment (B217-220)	2015	10	0.5	8										
4 New YTI Crane Delivery (B217-220)	2015	7	0.4	8										
6 Crane Height Raising and Boom Extension (4 cranes at B212-213, 2 cr	2015	120	6.0	8										
PHASE 2: Berth 214-216 Dredging, Wharf & Backland Improvements														
Sheet and King Pile Installation 1	2016	50	2.50	8										
Sheet and King Pile Installation 2	2016	50	2.50	8										
Dredging - Ocean Disposal	2016	6	0.30	24										
Dredging - Upland Disposal	2016	17	0.85	24										
Concrete Runway	2015	10	0.50	8		1								
Cold plane and ac overlay	2015	8	0.40	8			1							
Slurry seal	2015	30	1.50	8				1						1
Striping	2015	20	1.00	8			1	1		1	1			
Final Inspections/Project closeout	2016	10	0.50											

Table B1.1

Proposed Project	3	4	5	6	7	8	9	10	11	12	2017 1	2
PHASE 1: Berth 217-220 Dredging, Wharf Improvements, TICTF E												
Mobilization/Prep/Coordination												
Sheet Piling 1												
Sheet Piling 2												
Dredging - Ocean Disposal												
Dredging - Upland Disposal												
Crane Rail Extension												
TICTF Expansion	1											
PHASE 1: Crane Removal, Relocation, Delivery												
2 LAHD Crane Relocation (B217-220)												
2 YTI Crane Relocation/Realignment (B217-220)												
4 New YTI Crane Delivery (B217-220)												
6 Crane Height Raising and Boom Extension (4 cranes at B212-213, 2 cr	1	1	1									
PHASE 2: Berth 214-216 Dredging, Wharf & Backland Improvemer												
Sheet and King Pile Installation 1	1	1	1									
Sheet and King Pile Installation 2				1	1	1						
Dredging - Ocean Disposal						0	0					
Dredging - Upland Disposal						1	1					
Concrete Runway												
Cold plane and ac overlay												
Slurry seal												
Striping								1	1			
Final Inspections/Project closeout												

Table B1.2

Alternative 2 - No Fed Action - NEPA Baseline	3	4	5	6	7	8	9	10	11	12	2017 1	2
PHASE 1: Berth 217-220 Dredging, Wharf Improvements, TICTF E												
Mobilization/Prep/Coordination												
Sheet Piling 1												
Sheet Piling 2												
Dredging - Ocean Disposal												
Dredging - Upland Disposal												
Crane Rail Extension												
TICTF Expansion												
PHASE 1: Crane Removal, Relocation, Delivery												
2 LAHD Crane Relocation (B217-220)												
2 YTI Crane Relocation/Realignment (B217-220)												
4 New YTI Crane Delivery (B217-220)												
6 Crane Height Raising and Boom Extension (4 cranes at B212-213, 2 cr												
PHASE 2: Berth 214-216 Dredging, Wharf & Backland Improvemer												
Sheet and King Pile Installation 1												
Sheet and King Pile Installation 2												
Dredging - Ocean Disposal												
Dredging - Upland Disposal												
Concrete Runway												
Cold plane and ac overlay												
Slurry seal												
Striping												
Final Inspections/Project closeout												

Table B1.3 **YTI Construction Schedule - Alternative 3 (Reduced Project)**

Alternative 3 - Reduced Project	Start Year	Duration (days)	Duration (months)	Hr/Day	2015 5	6	7	8	9	10	11	12	2016 1	2
PHASE 1: Berth 217-220 Dredging, Wharf Improvements, TICTF Expansion														
Mobilization/Prep/Coordination	2015	20	1.00											
Sheet Piling 1	2015	35	1.75	8				1	1					
Sheet Piling 2	2015	35	1.75	8						1	1			
Dredging - Ocean Disposal	2015	4	0.20	24								0		
Dredging - Upland Disposal	2015	12	0.60	24								1		
Crane Rail Extension	2015	50	2.50	8		1	1	1						
TICTF Expansion	2015	60	3.00	8								1	1	1
PHASE 1: Crane Removal, Relocation, Delivery														
2 LAHD Crane Relocation (B217-220)	2015	10	0.50	8			1							
2 YTI Crane Relocation/Realignment (B217-220)	2015	10	0.5	8								1		
4 New YTI Crane Delivery (B217-220)	2015	7	0.4	8								1		
6 Crane Height Raising and Boom Extension (4 cranes at B212-213, 2 cr	2015	120	6.0	8								1	1	1
PHASE 2: Berth 214-216 Dredging, Wharf & Backland Improvements														
Sheet and King Pile Installation 1	2016	50	2.50	8										
Sheet and King Pile Installation 2	2016	50	2.50	8										
Dredging - Ocean Disposal	2016	6	0.30	24										
Dredging - Upland Disposal	2016	17	0.85	24										
Concrete Runway	2015	10	0.50	8		1								
Cold plane and ac overlay	2015	8	0.40	8			1							
Slurry seal	2015	30	1.50	8				1						1
Striping	2015	20	1.00	8			1	1						
Final Inspections/Project closeout	2016	10	0.50											

Table B1.3

Alternative 3 - Reduced Project	3	4	5	6	7	8	9	10	11	12	2017 1	2
PHASE 1: Berth 217-220 Dredging, Wharf Improvements, TICTF E												
Mobilization/Prep/Coordination												
Sheet Piling 1												
Sheet Piling 2												
Dredging - Ocean Disposal												
Dredging - Upland Disposal												
Crane Rail Extension												
TICTF Expansion	1											
PHASE 1: Crane Removal, Relocation, Delivery												
2 LAHD Crane Relocation (B217-220)												
2 YTI Crane Relocation/Realignment (B217-220)												
4 New YTI Crane Delivery (B217-220)												
6 Crane Height Raising and Boom Extension (4 cranes at B212-213, 2 cr	1	1	1									
PHASE 2: Berth 214-216 Dredging, Wharf & Backland Improvemer												
Sheet and King Pile Installation 1												
Sheet and King Pile Installation 2												
Dredging - Ocean Disposal												
Dredging - Upland Disposal												
Concrete Runway												
Cold plane and ac overlay												
Slurry seal												
Striping								1	1			
Final Inspections/Project closeout												

Table B1.4 **Construction Offroad Engine Characteristics and Emission Factors**

Year	Source Description	OFFROAD2011 Category	Engine (kW)	Engine (Hp)	Load Factor	Emission Factor Units	Emission Factors, Unmitigated (unloaded) PM10	PM2.5	DPM	NOx	SOx	CO	HC	VOC	CO2	CH4	N2O
2015																	
2015	blade/grader	Graders	162	217	0.41	g/hp-hr	0.18565	0.17080	0.18565	5.72764	0.01010	5.0	0.32730	0.34465	538.22334	0.03057	0.01371
2015	crane	Cranes	208	279	0.29	g/hp-hr	0.25337	0.23310	0.25337	6.12414	0.00998	2.2	0.39259	0.41340	532.05105	0.03022	0.01355
2015	dozer	Rubber Tired Dozers	358	480	0.40	g/hp-hr	0.37313	0.34328	0.37313	7.99750	0.01014	4.0	0.58489	0.61589	540.32537	0.03069	0.01376
2015	excavator	Excavators	157	211	0.38	g/hp-hr	0.13307	0.12242	0.13307	4.18229	0.01000	5.0	0.23858	0.25122	532.94436	0.03027	0.01357
2015	forklift	Forklifts	149	200	0.20	g/hp-hr	0.29781	0.27399	0.29781	6.69679	0.01002	5.0	0.46671	0.49145	533.68728	0.03032	0.01359
2015	loader	Tractors/Loaders/Backhoes	75	101	0.37	g/hp-hr	0.42440	0.39045	0.42440	5.42219	0.01010	8.4	0.47052	0.49546	538.47071	0.03059	0.01371
2015	paving machine	Paving Equipment	82	110	0.36	g/hp-hr	0.47074	0.43308	0.47074	6.14464	0.01002	10.3	0.54628	0.57523	534.10140	0.03034	0.01360
2015	pneumatic lift	Other Construction Equipment	34	46	0.42	g/hp-hr	0.50336	0.46309	0.50336	5.56407	0.01119	5.2	1.08179	1.13913	596.39565	0.03388	0.01519
2015	prentice loader	Other Construction Equipment	261	350	0.42	g/hp-hr	0.51185	0.47091	0.51185	6.53660	0.00996	7.6	0.59746	0.62913	530.98261	0.03016	0.01352
2015	regulator	Other Construction Equipment	168	225	0.42	g/hp-hr	0.16263	0.14962	0.16263	4.41527	0.01006	1.7	0.26806	0.28227	536.21228	0.03046	0.01365
2015	roller	Rollers	84	113	0.38	g/hp-hr	0.46739	0.43000	0.46739	6.27168	0.01003	9.0	0.56475	0.59468	534.45320	0.03036	0.01361
2015	skip loader	Skid Steer Loaders	75	101	0.37	g/hp-hr	0.22021	0.20259	0.22021	3.81067	0.00999	7.1	0.24286	0.25573	532.46510	0.03025	0.01356
2015	slurry truck	Off-Highway Trucks	381	511	0.38	g/hp-hr	0.20846	0.19178	0.20846	5.12436	0.01005	1.9	0.37330	0.39308	535.63804	0.03043	0.01364
2015	speed swing	Other Construction Equipment	327	439	0.42	g/hp-hr	0.16263	0.14962	0.16263	4.41527	0.01006	1.7	0.26806	0.28227	536.21228	0.03046	0.01365
2015	striping truck	Other Construction Equipment	4	5	0.42	g/hp-hr	0.50336	0.46309	0.50336	5.56407	0.01119	5.2	1.08179	1.13913	596.39565	0.03388	0.01519
2015	sweeping truck	Off-Highway Trucks	381	511	0.38	g/hp-hr	0.20846	0.19178	0.20846	5.12436	0.01005	1.9	0.37330	0.39308	535.63804	0.03043	0.01364
2015	swivel dump	Other Construction Equipment	327	439	0.42	g/hp-hr	0.16263	0.14962	0.16263	4.41527	0.01006	1.7	0.26806	0.28227	536.21228	0.03046	0.01365
2015	tamper	Surfacing Equipment	392	526	0.30	g/hp-hr	0.10399	0.09567	0.10399	3.28684	0.00998	2.2	0.14683	0.15461	531.96628	0.03022	0.01355
2015	tie truck	Off-Highway Trucks	381	511	0.38	g/hp-hr	0.20846	0.19178	0.20846	5.12436	0.01005	1.9	0.37330	0.39308	535.63804	0.03043	0.01364
2015	jet pump	Other Construction Equipment	84	113	0.42	g/hp-hr	0.51185	0.47091	0.51185	6.53660	0.00996	7.6	0.59746	0.62913	530.98261	0.03016	0.01352
2015	scraper	Scrapers	356	477	0.48	g/hp-hr	0.24580	0.22613	0.24580	6.08587	0.01000	2.8	0.39026	0.41095	532.83159	0.03027	0.01357
2015	water truck	Off-Highway Trucks	381	511	0.38	g/hp-hr	0.20846	0.19178	0.20846	5.12436	0.01005	1.9	0.37330	0.39308	535.63804	0.03043	0.01364
2015	vibratory hammer	Other Construction Equipment	327	439	0.42	g/hp-hr	0.16263	0.14962	0.16263	4.41527	0.01006	1.7	0.26806	0.28227	536.21228	0.03046	0.01365
2015	pile hammer	Other Construction Equipment	327	439	0.42	g/hp-hr	0.16263	0.14962	0.16263	4.41527	0.01006	1.7	0.26806	0.28227	536.21228	0.03046	0.01365
2015	tractor	Tractors/Loaders/Backhoes	381	511	0.37	g/hp-hr	0.14910	0.13717	0.14910	4.34841	0.01000	1.7	0.25781	0.27148	532.74974	0.03026	0.01357
2015	welder	Other Construction Equipment	46	62	0.42	g/hp-hr	0.50336	0.46309	0.50336	5.56407	0.01119	5.2	1.08179	1.13913	596.39565	0.03388	0.01519
2015	aerial lift	Aerial Lifts	34	46	0.31	g/hp-hr	0.13602	0.12514	0.13602	3.93290	0.01111	5.2	0.20527	0.21615	592.03553	0.03363	0.01508
2015	*barge/scow auxiliary engines:*																
2015	barge/scow compressor	Other Construction Equipment		353	0.42	g/hp-hr	0.16263	0.14962	0.16263	4.41527	0.01006	1.7	0.26806	0.28227	536.21228	0.03046	0.01365
2015	barge/scow crane	Cranes		376	0.29	g/hp-hr	0.25337	0.23310	0.25337	6.12414	0.00998	2.2	0.39259	0.41340	532.05105	0.03022	0.01355
2015	barge/scow deck door engine	Other Construction Equipment		86	0.42	g/hp-hr	0.51185	0.47091	0.51185	6.53660	0.00996	7.6	0.59746	0.62913	530.98261	0.03016	0.01352
2015	barge/scow dredger	Other Construction Equipment		527	0.42	g/hp-hr	0.12313	0.11328	0.12313	3.83572	0.01001	0.9	0.20547	0.21636	533.32775	0.03030	0.01358
2015	barge/scow generator	Other Construction Equipment		464	0.42	g/hp-hr	0.16263	0.14962	0.16263	4.41527	0.01006	1.7	0.26806	0.28227	536.21228	0.03046	0.01365
2015	barge/scow hoist swing winch	Other Construction Equipment		379	0.42	g/hp-hr	0.16263	0.14962	0.16263	4.41527	0.01006	1.7	0.26806	0.28227	536.21228	0.03046	0.01365
2015	barge/scow hoist swing pump	Other Construction Equipment		517	0.42	g/hp-hr	0.12313	0.11328	0.12313	3.83572	0.01001	0.9	0.20547	0.21636	533.32775	0.03030	0.01358

Table B1.4 **Construction Offroad Engine Characteristics and Emission Factors**

			Emission Factors, Mitigated (Unloaded)										
Year	Source Description	OFFROAD2011 Category	PM10	PM2.5	DPM	NOx	SOx	CO	HC	VOC	CO2	CH4	N2O
2015													
2015	blade/grader	Graders	0.04300	0.04300	0.04300	2.58000	0.01010	3.46176		0.34465	538.22334	0.03057	0.01371
2015	crane	Cranes	0.04300	0.04300	0.04300	2.58000	0.00998	2.19918		0.41340	532.05105	0.03022	0.01355
2015	dozer	Rubber Tired Dozers	0.04300	0.04300	0.04300	2.58000	0.01014	3.46176		0.60455	540.32537	0.03069	0.01376
2015	excavator	Excavators	0.04300	0.04300	0.04300	2.58000	0.01000	3.46176		0.25122	532.94436	0.03027	0.01357
2015	forklift	Forklifts	0.04300	0.04300	0.04300	2.58000	0.01002	3.46176		0.49145	533.68728	0.03032	0.01359
2015	loader	Tractors/Loaders/Backhoes	0.04300	0.04300	0.04300	2.58000	0.01010	3.46176		0.49546	538.47071	0.03059	0.01371
2015	paving machine	Paving Equipment	0.04300	0.04300	0.04300	2.58000	0.01002	3.46176		0.57523	534.10140	0.03034	0.01360
2015	pneumatic lift	Other Construction Equipment	0.04300	0.04300	0.04300	2.58000	0.01119	3.46176		0.60455	596.39565	0.03388	0.01519
2015	prentice loader	Other Construction Equipment	0.04300	0.04300	0.04300	2.58000	0.00996	3.46176		0.60455	530.98261	0.03016	0.01352
2015	regulator	Other Construction Equipment	0.04300	0.04300	0.04300	2.58000	0.01006	1.65605		0.28227	536.21228	0.03046	0.01365
2015	roller	Rollers	0.04300	0.04300	0.04300	2.58000	0.01003	3.46176		0.59468	534.45320	0.03036	0.01361
2015	skip loader	Skid Steer Loaders	0.04300	0.04300	0.04300	2.58000	0.00999	3.46176		0.25573	532.46510	0.03025	0.01356
2015	slurry truck	Off-Highway Trucks	0.04300	0.04300	0.04300	2.58000	0.01005	1.85382		0.39308	535.63804	0.03043	0.01364
2015	speed swing	Other Construction Equipment	0.04300	0.04300	0.04300	2.58000	0.01006	1.65605		0.28227	536.21228	0.03046	0.01365
2015	striping truck	Other Construction Equipment	0.04300	0.04300	0.04300	2.58000	0.01119	3.46176		0.60455	596.39565	0.03388	0.01519
2015	sweeping truck	Off-Highway Trucks	0.04300	0.04300	0.04300	2.58000	0.01005	1.85382		0.39308	535.63804	0.03043	0.01364
2015	swivel dump	Other Construction Equipment	0.04300	0.04300	0.04300	2.58000	0.01006	1.65605		0.28227	536.21228	0.03046	0.01365
2015	tamper	Surfacing Equipment	0.04300	0.04300	0.04300	2.58000	0.00998	2.21205		0.15461	531.96628	0.03022	0.01355
2015	tie truck	Off-Highway Trucks	0.04300	0.04300	0.04300	2.58000	0.01005	1.85382		0.39308	535.63804	0.03043	0.01364
2015	jet pump	Other Construction Equipment	0.04300	0.04300	0.04300	2.58000	0.00996	3.46176		0.60455	530.98261	0.03016	0.01352
2015	scraper	Scrapers	0.04300	0.04300	0.04300	2.58000	0.01000	2.82769		0.41095	532.83159	0.03027	0.01357
2015	water truck	Off-Highway Trucks	0.04300	0.04300	0.04300	2.58000	0.01005	1.85382		0.39308	535.63804	0.03043	0.01364
2015	vibratory hammer	Other Construction Equipment	0.04300	0.04300	0.04300	2.58000	0.01006	1.65605		0.28227	536.21228	0.03046	0.01365
2015	pile hammer	Other Construction Equipment	0.04300	0.04300	0.04300	2.58000	0.01006	1.65605		0.28227	536.21228	0.03046	0.01365
2015	tractor	Tractors/Loaders/Backhoes	0.04300	0.04300	0.04300	2.58000	0.01000	1.74404		0.27148	532.74974	0.03026	0.01357
2015	welder	Other Construction Equipment	0.04300	0.04300	0.04300	2.58000	0.01119	3.46176		0.60455	596.39565	0.03388	0.01519
2015	aerial lift	Aerial Lifts	0.04300	0.04300	0.04300	2.58000	0.01111	3.46176		0.21615	592.03553	0.03363	0.01508
2015	*barge/scow auxiliary engines:*												
2015	barge/scow compressor	Other Construction Equipment	0.04300	0.04300	0.04300	2.58000	0.01006	1.65605		0.28227	536.21228	0.03046	0.01365
2015	barge/scow crane	Cranes	0.04300	0.04300	0.04300	2.58000	0.00998	2.19918		0.41340	532.05105	0.03022	0.01355
	barge/scow deck door	Other Construction Equipment											
2015	engine	Other Construction Equipment	0.04300	0.04300	0.04300	2.58000	0.00996	3.46176		0.60455	530.98261	0.03016	0.01352
2015	barge/scow dredger	Other Construction Equipment	0.04300	0.04300	0.04300	2.58000	0.01001	0.86783		0.21636	533.32775	0.03030	0.01358
2015	barge/scow generator	Other Construction Equipment	0.04300	0.04300	0.04300	2.58000	0.01006	1.65605		0.28227	536.21228	0.03046	0.01365
	barge/scow hoist swing												
2015	winch	Other Construction Equipment	0.04300	0.04300	0.04300	2.58000	0.01006	1.65605		0.28227	536.21228	0.03046	0.01365
	barge/scow hoist swing												
2015	pump	Other Construction Equipment	0.04300	0.04300	0.04300	2.58000	0.01001	0.86783		0.21636	533.32775	0.03030	0.01358

Table B1.4 **Construction Offroad Engine Characteristics and Emission Factors**

Year	Source Description	OFFROAD2011 Category	Engine (kW)	Engine (Hp)	Load Factor	Emission Factor Units	Emission Factors, Unmitigated (unloaded) PM10	PM2.5	DPM	NOx	SOx	CO	HC	VOC	CO2	CH4	N2O
2016																	
2016	blade/grader	Graders	162	217	0.41	g/hp-hr	0.18397	0.16925	0.18397	5.66289	0.01010	5.0	0.32917	0.34662	538.08896	0.03057	0.01370
2016	crane	Cranes	208	279	0.29	g/hp-hr	0.23319	0.21453	0.23319	5.64875	0.00999	2.1	0.36608	0.38549	532.19203	0.03023	0.01355
2016	excavator	Excavators	157	211	0.38	g/hp-hr	0.11579	0.10653	0.11579	3.66742	0.01000	5.0	0.21669	0.22818	532.67134	0.03026	0.01356
2016	forklift	Forklifts	149	200	0.20	g/hp-hr	0.27986	0.25747	0.27986	6.35314	0.01002	5.0	0.44583	0.46946	533.68728	0.03032	0.01359
2016	loader	Tractors/Loaders/Backhoes	75	101	0.37	g/hp-hr	0.39593	0.36426	0.39593	5.14244	0.01009	8.2	0.44467	0.46824	537.72060	0.03055	0.01369
2016	paving machine	Paving Equipment	82	110	0.36	g/hp-hr	0.43832	0.40326	0.43832	5.73340	0.01002	10.0	0.51508	0.54238	534.10803	0.03034	0.01360
2016	pneumatic lift	Other Construction Equipment	34	46	0.42	g/hp-hr	0.49199	0.45263	0.49199	5.49931	0.01119	5.2	1.05837	1.11447	596.22269	0.03387	0.01518
2016	prentice loader	Tractors/Loaders/Backhoes	261	350	0.37	g/hp-hr	0.39593	0.36426	0.39593	5.14244	0.01009	8.2	0.44467	0.46824	537.72060	0.03055	0.01369
2016	regulator	Other Construction Equipment	168	225	0.42	g/hp-hr	0.15066	0.13860	0.15066	4.08979	0.01006	1.6	0.25417	0.26765	535.99663	0.03045	0.01365
2016	roller	Rollers	84	113	0.38	g/hp-hr	0.42752	0.39332	0.42752	5.80573	0.01003	8.7	0.51920	0.54671	534.41138	0.03036	0.01361
2016	skip loader	Skid Steer Loaders	75	101	0.37	g/hp-hr	0.19740	0.18161	0.19740	3.53445	0.00999	6.9	0.22574	0.23771	532.41174	0.03024	0.01356
2016	slurry truck	Off-Highway Trucks	381	511	0.38	g/hp-hr	0.18665	0.17172	0.18665	4.64255	0.01003	1.8	0.34542	0.36373	534.61426	0.03037	0.01361
2016	speed swing	Other Construction Equipment	327	439	0.42	g/hp-hr	0.15066	0.13860	0.15066	4.08979	0.01006	1.6	0.25417	0.26765	535.99663	0.03045	0.01365
2016	striping truck	Other Construction Equipment	4	5	0.42	g/hp-hr	0.49199	0.45263	0.49199	5.49931	0.01119	5.2	1.05837	1.11447	596.22269	0.03387	0.01518
2016	sweeping truck	Off-Highway Trucks	381	511	0.38	g/hp-hr	0.18665	0.17172	0.18665	4.64255	0.01003	1.8	0.34542	0.36373	534.61426	0.03037	0.01361
2016	swivel dump	Other Construction Equipment	327	439	0.42	g/hp-hr	0.15066	0.13860	0.15066	4.08979	0.01006	1.6	0.25417	0.26765	535.99663	0.03045	0.01365
2016	tamper	Surfacing Equipment	392	526	0.30	g/hp-hr	0.09264	0.08523	0.09264	2.87959	0.01000	2.1	0.13374	0.14083	533.11616	0.03028	0.01358
2016	tie truck	Off-Highway Trucks	381	511	0.38	g/hp-hr	0.18665	0.17172	0.18665	4.64255	0.01003	1.8	0.34542	0.36373	534.61426	0.03037	0.01361
2016	jet pump	Other Construction Equipment	84	113	0.42	g/hp-hr	0.49569	0.45604	0.49569	6.32543	0.00997	7.4	0.58129	0.61210	531.41467	0.03019	0.01353
2016	scraper	Scrapers	356	477	0.48	g/hp-hr	0.23207	0.21350	0.23207	5.75759	0.00999	2.7	0.37386	0.39367	532.46770	0.03025	0.01356
2016	water truck	Off-Highway Trucks	381	511	0.38	g/hp-hr	0.18665	0.17172	0.18665	4.64255	0.01003	1.8	0.34542	0.36373	534.61426	0.03037	0.01361
2016	vibratory hammer	Other Construction Equipment	327	439	0.42	g/hp-hr	0.15066	0.13860	0.15066	4.08979	0.01006	1.6	0.25417	0.26765	535.99663	0.03045	0.01365
2016	pile hammer	Other Construction Equipment	327	439	0.42	g/hp-hr	0.15066	0.13860	0.15066	4.08979	0.01006	1.6	0.25417	0.26765	535.99663	0.03045	0.01365
2016	tractor	Tractors/Loaders/Backhoes	381	511	0.37	g/hp-hr	0.13104	0.12055	0.13104	3.78666	0.00997	1.7	0.23458	0.24702	531.33141	0.03018	0.01353
2016	welder	Other Construction Equipment	46	62	0.42	g/hp-hr	0.49199	0.45263	0.49199	5.49931	0.01119	5.2	1.05837	1.11447	596.22269	0.03387	0.01518
2016	aerial lift	Aerial Lifts	34	46	0.31	g/hp-hr	0.10463	0.09626	0.10463	3.67578	0.01111	5.2	0.18827	0.19825	592.03553	0.03363	0.01508
2016	*barge/scow auxiliary engines:*																
2016	barge/scow compressor	Other Construction Equipment		353	0.42	g/hp-hr	0.15066	0.13860	0.15066	4.08979	0.01006	1.6	0.25417	0.26765	535.99663	0.03045	0.01365
2016	barge/scow crane	Cranes		376	0.29	g/hp-hr	0.23319	0.21453	0.23319	5.64875	0.00999	2.1	0.36608	0.38549	532.19203	0.03023	0.01355
	barge/scow deck door	Other Construction															
2016	engine	Equipment		86	0.42	g/hp-hr	0.49569	0.45604	0.49569	6.32543	0.00997	7.4	0.58129	0.61210	531.41467	0.03019	0.01353
2016	barge/scow dredger	Other Construction Equipment		527	0.42	g/hp-hr	0.12157	0.11184	0.12157	3.74629	0.01001	0.9	0.20673	0.21769	533.35408	0.03030	0.01358
2016	barge/scow generator	Other Construction Equipment		464	0.42	g/hp-hr	0.15066	0.13860	0.15066	4.08979	0.01006	1.6	0.25417	0.26765	535.99663	0.03045	0.01365
	barge/scow hoist swing	Other Construction															
2016	winch	Equipment		379	0.42	g/hp-hr	0.15066	0.13860	0.15066	4.08979	0.01006	1.6	0.25417	0.26765	535.99663	0.03045	0.01365
	barge/scow hoist swing	Other Construction															
2016	pump	Equipment		517	0.42	g/hp-hr	0.12157	0.11184	0.12157	3.74629	0.01001	0.9	0.20673	0.21769	533.35408	0.03030	0.01358

Notes and assumptions:
Offroad2011 categories are from EMFAC2011 Offroad Construction Equipment and Industrial Equipment module
HP and load factors for offroad equipment are from CalEEMod, Appendix D, Table 3.3.
Horsepower and load factors for barge/scow auxiliary engines are from OFFROAD2011 HC module.
Exceptions: horsepower for striping machine was obtained from online advertisement
CO is from Offroad2007 because Offroad2011 does not calculate CO.

Table B1.4 **Construction Offroad Engine Characteristics and Emission Factors**

Year	Source Description	OFFROAD2011 Category	Emission Factors, Mitigated (Unloaded) PM10	PM2.5	DPM	NOx	SOx	CO	HC	VOC	CO2	CH4	N2O
2016													
2016	blade/grader	Graders	0.04300	0.04300	0.04300	2.58000	0.01010	3.46176		0.34662	538.08896	0.03057	0.01370
2016	crane	Cranes	0.04300	0.04300	0.04300	2.58000	0.00999	2.08937		0.38549	532.19203	0.03023	0.01355
2016	excavator	Excavators	0.04300	0.04300	0.04300	2.58000	0.01000	3.46176		0.22818	532.67134	0.03026	0.01356
2016	forklift	Forklifts	0.04300	0.04300	0.04300	2.58000	0.01002	3.46176		0.46946	533.68728	0.03032	0.01359
2016	loader	Tractors/Loaders/Backhoes	0.04300	0.04300	0.04300	2.58000	0.01009	3.46176		0.46824	537.72060	0.03055	0.01369
2016	paving machine	Paving Equipment	0.04300	0.04300	0.04300	2.58000	0.01002	3.46176		0.54238	534.10803	0.03034	0.01360
2016	pneumatic lift	Other Construction Equipment	0.04300	0.04300	0.04300	2.58000	0.01119	3.46176		0.60455	596.22269	0.03387	0.01518
2016	prentice loader	Tractors/Loaders/Backhoes	0.04300	0.04300	0.04300	2.58000	0.01009	3.46176		0.46824	537.72060	0.03055	0.01369
2016	regulator	Other Construction Equipment	0.04300	0.04300	0.04300	2.58000	0.01006	1.62446		0.26765	535.99663	0.03045	0.01365
2016	roller	Rollers	0.04300	0.04300	0.04300	2.58000	0.01003	3.46176		0.54671	534.41138	0.03036	0.01361
2016	skip loader	Skid Steer Loaders	0.04300	0.04300	0.04300	2.58000	0.00999	3.46176		0.23771	532.41174	0.03024	0.01356
2016	slurry truck	Off-Highway Trucks	0.04300	0.04300	0.04300	2.58000	0.01003	1.80585		0.36373	534.61426	0.03037	0.01361
2016	speed swing	Other Construction Equipment	0.04300	0.04300	0.04300	2.58000	0.01006	1.62446		0.26765	535.99663	0.03045	0.01365
2016	striping truck	Other Construction Equipment	0.04300	0.04300	0.04300	2.58000	0.01119	3.46176		0.60455	596.22269	0.03387	0.01518
2016	sweeping truck	Off-Highway Trucks	0.04300	0.04300	0.04300	2.58000	0.01003	1.80585		0.36373	534.61426	0.03037	0.01361
2016	swivel dump	Other Construction Equipment	0.04300	0.04300	0.04300	2.58000	0.01006	1.62446		0.26765	535.99663	0.03045	0.01365
2016	tamper	Surfacing Equipment	0.04300	0.04300	0.04300	2.58000	0.01000	2.10630		0.14083	533.11616	0.03028	0.01358
2016	tie truck	Off-Highway Trucks	0.04300	0.04300	0.04300	2.58000	0.01003	1.80585		0.36373	534.61426	0.03037	0.01361
2016	jet pump	Other Construction Equipment	0.04300	0.04300	0.04300	2.58000	0.00997	3.46176		0.60455	531.41467	0.03019	0.01353
2016	scraper	Scrapers	0.04300	0.04300	0.04300	2.58000	0.00999	2.67307		0.39367	532.46770	0.03025	0.01356
2016	water truck	Off-Highway Trucks	0.04300	0.04300	0.04300	2.58000	0.01003	1.80585		0.36373	534.61426	0.03037	0.01361
2016	vibratory hammer	Other Construction Equipment	0.04300	0.04300	0.04300	2.58000	0.01006	1.62446		0.26765	535.99663	0.03045	0.01365
2016	pile hammer	Other Construction Equipment	0.04300	0.04300	0.04300	2.58000	0.01006	1.62446		0.26765	535.99663	0.03045	0.01365
2016	tractor	Tractors/Loaders/Backhoes	0.04300	0.04300	0.04300	2.58000	0.00997	1.71311		0.24702	531.33141	0.03018	0.01353
2016	welder	Other Construction Equipment	0.04300	0.04300	0.04300	2.58000	0.01119	3.46176		0.60455	596.22269	0.03387	0.01518
2016	aerial lift	Aerial Lifts	0.04300	0.04300	0.04300	2.58000	0.01111	3.46176		0.19825	592.03553	0.03363	0.01508
2016	*barge/scow auxiliary engines:*												
2016	barge/scow compressor	Other Construction Equipment	0.04300	0.04300	0.04300	2.58000	0.01006	1.62446		0.26765	535.99663	0.03045	0.01365
2016	barge/scow crane	Cranes	0.04300	0.04300	0.04300	2.58000	0.00999	2.08937		0.38549	532.19203	0.03023	0.01355
	barge/scow deck door	Other Construction											
2016	engine	Equipment	0.04300	0.04300	0.04300	2.58000	0.00997	3.46176		0.60455	531.41467	0.03019	0.01353
2016	barge/scow dredger	Other Construction Equipment	0.04300	0.04300	0.04300	2.58000	0.01001	0.85128		0.21769	533.35408	0.03030	0.01358
2016	barge/scow generator	Other Construction Equipment	0.04300	0.04300	0.04300	2.58000	0.01006	1.62446		0.26765	535.99663	0.03045	0.01365
	barge/scow hoist swing	Other Construction											
2016	winch	Equipment	0.04300	0.04300	0.04300	2.58000	0.01006	1.62446		0.26765	535.99663	0.03045	0.01365
	barge/scow hoist swing	Other Construction											
2016	pump	Equipment	0.04300	0.04300	0.04300	2.58000	0.01001	0.85128		0.21769	533.35408	0.03030	0.01358

Notes and assumptions:

Offroad2011 categories are from EMFAC2011 Offroad Construction Equipment and Industrial Equipment module

HP and load factors for offroad equipment are from CalEEMod, Appendix D, Table 3.3.

Horsepower and load factors for barge/scow auxiliary engines are from OFFROAD2011 HC module.

Exceptions: horsepower for striping machine was obtained from online advertisement

CO is from Offroad2007 because Offroad2011 does not calculate CO.

Table B1.5 **Offroad2011 Load Factors**

EquipmentTypeID	Adj ARB LF
A/C Tug Narrow Body	0.536
A/C Tug Wide Body	0.536
Baggage Tug	0.3685
Belt Loader	0.335
Bobtail	0.3685
Cargo Loader	0.335
Cargo Tractor	0.3618
Forklift (GSE)	0.201
Lift (GSE)	0.335
Other GSE	0.335
Bore/Drill Rigs	0.5025
Cranes	0.2881
Crawler Tractors	0.4288
Excavators	0.3819
Graders	0.4087
Off-Highway Tractors	0.4355
Off-Highway Trucks	0.3819
Other Construction Equipment	0.4154
Pavers	0.4154
Paving Equipment	0.3551
Rollers	0.3752
Rough Terrain Forklifts	0.402
Rubber Tired Dozers	0.3953
Rubber Tired Loaders	0.3618
Scrapers	0.4824
Skid Steer Loaders	0.3685
Surfacing Equipment	0.3015
Tractors/Loaders/Backhoes	0.3685
Trenchers	0.5025
Aerial Lifts	0.3082
Forklifts	0.201
Other General Industrial Equipment	0.3417
Other Material Handling Equipment	0.3953
Drill Rig (Mobile)	0.5025
Workover Rig (Mobile)	0.5025
Sweepers/Scrubbers	0.4556
Passenger Stand	0.3953

Table B1.6 **LAHD Sustainable Construction Guidelines Table A: Comp** (g/bhp-hr)

Compliance Alternative	Engine Standard	CARB-Verified DECS	2015+	PM	Nox	CO	VOC
1	Tier 4	N/A	50%	0.01	0.3	2.55	0.15
2	Tier 3	Level 3	20%	0.02	2.9	2.71	0.56
3	Tier 2	Level 3		0.02	4.7	2.71	2.19
4	Tier 1	Level 3	10%	0.06	6.9	6.87	0.99
5	Tier 2	Level 2	10%	0.08	4.7	2.71	2.19
6	Tier 2	Level 1		0.11	4.7	2.71	2.19
7	Tier 2	Uncontrolled		0.15	4.7	2.71	2.19
8	Tier 1	Level 2	10%	0.2	6.9	6.87	0.99
2015+ Composite Emission Factor				**0.043**	**2.58**	**3.5**	**0.6**

Table B1.7 Construction Onroad Engine Characteristics and Emission Factors

			Emission Factors, Unmitigated Average													
			PM10 brake wear	PM10 tire wear	PM2.5 brake wear	PM2.5 tire wear	PM10	PM2.5	DPM	NOx	SOx	CO	HC	VOC	CO2	CH4	N2O
2015	*Idling Exhaust Onsite*																
	bobtail truck	T6 instate construction heavy	g/hr-vehicle	0	0	0	0	0.337314	0.3103289	0.337314	80.186509	0.0715001	22.033837		1.9698024	7307.0452	0	0
	flatbed trailer	T6 instate construction heavy	g/hr-vehicle	0	0	0	0	0.337314	0.3103289	0.337314	80.186509	0.0715001	22.033837		1.9698024	7307.0452	0	0
	haul trucks	T6 instate construction heavy	g/hr-vehicle	0	0	0	0	0.337314	0.3103289	0.337314	80.186509	0.0715001	22.033837		1.9698024	7307.0452	0	0
	material deli	T6 instate construction heavy	g/hr-vehicle	0	0	0	0	0.337314	0.3103289	0.337314	80.186509	0.0715001	22.033837		1.9698024	7307.0452	0	0
	pick-up truc	LDT2	g/hr-vehicle															
	worker vehi	LDA	g/hr-vehicle															
2015	*Transit Exhaust Onsite*																
	bobtail truck	T6 instate construction heavy	g/mile	0	0	0	0	0.3086019	0.2839138	0.3086019	20.308176	0	2.4465648		1.6431981	2545.7776	0	0
	flatbed trailer	T6 instate construction heavy	g/mile	0	0	0	0	0.3086019	0.2839138	0.3086019	20.308176	0	2.4465648		1.6431981	2545.7776	0	0
	haul trucks	T6 instate construction heavy	g/mile	0	0	0	0	0.3086019	0.2839138	0.3086019	20.308176	0	2.4465648		1.6431981	2545.7776	0	0
	material deli	T6 instate construction heavy	g/mile	0	0	0	0	0.3086019	0.2839138	0.3086019	20.308176	0	2.4465648		1.6431981	2545.7776	0	0
	pick-up truc	LDT2	g/mile	0	0	0	0	0.1214561	0.1117396	0.1214561	0.9438616	0	1.0334394		0.1521778	386.36591	0	0
	worker vehi	LDA	g/mile	0	0	0	0	0.0108168	0.0099379	0.0108168	0.1780533	0	2.4092613		0.1717998	945.27011	0	0
2015	*Transit Exhaust Offsite*																
	bobtail truck	T6 instate construction heavy	g/mile	0.13034	0.012	0.05586	0.003	0.0738049	0.0679005	0.0738049	6.6745717	0.010913	0.49954		0.1215765	1115.2628	0	0
	flatbed trailer	T6 instate construction heavy	g/mile	0.13034	0.012	0.05586	0.003	0.0738049	0.0679005	0.0738049	6.6745717	0.010913	0.49954		0.1215765	1115.2628	0	0
	haul trucks	T6 instate construction heavy	g/mile	0.13034	0.012	0.05586	0.003	0.0738049	0.0679005	0.0738049	6.6745717	0.010913	0.49954		0.1215765	1115.2628	0	0
	material deli	T6 instate construction heavy	g/mile	0.13034	0.012	0.05586	0.003	0.0738049	0.0679005	0.0738049	6.6745717	0.010913	0.49954		0.1215765	1115.2628	0	0
	pick-up truc	LDT2	g/mile	0.03675	0.008	0.01575	0.002	0.0025725	0.0023611	0.0025725	0.259778	0.0050955	2.3288254		0.2375715	454.71457	0	0
	worker vehi	LDA	g/mile	0.03675	0.008	0.01575	0.002	0.0024763	0.002265	0.0024763	0.1383158	0.0037545	1.6735154		0.1813203	320.37078	0	0
2016	*Idling Exhaust Onsite*																
	bobtail truck	T6 instate construction heavy	g/hr-vehicle	0	0	0	0	0.276904	0.2547516	0.276904	75.252988	0.0718999	21.894273		1.9162029	7272.5331	0	0
	flatbed trailer	T6 instate construction heavy	g/hr-vehicle	0	0	0	0	0.276904	0.2547516	0.276904	75.252988	0.0718999	21.894273		1.9162029	7272.5331	0	0
	haul trucks	T6 instate construction heavy	g/hr-vehicle	0	0	0	0	0.276904	0.2547516	0.276904	75.252988	0.0718999	21.894273		1.9162029	7272.5331	0	0
	material deli	T6 instate construction heavy	g/hr-vehicle	0	0	0	0	0.276904	0.2547516	0.276904	75.252988	0.0718999	21.894273		1.9162029	7272.5331	0	0
	pick-up truc	LDT2	g/hr-vehicle															
	worker vehi	LDA	g/hr-vehicle															
2016	*Transit Exhaust Onsite*																
	bobtail truck	T6 instate construction heavy	g/mile	0	0	0	0	0.187414	0.1724208	0.187414	18.006635	0	2.0992087		1.3260276	2517.0611	0	0
	flatbed trailer	T6 instate construction heavy	g/mile	0	0	0	0	0.187414	0.1724208	0.187414	18.006635	0	2.0992087		1.3260276	2517.0611	0	0
	haul trucks	T6 instate construction heavy	g/mile	0	0	0	0	0.187414	0.1724208	0.187414	18.006635	0	2.0992087		1.3260276	2517.0611	0	0
	material deli	T6 instate construction heavy	g/mile	0	0	0	0	0.187414	0.1724208	0.187414	18.006635	0	2.0992087		1.3260276	2517.0611	0	0
	pick-up truc	LDT2	g/mile	0	0	0	0	0.10029	0.0922668	0.10029	0.8440851	0	0.8797248		0.1259299	381.16624	0	0
	worker vehi	LDA	g/mile	0	0	0	0	0.0105309	0.0096978	0.0105309	0.1620182	0	2.1336324		0.1478416	908.46905	0	0
2016	*Transit Exhaust Offsite*																
	bobtail truck	T6 instate construction heavy	g/mile	0.13034	0.012	0.05586	0.003	0.0580021	0.0533619	0.0580021	5.9058158	0.0109024	0.4309046		0.1008201	1102.7602	0	0
	flatbed trailer	T6 instate construction heavy	g/mile	0.13034	0.012	0.05586	0.003	0.0580021	0.0533619	0.0580021	5.9058158	0.0109024	0.4309046		0.1008201	1102.7602	0	0
	haul trucks	T6 instate construction heavy	g/mile	0.13034	0.012	0.05586	0.003	0.0580021	0.0533619	0.0580021	5.9058158	0.0109024	0.4309046		0.1008201	1102.7602	0	0
	material deli	T6 instate construction heavy	g/mile	0.13034	0.012	0.05586	0.003	0.0580021	0.0533619	0.0580021	5.9058158	0.0109024	0.4309046		0.1008201	1102.7602	0	0
	pick-up truc	LDT2	g/mile	0.03675	0.008	0.01575	0.002	0.0024904	0.0022914	0.0024904	0.2300656	0.00509	2.0961014		0.2184972	441.00857	0	0
	worker vehi	LDA	g/mile	0.03675	0.008	0.01575	0.002	0.0024072	0.0022093	0.0024072	0.1238718	0.0037527	1.4993803		0.1613263	307.82333	0	0

Table B1.7 Construction Onroad Engine Characteristics and Emission Factors

		Emission Factors, Mitigated Average														
		PM10 brake wear	PM10 tire wear	PM2.5 brake wear	PM2.5 tire wear	PM10	PM2.5	DPM	NOx	SOx	CO	HC	VOC	CO2	CH4	N2O
2015 *Idling Exhaust Onsite*																
bobtail truck	T6 instate construction heavy	g/hr-vehicle	0	0	0	0	0.0902737	0.0830518	0.0902737	38.408956	0.0728751	25.423013		2.1499258	7447.5574	0	0
flatbed trailer	T6 instate construction heavy	g/hr-vehicle	0	0	0	0	0.0902737	0.0830518	0.0902737	38.408956	0.0728751	25.423013		2.1499258	7447.5574	0	0
haul trucks	T6 instate construction heavy	g/hr-vehicle	0	0	0	0	0.0902737	0.0830518	0.0902737	38.408956	0.0728751	25.423013		2.1499258	7447.5574	0	0
material deli	T6 instate construction heavy	g/hr-vehicle	0	0	0	0	0.0902737	0.0830518	0.0902737	38.408956	0.0728751	25.423013		2.1499258	7447.5574	0	0
pick-up truc	LDT2	g/hr-vehicle															
worker vehi	LDA	g/hr-vehicle															
2015 *Transit Exhaust Onsite*																
bobtail truck	T6 instate construction heavy	g/mile	0	0	0	0	0.0399314	0.0367369	0.0399314	5.9294374	0	2.3254946		1.3114062	2525.156	0	0
flatbed trailer	T6 instate construction heavy	g/mile	0	0	0	0	0.0399314	0.0367369	0.0399314	5.9294374	0	2.3254946		1.3114062	2525.156	0	0
haul trucks	T6 instate construction heavy	g/mile	0	0	0	0	0.0399314	0.0367369	0.0399314	5.9294374	0	2.3254946		1.3114062	2525.156	0	0
material deli	T6 instate construction heavy	g/mile	0	0	0	0	0.0399314	0.0367369	0.0399314	5.9294374	0	2.3254946		1.3114062	2525.156	0	0
pick-up truc	LDT2	g/mile															
worker vehi	LDA	g/mile															
2015 *Transit Exhaust Offsite*																
bobtail truck	T6 instate construction heavy	g/mile	0.13034	0.012	0.05586	0.003	0.0407941	0.0375306	0.0407941	1.7949291	0.0107896	0.4833215		0.1054755	1102.6516	0	0
flatbed trailer	T6 instate construction heavy	g/mile	0.13034	0.012	0.05586	0.003	0.0407941	0.0375306	0.0407941	1.7949291	0.0107896	0.4833215		0.1054755	1102.6516	0	0
haul trucks	T6 instate construction heavy	g/mile	0.13034	0.012	0.05586	0.003	0.0407941	0.0375306	0.0407941	1.7949291	0.0107896	0.4833215		0.1054755	1102.6516	0	0
material deli	T6 instate construction heavy	g/mile	0.13034	0.012	0.05586	0.003	0.0407941	0.0375306	0.0407941	1.7949291	0.0107896	0.4833215		0.1054755	1102.6516	0	0
pick-up truc	LDT2	g/mile															
worker vehi	LDA	g/mile															
2016 *Idling Exhaust Onsite*																
bobtail truck	T6 instate construction heavy	g/hr-vehicle	0	0	0	0	0.0902737	0.0830518	0.0902737	38.408956	0.0728751	25.423013		2.1499258	7371.1721	0	0
flatbed trailer	T6 instate construction heavy	g/hr-vehicle	0	0	0	0	0.0902737	0.0830518	0.0902737	38.408956	0.0728751	25.423013		2.1499258	7371.1721	0	0
haul trucks	T6 instate construction heavy	g/hr-vehicle	0	0	0	0	0.0902737	0.0830518	0.0902737	38.408956	0.0728751	25.423013		2.1499258	7371.1721	0	0
material deli	T6 instate construction heavy	g/hr-vehicle	0	0	0	0	0.0902737	0.0830518	0.0902737	38.408956	0.0728751	25.423013		2.1499258	7371.1721	0	0
pick-up truc	LDT2	g/hr-vehicle															
worker vehi	LDA	g/hr-vehicle															
2016 *Transit Exhaust Onsite*																
bobtail truck	T6 instate construction heavy	g/mile	0	0	0	0	0.0412094	0.0379127	0.0412094	5.7969048	0	2.3645325		1.3334207	2496.6121	0	0
flatbed trailer	T6 instate construction heavy	g/mile	0	0	0	0	0.0412094	0.0379127	0.0412094	5.7969048	0	2.3645325		1.3334207	2496.6121	0	0
haul trucks	T6 instate construction heavy	g/mile	0	0	0	0	0.0412094	0.0379127	0.0412094	5.7969048	0	2.3645325		1.3334207	2496.6121	0	0
material deli	T6 instate construction heavy	g/mile	0	0	0	0	0.0412094	0.0379127	0.0412094	5.7969048	0	2.3645325		1.3334207	2496.6121	0	0
pick-up truc	LDT2	g/mile															
worker vehi	LDA	g/mile															
2016 *Transit Exhaust Offsite*																
bobtail truck	T6 instate construction heavy	g/mile	0.13034	0.012	0.05586	0.003	0.0425351	0.0391323	0.0425351	1.7879376	0.0107844	0.4960747		0.1081131	1090.8212	0	0
flatbed trailer	T6 instate construction heavy	g/mile	0.13034	0.012	0.05586	0.003	0.0425351	0.0391323	0.0425351	1.7879376	0.0107844	0.4960747		0.1081131	1090.8212	0	0
haul trucks	T6 instate construction heavy	g/mile	0.13034	0.012	0.05586	0.003	0.0425351	0.0391323	0.0425351	1.7879376	0.0107844	0.4960747		0.1081131	1090.8212	0	0
material deli	T6 instate construction heavy	g/mile	0.13034	0.012	0.05586	0.003	0.0425351	0.0391323	0.0425351	1.7879376	0.0107844	0.4960747		0.1081131	1090.8212	0	0
pick-up truc	LDT2	g/mile															
worker vehi	LDA	g/mile															

Table B1.8 **Paved Road Dust Emission Factors**

Emission Source	(sL) Silt Loading (g/m2)	(k) Particle Size Multiplier - PM10 (g/VMT)	(k) Particle Size Multiplier - PM2.5 (g/VMT)	(W) Average Vehicle Weight on Road (tons)	(E) Uncontrolled PM10 Emission Factor (g/VMT)	(E) Uncontrolled PM2.5 Emission Factor (g/VMT)
Onsite Trucks	0.6	1.00	0.25	20.0	**13.34**	**3.34**
Offsite Autos	0.6	1.00	0.25	2.4	**1.53**	**0.38**
Offsite Roadway (all vehicles) <500 ADT	0.6	1.00	0.25	2.4	1.53	0.38
Offsite Roadway (all vehicles) 500-5000 ADT	0.2	1.00	0.25	2.4	0.56	0.14
Offsite Roadway (all vehicles) 5000-10000 ADT	0.06	1.00	0.25	2.4	**0.19**	**0.05**
Offsite Roadway (all vehicles) >10000 ADT	0.03	1.00	0.25	2.4	0.10	0.03
Offsite Roadway (all vehicles) >10000 ADT Limited Access	0.015	1.00	0.25	2.4	0.05	0.01

Notes:

1. Emission factors are calculated using Equation 1 of AP-42 Section 13.2.1 (Jan 2011). Because the emissions are primarily used for peak day or peak hour calculations, the downward adjustment due to annual precipitation (in Equation 2) was not made.
2. Emission factors exclude engine exhaust, tire wear, and brake wear.
3. The equation is: E = k (sL)^0.91 x (W)^1.02

Table B1.9 **Summary of Daily VMT by Roadway Type**

Los Angeles - Long Beach - Santa Ana Metro Area

Metropolitan Area	Interstate/ Other Fwy/ Exprwy	Other Principal Arterial	Minor Arterial	Collector	Local
Daily Vehicle-Miles Travelled (Thousands)	132,168	69,417	48,441	11,845	13,794
Travel Fraction	0.48	0.25	0.18	0.04	0.05

Source: Federal Highway Adminstration. Highway Statistics 2008 - Urbanized Areas - 2008 Miles and Daily Vehicle Miles Traveled. Table HM-71. October 2009. website: http://www.fhwa.dot.gov/policyinformation/statistics/2008/hm71.cfm.

Table B1.10 **Composite Paved Road Dust Emission Factors for Project Trips**

Road Type	Fraction of Travel by Roadway Type					Composite EF	
	Interstate/ Other Fwy/ Exprwy	Other Principal Arterial	Minor Arterial	Collector	Local	PM10 (g/VMT)	PM2.5 (g/VMT)
Vehicle Trips in Los Angeles - Long Beach - Santa Ana Metro Area	0.48	0.25	0.18	0.04	0.05	0.19	0.05

Table B1.11 **Grading Dust Emission Factors**

PM10 (lb/VMT)	1.543	PM10 (lb/acre)	1.06
PM2.5 (lb/VMT)	0.167	PM2.5 (lb/acre)	0.11

E (lb/VMT) = k x 0.051 x (S)2.0 for PM10 and k x 0.040 x (S)2.5 for PM2.5
k = Scaling Constant (0.60 for PM10 and 0.031 for PM2.5)
S = Mean Vehicle Speed assumed to be 7.1 mph
Assumes VMT = 3 x hours in use

E = EF * VMT
VMT = Acres graded / Wb * 43560(sft/acre) / 5280(ft/mile) 0.6875 VMT/acre
Wb = blade width of grading equipment = 12 ft
Source: AP42 11.9 & CalEEMod

Table B1.12 **Material Loading/Handling Dust Emision Factors**

PM10 (lb/ton)	0.0000888
PM2.5 (lb/ton)	0.0000134

EF = (k)(0.0032)[(U/5)1.3]/[(M/2)1.4]
EF = lb/ton
k = Particle Size Constant (0.35 for PM10 and 0.053 for PM2.5)
U = average wind speed = 2.2 m/s (CalEEMod), 4.9 mph
M = moisture content = 12% (CalEEMod)
Source: AP-42, p. 13.2.4 & CalEEMod

Soil density (ton/cyd):	1.26
Truck capacity (cyd)	20
Truck capacity (ton)	25.28

Table B1.13 **Asphalt Paving**

VOC (lb/acre)	2.62

Source: CalEEMod, Appendix A, Section 4.8.

Table B1.14 Construction Marine Engine Characteristics and Emission Factors

			HC Characteristics					Unmitigated Emission Factors										
Year	HC Classification	Engine Type	Engine Count per HC	Average Model Year	HC Average Power (hp)	HC Average Power (kW)	Load Factor	Engine Tier	PM10 (g/kW-hr)	PM2.5 (g/kW-hr)	DPM (g/kW-hr)	NOX (g/kW-hr)	SOX (g/kW-hr)	CO (g/kW-hr)	VOC (g/kW-hr)	CO2 (g/kW-hr)	CH4 (g/kW-hr)	N2O (g/kW-hr)
2015	Assist Tugboat	Propulsion	2	2004	2,046	1,526	0.31	Tier 1	0.54	0.48	0.54	17.00	0.01	11.40	1.37	652	0.03	0.03
		Auxiliary	1	2007	185	138	0.43	Tier 2	0.30	0.27	0.30	6.27	0.01	5.00	0.35	652	0.01	0.03
	Dive Boat	Propulsion	2	2001	496	370	0.38	Tier 1	0.54	0.48	0.54	17.00	0.01	11.40	1.37	652	0.03	0.03
		Auxiliary	1	1989	74	55	0.32	Tier 3	0.30	0.27	0.30	7.13	0.01	5.00	0.39	652	0.01	0.03
	Tugboat	Propulsion	2	2006	678	506	0.31	Tier 1	0.54	0.48	0.54	17.00	0.01	11.40	1.37	652	0.03	0.03
		Auxiliary	1	2007	45	34	0.43	Tier 2	0.30	0.27	0.30	6.27	0.01	5.00	0.35	652	0.01	0.03
	Crane Delivery Ship																	
	Crane Delivery Ship	Propulsion	1			12,798	Note [1]	Note [1]	1.50	1.20	1.50	18.10	10.50	1.40	0.63	620	0.01	0.03
	Crane Delivery Ship	Auxiliary	1			1,776	Note [1]	Note [1]	1.50	1.20	1.50	14.70	12.30	1.10	0.42	683	0.08	0.03
	Crane Delivery Ship	Boiler	1			371	Note [1]	Note [1]	0.80	0.64	0	2.10	16.50	0.20	0.11	970	0.00	0.08

Source:

HC average hp and engine count: 2011 POLA Emissions Inventory, Tables 4.1 and 4.2.

HC load factor: 2011 POLA Emissions Inventory, Table 4.6.

Note [1]. Crane delivery ship emissions were calculated using the OGV methodology used in operational calculations. Load factors for the propulsion engine vary depending on speed in each geographical zone between the Harbor and 100 nautical miles. Load factors for the auxiliary engine vary with energy demand while in transit, maneuvering or at berth.

Emission factors do not change between project alternatives.

Table B1.14 Construction Marine Engine Characteristi

Year	HC Classification	Engine Type	Engine Tier	Mitigated Emission Factors PM10 (g/kW-hr)	PM2.5 (g/kW-hr)	DPM (g/kW-hr)	NOX (g/kW-hr)	SOX (g/kW-hr)	CO (g/kW-hr)	VOC (g/kW-hr)	CO2 (g/kW-hr)	CH4 (g/kW-hr)	N2O (g/kW-hr)
2015	Assist Tugboat	Propulsion	Tier 3	0.34	0.30	0.34	10.45	0.01	5.00	0.58	652	0.01	0.03
		Auxiliary	Tier 3	0.12	0.11	0.12	5.28	0.01	5.00	0.29	652.00	0.01	0.03
	Dive Boat	Propulsion	Tier 3	0.23	0.21	0.23	7.94	0.01	5.00	0.44	652.00	0.01	0.03
		Auxiliary	Tier 3	0.35	0.31	0.35	7.13	0.01	5.00	0.39	652.00	0.01	0.03
	Tugboat	Propulsion	Tier 3	0.23	0.21	0.23	7.94	0.01	5.00	0.44	652.00	0.01	0.03
		Auxiliary	Tier 3	0.18	0.16	0.18	5.81	0.01	5.00	0.32	652.00	0.01	0.03
	Crane Delivery Ship												
	Crane Delivery Ship	Propulsion	Note [1]	1.50	1.20	1.50	18.10	10.50	1.40	0.63	620	0.01	0.03
	Crane Delivery Ship	Auxiliary	Note [1]	1.50	1.20	1.50	14.70	12.30	1.10	0.42	683	0.08	0.03
	Crane Delivery Ship	Boiler	Note [1]	0.80	0.64	0	2.10	16.50	0.20	0.11	970	0.00	0.08

Source:

HC average hp and engine count: 2011 POLA Emissions Inventory

HC load factor: 2011 POLA Emissions Inventory, Table 4.6.

Note [1]. Crane delivery ship emissions were calculated using the
the auxiliary engine vary with energy demand while in transit, man

Emission factors do not change between project alternatives.

Table B1.15 Harbor Craft Tier Designation

Model Year	HP Range	kW Range	Tier
<1999			Tier 0
2000-2003	<750	<560	Tier 1
2000-2006	>750	>560	Tier 1
>2004	<750	<560	Tier 2
>2007	>750	>560	Tier 2
>2009	25-120	18-90	Tier 3

Source: POLA 2012 Emissions Inventory

Table B1.16 Harbor Craft Emission Factors - EPA Standards

g/kw-hr

Engine Displacement	(kW)	EPA Tier	CARB Compliance MY	MHC+NOx	PM10	PM2.5	DPM	NOx	SOX	CO	HC	VOC	CO2	CH4	N2O
Category 1	HC auxiliary engines														
		Tier 1	2004		**0.54**	0.48	0.54	**17.00**	0.006	**11.40**	**1.30**	1.37	652	0.026	0.031
<0.9	37-75	Tier 2	2005	**7.50**	**0.40**	0.36	0.40	7.1	0.006	**5.00**	0.38	0.39	652	0.008	0.031
0.9 < displ < 1.2	75-130	Tier 2	2004	**7.20**	**0.30**	0.27	0.30	6.3	0.006	**5.00**	0.33	0.35	652	0.007	0.031
1.2 < displ < 2.5	130-560	Tier 2	2004	**7.20**	**0.30**	0.27	0.30	6.3	0.006	**5.00**	0.33	0.35	652	0.007	0.031
2.5 < displ < 5	>560	Tier 2	2007	**7.20**	**0.20**	0.18	0.20	6.1	0.006	**5.00**	0.32	0.34	652	0.006	0.031
<0.9	<19	Tier 3	2009	**7.5**	**0.40**	0.36	0.40	7.1	0.006	5.00	0.38	0.39	652	0.008	0.031
<0.9	19-75	Tier 3	2009	**7.5**	**0.30**	0.27	0.30	7.1	0.006	5.00	0.38	0.39	652	0.008	0.031
<0.9	75-3700	Tier 3	2012	**5.4**	**0.14**	0.12	0.14	5.1	0.006	5.00	0.27	0.28	652	0.005	0.031
0.9 < displ < 1.2	100-175	Tier 3	2013	**5.4**	**0.12**	0.11	0.12	5.1	0.006	5.00	0.27	0.28	652	0.005	0.031
1.2 < displ < 2.5	175-750	Tier 3	2014	**5.6**	**0.11**	0.10	0.11	5.3	0.006	5.00	0.28	0.29	652	0.006	0.031
2.5 < displ < 5	>750	Tier 3	2013	**5.6**	**0.11**	0.10	0.11	5.3	0.006	5.00	0.28	0.29	652	0.006	0.031
3.5 ≤ D < 7		Tier 3	2012	**5.8**	**0.11**	0.10	0.11	5.5	0.006	5.00	0.29	0.31	652	0.006	0.031
	>3700	Tier 4	2014		**0.12**	0.11	0.12	**1.8**	0.006	5.00	**0.19**	0.20	652	0.004	0.031
	2000-3700	Tier 4	2014		**0.04**	0.04	0.04	**1.8**	0.006	5.00	**0.19**	0.20	652	0.004	0.031
	1400-2000	Tier 4	2016		**0.04**	0.04	0.04	**1.8**	0.006	5.00	**0.19**	0.20	652	0.004	0.031
	600-1400	Tier 4	2017		**0.04**	0.04	0.04	**1.8**	0.006	5.00	**0.19**	0.20	652	0.004	0.031
Category 2	HC propulsion engines														
			MY												
>2.5	>37	Tier 1	2004		**0.54**	0.48	0.54	**17.00**	0.006	**11.40**	**1.30**	1.37	652	0.026	0.031
5.0 ≤ D < 15	all	Tier 2	2007	**7.8**	**0.27**	0.24	0.27	7.4	0.006	**5.00**	0.39	0.41	652	0.008	0.031
15 ≤ D < 20	< 3300 kW	Tier 2	2007	**8.7**	**0.50**	0.45	0.50	8.3	0.006	**5.00**	0.44	0.46	652	0.009	0.031
15 ≤ D < 20	≥ 3300 kW	Tier 2	2007	**9.8**	**0.50**	0.45	0.50	9.3	0.006	**5.00**	0.49	0.52	652	0.010	0.031
20 ≤ D < 25	all	Tier 2	2007	**9.8**	**0.50**	0.45	0.50	9.3	0.006	**5.00**	0.49	0.52	652	0.010	0.031
25 ≤ D < 30	all	Tier 2	2007	**11.0**	**0.50**	0.45	0.50	10.5	0.006	**5.00**	0.55	0.58	652	0.011	0.031
7 ≤ D < 15	<2000	Tier 3	2013	**6.2**	**0.14**	0.12	0.14	5.9	0.006	**5.00**	0.31	0.33	652	0.006	0.031
7 ≤ D < 15	2000-3700	Tier 3	2013	**7.8**	**0.14**	0.12	0.14	7.4	0.006	**5.00**	0.39	0.41	652	0.008	0.031
15 ≤ D < 20	<2000	Tier 3	2014	**7.0**	**0.34**	0.30	0.34	6.7	0.006	**5.00**	0.35	0.37	652	0.007	0.031
20 ≤ D < 25	<2000	Tier 3	2014	**9.8**	**0.27**	0.24	0.27	9.3	0.006	**5.00**	0.49	0.52	652	0.010	0.031
25 ≤ D < 30	<2000	Tier 3	2014	**11.0**	**0.27**	0.24	0.27	10.5	0.006	**5.00**	0.55	0.58	652	0.011	0.031
all	2000-3700	Tier 4	2014		**0.04**	0.04	0.04	**1.8**	0.006	5.00	**0.19**	0.20	652	0.004	0.031
<15	>3700	Tier 4	2014		**0.12**	0.11	0.12	**1.8**	0.006	5.00	**0.19**	0.20	652	0.004	0.031
15 ≤ D < 30	>3700	Tier 4	2014		**0.25**	0.22	0.25	**1.8**	0.006	5.00	**0.19**	0.20	652	0.004	0.031
all	>3700	Tier 4	2016		**0.06**	0.05	0.06	**1.8**	0.006	5.00	**0.19**	0.20	652	0.004	0.031
all	1400-2000	Tier 4	2016		**0.04**	0.04	0.04	**1.8**	0.006	5.00	**0.19**	0.20	652	0.004	0.031
all	600-1400	Tier 4	2017		**0.04**	0.04	0.04	**1.8**	0.006	5.00	**0.19**	0.20	652	0.004	0.031

Source:

Federal Marine Compression-Ignition Engines - Exhaust Emission Standards Reference Guide, http://epa.gov/OMS/standards/nonroad/marineci.htm

Amendments to the Regulations to Reduce Emissions From Diesel Engines on Commercial Harbor Craft Operated Within California Waters and 24 Nautical Miles of the California Baseline. ARB 2011. Table 9, Compliance Dates for Engines on Crew and Supply Vessels Nationwide.

http://www.arb.ca.gov/regact/2010/chc10/frochc931185.pdf

EPA Tier 1 emissions standards do not specify restrictions to PM, SOx, CO, or VOC. NOx is restricted to Marpol Annex VI (17 g/kW-hr).

EPA Tier 2 and Tier 3 emission standards are reported as NOx+THC. 5% is HC per Carl Moyer Program guidelines. 95% is NOx.

SOx emission factor is based on 15 ppm fuel sulfur content.

PM2.5 is 89% of PM10, per SCAQMD 2006 Final Methodology to Calculate PM2.5 and PM 2.5 Significance Thresholds, Table 5.

CO2 and N20 emission factors are from IVL: Methodology for Calculating Emissions from Ships: Update on Emission Factors, 2004, also summarized in POLA 2009 Emissions Inventory, Appendix B. CH4 is 2% of HC, per IVL study.

Bold numbers represent actual emission standards.

Table B1.17 SOx Emission Factor, Marine Engines

Harbor Craft	0.00552 g/hp-hr	
Dredging Equipment	use OFFROAD BSCF and convert to g SOx /hp-hr	
SOx (gms/hp-hr) = (S content in X/1,000,000) x (MW SO2/ MW S) x BSF =		
Where:		
X = S content in parts per million (ppm)		15 ppm
S MW = Molecular Weight		32
SO2 MW = Molecular Weight		64
BSFC for harbor craft = Brake Specific Fuel Consumption (per CARB 2007 Harbor Craft Methodology)		184 (g/hp-hr)

Table B1.18 Habor Craft Load Factor

Type		Main Engine	Auxiliary Engine
Assist tugboat		0.31	0.43
Commercial fishing		0.27	0.43
Crew boat		0.38	0.32
Excursion		0.42	0.43
Ferry		0.42	0.43
Government		0.51	0.43
Ocean tug		0.68	0.43
Tugboat		0.31	0.43
Dive boat	Work boat	0.38	0.32

Source:
2011 POLA Emissions Inventory, Table 4.6

Table B1.19 Construction Equipment Utilization by Construction Element

Year	Construction Element/Equipment	Source Type	Onsite/Off site	Power (hp) or (kW)	# Active	Equipment Activity (hr/day)	Daily Energy Demand (hp-hr) or (kW-hr)	Number Engines	Load Factor	Relevant Engine Tier	Total Work Days	Total No. 1-way Trips	No. 1-way Trips per Day	Onsite Idling Hours per Round-Trip	Miles Traveled (miles) per round-trip	Total Acreage or Weight (acres),(ton),(lb)	Peak Day Acreage or Weight (acres/day),(ton/day) (lb/day)
PHASE 1: Berth 217-220 Dredging, Wharf Improvements, TICTF Expansion																	
Sheet Piling 1																	
2015	derrick barge	offroad	onsite		1	4					35						
2015	barge/scow compressor	offroad	onsite	353	1	4	762		0.54		35						
2015	barge/scow crane	offroad	onsite	376	1	4	632		0.42		35						
2015	barge/scow deck door engine	offroad	onsite	86	1	4	306		0.89		35						
2015	barge/scow dredger	offroad	onsite	527	1	4	1,075		0.51		35						
2015	barge/scow generator	offroad	onsite	464	1	4	1,392		0.75		35						
2015	barge/scow hoist swing winch	offroad	onsite	379	1	4	470		0.31		35						
2015	barge/scow hoist swing pump	offroad	onsite	517	1	4	1,468		0.71		35						
2015	supply barge	offroad	onsite		1	4					35						
2015	barge/scow compressor	offroad	onsite	353	1	0	0		0.54		35						
2015	barge/scow crane	offroad	onsite	376	1	0	0		0.42		35						
2015	barge/scow generator	offroad	onsite	464	1	0	0		0.75		35						
2015	barge/scow hoist swing winch	offroad	onsite	379	1	0	0		0.31		35						
2015	vibratory hammer	offroad	onsite	439	1	8	2,175		0.62		35						
2015	tugboat propulsion	marine	onsite	506	1	4	1,254	2	0.31	Tier 1	35						
2015	tugboat auxiliary	marine	onsite	34	1	4	58	1	0.43	Tier 2	35						
2015	dive boat propulsion	marine	onsite	370	1	8	2,249	2	0.38	Tier 1	35						
2015	dive boat auxiliary	marine	onsite	55	1	8	141	1	0.32	Tier 3	35						
2015	pile delivery trucks - onsite idling	onroad	onsite		30	8					1	60	60	0.17			
2015	pile delivery trucks - onsite transit	onroad	onsite		30	8					1	60	60	0.17	1.0		
2015	pile delivery trucks - offsite transit	onroad	offsite		30	8					1	60	60	0.17	65		
2015	worker vehicles - offsite transit	onroad	offsite		5	1					35	350	10		12.7		
Sheet Piling 2																	
2015	derrick barge	offroad	onsite		1	4					35						
2015	barge/scow compressor	offroad	onsite	353	1	4	762		0.54		35						
2015	barge/scow crane	offroad	onsite	376	1	4	632		0.42		35						
2015	barge/scow deck door engine	offroad	onsite	86	1	4	306		0.89		35						
2015	barge/scow dredger	offroad	onsite	527	1	4	1,075		0.51		35						
2015	barge/scow generator	offroad	onsite	464	1	4	1,392		0.75		35						
2015	barge/scow hoist swing winch	offroad	onsite	379	1	4	470		0.31		35						
2015	barge/scow hoist swing pump	offroad	onsite	517	1	4	1,468		0.71		35						
2015	supply barge	offroad	onsite		1	4					35						
2015	barge/scow compressor	offroad	onsite	353	1	0	0		0.54		35						
2015	barge/scow crane	offroad	onsite	376	1	0	0		0.42		35						
2015	barge/scow generator	offroad	onsite	464	1	0	0		0.75		35						
2015	barge/scow hoist swing winch	offroad	onsite	379	1	0	0		0.31		35						
2015	pile hammer	offroad	onsite	439	1	8	2,175		0.62		35						
2015	tugboat propulsion	marine	onsite	506	1	4	1,254	2	0.31	Tier 1	35						
2015	tugboat auxiliary	marine	onsite	34	1	4	58	1	0.43	Tier 2	35						
2015	dive boat propulsion	marine	onsite	370	1	8	2,249	2	0.38	Tier 1	35						
2015	dive boat auxiliary	marine	onsite	55	1	8	141	1	0.32	Tier 3	35						
2015	worker vehicles - offsite transit	onroad	offsite		5	1					35	350	10		12.7		

Table B1.19 Construction Equipment Utilization by Construction Element

Year	Construction Element/Equipment	Source Type	Onsite/Off site	Power (hp) or (kW)	# Active	Equipment Activity (hr/day)	Daily Energy Demand (hp-hr) or (kW-hr)	Number Engines	Load Factor	Relevant Engine Tier	Total Work Days	Total No. 1-way Trips	No. 1-way Trips per Day	Onsite Idling Hours per Round-Trip	Miles Traveled (miles) per round-trip	Total Acreage or Weight (acres),(ton),(lb)	Peak Day Acreage or Weight (acres/day),(ton/day) (lb/day)
Dredging - Ocean Disposal																	
2015	derrick barge	offroad	onsite		1	24					4						
2015	barge/scow compressor	offroad	onsite	353	1	24	4,575		0.54		4						
2015	barge/scow crane	offroad	onsite	376	1	24	3,790		0.42		4						
2015	barge/scow deck door engine	offroad	onsite	86	1	24	1,837		0.89		4						
2015	barge/scow dredger	offroad	onsite	527	1	24	6,450		0.51		4						
2015	barge/scow generator	offroad	onsite	464	1	24	8,352		0.75		4						
2015	barge/scow hoist swing winch	offroad	onsite	379	1	24	2,820		0.31		4						
2015	barge/scow hoist swing pump	offroad	onsite	517	1	24	8,810		0.71		4						
2015	dump scow	offroad	offsite		2	24					4						
2015	barge/scow compressor	offroad	offsite	353	2	0	0		0.54		4						
2015	barge/scow crane	offroad	offsite	376	2	0	0		0.42		4						
2015	barge/scow deck door engine	offroad	offsite	86	2	0	0		0.89		4						
2015	barge/scow dredger	offroad	offsite	527	2	0	0		0.51		4						
2015	barge/scow generator	offroad	offsite	464	2	0	0		0.75		4						
2015	barge/scow hoist swing winch	offroad	offsite	379	2	0	0		0.31		4						
2015	barge/scow hoist swing pump	offroad	offsite	517	2	0	0		0.71		4						
2015	tugboat propulsion	marine	onsite	506	1	24	7,523	2	0.31	Tier 1	4						
2015	tugboat auxiliary	marine	onsite	34	1	24	346	1	0.43	Tier 2	4						
2015	tugboat propulsion	marine	offsite	506	2	24	15,046	2	0.31	Tier 1	4						
2015	tugboat auxiliary	marine	offsite	34	2	24	693	1	0.43	Tier 2	4						
2015	worker vehicles - offsite transit	onroad	offsite		7.5	1					4	60	15		12.7		
Dredging - Upland Disposal																	
2015	derrick barge	offroad	onsite		1	24					12						
2015	barge/scow compressor	offroad	onsite	353	1	24	4,575		0.54		12						
2015	barge/scow crane	offroad	onsite	376	1	24	3,790		0.42		12						
2015	barge/scow deck door engine	offroad	onsite	86	1	24	1,837		0.89		12						
2015	barge/scow dredger	offroad	onsite	527	1	24	6,450		0.51		12						
2015	barge/scow generator	offroad	onsite	464	1	24	8,352		0.75		12						
2015	barge/scow hoist swing winch	offroad	onsite	379	1	24	2,820		0.31		12						
2015	barge/scow hoist swing pump	offroad	onsite	517	1	24	8,810		0.71		12						
2015	dump scow	offroad	onsite		1	24					12						
2015	barge/scow compressor	offroad	onsite	353	1	0	0		0.54		12						
2015	barge/scow crane	offroad	onsite	376	1	0	0		0.42		12						
2015	barge/scow deck door engine	offroad	onsite	86	1	1	77		0.89		12						
2015	barge/scow dredger	offroad	onsite	527	1	0	0		0.51		12						
2015	barge/scow generator	offroad	onsite	464	1	0	0		0.75		12						
2015	barge/scow hoist swing winch	offroad	onsite	379	1	0	0		0.31		12						
2015	barge/scow hoist swing pump	offroad	onsite	517	1	0	0		0.71		12						
2015	tugboat propulsion	marine	onsite	506	1	24	7,523	2	0.31	Tier 1	12						
2015	tugboat auxiliary	marine	onsite	34	1	24	346	1	0.43	Tier 2	12						
2015	tugboat propulsion	marine	onsite	506	1	24	7,523	2	0.31	Tier 1	12						
2015	tugboat auxiliary	marine	onsite	34	1	24	346	1	0.43	Tier 2	12						
2015	excavator	offroad	onsite	211	1	24	2,880		0.57		12						
2015	sweeping truck	offroad	onsite	511	1	24	6,990		0.57		12						
2015	haul trucks - onsite idling	onroad	onsite		400	8					12	800	200	0.17			
2015	haul trucks - onsite transit	onroad	onsite		400	8					12	800	200	0.17	1.0		
2015	haul trucks - offsite transit	onroad	offsite		400	8					12	800	200	0.17	200		
2015	worker vehicles - offsite transit	onroad	offsite		7.5	1					12	180	15		12.7		

Table B1.19 Construction Equipment Utilization by Construction Element

Year	Construction Element/Equipment	Source Type	Onsite/Off site	Power (hp) or (kW)	# Active	Equipment Activity (hr/day)	Daily Energy Demand (hp-hr) or (kW-hr)	Number Engines	Load Factor	Relevant Engine Tier	Total Work Days	Total No. 1-way Trips	No. 1-way Trips per Day	Onsite Idling Hours per Round-Trip	Miles Traveled (miles) per round-trip	Total Acreage or Weight (acres),(ton),(lb)	Peak Day Acreage or Weight (acres/day),(ton/day),(lb/day)	
Crane Rail Extension																		
2015	excavator	offroad	onsite	211	1	8	960		0.57		10							
2015	crane	offroad	onsite	279	2	4	960		0.43		25							
2015	pile hammer	offroad	onsite	439	1	8	2,175		0.62		25							
2015	loader	offroad	onsite	101	1	8	443		0.55		10							
2015	forklift	offroad	onsite	200	1	8	480		0.30		50							
2015	skip loader	offroad	onsite	101	1	8	443		0.55		10							
2015	paving machine	offroad	onsite	110	1	8	466		0.53		1							
2015	water truck	offroad	onsite	511	1	8	2,330		0.57		50							
2015	concrete delivery trucks - onsite idling	onroad	onsite		90	8					4	180	45	0.17				
2015	concrete delivery trucks - onsite transit	onroad	onsite		90	8					4	180	45	0.17	1.0			
2015	concrete delivery trucks - offsite transit	onroad	offsite		90	8					4	180	45	0.17	65			
2015	haul trucks - onsite idling	onroad	onsite		90	8					10	180	18	0.17				
2015	haul trucks - onsite transit	onroad	onsite		90	8					10	180	18	0.17	1.0			
2015	haul trucks - offsite transit	onroad	offsite		90	8					10	180	18	0.17	20.0			
2015	rail delivery trucks - onsite idling	onroad	onsite		20	8					2	40	20	0.17				
2015	rail delivery trucks - onsite transit	onroad	onsite		20	8					2	40	20	0.17	1.0			
2015	rail delivery trucks - offsite transit	onroad	offsite		20	8					2	40	20	0.17	65			
2015	pile delivery trucks - onsite idling	onroad	onsite		175	8					35	350	10	0.17				
2015	pile delivery trucks - onsite transit	onroad	onsite		175	8					35	350	10	0.17	1.0			
2015	pile delivery trucks - offsite transit	onroad	offsite		175	8					35	350	10	0.17	65			
2015	debris haul trucks - onsite idling	onroad	onsite		20	8					1	40	40	0.17				
2015	debris haul delivery trucks - onsite transit	onroad	onsite		20	8					1	40	40	0.17	1.0			
2015	debris haul delivery trucks - offsite transit	onroad	offsite		20	8					1	40	40	0.17	20.0			
2015	haul trucks - onsite idling	onroad	onsite		115	8					8	230	29	0.17				
2015	haul delivery trucks - onsite transit	onroad	onsite		115	8					8	230	29	0.17	1.0			
2015	haul delivery trucks - offsite transit	onroad	offsite		115	8					8	230	29	0.17	20.0			
2015	concrete slurry delivery trucks - onsite idli	onroad	onsite		15	8					4	30	8	0.17				
2015	concrete slurry delivery trucks - onsite tra	onroad	onsite		15	8					4	30	8	0.17	1.0			
2015	concrete slurry delivery trucks - offsite tra	onroad	offsite		15	8					4	30	8	0.17	20.0			
2015	asphalt delivery trucks - onsite idling	onroad	onsite		15	8					1	30	30	0.17				
2015	asphalt delivery trucks - onsite transit	onroad	onsite		15	8					1	30	30	0.17	1.0			
2015	asphalt delivery trucks - offsite transit	onroad	offsite		15	8					1	30	30	0.17	20.0			
2015	worker vehicles - offsite transit	onroad	offsite		11.25	1					50	1125	22.5		12.7			
2015	truck loading	fugitive	onsite		90	8							10			2,275	228	ton/yr, ton/day
2015	truck loading	fugitive	onsite		115	8							8			2,908	363	ton/yr, ton/day
2015	asphalt offgassing	fugitive	onsite			8					1		1			6	6	acre

Table B1.19 Construction Equipment Utilization by Construction Element

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TICTF Expansion																		
2015	excavator	offroad	onsite	211	1	8	960		0.57		60							
2015	crane	offroad	onsite	279	1	8	960		0.43		60							
2015	tamper	offroad	onsite	526	1	8	1,892		0.45		60							
2015	regulator	offroad	onsite	225	1	8	1,116		0.62		60							
2015	speed swing	offroad	onsite	439	1	8	2,175		0.62		60							
2015	forklift	offroad	onsite	200	1	8	480		0.30		60							
2015	loader	offroad	onsite	101	1	8	443		0.55		60							
2015	dozer	offroad	onsite	480	1	8	2,266		0.59		60							
2015	blade/grader	offroad	onsite	217	1	8	1,060		0.61		60							
2015	swivel dump	offroad	onsite	439	1	8	2,175		0.62		60							
2015	water truck	offroad	onsite	511	1	8	2,330		0.57		60							
2015	prentice loader	offroad	onsite	350	1	8	1,540		0.55		60							
2015	tie truck	offroad	onsite	511	1	8	2,330		0.57		60							
2015	paving machine	offroad	onsite	110	1	8	466		0.53		3							
2015	roller	offroad	onsite	113	2	8	1,009		0.56		60							
2015	skip loader	offroad	onsite	101	1	8	443		0.55		60							
2015	flatbed trailer - onsite idling	onroad	onsite		38	8					2	76	38	0.17				
2015	flatbed trailer - onsite transit	onroad	onsite		38	8					2	76	38	0.17	1.0			
2015	flatbed trailer - offsite transit	onroad	offsite		38	8					2	76	38	0.17	20.0			
2015	ballast delivery trucks - onsite idling	onroad	onsite		235	8					2	470	235	0.17				
2015	ballast delivery trucks - onsite transit	onroad	onsite		235	8					2	470	235	0.17	1.0			
2015	ballast delivery trucks - offsite transit	onroad	offsite		235	8					2	470	235	0.17	20.0			
2015	haul trucks - onsite idling	onroad	onsite		180	8					10	360	36	0.17				
2015	haul trucks - onsite transit	onroad	onsite		180	8					10	360	36	0.17	1.0			
2015	haul trucks - offsite transit	onroad	offsite		180	8					10	360	36	0.17	20.0			
2015	light pole delivery trucks - onsite idling	onroad	onsite		20	8					1	40	40	0.17				
2015	light pole delivery trucks - onsite transit	onroad	onsite		20	8					1	40	40	0.17	1.0			
2015	light pole delivery trucks - offsite transit	onroad	offsite		20	8					1	40	40	0.17	65			
2015	asphalt delivery trucks - onsite idling	onroad	onsite		550	8					3	1100	367	0.17				
2015	asphalt delivery trucks - onsite transit	onroad	onsite		550	8					3	1100	367	0.17	1.0			
2015	asphalt delivery trucks - offsite transit	onroad	offsite		550	8					3	1100	367	0.17	20.0			
2015	worker vehicles - offsite transit	onroad	offsite		21.25	1					60	2550	42.5		12.7			
2015	asphalt offgassing	fugitive	onsite			8					3					6	2	acre
2015	truck loading	fugitive	onsite		235	8					10					5,942	594	ton, ton/day
2015	grading	fugitive	onsite		3	8					60					5	1.5	acre, acre/8-hr day

Table B1.19 Construction Equipment Utilization by Construction Element

Year	Construction Element/Equipment	Source Type	Onsite/Off site	Power (hp) or (kW)	# Active	Equipment Activity (hr/day)	Daily Energy Demand (hp-hr) or (kW-hr)	Number Engines	Load Factor	Relevant Engine Tier	Total Work Days	Total No. 1-way Trips	No. 1-way Trips per Day	Onsite Idling Hours per Round-Trip	Miles Traveled (miles) per round-trip	Total Acreage or Weight (acres),(ton),(lb)	Peak Day Acreage or Weight (acres/day),(ton/day) (lb/day)
PHASE 1: Crane Removal, Relocation, Delivery																	
2 LAHD Crane Relocation (B217-220)																	
2015	supply barge	offroad	onsite														
2015	barge/scow compressor	offroad	onsite	353	1	8	2,824				10						
2015	barge/scow crane	offroad	onsite	376	1	8	1,263		0.42		10						
2015	barge/scow generator	offroad	onsite	464	1	8	2,784		0.75		10						
2015	barge/scow hoist swing winch	offroad	onsite	379	1	8	940		0.31		10						
2015	welder	offroad	onsite	62	1	4	111		0.45		10						
2015	tractor	offroad	onsite	511	1	4	1,165		0.57		10						
2015	tugboat propulsion	marine	onsite	506	1	8	2,508	2	0.31	Tier 1	10						
2015	tugboat auxiliary	marine	onsite	34	1	8	115	1	0.43	Tier 2	10						
2015	worker vehicles - offsite transit	onroad	offsite		5	1					10	100	10		12.7		
2 YTI Crane Relocation/Realignment (B217-220)																	
2015	crane	offroad	onsite	279	2	8	1,919		0.43		10						
2015	welder	offroad	onsite	62	2	8	444		0.45		10						
2015	tractor	offroad	onsite	511	1	8	2,330		0.57		10						
2015	worker vehicles - offsite transit	onroad	offsite		6.25	1					10	125	12.5		12.7		
4 New YTI Crane Delivery (B217-220)																	
2015	Crane delivery ship transit		offsite		1	7											
2015	Crane delivery ship hotelling		onsite		1	17											
2015	tugboat propulsion		offsite	506	2	4	2,508	2	0.31	Tier 1	7						
2015	tugboat auxiliary		onsite	34	2	4	115	1	0.43	Tier 2	7						
2015	crane	offroad	onsite	279	2	4	960		0.43		7						
2015	welder	offroad	onsite	62	2	4	222		0.45		7						
2015	tractor	offroad	onsite	511	2	4	2,330		0.57		7						
2015	worker vehicles - offsite transit	onroad	offsite		7.5	1					7	105	15		12.7		

Table B1.19 Construction Equipment Utilization by Construction Element

Year	Construction Element/Equipment	Source Type	Onsite/Off site	Power (hp) or (kW)	# Active	Equipment Activity (hr/day)	Daily Energy Demand (hp-hr) or (kW-hr)	Number Engines	Load Factor	Relevant Engine Tier	Total Work Days	Total No. 1-way Trips	No. 1-way Trips per Day	Onsite Idling Hours per Round-Trip	Miles Traveled (miles) per round-trip	Total Acreage or Weight (acres),(ton),(lb)	Peak Day Acreage or Weight (acres/day),(ton/day) (lb/day)
PHASE 2: Berth 214-216 Dredging, Wharf & Backland Improvements																	
Sheet and King Pile Installation 1																	
2016	derrick barge	offroad	onsite		1	4					50						
2016	barge/scow compressor	offroad	onsite	353	1	4	762		0.54		50						
2016	barge/scow crane	offroad	onsite	376	1	4	632		0.42		50						
2016	barge/scow deck door engine	offroad	onsite	86	1	4	306		0.89		50						
2016	barge/scow dredger	offroad	onsite	527	1	4	1,075		0.51		50						
2016	barge/scow generator	offroad	onsite	464	1	4	1,392		0.75		50						
2016	barge/scow hoist swing winch	offroad	onsite	379	1	4	470		0.31		50						
2016	barge/scow hoist swing pump	offroad	onsite	517	1	4	1,468		0.71		50						
2016	supply barge	offroad	onsite		1	4					50						
2016	barge/scow compressor	offroad	onsite	353	1	0	0		0.54		50						
2016	barge/scow crane	offroad	onsite	376	1	0	0		0.42		50						
2016	barge/scow generator	offroad	onsite	464	1	0	0		0.75		50						
2016	barge/scow hoist swing winch	offroad	onsite	379	1	0	0		0.31		50						
2016	vibratory hammer	offroad	onsite	439	1	8	2,175		0.62		50						
2016	jet pump	offroad	onsite	113	1	8	667		0.74		50						
2016	tugboat propulsion	marine	onsite	506	1	4	1,254	2	0.31	Tier 1	50						
2016	tugboat auxiliary	marine	onsite	34	1	4	58	1	0.43	Tier 2	50						
2016	dive boat propulsion	marine	onsite	370	1	8	2,249	2	0.38	Tier 1	50						
2016	dive boat auxiliary	marine	onsite	55	1	8	141	1	0.32	Tier 3	50						
2016	pile delivery trucks - onsite idling	onroad	onsite		30	8					1	60	60	0.17			
2016	pile delivery trucks - onsite transit	onroad	onsite		30	8					1	60	60	0.17	1.0		
2016	pile delivery trucks - offsite transit	onroad	offsite		30	8					1	60	60	0.17	65		
2016	pile delivery trucks - onsite idling	onroad	onsite		70	8					3	140	47	0.17			
2016	pile delivery trucks - onsite transit	onroad	onsite		70	8					3	140	47	0.17	1.0		
2016	pile delivery trucks - offsite transit	onroad	offsite		70	8					3	140	47	0.17	65		
2016	worker vehicles - offsite transit	onroad	offsite		5	1					50	500	10		12.7		
Sheet and King Pile Installation 2																	
2016	derrick barge	offroad	onsite		1	4					50						
2016	barge/scow compressor	offroad	onsite	353	1	4	762		0.54		50						
2016	barge/scow crane	offroad	onsite	376	1	4	632		0.42		50						
2016	barge/scow deck door engine	offroad	onsite	86	1	4	306		0.89		50						
2016	barge/scow dredger	offroad	onsite	527	1	4	1,075		0.51		50						
2016	barge/scow generator	offroad	onsite	464	1	4	1,392		0.75		50						
2016	barge/scow hoist swing winch	offroad	onsite	379	1	4	470		0.31		50						
2016	barge/scow hoist swing pump	offroad	onsite	517	1	4	1,468		0.71		50						
2016	supply barge	offroad	onsite		1	4					50						
2016	barge/scow compressor	offroad	onsite	353	1	0	0		0.54		50						
2016	barge/scow crane	offroad	onsite	376	1	0	0		0.42		50						
2016	barge/scow generator	offroad	onsite	464	1	0	0		0.75		50						
2016	barge/scow hoist swing winch	offroad	onsite	379	1	0	0		0.31		50						
2016	pile hammer	offroad	onsite	439	1	8	2,175		0.62		50						
2016	jet pump	offroad	onsite	113	1	8	667		0.74		50						
2016	tugboat propulsion	marine	onsite	506	1	4	1,254	2	0.31	Tier 1	50						
2016	tugboat auxiliary	marine	onsite	34	1	4	58	1	0.43	Tier 2	50						
2016	dive boat propulsion	marine	onsite	370	1	8	2,249	2	0.38	Tier 1	50						
2016	dive boat auxiliary	marine	onsite	55	1	8	141	1	0.32	Tier 3	50						
2016	worker vehicles - offsite transit	onroad	offsite		5	1					50	500	10		12.7		

Table B1.19 Construction Equipment Utilization by Construction Element

Year	Construction Element/Equipment	Source Type	Onsite/Off site	Power (hp) or (kW)	# Active	Equipment Activity (hr/day)	Daily Energy Demand (hp-hr) or (kW-hr)	Number Engines	Load Factor	Relevant Engine Tier	Total Work Days	Total No. 1-way Trips	No. 1-way Trips per Day	Onsite Idling Hours per Round-Trip	Miles Traveled (miles) per round-trip	Total Acreage or Weight (acres),(ton),(lb)	Peak Day Acreage or Weight (acres/day),(ton/day) (lb/day)
Dredging - Ocean Disposal																	
2016	derrick barge	offroad	onsite		1	24					6						
2016	barge/scow compressor	offroad	onsite	353	1	24	4,575		0.54		6						
2016	barge/scow crane	offroad	onsite	376	1	24	3,790		0.42		6						
2016	barge/scow deck door engine	offroad	onsite	86	1	24	1,837		0.89		6						
2016	barge/scow dredger	offroad	onsite	527	1	24	6,450		0.51		6						
2016	barge/scow generator	offroad	onsite	464	1	24	8,352		0.75		6						
2016	barge/scow hoist swing winch	offroad	onsite	379	1	24	2,820		0.31		6						
2016	barge/scow hoist swing pump	offroad	onsite	517	1	24	8,810		0.71		6						
2016	dump scow	offroad	offsite		2	24					6						
2016	barge/scow compressor	offroad	offsite	353	2	0	0		0.54		6						
2016	barge/scow crane	offroad	offsite	376	2	0	0		0.42		6						
2016	barge/scow deck door engine	offroad	offsite	86	2	0	0		0.89		6						
2016	barge/scow dredger	offroad	offsite	527	2	0	0		0.51		6						
2016	barge/scow generator	offroad	offsite	464	2	0	0		0.75		6						
2016	barge/scow hoist swing winch	offroad	offsite	379	2	0	0		0.31		6						
2016	barge/scow hoist swing pump	offroad	offsite	517	2	0	0		0.71		6						
2016	tugboat propulsion	marine	onsite	506	1	24	7,523	2	0.31	Tier 1	6						
2016	tugboat auxiliary	marine	onsite	34	1	24	346	1	0.43	Tier 2	6						
2016	tugboat propulsion	marine	offsite	506	2	24	15,046	2	0.31	Tier 1	6						
2016	tugboat auxiliary	marine	offsite	34	2	24	693	1	0.43	Tier 2	6						
2016	worker vehicles - offsite transit	onroad	offsite		7.5	1					6	90	15		12.7		
Dredging - Upland Disposal																	
2016	derrick barge	offroad	onsite		1	24					17						
2016	barge/scow compressor		onsite	353	1	24	4,575		0.54		17						
2016	barge/scow crane		onsite	376	1	24	3,790		0.42		17						
2016	barge/scow deck door engine		onsite	86	1	24	1,837		0.89		17						
2016	barge/scow dredger		onsite	527	1	24	6,450		0.51		17						
2016	barge/scow generator		onsite	464	1	24	8,352		0.75		17						
2016	barge/scow hoist swing winch		onsite	379	1	24	2,820		0.31		17						
2016	barge/scow hoist swing pump		onsite	517	1	24	8,810		0.71		17						
2016	dump scow	offroad	onsite		1	24					17						
2016	barge/scow compressor		onsite	353	1	0	0		0.54		17						
2016	barge/scow crane		onsite	376	1	0	0		0.42		17						
2016	barge/scow deck door engine		onsite	86	1	1	77		0.89		17						
2016	barge/scow dredger		onsite	527	1	0	0		0.51		17						
2016	barge/scow generator		onsite	464	1	0	0		0.75		17						
2016	barge/scow hoist swing winch		onsite	379	1	0	0		0.31		17						
2016	barge/scow hoist swing pump		onsite	517	1	0	0		0.71		17						
2016	tugboat propulsion	marine	onsite	506	1	24	7,523	2	0.31	Tier 1	17						
2016	tugboat auxiliary	marine	onsite	34	1	24	346	1	0.43	Tier 2	17						
2016	tugboat propulsion	marine	onsite	506	1	24	7,523	2	0.31	Tier 1	17						
2016	tugboat auxiliary	marine	onsite	34	1	24	346	1	0.43	Tier 2	17						
2016	excavator	offroad	onsite	211	1	8	960		0.57		17						
2016	sweeping truck	offroad	onsite	511	1	8	2,330		0.57		17						
2016	haul trucks - onsite idling	onroad	onsite		1,700	8					17	3400	200	0.17			
2016	haul trucks - onsite transit	onroad	onsite		1,700	8					17	3400	200	0.17	1.0		
2016	haul trucks - offsite transit	onroad	offsite		1,700	8					17	3400	200	0.17	200		
2016	worker vehicles - offsite transit	onroad	offsite		7.5	1					17	255	15		12.7		

Table B1.19 Construction Equipment Utilization by Construction Element

Year	Construction Element/Equipment	Source Type	Onsite/Off site	Power (hp) or (kW)	# Active	Equipment Activity (hr/day)	Daily Energy Demand (hp-hr) or (kW-hr)	Number Engines	Load Factor	Relevant Engine Tier	Total Work Days	Total No. 1-way Trips	No. 1-way Trips per Day	Onsite Idling Hours per Round-Trip	Miles Traveled (miles) per round-trip	Total Acreage or Weight (acres),(ton),(lb)	Peak Day Acreage or Weight (acres/day),(ton/day) (lb/day)	
Concrete Runway																		
2015	excavator	offroad	onsite	211	1	8	960		0.57		10							
2015	skip loader	offroad	onsite	101	1	8	443		0.55		10							
2015	paving machine	offroad	onsite	110	1	8	466		0.53		1							
2015	water truck	offroad	onsite	511	1	8	2,330		0.57		10							
2015	haul trucks - onsite idling	onroad	onsite		200	8					5	400	80	0.17				
2015	haul trucks - onsite transit	onroad	onsite		200	8					5	400	80	0.17	1.0			
2015	haul trucks - offsite transit	onroad	offsite		200	8					5	400	80	0.17	20.0			
2015	concrete delivery trucks - onsite idling	onroad	onsite		100	8					2	200	100	0.17				
2015	concrete delivery trucks - onsite transit	onroad	onsite		100	8					2	200	100	0.17	1.0			
2015	concrete delivery trucks - offsite transit	onroad	offsite		100	8					2	200	100	0.17	65			
2015	base material delivery trucks - onsite idlin	onroad	onsite		100	8					1	200	200	0.17				
2015	base material delivery trucks - onsite trans	onroad	onsite		100	8					1	200	200	0.17	1.0			
2015	base material delivery trucks - offsite tran	onroad	offsite		100	8					1	200	200	0.17	65			
2015	worker vehicles - offsite transit	onroad	offsite		5	1					10	100	10		12.7			
2015	truck loading	fugitive	onsite		200	8					5					5,057	1,011	ton/yr, ton/day
2015	grading/scraping	fugitive	onsite		2	8					10					0.7	1.0	acre, acre/8-hr day
2015	asphalt offgassing	fugitive	onsite			8					1					0.7	0.7	acre
Cold plane and ac overlay																		
2015	scraper			477	1	8	2,750		0.72		8							
2015	paving machine	offroad	onsite	110	1	8	466		0.53		2							
2015	roller	offroad	onsite	113	2	8	1,009		0.56		8							
2015	skip loader	offroad	onsite	101	1	8	443		0.55		8							
2015	asphalt delivery trucks - onsite idling	onroad	onsite		1,150	8					2	2300	1,150	0.17				
2015	asphalt delivery trucks - onsite transit	onroad	onsite		1,150	8					2	2300	1,150	0.17	1.0			
2015	asphalt delivery trucks - offsite transit	onroad	offsite		1,150	8					2	2300	1,150	0.17	20.0			
2015	scraped material hauling trucks - onsite id	onroad	onsite		1,150	8					2	2300	1,150	0.17				
2015	scraped material hauling trucks - onsite tr	onroad	onsite		1,150	8					2	2300	1,150	0.17	1.0			
2015	scraped material hauling trucks - offsite tr	onroad	offsite		1,150	8					2	2300	1,150	0.17	20.0			
2015	worker vehicles - offsite transit	onroad	offsite		6.25	1					8	100	12.5		12.7			
2015	haul truck loading	fugitive	onsite		1,150	8					2					29,076	14,538	ton/yr, ton/day
2015	grading/scraping	fugitive	onsite		2	8					8					24	1.0	acre, acre/8-hr day
2015	asphalt offgassing	fugitive	onsite			8					2					24	12	acre, acre/day
Slurry seal																		
2015	slurry truck	offroad	onsite	511	1	8	2,330		0.57		30							
2015	pickup trucks - onsite idling	onroad	onsite		2	8					30	4	4	0.17				
2015	pickup trucks - onsite transit	onroad	onsite		2	8					30	4	4	0.17	1.0			
2015	pickup trucks - offsite transit	onroad	offsite		2	8					30	4	4	0.17	20.0			
2015	worker vehicles - offsite transit	onroad	offsite		1.25	1					30	75	2.5		12.7			
2015	asphalt offgassing	fugitive	onsite			8					30					133	5	acre, acre/day

Table B1.19 Construction Equipment Utilization by Construction Element

Year	Construction Element/Equipment	Source Type	Onsite/Off site	Power (hp) or (kW)	# Active	Equipment Activity (hr/day)	Daily Energy Demand (hp-hr) or (kW-hr)	Number Engines	Load Factor	Relevant Engine Tier	Total Work Days	Total No. 1-way Trips	No. 1-way Trips per Day	Onsite Idling Hours per Round-Trip	Miles Traveled (miles) per round-trip	Total Acreage or Weight (acres),(ton),(lb)	Peak Day Acreage or Weight (acres/day),(ton/day) (lb/day)
Striping																	
2015	striping truck	offroad	onsite	5	1	8	27		0.62		20						
2015	worker vehicles - offsite transit	onroad	offsite		1.25	1					20	50	2.5		12.7		
6 Crane Height Raising and Boom Extension (4 cranes at B212-213, 2 cranes at B217-220)																	
2015	crane	offroad	onsite	279	2	8	1,919		0.43		12						
2015	aerial lift	offroad	onsite	46	8	8	1,342		0.46		72						
2015	welder	offroad	onsite	62	2	4	222		0.45		72						
2015	worker vehicles - offsite transit	onroad	offsite		15	1					72		30		12.7		
2015	crane	offroad	onsite	2935	1	7	8,834		0.43		12						

Notes and assumptions:

Onsite truck idling is 5 minutes per trip x 2 one-way trips = 10 minutes per truck. 0.17

Construction vehicle and worker one-way vehicle transit miles were obtained from CalEEMod, Appendix A, Chapter 4.5 and associated Appendix D, Table 4.2 for Los Angeles - South Coast as well as from APL EIR/EIS and Google Maps.

VMT for haul trucks:	20	miles
VMT for haul trucks used for upland disposal of dredged materials (Kettleman Class I landfill assumed):	200	miles
VMT for pile, concrete and rail delivery (obtained from APL EIR/EIS for pile delivery):	65	miles
VMT for workers, Home-Work VMT:	12.7	miles
VMT for onsite travel assumed:	1	miles/round-trip

Construction worker trips were obtained from CalEEMod, Appendix A, Chapter 4.5. 1.25 workers/equipment

Provided by LAHD Engineering.

Information provided by Starcrest
Information provided by YTI
Information provided by POLA
Calculated

Table B1.20 **Operational Activity Matrix**

		CEQA Baseline	NEPA Baseline					Proposed Project					
		(January 2012-December 2012)	2012	2015	2016	2017	2020	2026	2012	2015	2016	2017	2020	2026
Annual TEUs 577,120 moves	**TEU Factor: 1.726**	996,109	996,109	1,230,126	1,267,816	1,306,611	1,430,376	1,692,000	996,109	1,230,126	1,267,816	1,380,253	1,596,153	1,913,000
Annual Ship Calls:														
Size Category	**Assumed Capacity**													
1,000	1,000-1,999	10	10	0	0	0	0	0	10					
2,000	2,000-2,999	37	37	52	52	52	52	52	37	52	52	52	52	52
3,000	3,000-3,999	0	0	52	52	52	52	52	0	52	52	52	52	52
4,000	4,000-4,999	1	1	0	0	0	0	0	1					
5,000	5,000-5,999	9	9	0	0	0	0	0	9					
6,000	6,000-6,999	87	87	94	94	52	0	0	87	94	94	77		
7,000	7,000-7,999	5	5	8	8	0	0	0	5	8	8			
8,000	8,000-9,999	0	0	0	0	50	102	102	0				52	
10,000	10,000-10,999	0	0	0	0	0	0	0	0					52
11,000	11,000-11,999	0	0	0	0	0	0	0	0					
12,000	12,000-12,999	0	0	0	0	0	0	0	0			25	50	50
13,000	13,000-13,999	0	0	0	0	0	0	0	0					
Reefer		13	13	0	0	0	0	0	13	0	0	0	0	0
Total Annual Ship Calls		162	162	206	206	206	206	206	162	206	206	206	206	206
Peak Day Ship Calls - Ships at Berth		3	3	4	4	4	4	4	3	4	4	4	4	4
Peak Day Number of Transits		3	3	4	4	4	4	4	3	4	4	4	4	4
Op hours - Ships		16hr/day, 7 day/wk	16/7	16/7	16/7	16/7	16/7	16/7	16/7	16/7	16/7	16/7	16/7	16/7

Information provided by Starcrest
Information provided by YTI
Information provided by POLA
Calculated

Table B1.20 **Operational Activity Matrix**

		Alt 1 No Project						Alt 2 No Federal Action					
		2012	**2015**	**2016**	**2017**	**2020**	**2026**	**2012**	**2015**	**2016**	**2017**	**2020**	**2026**
Annual TEUs 577,120 moves	**TEU Factor: 1.726**	996,109	1,230,126	1,267,816	1,306,611	1,430,376	1,692,000	996,109	1,230,126	1,267,816	1,306,611	1,430,376	1,692,000
Annual Ship Calls:													
Size Category	**Assumed Capacity**												
1,000	1,000-1,999	10						10					
2,000	2,000-2,999	37	52	52	52	52	52	37	52	52	52	52	52
3,000	3,000-3,999	0	52	52	52	52	52	0	52	52	52	52	52
4,000	4,000-4,999	1						1					
5,000	5,000-5,999	9						9					
6,000	6,000-6,999	87	94	94	52			87	94	94	52		
7,000	7,000-7,999	5	8	8				5	8	8			
8,000	8,000-9,999	0			50	102	102	0			50	102	102
10,000	10,000-10,999	0						0					
11,000	11,000-11,999	0						0					
12,000	12,000-12,999	0						0					
13,000	13,000-13,999	0						0					
Reefer		13	0	0	0	0	0	13	0	0	0	0	0
Total Annual Ship Calls		162	206	206	206	206	206	162	206	206	206	206	206
Peak Day Ship Calls - Ships at Berth		3	4	4	4	4	4	3	4	4	4	4	4
Peak Day Number of Transits		3	4	4	4	4	4	3	4	4	4	4	4
Op hours - Ships		16/7	16/7	16/7	16/7	16/7	16/7	16/7	16/7	16/7	16/7	16/7	16/7

Information provided by Starcrest
Information provided by YTI
Information provided by POLA
Calculated

Table B1.20 **Operational Activity Matrix**

		Alt 3 Improve Only B217-220					
		2012	**2015**	**2016**	**2017**	**2020**	**2026**
Annual TEUs 577,120 moves	**TEU Factor: 1.726**	996,109	1,230,126	1,267,816	1,380,253	1,596,153	1,913,000
Annual Ship Calls:							
Size Category	**Assumed Capacity**						
1,000	1,000-1,999	10					
2,000	2,000-2,999	37	52	52	52	52	52
3,000	3,000-3,999	0	52	52	52	52	52
4,000	4,000-4,999	1					
5,000	5,000-5,999	9					
6,000	6,000-6,999	87	94	94	52	26	26
7,000	7,000-7,999	5	8	8			
8,000	8,000-9,999	0				52	
10,000	10,000-10,999	0			50	50	102
11,000	11,000-11,999	0					
12,000	12,000-12,999	0					
13,000	13,000-13,999	0					
Reefer		13	0	0	0	0	0
Total Annual Ship Calls		162	206	206	206	232	232
Peak Day Ship Calls - Ships at Berth		3	4	4	4	5	5
Peak Day Number of Transits		3	4	4	4	5	5
Op hours - Ships		16/7	16/7	16/7	16/7	16/7	16/7

Table B1.20 **Operational Activity Matrix**

		CEQA Baseline	NEPA Baseline					Proposed Project					
		(January 2012-December 2012)	2012	2015	2016	2017	2020	2026	2012	2015	2016	2017	2020	2026
Hotelling Time per Ship Call		varies by vessel size; 49 hours/call on average	varies by vessel size; 49 hours/call on average	50.4	50.4	50.4	50.4	50.4	varies by vessel size; 49 hours/call on average	50.4	50.4	50.4	50.4	50.4
Operating Berths		B212-213 B214-216	B212-213 B214-216	B212-213 B214-216	B212-213 B214-216	B212-213 B214-216	B212-213 B214-216	B212-213 B214-216	B212-213 B214-216	B212-213 B214-216	B212-213 B217-220	B212-213 B214-216 B217-220	B212-213 B214-216 B217-220	B212-213 B214-216 B217-220
AMPd Berths		B214-216	B214-216	B212-213 B214-216	B212-213 B214-216	B212-213 B214-216	B212-213 B214-216	B212-213 B214-216	B214-216	B212-213 B214-216	B212-213 B217-220	B212-213 B214-216 B217-220	B212-213 B214-216 B217-220	B212-213 B214-216 B217-220
Peak Day Ship Calls/Transits:			0	0	0	0	0	0						
Size Category	Assumed Capacity		0	0	0	0	0	0						
1,000	1,000-1,999		0	0	0	0	0	0	0					
2,000	2,000-2,999	1	1	1	1	1	1	1	1	1	1	1	1	1
3,000	3,000-3,999		0	1	1	1	1	1	0	1	1	1	1	1
4,000	4,000-4,999		0	0	0	0	0	0	0					
5,000	5,000-5,999		0	0	0	0	0	0	0					
6,000	6,000-6,999	2	2	1	1	1	0	0	2	1	1	1		
7,000	7,000-7,999		0	1	1	0	0	0	0	1	1			
8,000	8,000-9,999		0	0	0	1	2	2	0				1	
10,000	10,000-10,999		0	0	0	0	0	0	0					1
11,000	11,000-11,999		0	0	0	0	0	0	0					
12,000	12,000-12,999		0	0	0	0	0	0	0			1	1	1
13,000	13,000-13,999		0	0	0	0	0	0	0					
Reefer			0	0	0	0	0	0	0					
Peak Day Hotelling Times (hr):			0	0	0	0	0	0						
Size Category	Assumed Capacity		0	0	0	0	0	0						
1,000	1,000-1,999		0	0	0	0	0	0	0					
2,000	2,000-2,999	6	6	10.5	10.5	10.5	10.5	10.5	6	10.5	10.5	10.5	10.5	10.5
3,000	3,000-3,999		0	10.5	10.5	10.5	10.5	10.5	0	10.5	10.5	10.5	10.5	10.5
4,000	4,000-4,999		0	0.0	0.0	0.0	0.0	0.0	0	0	0			
5,000	5,000-5,999		0	0.0	0.0	0.0	0.0	0.0	0	0	0			
6,000	6,000-6,999	19/18	19/18	10.5	10.5	10.5	0.0	0.0	19/18	10.5	10.5	19		
7,000	7,000-7,999		0	10.5	10.5	0.0	0.0	0.0	0	10.5	10.5			
8,000	8,000-9,999		0	0.0	0.0	10.5	10.5	10.5	0				19	
10,000	10,000-10,999		0	0.0	0.0	0.0	0.0	0.0	0					19
11,000	11,000-11,999		0	0.0	0.0	0.0	0.0	0.0	0					
12,000	12,000-12,999		0	0.0	0.0	0.0	0.0	0.0	0			19	19	19
13,000	13,000-13,999		0	0.0	0.0	0.0	0.0	0.0	0					
Reefer			0	0.0	0.0	0.0	0.0	0.0	0					

Table B1.20 **Operational Activity Matrix**

		Alt 1 No Project						Alt 2 No Federal Action					
		2012	2015	2016	2017	2020	2026	2012	2015	2016	2017	2020	2026
Hotelling Time per Ship Call		varies by vessel size; 49 hours/call on average	50.4	50.4	50.4	50.4	50.4	varies by vessel size; 49 hours/call on average	50.4	50.4	50.4	50.4	50.4
Operating Berths		B212-213 B214-216	B212-213 B214-216	B212-213 B214-216	B212-213 B214-216	B212-213 B214-216	B212-213 B214-216	B212-213 B214-216	B212-213 B214-216	B212-213 B214-216	B212-213 B214-216	B212-213 B214-216	B212-213 B214-216
AMPd Berths		B214-216	B212-213 B214-216	B212-213 B214-216	B212-213 B214-216	B212-213 B214-216	B212-213 B214-216	B214-216	B212-213 B214-216	B212-213 B214-216	B212-213 B214-216	B212-213 B214-216	B212-213 B214-216
Peak Day Ship Calls/Transits:													
Size Category	Assumed Capacity												
1,000	1,000-1,999	0						0					
2,000	2,000-2,999	1	1	1	1	1	1	1	1	1	1	1	1
3,000	3,000-3,999	0	1	1	1	1	1	0	1	1	1	1	1
4,000	4,000-4,999	0						0					
5,000	5,000-5,999	0						0					
6,000	6,000-6,999	2	1	1	1			2	1	1	1		
7,000	7,000-7,999	0	1	1				0	1	1			
8,000	8,000-9,999	0			1	2	2	0			1	2	2
10,000	10,000-10,999	0						0					
11,000	11,000-11,999	0						0					
12,000	12,000-12,999	0						0					
13,000	13,000-13,999	0						0					
Reefer		0						0					
Peak Day Hotelling Times (hr):													
Size Category	Assumed Capacity												
1,000	1,000-1,999	0						0					
2,000	2,000-2,999	6	10.5	10.5	10.5	10.5	10.5	6	10.5	10.5	10.5	10.5	10.5
3,000	3,000-3,999	0	10.5	10.5	10.5	10.5	10.5	0	10.5	10.5	10.5	10.5	10.5
4,000	4,000-4,999	0	47	0				0	0	0			
5,000	5,000-5,999	0	48	0				0	0	0			
6,000	6,000-6,999	19/18	10.5	10.5	10.5			19/18	10.5	10.5	10.5		
7,000	7,000-7,999	0	10.5	10.5				0	10.5	10.5			
8,000	8,000-9,999	0			10.5	10.5	10.5	0			10.5	10.5	10.5
10,000	10,000-10,999	0						0					
11,000	11,000-11,999	0						0					
12,000	12,000-12,999	0						0					
13,000	13,000-13,999	0						0					
Reefer		0						0					

Table B1.20 **Operational Activity Matrix**

		Alt 3 Improve Only B217-220					
		2012	**2015**	**2016**	**2017**	**2020**	**2026**
Hotelling Time per Ship Call		varies by vessel size; 49 hours/call on average	50.4	50.4	50.4	50.4	50.4
Operating Berths		B212-213 B214-216	B212-213 B214-216	B212-213 B214-216	B212-213 B214-216 B217-220	B212-213 B214-216 B217-220	B212-213 B214-216 B217-220
AMPd Berths		B212-213 B214-216	B212-213 B214-216	B212-213 B217-220	B212-213 B214-216 B217-220	B212-213 B214-216 B217-220	B212-213 B214-216 B217-220
Peak Day Ship Calls/Transits:							
Size Category	Assumed Capacity						
1,000	1,000-1,999	0					
2,000	2,000-2,999	1	1	1	1	1	1
3,000	3,000-3,999	0	1	1	1	1	1
4,000	4,000-4,999	0					
5,000	5,000-5,999	0					
6,000	6,000-6,999	2	1	1	1	1	1
7,000	7,000-7,999	0	1	1			
8,000	8,000-9,999	0				1	
10,000	10,000-10,999	0			1	1	2
11,000	11,000-11,999	0					
12,000	12,000-12,999	0					
13,000	13,000-13,999	0					
Reefer		0					
Peak Day Hotelling Times (hr):							
Size Category	Assumed Capacity						
1,000	1,000-1,999	0					
2,000	2,000-2,999	6	10.5	10.5	10.5	10.5	10.5
3,000	3,000-3,999	0	10.5	10.5	10.5	10.5	10.5
4,000	4,000-4,999	0	0	0			
5,000	5,000-5,999	0	0	0			
6,000	6,000-6,999	19/18	10.5	10.5	19	19	19
7,000	7,000-7,999	0	10.5	10.5			
8,000	8,000-9,999	0				10.5	
10,000	10,000-10,999	0			19	10.5	10.5
11,000	11,000-11,999	0					
12,000	12,000-12,999	0					
13,000	13,000-13,999	0					
Reefer		0					

Table B1.20 **Operational Activity Matrix**

		CEQA Baseline	NEPA Baseline					Proposed Project					
		(January 2012-December 2012)	2012	2015	2016	2017	2020	2026	2012	2015	2016	2017	2020	2026
Trucks		On-road vehicle emissions were calculated using link-based volumes and speeds provided by Cambridge Systematics Inc.												
Peak Day Factor for Trucks (annual truck trips/peak day truck trips)		294	294	282	278	274	274	274	294	282	278	274	274	274
Avg. truck Idling time at in-gate (min/truck)		6 mins.	Constant for all years and alternatives											
Avg. truck idling time at out-gate (min/truck)		8 mins.	Constant for all years and alternatives											
Avg. truck idling time while on-terminal, not including at gate (min/truck)		10 mins.	Constant for all years and alternatives											
Avg. truck on-terminal drive time, excluding idling time (min/truck)		9 mins.	Constant for all years and alternatives											
Avg. truck driving distance while on-terminal (mi/truck)		1.5mi	Constant for all years and alternatives											
Op hours - Truck gate		3 days/week x 8 hrs												
		3 days/week x 16hrs	3x8hrs 3x16hrs	2x9hrs 4x18hrs					3x8hrs 3x16hrs	2x9hrs 4x18hrs	2x9hrs 4x18hrs	2x9hrs 4x18hrs	2x9hrs 4x18hrs	2x9hrs 4x18hrs
Truck gate daily start time for single-shift day		8am	8am	7am					8am	7am	7am	7am	7am	7am
Truck gate daily end time for single-shift day		5pm	Constant for all years and alternatives											
Truck gate daily start time for double-shift day (start night shift)		6pm	Constant for all years and alternatives											
Truck gate daily end time for double-shift day (end night shift)		3am	Constant for all years and alternatives											
Rail														
Peak Day On-Dock Rail Factor (peak day rail TEUs/avg. day rail TEUs)		1.08	Constant for all years & alternatives (used to determine peak day activity for switcher locomotives)											
Average Line Haul Locomotive Size (hp)		4,000	Constant for all years and alternatives											
Average Daily PHL Switch Engine Use On-Dock (locomotive-hr/day)		5.7	Per Doug Hansen/YTI: This is all activity attributed to crews assigned to YTI at TICTF. Consider this figure to be a factor and scale it accordingly.											
On-Dock Line Haul Locomotive load factor		0.28	Constant for all years and alternatives											
Line Haul Locomotive Operating Hours on Port per trip (hr/loco) (westbound exports)		1.0	Constant for all years and alternatives											
Line Haul Locomotive Operating Hours on Port per trip (hr/loco) eastbound imports)		2.5	Constant for all years and alternatives											
Op hours - On-Dock Rail Yard		16hr/day, 7 day/	Constant for all years and alternatives											
On-Dock Rail Yard Daily Start Time		8am	Constant for all years and alternatives											
On-Dock Rail Yard Daily End Time		3am	Constant for all years and alternatives											
Terminal Acreage (total)		181.4	181.4	181.4	181.4	181.4	181.4	181.4	181.4	181.4	181.4	181.4	181.4	181.4
Space Assignment 6A		4.0												
Building Space, sq ft (total)		62,227	Constant for all years and alternatives											
No. of Wharf Cranes		10	10						10	10	10	14	14	14
Yard Equipment														
Type	**Average HP/Load Factor**	**Annual Hrs by Type**												
Electric Wharf Crane	N/A	12,391	12,391	15,302	15,771	16,253	17,793	21,047	12,391	15,302	15,771	17,170	19,855	23,797
Forklift (Diesel)	191/.30	5,637	5,637	6,961	7,175	7,394	8,095	9,575	5,637	6,961	7,175	7,811	9,033	10,826
RMG cranes	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rub-trd Gantry Crane	451/.20	21,704	21,704	26,803	27,624	28,469	31,166	36,867	21,704	26,803	27,624	30,074	34,778	41,682
Top handler (terminal)	318/.59	50,629	50,629	62,523	64,439	66,411	72,701	85,999	50,629	62,523	64,439	70,154	81,127	97,232
Top handler (TICTF)	318/.59	6,777	6,777	8,369	8,626	8,889	9,732	11,511	6,777	8,369	8,626	9,391	10,859	13,015
Side pick	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Yard tractor (terminal)	201/.39	171,929	171,929	212,320	218,826	225,522	246,884	292,040	171,929	212,320	218,826	238,232	275,497	330,185
Yard tractor (TICTF)	201/.39	21,758	21,758	26,870	27,693	28,540	31,244	36,958	21,758	26,870	27,693	30,149	34,865	41,786

Table B1.20 **Operational Activity Matrix**

		Alt 1 No Project						Alt 2 No Federal Action					
		2012	**2015**	**2016**	**2017**	**2020**	**2026**	**2012**	**2015**	**2016**	**2017**	**2020**	**2026**
Trucks													
Peak Day Factor for Trucks (annual truck trips/peak day truck trips)		294	282	278	274	274	274	294	282	278	274	274	274
Avg. truck Idling time at in-gate (min/truck)													
Avg. truck idling time at out-gate (min/truck)													
Avg. truck idling time while on-terminal, not including at gate (min/truck)													
Avg. truck on-terminal drive time, excluding idling time (min/truck)													
Avg. truck driving distance while on-terminal (mi/truck)													
Op hours - Truck gate													
		3x8hrs	2x9hrs	2x9hrs	2x9hrs	2x9hrs	2x9hrs	3x8hrs	2x9hrs	2x9hrs	2x9hrs	2x9hrs	2x9hrs
		3x16hrs	4x18hrs	4x18hrs	4x18hrs	4x18hrs	4x18hrs	3x16hrs	4x18hrs	4x18hrs	4x18hrs	4x18hrs	4x18hrs
Truck gate daily start time for single-shift day		8am	7am	7am	7am	7am	7am	8am	7am	7am	7am	7am	7am
Truck gate daily end time for single-shift day													
Truck gate daily start time for double-shift day (start night shift)													
Truck gate daily end time for double-shift day (end night shift)													
Rail													
Peak Day On-Dock Rail Factor (peak day rail TEUs/avg. day rail TEUs)													
Average Line Haul Locomotive Size (hp)													
Average Daily PHL Switch Engine Use On-Dock (locomotive-hr/day)													
On-Dock Line Haul Locomotive load factor													
Line Haul Locomotive Operating Hours on Port per trip (hr/loco) (westbound exports)													
Line Haul Locomotive Operating Hours on Port per trip (hr/loco) eastbound imports)													
Op hours - On-Dock Rail Yard	16												
On-Dock Rail Yard Daily Start Time													
On-Dock Rail Yard Daily End Time													
Terminal Acreage (total)		181.4	181.4	181.4	181.4	181.4	181.4	181.4	181.4	181.4	181.4	181.4	181.4
Space Assignment 6A													
Building Space, sq ft (total)													
No. of Wharf Cranes		10	10	10	10	10	10	10	10	10	10	10	10
Yard Equipment													
Type	**Average HP/Load Factor**												
Electric Wharf Crane	N/A	12,391	15,302	15,771	16,253	17,793	21,047	12,391	15,302	15,771	16,253	17,793	21,047
Forklift (Diesel)	191/.30	5,637	6,961	7,175	7,394	8,095	9,575	5,637	6,961	7,175	7,394	8,095	9,575
RMG cranes	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rub-trd Gantry Crane	451/.20	21,704	26,803	27,624	28,469	31,166	36,867	21,704	26,803	27,624	28,469	31,166	36,867
Top handler (terminal)	318/.59	50,629	62,523	64,439	66,411	72,701	85,999	50,629	62,523	64,439	66,411	72,701	85,999
Top handler (TICTF)	318/.59	6,777	8,369	8,626	8,889	9,732	11,511	6,777	8,369	8,626	8,889	9,732	11,511
Side pick	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Yard tractor (terminal)	201/.39	171,929	212,320	218,826	225,522	246,884	292,040	171,929	212,320	218,826	225,522	246,884	292,040
Yard tractor (TICTF)	201/.39	21,758	26,870	27,693	28,540	31,244	36,958	21,758	26,870	27,693	28,540	31,244	36,958

Table B1.20 **Operational Activity Matrix**

		Alt 3 Improve Only B217-220					
		2012	**2015**	**2016**	**2017**	**2020**	**2026**
Trucks							
Peak Day Factor for Trucks (annual truck trips/peak day truck trips)		294	282	278	274	274	274
Avg. truck Idling time at in-gate (min/truck)							
Avg. truck idling time at out-gate (min/truck)							
Avg. truck idling time while on-terminal, not including at gate (min/truck)							
Avg. truck on-terminal drive time, excluding idling time (min/truck)							
Avg. truck driving distance while on-terminal (mi/truck)							
Op hours - Truck gate							
		3x8hrs 3x16hrs	2x9hrs 4x18hrs	2x9hrs 4x18hrs	2x9hrs 4x18hrs	2x9hrs 4x18hrs	2x9hrs 4x18hrs
Truck gate daily start time for single-shift day		8am	7am	7am	7am	7am	7am
Truck gate daily end time for single-shift day							
Truck gate daily start time for double-shift day (start night shift)							
Truck gate daily end time for double-shift day (end night shift)							
Rail							
Peak Day On-Dock Rail Factor (peak day rail TEUs/avg. day rail TEUs)							
Average Line Haul Locomotive Size (hp)							
Average Daily PHL Switch Engine Use On-Dock (locomotive-hr/day)							
On-Dock Line Haul Locomotive load factor							
Line Haul Locomotive Operating Hours on Port per trip (hr/loco) (westbound exports)							
Line Haul Locomotive Operating Hours on Port per trip (hr/loco) eastbound imports)							
Op hours - On-Dock Rail Yard	16						
On-Dock Rail Yard Daily Start Time							
On-Dock Rail Yard Daily End Time							
Terminal Acreage (total)		181.4	181.4	181.4	181.4	181.4	181.4
Space Assignment 6A							
Building Space, sq ft (total)							
No. of Wharf Cranes		10	10	10	14	14	14
Yard Equipment							
Type	**Average HP/Load Factor**						
Electric Wharf Crane	N/A	12,391	15,302	15,771	17,170	19,855	23,797
Forklift (Diesel)	191/.30	5,637	6,961	7,175	7,811	9,033	10,826
RMG cranes	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rub-trd Gantry Crane	451/.20	21,704	26,803	27,624	30,074	34,778	41,682
Top handler (terminal)	318/.59	50,629	62,523	64,439	70,154	81,127	97,232
Top handler (TICTF)	318/.59	6,777	8,369	8,626	9,391	10,859	13,015
Side pick	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Yard tractor (terminal)	201/.39	171,929	212,320	218,826	238,232	275,497	330,185
Yard tractor (TICTF)	201/.39	21,758	26,870	27,693	30,149	34,865	41,786

Table B1.20 **Operational Activity Matrix**

		CEQA Baseline	NEPA Baseline					Proposed Project					
		(January 2012-December 2012)	2012	2015	2016	2017	2020	2026	2012	2015	2016	2017	2020	2026
Type	**Average HP/Load Factor**	**Day Hours by Type**												
Electric Wharf Crane	N/A	128	128	158	163	168	184	217	128	158	163	177	205	246
Forklift (Diesel)	191/.30	80	80	99	102	105	115	136	80	99	102	111	128	154
RMG cranes	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rub-trd Gantry Crane	451/.20	96	96	119	122	126	138	163	96	119	122	133	154	184
Top handler (terminal)	318/.59	288	288	356	367	378	414	489	288	356	367	399	461	553
Top handler (TICTF)	318/.59	32	32	40	41	42	46	54	32	40	41	44	51	61
Side pick	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Yard tractor (terminal)	201/.39	1,280	1,280	1,581	1,629	1,679	1,838	2,174	1,280	1,581	1,629	1,774	2,051	2,458
Yard tractor (TICTF)	201/.39	128	128	158	163	168	184	217	128	158	163	177	205	246
Type	**Average HP/Load Factor**	**e Consumption, gal**												
Forklift (Propane)	57.6HP/ .3 load factor	1,726	1,726	2,131	2,197	2,264	2,478	2,932	1,726	2,131	2,197	2,392	2,766	3,315
Forklift (Propane)	57.6HP/ .3 load factor	6	6	7	7	7	8	9	6	7	7	8	9	11
Non-Container Vehicle Trips														
Shift Splits Employees (Avg all types)		314/210/9	314/210/9						314/210/9	332/222/9	334/224/10	353/239/10	400/291/10	468/367/10
Peak Daily Employees		533	533						533	563	568	602	701	845
Average Weekday non-container truck vehicle trips		25	25	31	32	33	36	42	25	31	32	35	40	48
Annual non-container truck vehicle		312	312	385	397	409	448	530	312	385	397	432	500	599

Table B1.20 **Operational Activity Matrix**

		Alt 1 No Project						Alt 2 No Federal Action					
		2012	**2015**	**2016**	**2017**	**2020**	**2026**	**2012**	**2015**	**2016**	**2017**	**2020**	**2026**
Type	**Average HP/Load Factor**												
Electric Wharf Crane	N/A	128	158	163	168	184	217	128	158	163	168	184	217
Forklift (Diesel)	191/.30	80	99	102	105	115	136	80	99	102	105	115	136
RMG cranes	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rub-trd Gantry Crane	451/.20	96	119	122	126	138	163	96	119	122	126	138	163
Top handler (terminal)	318/.59	288	356	367	378	414	489	288	356	367	378	414	489
Top handler (TICTF)	318/.59	32	40	41	42	46	54	32	40	41	42	46	54
Side pick	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Yard tractor (terminal)	201/.39	1,280	1,581	1,629	1,679	1,838	2,174	1,280	1,581	1,629	1,679	1,838	2,174
Yard tractor (TICTF)	201/.39	128	158	163	168	184	217	128	158	163	168	184	217
Type	**Average HP/Load Factor**												
Forklift (Propane)	57.6HP/ .3 load factor	1,726	2,131	2,197	2,264	2,478	2,932	1,726	2,131	2,197	2,264	2,478	2,932
Forklift (Propane)	57.6HP/ .3 load factor	6	7	7	7	8	9	6	7	7	7	8	9
Non-Container Vehicle Trips													
Shift Splits Employees (Avg all types)		314/210/9	332/222/9	334/224/10	344/229/10	367/253/10	424/317/10	314/210/9	332/222/9	334/224/10	344/229/10	367/253/10	424/317/10
Peak Daily Employees		533	563	568	583	630	751	533	563	568	583	630	751
Average Weekday non-container truck vehicle trips		25	31	32	33	36	42	25	31	32	33	36	42
Annual non-container truck vehicle		312	385	397	409	448	530	312	385	397	409	448	530

Table B1.20 **Operational Activity Matrix**

		Alt 3 Improve Only B217-220					
		2012	**2015**	**2016**	**2017**	**2020**	**2026**
Type	**Average HP/Load Factor**						
Electric Wharf Crane	N/A	128	158	163	177	205	246
Forklift (Diesel)	191/.30	80	99	102	111	128	154
RMG cranes	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rub-trd Gantry Crane	451/.20	96	119	122	133	154	184
Top handler (terminal)	318/.59	288	356	367	399	461	553
Top handler (TICTF)	318/.59	32	40	41	44	51	61
Side pick	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Yard tractor (terminal)	201/.39	1,280	1,581	1,629	1,774	2,051	2,458
Yard tractor (TICTF)	201/.39	128	158	163	177	205	246
Type	**Average HP/Load Factor**						
Forklift (Propane)	57.6HP/ .3 load factor	1,726	2,131	2,197	2,392	2,766	3,315
Forklift (Propane)	57.6HP/ .3 load factor	6	7	7	8	9	11
Non-Container Vehicle Trips							
Shift Splits Employees (Avg all types)		314/210/9	332/222/9	334/224/10	353/239/10	400/291/10	468/367/10
Peak Daily Employees		533	563	568	602	701	845
Average Weekday non-container truck vehicle trips		25	31	32	35	40	48
Annual non-container truck vehicle		312	385	397	432	500	599

Table B1.21 **Container Ship Activity Summary**

Analysis Year	TEUs	TEU Factor	Moves or No. Containers	No. Annual Vessel Calls	Peak Day Vessels at Berth	Peak Day Vessel Transits	Peak Day AMP Unmitigated	Peak Day AMP Mitigated	Peak Day VSRP Zone 4 Unmitigated	Peak Day VSR Zone 4 Mitigated
Baseline										
2012	996,109	1.726	577,120	162	3	3	0	0	2	2
Proposed Project										
2015	1,230,126	1.750	702,929	206	4	4	0	0	2	2
2016	1,267,816	1.750	724,466	206	4	4	0	0	2	2
2017	1,380,253	1.750	788,716	206	4	4	1	1	2	3
2020	1,596,153	1.750	912,087	206	4	4	2	2	2	3
2026	1,913,000	1.750	1,093,143	206	4	4	2	3	2	3
Alternative 1 No Project										
2015	1,230,126	1.750	702,929	206	4	4	0	0	2	2
2016	1,267,816	1.750	724,466	206	4	4	0	0	2	2
2017	1,306,611	1.750	746,635	206	4	4	1	1	2	2
2020	1,430,376	1.750	817,358	206	4	4	2	2	2	2
2026	1,692,000	1.750	966,857	206	4	4	2	2	2	2
Alternative 2 No Federal Action										
2015	1,230,126	1.750	702,929	206	4	4	0	0	2	2
2016	1,267,816	1.750	724,466	206	4	4	0	0	2	2
2017	1,306,611	1.750	746,635	206	4	4	1	1	2	3
2020	1,430,376	1.750	817,358	206	4	4	2	2	2	3
2026	1,692,000	1.750	966,857	206	4	4	2	3	2	3
Alternative 3 Reduced Project										
2015	1,230,126	1.750	702,929	206	4	4	0	0	2	2
2016	1,267,816	1.750	724,466	206	4	4	0	0	2	2
2017	1,380,253	1.750	788,716	206	4	4	2	2	2	3
2020	1,596,153	1.750	912,087	232	5	5	3	3	2	4
2026	1,913,000	1.750	1,093,143	232	5	5	3	4	2	4

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Table B1.22 **Operational OGV Emissions - Baseline (2012) and Future Baseline (2015, 2016, 2017, 2020, 2026)**

			Vessel Characteristics			Activity								
	Vessel Type	Engine/Source Type	Engine Rating (kW)	Vessel Year	Max Rated Speed (knots)	Peak Day Berth Calls	Peak Day Transits	Peak Day Hotelling Time Per Vessel (hr/day)	Annual Berth Calls	Annual Transits	Peak Day Fuel Sulfur	Peak Day Number of Transits in Compliance with VSRP in Zone 3	Peak Day Number of Transits in Compliance with VSRP in Zone 4	Peak Day Number of Vessels using AMP
Baseline	2 operating berths (B212-213, B213-215); 1 berth with AMP (B212-213)													
2012	Container1000	Propulsion	12,516	1995	19				10	20	0.5%			
	Container1000	Auxiliary							10	20	0.5%	0	0	0
	Container1000	Auxiliary Boiler							10	20	0.5%	0	0	0
	Container2000	Propulsion	21,053	2004	22	1	1	6.0	37	74	0.5%	1	1	0
	Container2000	Auxiliary				1	1	6.0	37	74	0.5%	1	1	0
	Container2000	Auxiliary Boiler				1	1	6.0	37	74	0.5%	1	1	0
	Container4000	Propulsion	51,389	2009	25				1	2	0.5%			
	Container4000	Auxiliary							1	2	0.5%	0	0	0
	Container4000	Auxiliary Boiler							1	2	0.5%	0	0	0
	Container5000	Propulsion	58,823	2000	25				9	18	0.5%			
	Container5000	Auxiliary							9	18	0.5%	0	0	0
	Container5000	Auxiliary Boiler							9	18	0.5%	0	0	0
	Container6000	Propulsion	63,817	2003	25	2	2	18.5	87	174	0.5%	2	1	0
	Container6000	Auxiliary				2	2	18.5	87	174	0.5%	2	1	0
	Container6000	Auxiliary Boiler				2	2	18.5	87	174	0.5%	2	1	0
	Container7000	Propulsion	68,639	2001	25				5	10	0.5%	0		0
	Container7000	Auxiliary							5	10	0.5%	0	0	0
	Container7000	Auxiliary Boiler							5	10	0.5%	0	0	0
	Reefer	Propulsion	9,736	1992	20				13	26	0.5%			
	Reefer	Auxiliary							13	26	0.5%	0	0	0
	Reefer	Auxiliary Boiler							13	26	0.5%	0	0	0
	Reefer	Refrigerant Loss							13	26				
Total 2012						**3**	**3**		**162**	**324**		**3**	**2**	**0**

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Information provided by YTI
Information provided by POLA

Table B1.22

	Vessel Type	Engine/Source Type	Peak Day Number of Transits with Slide Valves	Annual Fuel Sulfur	Annual Number of Transits in Compliance with VSRP in Zone 3	Annual Number of Transits in Compliance with VSRP in Zone 4	Annual Number of Vessels using AMP	Annual Number of Transits with Slide Valves	Average Auxiliary Load (kW)		
									Transit	Maneuvering	Berth/ Anchorage
Baseline	2 operating berths (B212-213, B213-215); 1										
2012	Container1000	Propulsion		0.5%	20	15	0	0			
	Container1000	Auxiliary		0.5%	20	15	0	0	619	955	367
	Container1000	Auxiliary Boiler		0.5%	20	15	0	0	178	241	241
	Container2000	Propulsion	0	0.5%	74	57	0	25			
	Container2000	Auxiliary	0	0.5%	74	57	0	25	981	2,180	1,030
	Container2000	Auxiliary Boiler	0	0.5%	74	57	0	25	322	325	325
	Container4000	Propulsion		0.5%	2	2	0	1			
	Container4000	Auxiliary		0.5%	2	2	0	1	1,434	2,526	1,161
	Container4000	Auxiliary Boiler		0.5%	2	2	0	1	369	492	492
	Container5000	Propulsion		0.5%	18	14	0	0			
	Container5000	Auxiliary		0.5%	18	14	0	0	1,176	4,200	1,025
	Container5000	Auxiliary Boiler		0.5%	18	14	0	0	630	630	630
	Container6000	Propulsion	0	0.5%	174	134	14	18			
	Container6000	Auxiliary	0	0.5%	174	134	14	18	1,386	2,560	1,047
	Container6000	Auxiliary Boiler	0	0.5%	174	134	14	18	486	565	565
	Container7000	Propulsion	0	0.5%	10	8	0	0			
	Container7000	Auxiliary	0	0.5%	10	8	0	0	1,539	3,434	1,066
	Container7000	Auxiliary Boiler	0	0.5%	10	8	0	0	530	551	551
	Reefer	Propulsion		0.5%	26	20	0	0			
	Reefer	Auxiliary		0.5%	26	20	0	0	568	1,537	863
	Reefer	Auxiliary Boiler		0.5%	26	20	0	0	122	255	255
	Reefer	Refrigerant Loss									
Total 2012					**324**	**249**	**14**	**44**			

Table B1.22 **Operational OGV Emissions - Baseline (2012) and Future Baseline (2015, 2016, 2017, 2020, 2026)**

			Vessel Characteristics			Activity								
	Vessel Type	Engine/Source Type	Engine Rating (kW)	Vessel Year	Max Rated Speed (knots)	Peak Day Berth Calls	Peak Day Transits	Peak Day Hotelling Time Per Vessel (hr/day)	Annual Berth Calls	Annual Transits	Peak Day Fuel Sulfur	Peak Day Number of Transits in Compliance with VSRP in Zone 3	Peak Day Number of Transits in Compliance with VSRP in Zone 4	Peak Day Number of Vessels using AMP
2015	Container1000	Propulsion	12,516	1995	19	0	0	0	10	20	0.1%	0	0	0
	Container1000	Auxiliary	0	0	0	0	0	0	10	20	0.1%	0	0	0
	Container1000	Auxiliary Boiler	0	0	0	0	0	0	10	20	0.1%	0	0	0
	Container2000	Propulsion	21,053	2004	22	1	1	6	37	74	0.1%	1	1	0
	Container2000	Auxiliary	0	0	0	1	1	6	37	74	0.1%	1	1	0
	Container2000	Auxiliary Boiler	0	0	0	1	1	6	37	74	0.1%	1	1	0
	Container4000	Propulsion	51,389	2009	25	0	0	0	1	2	0.1%	0	0	0
	Container4000	Auxiliary	0	0	0	0	0	0	1	2	0.1%	0	0	0
	Container4000	Auxiliary Boiler	0	0	0	0	0	0	1	2	0.1%	0	0	0
	Container5000	Propulsion	58,823	2000	25	0	0	0	9	18	0.1%	0	0	0
	Container5000	Auxiliary	0	0	0	0	0	0	9	18	0.1%	0	0	0
	Container5000	Auxiliary Boiler	0	0	0	0	0	0	9	18	0.1%	0	0	0
	Container6000	Propulsion	63,817	2003	25	2	2	19	87	174	0.1%	2	1	0
	Container6000	Auxiliary	0	0	0	2	2	19	87	174	0.1%	2	1	0
	Container6000	Auxiliary Boiler	0	0	0	2	2	19	87	174	0.1%	2	1	0
	Container7000	Propulsion	68,639	2001	25	0	0	0	5	10	0.1%	0	0	0
	Container7000	Auxiliary	0	0	0	0	0	0	5	10	0.1%	0	0	0
	Container7000	Auxiliary Boiler	0	0	0	0	0	0	5	10	0.1%	0	0	0
	Reefer	Propulsion	9,736	1992	20	0	0	0	13	26	0.1%	0	0	0
	Reefer	Auxiliary	0	0	0	0	0	0	13	26	0.1%	0	0	0
	Reefer	Auxiliary Boiler	0	0	0	0	0	0	13	26	0.1%	0	0	0
Total 2015						**3**	**3**		**162**	**324**		**3**	**2**	**0**

Table B1.22

	Vessel Type	Engine/Source Type	Peak Day Number of Transits with Slide Valves	Annual Fuel Sulfur	Annual Number of Transits in Compliance with VSRP in Zone 3	Annual Number of Transits in Compliance with VSRP in Zone 4	Annual Number of Vessels using AMP	Annual Number of Transits with Slide Valves	Average Auxiliary Load (kW)		
									Transit	Maneuvering	Berth/ Anchorage
2015	Container1000	Propulsion	0	0.1%	20	15	5	0	0	0	0
	Container1000	Auxiliary	0	0.1%	20	15	5	0	619	955	367
	Container1000	Auxiliary Boiler	0	0.1%	20	15	5	0	178	241	241
	Container2000	Propulsion	0	0.1%	74	57	19	25	0	0	0
	Container2000	Auxiliary	0	0.1%	74	57	19	25	981	2,180	1,030
	Container2000	Auxiliary Boiler	0	0.1%	74	57	19	25	322	325	325
	Container4000	Propulsion	0	0.1%	2	2	1	1	0	0	0
	Container4000	Auxiliary	0	0.1%	2	2	1	1	1,434	2,526	1,161
	Container4000	Auxiliary Boiler	0	0.1%	2	2	1	1	369	492	492
	Container5000	Propulsion	0	0.1%	18	14	5	0	0	0	0
	Container5000	Auxiliary	0	0.1%	18	14	5	0	1,176	4,200	1,025
	Container5000	Auxiliary Boiler	0	0.1%	18	14	5	0	630	630	630
	Container6000	Propulsion	0	0.1%	174	134	44	18	0	0	0
	Container6000	Auxiliary	0	0.1%	174	134	44	18	1,386	2,560	1,047
	Container6000	Auxiliary Boiler	0	0.1%	174	134	44	18	486	565	565
	Container7000	Propulsion	0	0.1%	10	8	3	0	0	0	0
	Container7000	Auxiliary	0	0.1%	10	8	3	0	1,539	3,434	1,066
	Container7000	Auxiliary Boiler	0	0.1%	10	8	3	0	530	551	551
	Reefer	Propulsion	0	0.1%	26	20	7	0	0	0	0
	Reefer	Auxiliary	0	0.1%	26	20	7	0	568	1,537	863
	Reefer	Auxiliary Boiler	0	0.1%	26	20	7	0	122	255	255
Total 2015					**324**	**249**	**81**	**44**			

Table B1.22 **Operational OGV Emissions - Baseline (2012) and Future Baseline (2015, 2016, 2017, 2020, 2026)**

			Vessel Characteristics			Activity								
	Vessel Type	Engine/Source Type	Engine Rating (kW)	Vessel Year	Max Rated Speed (knots)	Peak Day Berth Calls	Peak Day Transits	Peak Day Hotelling Time Per Vessel (hr/day)	Annual Berth Calls	Annual Transits	Peak Day Fuel Sulfur	Peak Day Number of Transits in Compliance with VSRP in Zone 3	Peak Day Number of Transits in Compliance with VSRP in Zone 4	Peak Day Number of Vessels using AMP
2016	Container1000	Propulsion	12,516	1995	19	0	0	0	10	20	0.1%	0	0	0
	Container1000	Auxiliary	0	0	0	0	0	0	10	20	0.1%	0	0	0
	Container1000	Auxiliary Boiler	0	0	0	0	0	0	10	20	0.1%	0	0	0
	Container2000	Propulsion	21,053	2004	22	1	1	6	37	74	0.1%	1	1	0
	Container2000	Auxiliary	0	0	0	1	1	6	37	74	0.1%	1	1	0
	Container2000	Auxiliary Boiler	0	0	0	1	1	6	37	74	0.1%	1	1	0
	Container4000	Propulsion	51,389	2009	25	0	0	0	1	2	0.1%	0	0	0
	Container4000	Auxiliary	0	0	0	0	0	0	1	2	0.1%	0	0	0
	Container4000	Auxiliary Boiler	0	0	0	0	0	0	1	2	0.1%	0	0	0
	Container5000	Propulsion	58,823	2000	25	0	0	0	9	18	0.1%	0	0	0
	Container5000	Auxiliary	0	0	0	0	0	0	9	18	0.1%	0	0	0
	Container5000	Auxiliary Boiler	0	0	0	0	0	0	9	18	0.1%	0	0	0
	Container6000	Propulsion	63,817	2003	25	2	2	19	87	174	0.1%	2	1	0
	Container6000	Auxiliary	0	0	0	2	2	19	87	174	0.1%	2	1	0
	Container6000	Auxiliary Boiler	0	0	0	2	2	19	87	174	0.1%	2	1	0
	Container7000	Propulsion	68,639	2001	25	0	0	0	5	10	0.1%	0	0	0
	Container7000	Auxiliary	0	0	0	0	0	0	5	10	0.1%	0	0	0
	Container7000	Auxiliary Boiler	0	0	0	0	0	0	5	10	0.1%	0	0	0
	Reefer	Propulsion	9,736	1992	20	0	0	0	13	26	0.1%	0	0	0
	Reefer	Auxiliary	0	0	0	0	0	0	13	26	0.1%	0	0	0
	Reefer	Auxiliary Boiler	0	0	0	0	0	0	13	26	0.1%	0	0	0
Total 2016						**3**	**3**		**162**	**324**		**3**	**2**	**0**
2017	Container1000	Propulsion	12,516	1995	19	0	0	0	10	20	0.1%	0	0	0
	Container1000	Auxiliary	0	0	0	0	0	0	10	20	0.1%	0	0	0
	Container1000	Auxiliary Boiler	0	0	0	0	0	0	10	20	0.1%	0	0	0
	Container2000	Propulsion	21,053	2004	22	1	1	6	37	74	0.1%	1	1	1
	Container2000	Auxiliary	0	0	0	1	1	6	37	74	0.1%	1	1	1
	Container2000	Auxiliary Boiler	0	0	0	1	1	6	37	74	0.1%	1	1	1
	Container4000	Propulsion	51,389	2009	25	0	0	0	1	2	0.1%	0	0	0
	Container4000	Auxiliary	0	0	0	0	0	0	1	2	0.1%	0	0	0
	Container4000	Auxiliary Boiler	0	0	0	0	0	0	1	2	0.1%	0	0	0
	Container5000	Propulsion	58,823	2000	25	0	0	0	9	18	0.1%	0	0	0
	Container5000	Auxiliary	0	0	0	0	0	0	9	18	0.1%	0	0	0
	Container5000	Auxiliary Boiler	0	0	0	0	0	0	9	18	0.1%	0	0	0
	Container6000	Propulsion	63,817	2003	25	2	2	19	87	174	0.1%	2	1	0
	Container6000	Auxiliary	0	0	0	2	2	19	87	174	0.1%	2	1	0
	Container6000	Auxiliary Boiler	0	0	0	2	2	19	87	174	0.1%	2	1	0
	Container7000	Propulsion	68,639	2001	25	0	0	0	5	10	0.1%	0	0	0
	Container7000	Auxiliary	0	0	0	0	0	0	5	10	0.1%	0	0	0
	Container7000	Auxiliary Boiler	0	0	0	0	0	0	5	10	0.1%	0	0	0
	Reefer	Propulsion	9,736	1992	20	0	0	0	13	26	0.1%	0	0	0
	Reefer	Auxiliary	0	0	0	0	0	0	13	26	0.1%	0	0	0
	Reefer	Auxiliary Boiler	0	0	0	0	0	0	13	26	0.1%	0	0	0
Total 2017						**3**	**3**		**162**	**324**		**3**	**2**	**1**

Table B1.22

	Vessel Type	Engine/Source Type	Peak Day Number of Transits with Slide Valves	Annual Fuel Sulfur	Annual Number of Transits in Compliance with VSRP in Zone 3	Annual Number of Transits in Compliance with VSRP in Zone 4	Annual Number of Vessels using AMP	Annual Number of Transits with Slide Valves	Average Auxiliary Load (kW) Transit	Maneuvering	Berth/ Anchorage
2016	Container1000	Propulsion	0	0.1%	20	15	5	0	0	0	0
	Container1000	Auxiliary	0	0.1%	20	15	5	0	619	955	367
	Container1000	Auxiliary Boiler	0	0.1%	20	15	5	0	178	241	241
	Container2000	Propulsion	0	0.1%	74	57	19	25	0	0	0
	Container2000	Auxiliary	0	0.1%	74	57	19	25	981	2,180	1,030
	Container2000	Auxiliary Boiler	0	0.1%	74	57	19	25	322	325	325
	Container4000	Propulsion	0	0.1%	2	2	1	1	0	0	0
	Container4000	Auxiliary	0	0.1%	2	2	1	1	1,434	2,526	1,161
	Container4000	Auxiliary Boiler	0	0.1%	2	2	1	1	369	492	492
	Container5000	Propulsion	0	0.1%	18	14	5	0	0	0	0
	Container5000	Auxiliary	0	0.1%	18	14	5	0	1,176	4,200	1,025
	Container5000	Auxiliary Boiler	0	0.1%	18	14	5	0	630	630	630
	Container6000	Propulsion	0	0.1%	174	134	44	18	0	0	0
	Container6000	Auxiliary	0	0.1%	174	134	44	18	1,386	2,560	1,047
	Container6000	Auxiliary Boiler	0	0.1%	174	134	44	18	486	565	565
	Container7000	Propulsion	0	0.1%	10	8	3	0	0	0	0
	Container7000	Auxiliary	0	0.1%	10	8	3	0	1,539	3,434	1,066
	Container7000	Auxiliary Boiler	0	0.1%	10	8	3	0	530	551	551
	Reefer	Propulsion	0	0.1%	26	20	7	0	0	0	0
	Reefer	Auxiliary	0	0.1%	26	20	7	0	568	1,537	863
	Reefer	Auxiliary Boiler	0	0.1%	26	20	7	0	122	255	255
Total 2016					**324**	**249**	**81**	**44**			
2017	Container1000	Propulsion	0	0.1%	20	15	7	0	0	0	0
	Container1000	Auxiliary	0	0.1%	20	15	7	0	619	955	367
	Container1000	Auxiliary Boiler	0	0.1%	20	15	7	0	178	241	241
	Container2000	Propulsion	0	0.1%	74	57	26	25	0	0	0
	Container2000	Auxiliary	0	0.1%	74	57	26	25	981	2,180	1,030
	Container2000	Auxiliary Boiler	0	0.1%	74	57	26	25	322	325	325
	Container4000	Propulsion	0	0.1%	2	2	1	1	0	0	0
	Container4000	Auxiliary	0	0.1%	2	2	1	1	1,434	2,526	1,161
	Container4000	Auxiliary Boiler	0	0.1%	2	2	1	1	369	492	492
	Container5000	Propulsion	0	0.1%	18	14	6	0	0	0	0
	Container5000	Auxiliary	0	0.1%	18	14	6	0	1,176	4,200	1,025
	Container5000	Auxiliary Boiler	0	0.1%	18	14	6	0	630	630	630
	Container6000	Propulsion	0	0.1%	174	134	61	18	0	0	0
	Container6000	Auxiliary	0	0.1%	174	134	61	18	1,386	2,560	1,047
	Container6000	Auxiliary Boiler	0	0.1%	174	134	61	18	486	565	565
	Container7000	Propulsion	0	0.1%	10	8	4	0	0	0	0
	Container7000	Auxiliary	0	0.1%	10	8	4	0	1,539	3,434	1,066
	Container7000	Auxiliary Boiler	0	0.1%	10	8	4	0	530	551	551
	Reefer	Propulsion	0	0.1%	26	20	9	0	0	0	0
	Reefer	Auxiliary	0	0.1%	26	20	9	0	568	1,537	863
	Reefer	Auxiliary Boiler	0	0.1%	26	20	9	0	122	255	255
Total 2017					**324**	**249**	**113**	**44**			

Table B1.22 **Operational OGV Emissions - Baseline (2012) and Future Baseline (2015, 2016, 2017, 2020, 2026)**

			Vessel Characteristics			Activity								
	Vessel Type	Engine/Source Type	Engine Rating (kW)	Vessel Year	Max Rated Speed (knots)	Peak Day Berth Calls	Peak Day Transits	Peak Day Hotelling Time Per Vessel (hr/day)	Annual Berth Calls	Annual Transits	Peak Day Fuel Sulfur	Peak Day Number of Transits in Compliance with VSRP in Zone 3	Peak Day Number of Transits in Compliance with VSRP in Zone 4	Peak Day Number of Vessels using AMP
2020	Container1000	Propulsion	12,516	1995	19	0	0	0	10	20	0.1%	0	0	0
	Container1000	Auxiliary	0	0	0	0	0	0	10	20	0.1%	0	0	0
	Container1000	Auxiliary Boiler	0	0	0	0	0	0	10	20	0.1%	0	0	0
	Container2000	Propulsion	21,053	2004	22	1	1	6	37	74	0.1%	1	1	1
	Container2000	Auxiliary	0	0	0	1	1	6	37	74	0.1%	1	1	1
	Container2000	Auxiliary Boiler	0	0	0	1	1	6	37	74	0.1%	1	1	1
	Container4000	Propulsion	51,389	2009	25	0	0	0	1	2	0.1%	0	0	0
	Container4000	Auxiliary	0	0	0	0	0	0	1	2	0.1%	0	0	0
	Container4000	Auxiliary Boiler	0	0	0	0	0	0	1	2	0.1%	0	0	0
	Container5000	Propulsion	58,823	2000	25	0	0	0	9	18	0.1%	0	0	0
	Container5000	Auxiliary	0	0	0	0	0	0	9	18	0.1%	0	0	0
	Container5000	Auxiliary Boiler	0	0	0	0	0	0	9	18	0.1%	0	0	0
	Container6000	Propulsion	63,817	2003	25	2	2	19	87	174	0.1%	2	1	0
	Container6000	Auxiliary	0	0	0	2	2	19	87	174	0.1%	2	1	0
	Container6000	Auxiliary Boiler	0	0	0	2	2	19	87	174	0.1%	2	1	0
	Container7000	Propulsion	68,639	2001	25	0	0	0	5	10	0.1%	0	0	0
	Container7000	Auxiliary	0	0	0	0	0	0	5	10	0.1%	0	0	0
	Container7000	Auxiliary Boiler	0	0	0	0	0	0	5	10	0.1%	0	0	0
	Reefer	Propulsion	9,736	1992	20	0	0	0	13	26	0.1%	0	0	0
	Reefer	Auxiliary	0	0	0	0	0	0	13	26	0.1%	0	0	0
	Reefer	Auxiliary Boiler	0	0	0	0	0	0	13	26	0.1%	0	0	0
Total 2020						**3**	**3**		**162**	**324**		**3**	**2**	**1**
2026	Container1000	Propulsion	12,516	1995	19	0	0	0	10	20	0.1%	0	0	0
	Container1000	Auxiliary	0	0	0	0	0	0	10	20	0.1%	0	0	0
	Container1000	Auxiliary Boiler	0	0	0	0	0	0	10	20	0.1%	0	0	0
	Container2000	Propulsion	21,053	2004	22	1	1	6	37	74	0.1%	1	1	1
	Container2000	Auxiliary	0	0	0	1	1	6	37	74	0.1%	1	1	1
	Container2000	Auxiliary Boiler	0	0	0	1	1	6	37	74	0.1%	1	1	1
	Container4000	Propulsion	51,389	2009	25	0	0	0	1	2	0.1%	0	0	0
	Container4000	Auxiliary	0	0	0	0	0	0	1	2	0.1%	0	0	0
	Container4000	Auxiliary Boiler	0	0	0	0	0	0	1	2	0.1%	0	0	0
	Container5000	Propulsion	58,823	2000	25	0	0	0	9	18	0.1%	0	0	0
	Container5000	Auxiliary	0	0	0	0	0	0	9	18	0.1%	0	0	0
	Container5000	Auxiliary Boiler	0	0	0	0	0	0	9	18	0.1%	0	0	0
	Container6000	Propulsion	63,817	2003	25	2	2	19	87	174	0.1%	2	1	0
	Container6000	Auxiliary	0	0	0	2	2	19	87	174	0.1%	2	1	0
	Container6000	Auxiliary Boiler	0	0	0	2	2	19	87	174	0.1%	2	1	0
	Container7000	Propulsion	68,639	2001	25	0	0	0	5	10	0.1%	0	0	0
	Container7000	Auxiliary	0	0	0	0	0	0	5	10	0.1%	0	0	0
	Container7000	Auxiliary Boiler	0	0	0	0	0	0	5	10	0.1%	0	0	0
	Reefer	Propulsion	9,736	1992	20	0	0	0	13	26	0.1%	0	0	0
	Reefer	Auxiliary	0	0	0	0	0	0	13	26	0.1%	0	0	0
	Reefer	Auxiliary Boiler	0	0	0	0	0	0	13	26	0.1%	0	0	0
Total 2026						**3**	**3**		**162**	**324**		**3**	**2**	**1**

Table B1.22

	Vessel Type	Engine/Source Type	Peak Day Number of Transits with Slide Valves	Annual Fuel Sulfur	Annual Number of Transits in Compliance with VSRP in Zone 3	Annual Number of Transits in Compliance with VSRP in Zone 4	Annual Number of Vessels using AMP	Annual Number of Transits with Slide Valves	Average Auxiliary Load (kW) Transit	Maneuvering	Berth/ Anchorage
2020	Container1000	Propulsion	0	0.1%	20	15	8	0	0	0	0
	Container1000	Auxiliary	0	0.1%	20	15	8	0	619	955	367
	Container1000	Auxiliary Boiler	0	0.1%	20	15	8	0	178	241	241
	Container2000	Propulsion	0	0.1%	74	57	30	25	0	0	0
	Container2000	Auxiliary	0	0.1%	74	57	30	25	981	2,180	1,030
	Container2000	Auxiliary Boiler	0	0.1%	74	57	30	25	322	325	325
	Container4000	Propulsion	0	0.1%	2	2	1	1	0	0	0
	Container4000	Auxiliary	0	0.1%	2	2	1	1	1,434	2,526	1,161
	Container4000	Auxiliary Boiler	0	0.1%	2	2	1	1	369	492	492
	Container5000	Propulsion	0	0.1%	18	14	7	0	0	0	0
	Container5000	Auxiliary	0	0.1%	18	14	7	0	1,176	4,200	1,025
	Container5000	Auxiliary Boiler	0	0.1%	18	14	7	0	630	630	630
	Container6000	Propulsion	0	0.1%	174	134	70	18	0	0	0
	Container6000	Auxiliary	0	0.1%	174	134	70	18	1,386	2,560	1,047
	Container6000	Auxiliary Boiler	0	0.1%	174	134	70	18	486	565	565
	Container7000	Propulsion	0	0.1%	10	8	4	0	0	0	0
	Container7000	Auxiliary	0	0.1%	10	8	4	0	1,539	3,434	1,066
	Container7000	Auxiliary Boiler	0	0.1%	10	8	4	0	530	551	551
	Reefer	Propulsion	0	0.1%	26	20	10	0	0	0	0
	Reefer	Auxiliary	0	0.1%	26	20	10	0	568	1,537	863
	Reefer	Auxiliary Boiler	0	0.1%	26	20	10	0	122	255	255
Total 2020					**324**	**249**	**130**	**44**			
2026	Container1000	Propulsion	0	0.1%	20	15	8	0	0	0	0
	Container1000	Auxiliary	0	0.1%	20	15	8	0	619	955	367
	Container1000	Auxiliary Boiler	0	0.1%	20	15	8	0	178	241	241
	Container2000	Propulsion	0	0.1%	74	57	30	25	0	0	0
	Container2000	Auxiliary	0	0.1%	74	57	30	25	981	2,180	1,030
	Container2000	Auxiliary Boiler	0	0.1%	74	57	30	25	322	325	325
	Container4000	Propulsion	0	0.1%	2	2	1	1	0	0	0
	Container4000	Auxiliary	0	0.1%	2	2	1	1	1,434	2,526	1,161
	Container4000	Auxiliary Boiler	0	0.1%	2	2	1	1	369	492	492
	Container5000	Propulsion	0	0.1%	18	14	7	0	0	0	0
	Container5000	Auxiliary	0	0.1%	18	14	7	0	1,176	4,200	1,025
	Container5000	Auxiliary Boiler	0	0.1%	18	14	7	0	630	630	630
	Container6000	Propulsion	0	0.1%	174	134	70	18	0	0	0
	Container6000	Auxiliary	0	0.1%	174	134	70	18	1,386	2,560	1,047
	Container6000	Auxiliary Boiler	0	0.1%	174	134	70	18	486	565	565
	Container7000	Propulsion	0	0.1%	10	8	4	0	0	0	0
	Container7000	Auxiliary	0	0.1%	10	8	4	0	1,539	3,434	1,066
	Container7000	Auxiliary Boiler	0	0.1%	10	8	4	0	530	551	551
	Reefer	Propulsion	0	0.1%	26	20	10	0	0	0	0
	Reefer	Auxiliary	0	0.1%	26	20	10	0	568	1,537	863
	Reefer	Auxiliary Boiler	0	0.1%	26	20	10	0	122	255	255
Total 2026					**324**	**249**	**130**	**44**			

Information provided by Starcrest
Information provided by YTI
Information provided by POLA

Table B1.23 **Operational OGV Emissions Without Mitigation - Proposed Project and Alternatives**

			Vessel Characteristics			**Activity**														**Average Auxiliary Load (kW)**		
	Vessel Type	Engine/Source Type	Engine Rating (kW)	Vessel Year	Max Rated Speed (knots)	Peak Day Berth Calls	Peak Day Transits	Peak Day Hotelling Time Per Vessel (hr/day)	Annual Berth Calls	Annual Transits	Peak Day Fuel Sulfur	Peak Day Number of Transits in Compliance with VSRP in Zone 3	Peak Day Number of Transits in Compliance with VSRP in Zone 4	Peak Day Number of Vessels using AMP	Peak Day Number of Transits with Slide Valves	Annual Fuel Sulfur	Annual Number of Transits in Compliance with VSRP in Zone 3	Annual Number of Transits in Compliance with VSRP in Zone 4	Annual Number of Vessels using AMP	Annual Number of Transits with Slide Valves	Transit	Maneuvering	Berth/ Anchorage
Proposed Project																						
2015	Container1000	Propulsion	15,627	2004	20					0	0.1%					0.1%	0	0	0	0			
	Container1000	Auxiliary	4,421			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	396	942	297
	Container1000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	241	241	241
	Container2000	Propulsion	22,469	2004	22	1	1	10.5	52	104	0.1%	1	1			0.1%	99	80	26	33			
	Container2000	Auxiliary	4,649			1	1	10.5	52	104	0.1%	1	1	0	0	0.1%	99	80	26	33	981	2,180	1,035
	Container2000	Auxiliary Boiler				1	1	10.5	52	104	0.1%	1	1	0	0	0.1%	99	80	26	33	325	325	325
	Container3000	Propulsion	29,107	1999	23	1	1	10.5	52	104	0.1%	1	1	0	0	0.1%	99	80	26	33			
	Container3000	Auxiliary	3,919			1	1	10.5	52	104	0.1%	1	1	0	0	0.1%	99	80	26	33	602	2,063	516
	Container3000	Auxiliary Boiler				1	1	10.5	52	104	0.1%	1	1	0	0	0.1%	99	80	26	33	474	474	474
	Container4000	Propulsion	41,323	2000	24					0	0.1%			0	0	0.1%	0	0	0	0			
	Container4000	Auxiliary	7,058			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,434	2,523	1,161
	Container4000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	492	492	492
	Container5000	Propulsion	50,247	2002	25					0	0.1%					0.1%	0	0	0	0			
	Container5000	Auxiliary	8,228			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,176	4,200	1,008
	Container5000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	630	630	630
	Container6000	Propulsion	60,580	2006	25	1	1	10.5	94	188	0.1%	1				0.1%	179	145	47	60			
	Container6000	Auxiliary	10,631			1	1	10.5	94	188	0.1%	1	0	0	0	0.1%	179	145	47	60	1,425	2,178	986
	Container6000	Auxiliary Boiler				1	1	10.5	94	188	0.1%	1	0	0	0	0.1%	179	145	47	60	565	565	565
	Container7000	Propulsion	57,217	2006	25	1	1	10.5	8	16	0.1%			0	0	0.1%	15	12	4	5			
	Container7000	Auxiliary	10,771			1	1	10.5	8	16	0.1%	0	0	0	0	0.1%	15	12	4	5	1,539	3,434	1,066
	Container7000	Auxiliary Boiler				1	1	10.5	8	16	0.1%	0	0	0	0	0.1%	15	12	4	5	551	551	551
	Container8000	Propulsion	66,868	2006	25					0	0.1%					0.1%	0	0	0	0			
	Container8000	Auxiliary	10,911			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,416	3,158	980
	Container8000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	525	525	525
	Container9000	Propulsion	67,428	2007	25	0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0			
	Container9000	Auxiliary	11,520			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,502	3,350	1,040
	Container9000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	547	547	547
	Container10000	Propulsion	68,034	2007	25					0	0.1%					0.1%	0	0	0	0			
	Container10000	Auxiliary	na			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,751	3,675	1,270
	Container10000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	574	574	574
	Container11000	Propulsion	68,639	2008	25					0	0.1%					0.1%	0	0	0	0			
	Container11000	Auxiliary	na			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	2,000	4,000	1,500
	Container11000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	600	600	600
	Container12000	Propulsion	67,399	2010	25					0	0.1%					0.1%	0	0	0	0			
	Container12000	Auxiliary	na			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	2,500	4,500	2,000
	Container12000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	600	600	600
	Container13000	Propulsion																					
	Container13000	Auxiliary																					
	Container13000	Auxiliary Boiler																					
	Container14000	Propulsion																					
	Container14000	Auxiliary																					
	Container14000	Auxiliary Boiler																					
Total 2015						**4**	**4**		**206**	**412**		**3**	**2**	**0**	**0**		**391**	**317**	**103**	**132**			

Table B1.23 **Operational OGV Emissions Without Mitigation - Proposed Project and Alternatives**

			Vessel Characteristics			Activity														Average Auxiliary Load (kW)		
	Vessel Type	Engine/Source Type	Engine Rating (kW)	Vessel Year	Max Rated Speed (knots)	Peak Day Berth Calls	Peak Day Transits	Peak Day Hotelling Time Per Vessel (hr/day)	Annual Berth Calls	Annual Transits	Peak Day Fuel Sulfur	Peak Day Number of Transits in Compliance with VSRP in Zone 3	Peak Day Number of Transits in Compliance with VSRP in Zone 4	Peak Day Number of Vessels using AMP	Peak Day Number of Transits with Slide Valves	Annual Fuel Sulfur	Annual Number of Transits in Compliance with VSRP in Zone 3	Annual Number of Transits in Compliance with VSRP in Zone 4	Annual Number of Vessels using AMP	Annual Number of Transits with Slide Valves	Transit	Maneuvering	Berth/ Anchorage
Proposed Project																						
2016	Container1000	Propulsion	15,627	2004	20					0	0.1%					0.1%	0	0	0	0			
	Container1000	Auxiliary	4,421			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	396	942	297
	Container1000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	241	241	241
	Container2000	Propulsion	22,469	2004	22	1	1	10.5	52	104	0.1%	1	1			0.1%	99	80	26	33			
	Container2000	Auxiliary	4,649			1	1	10.5	52	104	0.1%	1	1	0	0	0.1%	99	80	26	33	981	2,180	1,035
	Container2000	Auxiliary Boiler				1	1	10.5	52	104	0.1%	1	1	0	0	0.1%	99	80	26	33	325	325	325
	Container3000	Propulsion	29,107	1999	23	1	1	10.5	52	104	0.1%	1	1	0	0	0.1%	99	80	26	33			
	Container3000	Auxiliary	3,919			1	1	10.5	52	104	0.1%	1	1	0	0	0.1%	99	80	26	33	602	2,063	516
	Container3000	Auxiliary Boiler				1	1	10.5	52	104	0.1%	1	1	0	0	0.1%	99	80	26	33	474	474	474
	Container4000	Propulsion	41,323	2000	24					0	0.1%			0	0	0.1%	0	0	0	0			
	Container4000	Auxiliary	7,058			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,434	2,523	1,161
	Container4000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	492	492	492
	Container5000	Propulsion	50,247	2002	25					0	0.1%					0.1%	0	0	0	0			
	Container5000	Auxiliary	8,228			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,176	4,200	1,008
	Container5000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	630	630	630
	Container6000	Propulsion	60,580	2006	25	1	1	10.5	94	188	0.1%	1				0.1%	179	145	47	60			
	Container6000	Auxiliary	10,631			1	1	10.5	94	188	0.1%	1	0	0	0	0.1%	179	145	47	60	1,425	2,178	986
	Container6000	Auxiliary Boiler				1	1	10.5	94	188	0.1%	1	0	0	0	0.1%	179	145	47	60	565	565	565
	Container7000	Propulsion	57,217	2006	25	1	1	10.5	8	16	0.1%			0	0	0.1%	15	12	4	5			
	Container7000	Auxiliary	10,771			1	1	10.5	8	16	0.1%	0	0	0	0	0.1%	15	12	4	5	1,539	3,434	1,066
	Container7000	Auxiliary Boiler				1	1	10.5	8	16	0.1%	0	0	0	0	0.1%	15	12	4	5	551	551	551
	Container8000	Propulsion	66,868	2006	25					0	0.1%					0.1%	0	0	0	0			
	Container8000	Auxiliary	10,911			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,416	3,158	980
	Container8000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	525	525	525
	Container9000	Propulsion	67,428	2007	25	0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0			
	Container9000	Auxiliary	11,520			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,502	3,350	1,040
	Container9000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	547	547	547
	Container10000	Propulsion	68,034	2007	25					0	0.1%					0.1%	0	0	0	0			
	Container10000	Auxiliary	na			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,751	3,675	1,270
	Container10000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	574	574	574
	Container11000	Propulsion	68,639	2008	25					0	0.1%					0.1%	0	0	0	0			
	Container11000	Auxiliary	na			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	2,000	4,000	1,500
	Container11000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	600	600	600
	Container12000	Propulsion	67,399	2010	25					0	0.1%					0.1%	0	0	0	0			
	Container12000	Auxiliary	na			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	2,500	4,500	2,000
	Container12000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	600	600	600
	Container13000	Propulsion																				
	Container13000	Auxiliary																				
	Container13000	Auxiliary Boiler																				
	Container14000	Propulsion																				
	Container14000	Auxiliary																				
	Container14000	Auxiliary Boiler																				
Total 2016						**4**	**4**		**206**	**412**		**3**	**2**	**0**	**0**		**391**	**317**	**103**	**132**			

Table B1.23 **Operational OGV Emissions Without Mitigation - Proposed Project and Alternatives**

			Vessel Characteristics			Activity														Average Auxiliary Load (kW)		
	Vessel Type	Engine/Source Type	Engine Rating (kW)	Vessel Year	Max Rated Speed (knots)	Peak Day Berth Calls	Peak Day Transits	Peak Day Hotelling Time Per Vessel (hr/day)	Annual Berth Calls	Annual Transits	Peak Day Fuel Sulfur	Peak Day Number of Transits in Compliance with VSRP in Zone 3	Peak Day Number of Transits in Compliance with VSRP in Zone 4	Peak Day Number of Vessels using AMP	Peak Day Number of Transits with Slide Valves	Annual Fuel Sulfur	Annual Number of Transits in Compliance with VSRP in Zone 3	Annual Number of Transits in Compliance with VSRP in Zone 4	Annual Number of Vessels using AMP	Annual Number of Transits with Slide Valves	Transit	Maneuvering	Berth/ Anchorage
Proposed Project																						
2017	Container1000	Propulsion	15,627	2004	20					0	0.1%					0.1%	0	0	0	0			
	Container1000	Auxiliary	4,421			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	396	942	297
	Container1000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	241	241	241
	Container2000	Propulsion	22,469	2004	22	1	1	10.5	52	104	0.1%	1	1	1		0.1%	99	80	36	33			
	Container2000	Auxiliary	4,649			1	1	10.5	52	104	0.1%	1	1	1	0	0.1%	99	80	36	33	981	2,180	1,035
	Container2000	Auxiliary Boiler				1	1	10.5	52	104	0.1%	1	1	1	0	0.1%	99	80	36	33	325	325	325
	Container3000	Propulsion	29,107	1999	23	1	1	10.5	52	104	0.1%	1	1		0	0.1%	99	80	36	33			
	Container3000	Auxiliary	3,919			1	1	10.5	52	104	0.1%	1	1	0	0	0.1%	99	80	36	33	602	2,063	516
	Container3000	Auxiliary Boiler				1	1	10.5	52	104	0.1%	1	1	0	0	0.1%	99	80	36	33	474	474	474
	Container4000	Propulsion	41,323	2000	24					0	0.1%			0	0	0.1%	0	0	0	0			
	Container4000	Auxiliary	7,058			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,434	2,523	1,161
	Container4000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	492	492	492
	Container5000	Propulsion	50,247	2002	25					0	0.1%					0.1%	0	0	0	0			
	Container5000	Auxiliary	8,228			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,176	4,200	1,008
	Container5000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	630	630	630
	Container6000	Propulsion	60,580	2006	25	1	1	19.0	77	154	0.1%	1				0.1%	146	119	54	49			
	Container6000	Auxiliary	10,631			1	1	19.0	77	154	0.1%	1	0	0	0	0.1%	146	119	54	49	1,425	2,178	986
	Container6000	Auxiliary Boiler				1	1	19.0	77	154	0.1%	1	0	0	0	0.1%	146	119	54	49	565	565	565
	Container7000	Propulsion	57,217	2006	25					0	0.1%	0	0	0	0	0.1%	0	0	0	0			
	Container7000	Auxiliary	10,771			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,539	3,434	1,066
	Container7000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	551	551	551
	Container8000	Propulsion	66,868	2006	25	0	0	0.0	0	0	0.1%					0.1%	0	0	0	0			
	Container8000	Auxiliary	10,911			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,416	3,158	980
	Container8000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	525	525	525
	Container9000	Propulsion	67,428	2007	25	0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0			
	Container9000	Auxiliary	11,520			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,502	3,350	1,040
	Container9000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	547	547	547
	Container10000	Propulsion	68,034	2007	25					0	0.1%					0.1%	0	0	0	0			
	Container10000	Auxiliary	na			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,751	3,675	1,270
	Container10000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	574	574	574
	Container11000	Propulsion	68,639	2008	25					0	0.1%					0.1%	0	0	0	0			
	Container11000	Auxiliary	na			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	2,000	4,000	1,500
	Container11000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	600	600	600
	Container12000	Propulsion	67,399	2010	25	1	1	19.0	25	50	0.1%					0.1%	48	39	18	16			
	Container12000	Auxiliary	na			1	1	19.0	25	50	0.1%	0	0	0	0	0.1%	48	39	18	16	2,500	4,500	2,000
	Container12000	Auxiliary Boiler				1	1	19.0	25	50	0.1%	0	0	0	0	0.1%	48	39	18	16	600	600	600
	Container13000	Propulsion																					
	Container13000	Auxiliary																					
	Container13000	Auxiliary Boiler																					
	Container14000	Propulsion																					
	Container14000	Auxiliary																					
	Container14000	Auxiliary Boiler																					
Total 2017						**4**	**4**		**206**	**412**		**3**	**2**	**1**	**0**		**391**	**317**	**144**	**132**			

Table B1.23 **Operational OGV Emissions Without Mitigation - Proposed Project and Alternatives**

			Vessel Characteristics			Activity														Average Auxiliary Load (kW)		
	Vessel Type	Engine/Source Type	Engine Rating (kW)	Vessel Year	Max Rated Speed (knots)	Peak Day Berth Calls	Peak Day Transits	Peak Day Hotelling Time Per Vessel (hr/day)	Annual Berth Calls	Annual Transits	Peak Day Fuel Sulfur	Peak Day Number of Transits in Compliance with VSRP in Zone 3	Peak Day Number of Transits in Compliance with VSRP in Zone 4	Peak Day Number of Vessels using AMP	Peak Day Number of Transits with Slide Valves	Annual Fuel Sulfur	Annual Number of Transits in Compliance with VSRP in Zone 3	Annual Number of Transits in Compliance with VSRP in Zone 4	Annual Number of Vessels using AMP	Annual Number of Transits with Slide Valves	Transit	Maneuvering	Berth/ Anchorage
Proposed Project																						
2020	Container1000	Propulsion	15,627	2004	20					0	0.1%					0.1%	0	0	0	0			
	Container1000	Auxiliary	4,421			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	396	942	297
	Container1000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	241	241	241
	Container2000	Propulsion	22,469	2004	22	1	1	10.5	52	104	0.1%	1	1	1		0.1%	99	80	42	33			
	Container2000	Auxiliary	4,649			1	1	10.5	52	104	0.1%	1	1	1	0	0.1%	99	80	42	33	981	2,180	1,035
	Container2000	Auxiliary Boiler				1	1	10.5	52	104	0.1%	1	1	1	0	0.1%	99	80	42	33	325	325	325
	Container3000	Propulsion	29,107	1999	23	1	1	10.5	52	104	0.1%	1	1	1	0	0.1%	99	80	42	33			
	Container3000	Auxiliary	3,919			1	1	10.5	52	104	0.1%	1	1	1	0	0.1%	99	80	42	33	602	2,063	516
	Container3000	Auxiliary Boiler				1	1	10.5	52	104	0.1%	1	1	1	0	0.1%	99	80	42	33	474	474	474
	Container4000	Propulsion	41,323	2000	24					0	0.1%				0	0.1%	0	0	0	0			
	Container4000	Auxiliary	7,058			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,434	2,523	1,161
	Container4000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	492	492	492
	Container5000	Propulsion	50,247	2002	25					0	0.1%					0.1%	0	0	0	0			
	Container5000	Auxiliary	8,228			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,176	4,200	1,008
	Container5000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	630	630	630
	Container6000	Propulsion	60,580	2006	25					0	0.1%					0.1%	0	0	0	0			
	Container6000	Auxiliary	10,631			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,425	2,178	986
	Container6000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	565	565	565
	Container7000	Propulsion	57,217	2006	25	0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0			
	Container7000	Auxiliary	10,771			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,539	3,434	1,066
	Container7000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	551	551	551
	Container8000	Propulsion	66,868	2006	25	1	1	19.0	52	104	0.1%	1				0.1%	99	80	42	33			
	Container8000	Auxiliary	10,911			1	1	19.0	52	104	0.1%	1	0	0	0	0.1%	99	80	42	33	1,416	3,158	980
	Container8000	Auxiliary Boiler				1	1	19.0	52	104	0.1%	1	0	0	0	0.1%	99	80	42	33	525	525	525
	Container9000	Propulsion	67,428	2007	25	0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0			
	Container9000	Auxiliary	11,520			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,502	3,350	1,040
	Container9000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	547	547	547
	Container10000	Propulsion	68,034	2007	25					0	0.1%		0			0.1%	0	0	0	0			
	Container10000	Auxiliary	na			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,751	3,675	1,270
	Container10000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	574	574	574
	Container11000	Propulsion	68,639	2008	25					0	0.1%					0.1%	0	0	0	0			
	Container11000	Auxiliary	na			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	2,000	4,000	1,500
	Container11000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	600	600	600
	Container12000	Propulsion	67,399	2010	25	1	1	19.0	50	100	0.1%					0.1%	95	77	40	32			
	Container12000	Auxiliary	na			1	1	19.0	50	100	0.1%	0	0	0	0	0.1%	95	77	40	32	2,500	4,500	2,000
	Container12000	Auxiliary Boiler				1	1	19.0	50	100	0.1%	0	0	0	0	0.1%	95	77	40	32	600	600	600
	Container13000	Propulsion																					
	Container13000	Auxiliary																					
	Container13000	Auxiliary Boiler																					
	Container14000	Propulsion																					
	Container14000	Auxiliary																					
	Container14000	Auxiliary Boiler																					
Total 2020						**4**	**4**		**206**	**412**		**3**	**2**	**2**	**0**		**391**	**317**	**165**	**132**			

Table B1.23 **Operational OGV Emissions Without Mitigation - Proposed Project and Alternatives**

			Vessel Characteristics			Activity														Average Auxiliary Load (kW)		
	Vessel Type	Engine/Source Type	Engine Rating (kW)	Vessel Year	Max Rated Speed (knots)	Peak Day Berth Calls	Peak Day Transits	Peak Day Hotelling Time Per Vessel (hr/day)	Annual Berth Calls	Annual Transits	Peak Day Fuel Sulfur	Peak Day Number of Transits in Compliance with VSRP in Zone 3	Peak Day Number of Transits in Compliance with VSRP in Zone 4	Peak Day Number of Vessels using AMP	Peak Day Number of Transits with Slide Valves	Annual Fuel Sulfur	Annual Number of Transits in Compliance with VSRP in Zone 3	Annual Number of Transits in Compliance with VSRP in Zone 4	Annual Number of Vessels using AMP	Annual Number of Transits with Slide Valves	Transit	Maneuvering	Berth/ Anchorage
Proposed Project																						
2026	Container1000	Propulsion	15,627	2004	20					0	0.1%					0.1%	0	0	0	0			
	Container1000	Auxiliary	4,421			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	396	942	297
	Container1000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	241	241	241
	Container2000	Propulsion	22,469	2004	22	1	1	10.5	52	104	0.1%	1	1	1		0.1%	99	80	42	33			
	Container2000	Auxiliary	4,649			1	1	10.5	52	104	0.1%	1	1	1	0	0.1%	99	80	42	33	981	2,180	1,035
	Container2000	Auxiliary Boiler				1	1	10.5	52	104	0.1%	1	1	1	0	0.1%	99	80	42	33	325	325	325
	Container3000	Propulsion	29,107	1999	23	1	1	10.5	52	104	0.1%	1	1	1	0	0.1%	99	80	42	33			
	Container3000	Auxiliary	3,919			1	1	10.5	52	104	0.1%	1	1	1	0	0.1%	99	80	42	33	602	2,063	516
	Container3000	Auxiliary Boiler				1	1	10.5	52	104	0.1%	1	1	1	0	0.1%	99	80	42	33	474	474	474
	Container4000	Propulsion	41,323	2000	24					0	0.1%				0	0.1%	0	0	0	0			
	Container4000	Auxiliary	7,058			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,434	2,523	1,161
	Container4000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	492	492	492
	Container5000	Propulsion	50,247	2002	25					0	0.1%					0.1%	0	0	0	0			
	Container5000	Auxiliary	8,228			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,176	4,200	1,008
	Container5000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	630	630	630
	Container6000	Propulsion	60,580	2006	25					0	0.1%					0.1%	0	0	0	0			
	Container6000	Auxiliary	10,631			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,425	2,178	986
	Container6000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	565	565	565
	Container7000	Propulsion	57,217	2006	25	0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0			
	Container7000	Auxiliary	10,771			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,539	3,434	1,066
	Container7000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	551	551	551
	Container8000	Propulsion	66,868	2006	25	0	0	0.0	0	0	0.1%					0.1%	0	0	0	0			
	Container8000	Auxiliary	10,911			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,416	3,158	980
	Container8000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	525	525	525
	Container9000	Propulsion	67,428	2007	25	0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0			
	Container9000	Auxiliary	11,520			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,502	3,350	1,040
	Container9000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	547	547	547
	Container10000	Propulsion	68,034	2007	25	1	1	19.0	52	104	0.1%	1	0			0.1%	99	80	42	33			
	Container10000	Auxiliary	na			1	1	19.0	52	104	0.1%	1	0	0	0	0.1%	99	80	42	33	1,751	3,675	1,270
	Container10000	Auxiliary Boiler				1	1	19.0	52	104	0.1%	1	0	0	0	0.1%	99	80	42	33	574	574	574
	Container11000	Propulsion	68,639	2008	25					0	0.1%		0			0.1%	0	0	0	0			
	Container11000	Auxiliary	na			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	2,000	4,000	1,500
	Container11000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	600	600	600
	Container12000	Propulsion	67,399	2010	25	1	1	19.0	50	100	0.1%					0.1%	95	77	40	32			
	Container12000	Auxiliary	na			1	1	19.0	50	100	0.1%	0	0	0	0	0.1%	95	77	40	32	2,500	4,500	2,000
	Container12000	Auxiliary Boiler				1	1	19.0	50	100	0.1%	0	0	0	0	0.1%	95	77	40	32	600	600	600
	Container13000	Propulsion																					
	Container13000	Auxiliary																					
	Container13000	Auxiliary Boiler																					
	Container14000	Propulsion																					
	Container14000	Auxiliary																					
	Container14000	Auxiliary Boiler																					
Total 2026						**4**	**4**		**206**	**412**		**3**	**2**	**2**	**0**		**391**	**317**	**165**	**132**			

Table B1.23 **Operational OGV Emissions Without Mitigation - Proposed Project and Alternatives**

			Vessel Characteristics			Activity														Average Auxiliary Load (kW)		
	Vessel Type	Engine/Source Type	Engine Rating (kW)	Vessel Year	Max Rated Speed (knots)	Peak Day Berth Calls	Peak Day Transits	Peak Day Hotelling Time Per Vessel (hr/day)	Annual Berth Calls	Annual Transits	Peak Day Fuel Sulfur	Peak Day Number of Transits in Compliance with VSRP in Zone 3	Peak Day Number of Transits in Compliance with VSRP in Zone 4	Peak Day Number of Vessels using AMP	Peak Day Number of Transits with Slide Valves	Annual Fuel Sulfur	Annual Number of Transits in Compliance with VSRP in Zone 3	Annual Number of Transits in Compliance with VSRP in Zone 4	Annual Number of Vessels using AMP	Annual Number of Transits with Slide Valves	Transit	Maneuvering	Berth/ Anchorage
Alternative 1 No Project																						
2015	Container1000	Propulsion	15,627	2004	20					0	0.1%					0.1%	0	0	0	0			
	Container1000	Auxiliary	4,421			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	396	942	297
	Container1000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	241	241	241
	Container2000	Propulsion	22,469	2004	22	1	1	10.5	52	104	0.1%	1	1			0.1%	99	80	26	33			
	Container2000	Auxiliary	4,649			1	1	10.5	52	104	0.1%	1	1	0	0	0.1%	99	80	26	33	981	2,180	1,035
	Container2000	Auxiliary Boiler				1	1	10.5	52	104	0.1%	1	1	0	0	0.1%	99	80	26	33	325	325	325
	Container3000	Propulsion	29,107	1999	23	1	1	10.5	52	104	0.1%	1	1	0	0	0.1%	99	80	26	33			
	Container3000	Auxiliary	3,919			1	1	10.5	52	104	0.1%	1	1	0	0	0.1%	99	80	26	33	602	2,063	516
	Container3000	Auxiliary Boiler				1	1	10.5	52	104	0.1%	1	1	0	0	0.1%	99	80	26	33	474	474	474
	Container4000	Propulsion	41,323	2000	24					0	0.1%			0	0	0.1%	0	0	0	0			
	Container4000	Auxiliary	7,058			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,434	2,523	1,161
	Container4000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	492	492	492
	Container5000	Propulsion	50,247	2002	25					0	0.1%					0.1%	0	0	0	0			
	Container5000	Auxiliary	8,228			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,176	4,200	1,008
	Container5000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	630	630	630
	Container6000	Propulsion	60,580	2006	25	1	1	10.5	94	188	0.1%	1				0.1%	179	145	47	60			
	Container6000	Auxiliary	10,631			1	1	10.5	94	188	0.1%	1	0	0	0	0.1%	179	145	47	60	1,425	2,178	986
	Container6000	Auxiliary Boiler				1	1	10.5	94	188	0.1%	1	0	0	0	0.1%	179	145	47	60	565	565	565
	Container7000	Propulsion	57,217	2006	25	1	1	10.5	8	16	0.1%			0	0	0.1%	15	12	4	5			
	Container7000	Auxiliary	10,771			1	1	10.5	8	16	0.1%	0	0	0	0	0.1%	15	12	4	5	1,539	3,434	1,066
	Container7000	Auxiliary Boiler				1	1	10.5	8	16	0.1%	0	0	0	0	0.1%	15	12	4	5	551	551	551
	Container8000	Propulsion	66,868	2006	25					0	0.1%					0.1%	0	0	0	0			
	Container8000	Auxiliary	10,911			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,416	3,158	980
	Container8000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	525	525	525
	Container9000	Propulsion	67,428	2007	25	0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0			
	Container9000	Auxiliary	11,520			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,502	3,350	1,040
	Container9000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	547	547	547
	Container10000	Propulsion	68,034	2007	25					0	0.1%					0.1%	0	0	0	0			
	Container10000	Auxiliary	na			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,751	3,675	1,270
	Container10000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	574	574	574
	Container11000	Propulsion	68,639	2008	25					0	0.1%					0.1%	0	0	0	0			
	Container11000	Auxiliary	na			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	2,000	4,000	1,500
	Container11000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	600	600	600
	Container12000	Propulsion	67,399	2010	25					0	0.1%					0.1%	0	0	0	0			
	Container12000	Auxiliary	na			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	2,500	4,500	2,000
	Container12000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	600	600	600
	Container13000	Propulsion																				
	Container13000	Auxiliary																				
	Container13000	Auxiliary Boiler																				
	Container14000	Propulsion																				
	Container14000	Auxiliary																				
	Container14000	Auxiliary Boiler																				
Total 2015						**4**	**4**		**206**	**412**		**3**	**2**	**0**	**0**		**391**	**317**	**103**	**132**			

Table B1.23 **Operational OGV Emissions Without Mitigation - Proposed Project and Alternatives**

			Vessel Characteristics			Activity														Average Auxiliary Load (kW)		
	Vessel Type	Engine/Source Type	Engine Rating (kW)	Vessel Year	Max Rated Speed (knots)	Peak Day Berth Calls	Peak Day Transits	Peak Day Hotelling Time Per Vessel (hr/day)	Annual Berth Calls	Annual Transits	Peak Day Fuel Sulfur	Peak Day Number of Transits in Compliance with VSRP in Zone 3	Peak Day Number of Transits in Compliance with VSRP in Zone 4	Peak Day Number of Vessels using AMP	Peak Day Number of Transits with Slide Valves	Annual Fuel Sulfur	Annual Number of Transits in Compliance with VSRP in Zone 3	Annual Number of Transits in Compliance with VSRP in Zone 4	Annual Number of Vessels using AMP	Annual Number of Transits with Slide Valves	Transit	Maneuvering	Berth/ Anchorage
Alternative 1 No Project																						
2016	Container1000	Propulsion	15,627	2004	20					0	0.1%					0.1%	0	0	0	0			
	Container1000	Auxiliary	4,421			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	396	942	297
	Container1000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	241	241	241
	Container2000	Propulsion	22,469	2004	22	1	1	10.5	52	104	0.1%	1	1			0.1%	99	80	26	33			
	Container2000	Auxiliary	4,649			1	1	10.5	52	104	0.1%	1	1	0	0	0.1%	99	80	26	33	981	2,180	1,035
	Container2000	Auxiliary Boiler				1	1	10.5	52	104	0.1%	1	1	0	0	0.1%	99	80	26	33	325	325	325
	Container3000	Propulsion	29,107	1999	23	1	1	10.5	52	104	0.1%	1	1	0	0	0.1%	99	80	26	33			
	Container3000	Auxiliary	3,919			1	1	10.5	52	104	0.1%	1	1	0	0	0.1%	99	80	26	33	602	2,063	516
	Container3000	Auxiliary Boiler				1	1	10.5	52	104	0.1%	1	1	0	0	0.1%	99	80	26	33	474	474	474
	Container4000	Propulsion	41,323	2000	24					0	0.1%			0	0	0.1%	0	0	0	0			
	Container4000	Auxiliary	7,058			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,434	2,523	1,161
	Container4000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	492	492	492
	Container5000	Propulsion	50,247	2002	25					0	0.1%					0.1%	0	0	0	0			
	Container5000	Auxiliary	8,228			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,176	4,200	1,008
	Container5000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	630	630	630
	Container6000	Propulsion	60,580	2006	25	1	1	10.5	94	188	0.1%	1				0.1%	179	145	47	60			
	Container6000	Auxiliary	10,631			1	1	10.5	94	188	0.1%	1	0	0	0	0.1%	179	145	47	60	1,425	2,178	986
	Container6000	Auxiliary Boiler				1	1	10.5	94	188	0.1%	1	0	0	0	0.1%	179	145	47	60	565	565	565
	Container7000	Propulsion	57,217	2006	25	1	1	10.5	8	16	0.1%			0	0	0.1%	15	12	4	5			
	Container7000	Auxiliary	10,771			1	1	10.5	8	16	0.1%	0	0	0	0	0.1%	15	12	4	5	1,539	3,434	1,066
	Container7000	Auxiliary Boiler				1	1	10.5	8	16	0.1%	0	0	0	0	0.1%	15	12	4	5	551	551	551
	Container8000	Propulsion	66,868	2006	25					0	0.1%					0.1%	0	0	0	0			
	Container8000	Auxiliary	10,911			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,416	3,158	980
	Container8000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	525	525	525
	Container9000	Propulsion	67,428	2007	25	0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0			
	Container9000	Auxiliary	11,520			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,502	3,350	1,040
	Container9000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	547	547	547
	Container10000	Propulsion	68,034	2007	25					0	0.1%					0.1%	0	0	0	0			
	Container10000	Auxiliary	na			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,751	3,675	1,270
	Container10000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	574	574	574
	Container11000	Propulsion	68,639	2008	25					0	0.1%					0.1%	0	0	0	0			
	Container11000	Auxiliary	na			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	2,000	4,000	1,500
	Container11000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	600	600	600
	Container12000	Propulsion	67,399	2010	25					0	0.1%					0.1%	0	0	0	0			
	Container12000	Auxiliary	na			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	2,500	4,500	2,000
	Container12000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	600	600	600
	Container13000	Propulsion																				
	Container13000	Auxiliary																				
	Container13000	Auxiliary Boiler																				
	Container14000	Propulsion																				
	Container14000	Auxiliary																				
	Container14000	Auxiliary Boiler																				
Total 2016						**4**	**4**		**206**	**412**		**3**	**2**	**0**	**0**		**391**	**317**	**103**	**132**			

Table B1.23 **Operational OGV Emissions Without Mitigation - Proposed Project and Alternatives**

			Vessel Characteristics			Activity														Average Auxiliary Load (kW)		
	Vessel Type	Engine/Source Type	Engine Rating (kW)	Vessel Year	Max Rated Speed (knots)	Peak Day Berth Calls	Peak Day Transits	Peak Day Hotelling Time Per Vessel (hr/day)	Annual Berth Calls	Annual Transits	Peak Day Fuel Sulfur	Peak Day Number of Transits in Compliance with VSRP in Zone 3	Peak Day Number of Transits in Compliance with VSRP in Zone 4	Peak Day Number of Vessels using AMP	Peak Day Number of Transits with Slide Valves	Annual Fuel Sulfur	Annual Number of Transits in Compliance with VSRP in Zone 3	Annual Number of Transits in Compliance with VSRP in Zone 4	Annual Number of Vessels using AMP	Annual Number of Transits with Slide Valves	Transit	Maneuvering	Berth/ Anchorage
Alternative 1 No Project																						
2017	Container1000	Propulsion	15,627	2004	20					0	0.1%					0.1%	0	0	0	0			
	Container1000	Auxiliary	4,421			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	396	942	297
	Container1000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	241	241	241
	Container2000	Propulsion	22,469	2004	22	1	1	10.5	52	104	0.1%	1	1	1		0.1%	99	80	36	33			
	Container2000	Auxiliary	4,649			1	1	10.5	52	104	0.1%	1	1	1	0	0.1%	99	80	36	33	981	2,180	1,035
	Container2000	Auxiliary Boiler				1	1	10.5	52	104	0.1%	1	1	1	0	0.1%	99	80	36	33	325	325	325
	Container3000	Propulsion	29,107	1999	23	1	1	10.5	52	104	0.1%	1	1		0	0.1%	99	80	36	33			
	Container3000	Auxiliary	3,919			1	1	10.5	52	104	0.1%	1	1	0	0	0.1%	99	80	36	33	602	2,063	516
	Container3000	Auxiliary Boiler				1	1	10.5	52	104	0.1%	1	1	0	0	0.1%	99	80	36	33	474	474	474
	Container4000	Propulsion	41,323	2000	24					0	0.1%			0	0	0.1%	0	0	0	0			
	Container4000	Auxiliary	7,058			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,434	2,523	1,161
	Container4000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	492	492	492
	Container5000	Propulsion	50,247	2002	25					0	0.1%					0.1%	0	0	0	0			
	Container5000	Auxiliary	8,228			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,176	4,200	1,008
	Container5000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	630	630	630
	Container6000	Propulsion	60,580	2006	25	1	1	10.5	52	104	0.1%	1				0.1%	99	80	36	33			
	Container6000	Auxiliary	10,631			1	1	10.5	52	104	0.1%	1	0	0	0	0.1%	99	80	36	33	1,425	2,178	986
	Container6000	Auxiliary Boiler				1	1	10.5	52	104	0.1%	1	0	0	0	0.1%	99	80	36	33	565	565	565
	Container7000	Propulsion	57,217	2006	25					0	0.1%		0	0	0	0.1%	0	0	0	0			
	Container7000	Auxiliary	10,771			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,539	3,434	1,066
	Container7000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	551	551	551
	Container8000	Propulsion	66,868	2006	25	1	1	10.5	50	100	0.1%					0.1%	95	77	35	32			
	Container8000	Auxiliary	10,911			1	1	10.5	50	100	0.1%	0	0	0	0	0.1%	95	77	35	32	1,416	3,158	980
	Container8000	Auxiliary Boiler				1	1	10.5	50	100	0.1%	0	0	0	0	0.1%	95	77	35	32	525	525	525
	Container9000	Propulsion	67,428	2007	25	0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0			
	Container9000	Auxiliary	11,520			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,502	3,350	1,040
	Container9000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	547	547	547
	Container10000	Propulsion	68,034	2007	25					0	0.1%					0.1%	0	0	0	0			
	Container10000	Auxiliary	na			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,751	3,675	1,270
	Container10000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	574	574	574
	Container11000	Propulsion	68,639	2008	25					0	0.1%					0.1%	0	0	0	0			
	Container11000	Auxiliary	na			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	2,000	4,000	1,500
	Container11000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	600	600	600
	Container12000	Propulsion	67,399	2010	25					0	0.1%					0.1%	0	0	0	0			
	Container12000	Auxiliary	na			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	2,500	4,500	2,000
	Container12000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	600	600	600
	Container13000	Propulsion																				
	Container13000	Auxiliary																				
	Container13000	Auxiliary Boiler																				
	Container14000	Propulsion																				
	Container14000	Auxiliary																				
	Container14000	Auxiliary Boiler																				
Total 2017						**4**	**4**		**206**	**412**		**3**	**2**	**1**	**0**		**391**	**317**	**144**	**132**			

Table B1.23 **Operational OGV Emissions Without Mitigation - Proposed Project and Alternatives**

			Vessel Characteristics			Activity														Average Auxiliary Load (kW)		
	Vessel Type	Engine/Source Type	Engine Rating (kW)	Vessel Year	Max Rated Speed (knots)	Peak Day Berth Calls	Peak Day Transits	Peak Day Hotelling Time Per Vessel (hr/day)	Annual Berth Calls	Annual Transits	Peak Day Fuel Sulfur	Peak Day Number of Transits in Compliance with VSRP in Zone 3	Peak Day Number of Transits in Compliance with VSRP in Zone 4	Peak Day Number of Vessels using AMP	Peak Day Number of Transits with Slide Valves	Annual Fuel Sulfur	Annual Number of Transits in Compliance with VSRP in Zone 3	Annual Number of Transits in Compliance with VSRP in Zone 4	Annual Number of Vessels using AMP	Annual Number of Transits with Slide Valves	Transit	Maneuvering	Berth/ Anchorage
Alternative 1 No Project																						
2020	Container1000	Propulsion	15,627	2004	20					0	0.1%					0.1%	0	0	0	0			
	Container1000	Auxiliary	4,421			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	396	942	297
	Container1000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	241	241	241
	Container2000	Propulsion	22,469	2004	22	1	1	10.5	52	104	0.1%	1	1	1		0.1%	99	80	42	33			
	Container2000	Auxiliary	4,649			1	1	10.5	52	104	0.1%	1	1	1	0	0.1%	99	80	42	33	981	2,180	1,035
	Container2000	Auxiliary Boiler				1	1	10.5	52	104	0.1%	1	1	1	0	0.1%	99	80	42	33	325	325	325
	Container3000	Propulsion	29,107	1999	23	1	1	10.5	52	104	0.1%	1	1	1	0	0.1%	99	80	42	33			
	Container3000	Auxiliary	3,919			1	1	10.5	52	104	0.1%	1	1	1	0	0.1%	99	80	42	33	602	2,063	516
	Container3000	Auxiliary Boiler				1	1	10.5	52	104	0.1%	1	1	1	0	0.1%	99	80	42	33	474	474	474
	Container4000	Propulsion	41,323	2000	24					0	0.1%				0	0.1%	0	0	0	0			
	Container4000	Auxiliary	7,058			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,434	2,523	1,161
	Container4000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	492	492	492
	Container5000	Propulsion	50,247	2002	25					0	0.1%					0.1%	0	0	0	0			
	Container5000	Auxiliary	8,228			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,176	4,200	1,008
	Container5000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	630	630	630
	Container6000	Propulsion	60,580	2006	25					0	0.1%					0.1%	0	0	0	0			
	Container6000	Auxiliary	10,631			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,425	2,178	986
	Container6000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	565	565	565
	Container7000	Propulsion	57,217	2006	25	0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0			
	Container7000	Auxiliary	10,771			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,539	3,434	1,066
	Container7000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	551	551	551
	Container8000	Propulsion	66,868	2006	25	2	2	10.5	102	204	0.1%	1				0.1%	194	157	82	65			
	Container8000	Auxiliary	10,911			2	2	10.5	102	204	0.1%	1	0	0	0	0.1%	194	157	82	65	1,416	3,158	980
	Container8000	Auxiliary Boiler				2	2	10.5	102	204	0.1%	1	0	0	0	0.1%	194	157	82	65	525	525	525
	Container9000	Propulsion	67,428	2007	25	0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0			
	Container9000	Auxiliary	11,520			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,502	3,350	1,040
	Container9000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	547	547	547
	Container10000	Propulsion	68,034	2007	25					0	0.1%		0			0.1%	0	0	0	0			
	Container10000	Auxiliary	na			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,751	3,675	1,270
	Container10000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	574	574	574
	Container11000	Propulsion	68,639	2008	25					0	0.1%					0.1%	0	0	0	0			
	Container11000	Auxiliary	na			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	2,000	4,000	1,500
	Container11000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	600	600	600
	Container12000	Propulsion	67,399	2010	25					0	0.1%					0.1%	0	0	0	0			
	Container12000	Auxiliary	na			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	2,500	4,500	2,000
	Container12000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	600	600	600
	Container13000	Propulsion																					
	Container13000	Auxiliary																					
	Container13000	Auxiliary Boiler																					
	Container14000	Propulsion																					
	Container14000	Auxiliary																					
	Container14000	Auxiliary Boiler																					
Total 2020						**4**	**4**		**206**	**412**		**3**	**2**	**2**	**0**		**391**	**317**	**165**	**132**			

Table B1.23 **Operational OGV Emissions Without Mitigation - Proposed Project and Alternatives**

			Vessel Characteristics			Activity														Average Auxiliary Load (kW)		
	Vessel Type	Engine/Source Type	Engine Rating (kW)	Vessel Year	Max Rated Speed (knots)	Peak Day Berth Calls	Peak Day Transits	Peak Day Hotelling Time Per Vessel (hr/day)	Annual Berth Calls	Annual Transits	Peak Day Fuel Sulfur	Peak Day Number of Transits in Compliance with VSRP in Zone 3	Peak Day Number of Transits in Compliance with VSRP in Zone 4	Peak Day Number of Vessels using AMP	Peak Day Number of Transits with Slide Valves	Annual Fuel Sulfur	Annual Number of Transits in Compliance with VSRP in Zone 3	Annual Number of Transits in Compliance with VSRP in Zone 4	Annual Number of Vessels using AMP	Annual Number of Transits with Slide Valves	Transit	Maneuvering	Berth/ Anchorage
Alternative 1 No Project																						
2026	Container1000	Propulsion	15,627	2004	20					0	0.1%					0.1%	0	0	0	0			
	Container1000	Auxiliary	4,421			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	396	942	297
	Container1000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	241	241	241
	Container2000	Propulsion	22,469	2004	22	1	1	10.5	52	104	0.1%	1	1	1		0.1%	99	80	42	33			
	Container2000	Auxiliary	4,649			1	1	10.5	52	104	0.1%	1	1	1	0	0.1%	99	80	42	33	981	2,180	1,035
	Container2000	Auxiliary Boiler				1	1	10.5	52	104	0.1%	1	1	1	0	0.1%	99	80	42	33	325	325	325
	Container3000	Propulsion	29,107	1999	23	1	1	10.5	52	104	0.1%	1	1	1	0	0.1%	99	80	42	33			
	Container3000	Auxiliary	3,919			1	1	10.5	52	104	0.1%	1	1	1	0	0.1%	99	80	42	33	602	2,063	516
	Container3000	Auxiliary Boiler				1	1	10.5	52	104	0.1%	1	1	1	0	0.1%	99	80	42	33	474	474	474
	Container4000	Propulsion	41,323	2000	24					0	0.1%				0	0.1%	0	0	0	0			
	Container4000	Auxiliary	7,058			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,434	2,523	1,161
	Container4000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	492	492	492
	Container5000	Propulsion	50,247	2002	25					0	0.1%					0.1%	0	0	0	0			
	Container5000	Auxiliary	8,228			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,176	4,200	1,008
	Container5000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	630	630	630
	Container6000	Propulsion	60,580	2006	25					0	0.1%					0.1%	0	0	0	0			
	Container6000	Auxiliary	10,631			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,425	2,178	986
	Container6000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	565	565	565
	Container7000	Propulsion	57,217	2006	25	0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0			
	Container7000	Auxiliary	10,771			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,539	3,434	1,066
	Container7000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	551	551	551
	Container8000	Propulsion	66,868	2006	25	2	2	10.5	102	204	0.1%	1				0.1%	194	157	82	65			
	Container8000	Auxiliary	10,911			2	2	10.5	102	204	0.1%	1	0	0	0	0.1%	194	157	82	65	1,416	3,158	980
	Container8000	Auxiliary Boiler				2	2	10.5	102	204	0.1%	1	0	0	0	0.1%	194	157	82	65	525	525	525
	Container9000	Propulsion	67,428	2007	25	0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0			
	Container9000	Auxiliary	11,520			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,502	3,350	1,040
	Container9000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	547	547	547
	Container10000	Propulsion	68,034	2007	25					0	0.1%		0			0.1%	0	0	0	0			
	Container10000	Auxiliary	na			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,751	3,675	1,270
	Container10000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	574	574	574
	Container11000	Propulsion	68,639	2008	25					0	0.1%		0			0.1%	0	0	0	0			
	Container11000	Auxiliary	na			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	2,000	4,000	1,500
	Container11000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	600	600	600
	Container12000	Propulsion	67,399	2010	25					0	0.1%					0.1%	0	0	0	0			
	Container12000	Auxiliary	na			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	2,500	4,500	2,000
	Container12000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	600	600	600
	Container13000	Propulsion																				
	Container13000	Auxiliary																				
	Container13000	Auxiliary Boiler																				
	Container14000	Propulsion																				
	Container14000	Auxiliary																				
	Container14000	Auxiliary Boiler																				
Total 2026						**4**	**4**		**206**	**412**		**3**	**2**	**2**	**0**		**391**	**317**	**165**	**132**			

Table B1.23 **Operational OGV Emissions Without Mitigation - Proposed Project and Alternatives**

			Vessel Characteristics			Activity														Average Auxiliary Load (kW)		
	Vessel Type	Engine/Source Type	Engine Rating (kW)	Vessel Year	Max Rated Speed (knots)	Peak Day Berth Calls	Peak Day Transits	Peak Day Hotelling Time Per Vessel (hr/day)	Annual Berth Calls	Annual Transits	Peak Day Fuel Sulfur	Peak Day Number of Transits in Compliance with VSRP in Zone 3	Peak Day Number of Transits in Compliance with VSRP in Zone 4	Peak Day Number of Vessels using AMP	Peak Day Number of Transits with Slide Valves	Annual Fuel Sulfur	Annual Number of Transits in Compliance with VSRP in Zone 3	Annual Number of Transits in Compliance with VSRP in Zone 4	Annual Number of Vessels using AMP	Annual Number of Transits with Slide Valves	Transit	Maneuvering	Berth/ Anchorage
Alternative 2 No Federal Action																						
2015	Container1000	Propulsion	15,627	2004	20					0	0.1%					0.1%	0	0	0	0			
	Container1000	Auxiliary	4,421			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	396	942	297
	Container1000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	241	241	241
	Container2000	Propulsion	22,469	2004	22	1	1	10.5	52	104	0.1%	1	1			0.1%	99	80	26	33			
	Container2000	Auxiliary	4,649			1	1	10.5	52	104	0.1%	1	1	0	0	0.1%	99	80	26	33	981	2,180	1,035
	Container2000	Auxiliary Boiler				1	1	10.5	52	104	0.1%	1	1	0	0	0.1%	99	80	26	33	325	325	325
	Container3000	Propulsion	29,107	1999	23	1	1	10.5	52	104	0.1%	1	1	0	0	0.1%	99	80	26	33			
	Container3000	Auxiliary	3,919			1	1	10.5	52	104	0.1%	1	1	0	0	0.1%	99	80	26	33	602	2,063	516
	Container3000	Auxiliary Boiler				1	1	10.5	52	104	0.1%	1	1	0	0	0.1%	99	80	26	33	474	474	474
	Container4000	Propulsion	41,323	2000	24					0	0.1%			0	0	0.1%	0	0	0	0			
	Container4000	Auxiliary	7,058			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,434	2,523	1,161
	Container4000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	492	492	492
	Container5000	Propulsion	50,247	2002	25					0	0.1%					0.1%	0	0	0	0			
	Container5000	Auxiliary	8,228			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,176	4,200	1,008
	Container5000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	630	630	630
	Container6000	Propulsion	60,580	2006	25	1	1	10.5	94	188	0.1%	1				0.1%	179	145	47	60			
	Container6000	Auxiliary	10,631			1	1	10.5	94	188	0.1%	1	0	0	0	0.1%	179	145	47	60	1,425	2,178	986
	Container6000	Auxiliary Boiler				1	1	10.5	94	188	0.1%	1	0	0	0	0.1%	179	145	47	60	565	565	565
	Container7000	Propulsion	57,217	2006	25	1	1	10.5	8	16	0.1%			0	0	0.1%	15	12	4	5			
	Container7000	Auxiliary	10,771			1	1	10.5	8	16	0.1%	0	0	0	0	0.1%	15	12	4	5	1,539	3,434	1,066
	Container7000	Auxiliary Boiler				1	1	10.5	8	16	0.1%	0	0	0	0	0.1%	15	12	4	5	551	551	551
	Container8000	Propulsion	66,868	2006	25					0	0.1%					0.1%	0	0	0	0			
	Container8000	Auxiliary	10,911			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,416	3,158	980
	Container8000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	525	525	525
	Container9000	Propulsion	67,428	2007	25	0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0			
	Container9000	Auxiliary	11,520			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,502	3,350	1,040
	Container9000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	547	547	547
	Container10000	Propulsion	68,034	2007	25					0	0.1%					0.1%	0	0	0	0			
	Container10000	Auxiliary	na			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,751	3,675	1,270
	Container10000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	574	574	574
	Container11000	Propulsion	68,639	2008	25					0	0.1%					0.1%	0	0	0	0			
	Container11000	Auxiliary	na			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	2,000	4,000	1,500
	Container11000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	600	600	600
	Container12000	Propulsion	67,399	2010	25					0	0.1%					0.1%	0	0	0	0			
	Container12000	Auxiliary	na			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	2,500	4,500	2,000
	Container12000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	600	600	600
	Container13000	Propulsion																				
	Container13000	Auxiliary																				
	Container13000	Auxiliary Boiler																				
	Container14000	Propulsion																				
	Container14000	Auxiliary																				
	Container14000	Auxiliary Boiler																				
Total 2015						**4**	**4**		**206**	**412**		**3**	**2**	**0**	**0**		**391**	**317**	**103**	**132**			

Table B1.23 **Operational OGV Emissions Without Mitigation - Proposed Project and Alternatives**

			Vessel Characteristics			Activity														Average Auxiliary Load (kW)		
	Vessel Type	Engine/Source Type	Engine Rating (kW)	Vessel Year	Max Rated Speed (knots)	Peak Day Berth Calls	Peak Day Transits	Peak Day Hotelling Time Per Vessel (hr/day)	Annual Berth Calls	Annual Transits	Peak Day Fuel Sulfur	Peak Day Number of Transits in Compliance with VSRP in Zone 3	Peak Day Number of Transits in Compliance with VSRP in Zone 4	Peak Day Number of Vessels using AMP	Peak Day Number of Transits with Slide Valves	Annual Fuel Sulfur	Annual Number of Transits in Compliance with VSRP in Zone 3	Annual Number of Transits in Compliance with VSRP in Zone 4	Annual Number of Vessels using AMP	Annual Number of Transits with Slide Valves	Transit	Maneuvering	Berth/ Anchorage
Alternative 2 No Federal Action																						
2016	Container1000	Propulsion	15,627	2004	20					0	0.1%					0.1%	0	0	0	0			
	Container1000	Auxiliary	4,421			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	396	942	297
	Container1000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	241	241	241
	Container2000	Propulsion	22,469	2004	22	1	1	10.5	52	104	0.1%	1	1			0.1%	99	80	26	33			
	Container2000	Auxiliary	4,649			1	1	10.5	52	104	0.1%	1	1	0	0	0.1%	99	80	26	33	981	2,180	1,035
	Container2000	Auxiliary Boiler				1	1	10.5	52	104	0.1%	1	1	0	0	0.1%	99	80	26	33	325	325	325
	Container3000	Propulsion	29,107	1999	23	1	1	10.5	52	104	0.1%	1	1	0	0	0.1%	99	80	26	33			
	Container3000	Auxiliary	3,919			1	1	10.5	52	104	0.1%	1	1	0	0	0.1%	99	80	26	33	602	2,063	516
	Container3000	Auxiliary Boiler				1	1	10.5	52	104	0.1%	1	1	0	0	0.1%	99	80	26	33	474	474	474
	Container4000	Propulsion	41,323	2000	24					0	0.1%			0	0	0.1%	0	0	0	0			
	Container4000	Auxiliary	7,058			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,434	2,523	1,161
	Container4000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	492	492	492
	Container5000	Propulsion	50,247	2002	25					0	0.1%					0.1%	0	0	0	0			
	Container5000	Auxiliary	8,228			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,176	4,200	1,008
	Container5000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	630	630	630
	Container6000	Propulsion	60,580	2006	25	1	1	10.5	94	188	0.1%	1				0.1%	179	145	47	60			
	Container6000	Auxiliary	10,631			1	1	10.5	94	188	0.1%	1	0	0	0	0.1%	179	145	47	60	1,425	2,178	986
	Container6000	Auxiliary Boiler				1	1	10.5	94	188	0.1%	1	0	0	0	0.1%	179	145	47	60	565	565	565
	Container7000	Propulsion	57,217	2006	25	1	1	10.5	8	16	0.1%			0	0	0.1%	15	12	4	5			
	Container7000	Auxiliary	10,771			1	1	10.5	8	16	0.1%	0	0	0	0	0.1%	15	12	4	5	1,539	3,434	1,066
	Container7000	Auxiliary Boiler				1	1	10.5	8	16	0.1%	0	0	0	0	0.1%	15	12	4	5	551	551	551
	Container8000	Propulsion	66,868	2006	25					0	0.1%					0.1%	0	0	0	0			
	Container8000	Auxiliary	10,911			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,416	3,158	980
	Container8000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	525	525	525
	Container9000	Propulsion	67,428	2007	25	0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0			
	Container9000	Auxiliary	11,520			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,502	3,350	1,040
	Container9000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	547	547	547
	Container10000	Propulsion	68,034	2007	25					0	0.1%					0.1%	0	0	0	0			
	Container10000	Auxiliary	na			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,751	3,675	1,270
	Container10000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	574	574	574
	Container11000	Propulsion	68,639	2008	25					0	0.1%					0.1%	0	0	0	0			
	Container11000	Auxiliary	na			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	2,000	4,000	1,500
	Container11000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	600	600	600
	Container12000	Propulsion	67,399	2010	25					0	0.1%					0.1%	0	0	0	0			
	Container12000	Auxiliary	na			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	2,500	4,500	2,000
	Container12000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	600	600	600
	Container13000	Propulsion																					
	Container13000	Auxiliary																					
	Container13000	Auxiliary Boiler																					
	Container14000	Propulsion																					
	Container14000	Auxiliary																					
	Container14000	Auxiliary Boiler																					
Total 2016						**4**	**4**		**206**	**412**		**3**	**2**	**0**	**0**		**391**	**317**	**103**	**132**			

Table B1.23 **Operational OGV Emissions Without Mitigation - Proposed Project and Alternatives**

			Vessel Characteristics			Activity														Average Auxiliary Load (kW)		
	Vessel Type	Engine/Source Type	Engine Rating (kW)	Vessel Year	Max Rated Speed (knots)	Peak Day Berth Calls	Peak Day Transits	Peak Day Hotelling Time Per Vessel (hr/day)	Annual Berth Calls	Annual Transits	Peak Day Fuel Sulfur	Peak Day Number of Transits in Compliance with VSRP in Zone 3	Peak Day Number of Transits in Compliance with VSRP in Zone 4	Peak Day Number of Vessels using AMP	Peak Day Number of Transits with Slide Valves	Annual Fuel Sulfur	Annual Number of Transits in Compliance with VSRP in Zone 3	Annual Number of Transits in Compliance with VSRP in Zone 4	Annual Number of Vessels using AMP	Annual Number of Transits with Slide Valves	Transit	Maneuvering	Berth/ Anchorage
Alternative 2 No Federal Action																						
2017	Container1000	Propulsion	15,627	2004	20					0	0.1%					0.1%	0	0	0	0			
	Container1000	Auxiliary	4,421			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	396	942	297
	Container1000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	241	241	241
	Container2000	Propulsion	22,469	2004	22	1	1	10.5	52	104	0.1%	1	1	1		0.1%	99	80	36	33			
	Container2000	Auxiliary	4,649			1	1	10.5	52	104	0.1%	1	1	1	0	0.1%	99	80	36	33	981	2,180	1,035
	Container2000	Auxiliary Boiler				1	1	10.5	52	104	0.1%	1	1	1	0	0.1%	99	80	36	33	325	325	325
	Container3000	Propulsion	29,107	1999	23	1	1	10.5	52	104	0.1%	1	1		0	0.1%	99	80	36	33			
	Container3000	Auxiliary	3,919			1	1	10.5	52	104	0.1%	1	1	0	0	0.1%	99	80	36	33	602	2,063	516
	Container3000	Auxiliary Boiler				1	1	10.5	52	104	0.1%	1	1	0	0	0.1%	99	80	36	33	474	474	474
	Container4000	Propulsion	41,323	2000	24					0	0.1%			0	0	0.1%	0	0	0	0			
	Container4000	Auxiliary	7,058			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,434	2,523	1,161
	Container4000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	492	492	492
	Container5000	Propulsion	50,247	2002	25					0	0.1%					0.1%	0	0	0	0			
	Container5000	Auxiliary	8,228			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,176	4,200	1,008
	Container5000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	630	630	630
	Container6000	Propulsion	60,580	2006	25	1	1	10.5	52	104	0.1%	1				0.1%	99	80	36	33			
	Container6000	Auxiliary	10,631			1	1	10.5	52	104	0.1%	1	0	0	0	0.1%	99	80	36	33	1,425	2,178	986
	Container6000	Auxiliary Boiler				1	1	10.5	52	104	0.1%	1	0	0	0	0.1%	99	80	36	33	565	565	565
	Container7000	Propulsion	57,217	2006	25					0	0.1%		0	0	0	0.1%	0	0	0	0			
	Container7000	Auxiliary	10,771			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,539	3,434	1,066
	Container7000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	551	551	551
	Container8000	Propulsion	66,868	2006	25	1	1	10.5	50	100	0.1%					0.1%	95	77	35	32			
	Container8000	Auxiliary	10,911			1	1	10.5	50	100	0.1%	0	0	0	0	0.1%	95	77	35	32	1,416	3,158	980
	Container8000	Auxiliary Boiler				1	1	10.5	50	100	0.1%	0	0	0	0	0.1%	95	77	35	32	525	525	525
	Container9000	Propulsion	67,428	2007	25	0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0			
	Container9000	Auxiliary	11,520			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,502	3,350	1,040
	Container9000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	547	547	547
	Container10000	Propulsion	68,034	2007	25					0	0.1%					0.1%	0	0	0	0			
	Container10000	Auxiliary	na			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,751	3,675	1,270
	Container10000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	574	574	574
	Container11000	Propulsion	68,639	2008	25					0	0.1%					0.1%	0	0	0	0			
	Container11000	Auxiliary	na			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	2,000	4,000	1,500
	Container11000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	600	600	600
	Container12000	Propulsion	67,399	2010	25					0	0.1%					0.1%	0	0	0	0			
	Container12000	Auxiliary	na			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	2,500	4,500	2,000
	Container12000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	600	600	600
	Container13000	Propulsion																					
	Container13000	Auxiliary																					
	Container13000	Auxiliary Boiler																					
	Container14000	Propulsion																					
	Container14000	Auxiliary																					
	Container14000	Auxiliary Boiler																					
Total 2017						**4**	**4**		**206**	**412**		**3**	**2**	**1**	**0**		**391**	**317**	**144**	**132**			

Table B1.23 **Operational OGV Emissions Without Mitigation - Proposed Project and Alternatives**

			Vessel Characteristics			Activity														Average Auxiliary Load (kW)		
	Vessel Type	Engine/Source Type	Engine Rating (kW)	Vessel Year	Max Rated Speed (knots)	Peak Day Berth Calls	Peak Day Transits	Peak Day Hotelling Time Per Vessel (hr/day)	Annual Berth Calls	Annual Transits	Peak Day Fuel Sulfur	Peak Day Number of Transits in Compliance with VSRP in Zone 3	Peak Day Number of Transits in Compliance with VSRP in Zone 4	Peak Day Number of Vessels using AMP	Peak Day Number of Transits with Slide Valves	Annual Fuel Sulfur	Annual Number of Transits in Compliance with VSRP in Zone 3	Annual Number of Transits in Compliance with VSRP in Zone 4	Annual Number of Vessels using AMP	Annual Number of Transits with Slide Valves	Transit	Maneuvering	Berth/ Anchorage
Alternative 2 No Federal Action																						
2020	Container1000	Propulsion	15,627	2004	20					0	0.1%					0.1%	0	0	0	0			
	Container1000	Auxiliary	4,421			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	396	942	297
	Container1000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	241	241	241
	Container2000	Propulsion	22,469	2004	22	1	1	10.5	52	104	0.1%	1	1	1		0.1%	99	80	42	33			
	Container2000	Auxiliary	4,649			1	1	10.5	52	104	0.1%	1	1	1	0	0.1%	99	80	42	33	981	2,180	1,035
	Container2000	Auxiliary Boiler				1	1	10.5	52	104	0.1%	1	1	1	0	0.1%	99	80	42	33	325	325	325
	Container3000	Propulsion	29,107	1999	23	1	1	10.5	52	104	0.1%	1	1	1	0	0.1%	99	80	42	33			
	Container3000	Auxiliary	3,919			1	1	10.5	52	104	0.1%	1	1	1	0	0.1%	99	80	42	33	602	2,063	516
	Container3000	Auxiliary Boiler				1	1	10.5	52	104	0.1%	1	1	1	0	0.1%	99	80	42	33	474	474	474
	Container4000	Propulsion	41,323	2000	24					0	0.1%				0	0.1%	0	0	0	0			
	Container4000	Auxiliary	7,058			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,434	2,523	1,161
	Container4000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	492	492	492
	Container5000	Propulsion	50,247	2002	25					0	0.1%					0.1%	0	0	0	0			
	Container5000	Auxiliary	8,228			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,176	4,200	1,008
	Container5000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	630	630	630
	Container6000	Propulsion	60,580	2006	25					0	0.1%					0.1%	0	0	0	0			
	Container6000	Auxiliary	10,631			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,425	2,178	986
	Container6000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	565	565	565
	Container7000	Propulsion	57,217	2006	25	0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0			
	Container7000	Auxiliary	10,771			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,539	3,434	1,066
	Container7000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	551	551	551
	Container8000	Propulsion	66,868	2006	25	2	2	10.5	102	204	0.1%	1				0.1%	194	157	82	65			
	Container8000	Auxiliary	10,911			2	2	10.5	102	204	0.1%	1	0	0	0	0.1%	194	157	82	65	1,416	3,158	980
	Container8000	Auxiliary Boiler				2	2	10.5	102	204	0.1%	1	0	0	0	0.1%	194	157	82	65	525	525	525
	Container9000	Propulsion	67,428	2007	25	0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0			
	Container9000	Auxiliary	11,520			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,502	3,350	1,040
	Container9000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	547	547	547
	Container10000	Propulsion	68,034	2007	25					0	0.1%		0			0.1%	0	0	0	0			
	Container10000	Auxiliary	na			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,751	3,675	1,270
	Container10000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	574	574	574
	Container11000	Propulsion	68,639	2008	25					0	0.1%					0.1%	0	0	0	0			
	Container11000	Auxiliary	na			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	2,000	4,000	1,500
	Container11000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	600	600	600
	Container12000	Propulsion	67,399	2010	25					0	0.1%					0.1%	0	0	0	0			
	Container12000	Auxiliary	na			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	2,500	4,500	2,000
	Container12000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	600	600	600
	Container13000	Propulsion																					
	Container13000	Auxiliary																					
	Container13000	Auxiliary Boiler																					
	Container14000	Propulsion																					
	Container14000	Auxiliary																					
	Container14000	Auxiliary Boiler																					
Total 2020						**4**	**4**		**206**	**412**		**3**	**2**	**2**	**0**		**391**	**317**	**165**	**132**			

Table B1.23 **Operational OGV Emissions Without Mitigation - Proposed Project and Alternatives**

			Vessel Characteristics			Activity														Average Auxiliary Load (kW)		
	Vessel Type	Engine/Source Type	Engine Rating (kW)	Vessel Year	Max Rated Speed (knots)	Peak Day Berth Calls	Peak Day Transits	Peak Day Hotelling Time Per Vessel (hr/day)	Annual Berth Calls	Annual Transits	Peak Day Fuel Sulfur	Peak Day Number of Transits in Compliance with VSRP in Zone 3	Peak Day Number of Transits in Compliance with VSRP in Zone 4	Peak Day Number of Vessels using AMP	Peak Day Number of Transits with Slide Valves	Annual Fuel Sulfur	Annual Number of Transits in Compliance with VSRP in Zone 3	Annual Number of Transits in Compliance with VSRP in Zone 4	Annual Number of Vessels using AMP	Annual Number of Transits with Slide Valves	Transit	Maneuvering	Berth/ Anchorage
Alternative 2 No Federal Action																						
2026	Container1000	Propulsion	15,627	2004	20					0	0.1%					0.1%	0	0	0	0			
	Container1000	Auxiliary	4,421			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	396	942	297
	Container1000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	241	241	241
	Container2000	Propulsion	22,469	2004	22	1	1	10.5	52	104	0.1%	1	1	1		0.1%	99	80	42	33			
	Container2000	Auxiliary	4,649			1	1	10.5	52	104	0.1%	1	1	1	0	0.1%	99	80	42	33	981	2,180	1,035
	Container2000	Auxiliary Boiler				1	1	10.5	52	104	0.1%	1	1	1	0	0.1%	99	80	42	33	325	325	325
	Container3000	Propulsion	29,107	1999	23	1	1	10.5	52	104	0.1%	1	1	1	0	0.1%	99	80	42	33			
	Container3000	Auxiliary	3,919			1	1	10.5	52	104	0.1%	1	1	1	0	0.1%	99	80	42	33	602	2,063	516
	Container3000	Auxiliary Boiler				1	1	10.5	52	104	0.1%	1	1	1	0	0.1%	99	80	42	33	474	474	474
	Container4000	Propulsion	41,323	2000	24					0	0.1%				0	0.1%	0	0	0	0			
	Container4000	Auxiliary	7,058			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,434	2,523	1,161
	Container4000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	492	492	492
	Container5000	Propulsion	50,247	2002	25					0	0.1%					0.1%	0	0	0	0			
	Container5000	Auxiliary	8,228			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,176	4,200	1,008
	Container5000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	630	630	630
	Container6000	Propulsion	60,580	2006	25					0	0.1%					0.1%	0	0	0	0			
	Container6000	Auxiliary	10,631			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,425	2,178	986
	Container6000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	565	565	565
	Container7000	Propulsion	57,217	2006	25	0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0			
	Container7000	Auxiliary	10,771			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,539	3,434	1,066
	Container7000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	551	551	551
	Container8000	Propulsion	66,868	2006	25	2	2	10.5	102	204	0.1%	1				0.1%	194	157	82	65			
	Container8000	Auxiliary	10,911			2	2	10.5	102	204	0.1%	1	0	0	0	0.1%	194	157	82	65	1,416	3,158	980
	Container8000	Auxiliary Boiler				2	2	10.5	102	204	0.1%	1	0	0	0	0.1%	194	157	82	65	525	525	525
	Container9000	Propulsion	67,428	2007	25	0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0			
	Container9000	Auxiliary	11,520			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,502	3,350	1,040
	Container9000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	547	547	547
	Container10000	Propulsion	68,034	2007	25					0	0.1%		0			0.1%	0	0	0	0			
	Container10000	Auxiliary	na			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,751	3,675	1,270
	Container10000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	574	574	574
	Container11000	Propulsion	68,639	2008	25					0	0.1%		0			0.1%	0	0	0	0			
	Container11000	Auxiliary	na			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	2,000	4,000	1,500
	Container11000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	600	600	600
	Container12000	Propulsion	67,399	2010	25					0	0.1%					0.1%	0	0	0	0			
	Container12000	Auxiliary	na			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	2,500	4,500	2,000
	Container12000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	600	600	600
	Container13000	Propulsion																					
	Container13000	Auxiliary																					
	Container13000	Auxiliary Boiler																					
	Container14000	Propulsion																					
	Container14000	Auxiliary																					
	Container14000	Auxiliary Boiler																					
Total 2026						**4**	**4**		**206**	**412**		**3**	**2**	**2**	**0**		**391**	**317**	**165**	**132**			

Table B1.23 **Operational OGV Emissions Without Mitigation - Proposed Project and Alternatives**

			Vessel Characteristics			Activity														Average Auxiliary Load (kW)		
	Vessel Type	Engine/Source Type	Engine Rating (kW)	Vessel Year	Max Rated Speed (knots)	Peak Day Berth Calls	Peak Day Transits	Peak Day Hotelling Time Per Vessel (hr/day)	Annual Berth Calls	Annual Transits	Peak Day Fuel Sulfur	Peak Day Number of Transits in Compliance with VSRP in Zone 3	Peak Day Number of Transits in Compliance with VSRP in Zone 4	Peak Day Number of Vessels using AMP	Peak Day Number of Transits with Slide Valves	Annual Fuel Sulfur	Annual Number of Transits in Compliance with VSRP in Zone 3	Annual Number of Transits in Compliance with VSRP in Zone 4	Annual Number of Vessels using AMP	Annual Number of Transits with Slide Valves	Transit	Maneuvering	Berth/ Anchorage
Alternative 3 Reduced Project																						
2015	Container1000	Propulsion	15,627	2004	20					0	0.1%					0.1%	0	0	0	0			
	Container1000	Auxiliary	4,421			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	396	942	297
	Container1000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	241	241	241
	Container2000	Propulsion	22,469	2004	22	1	1	10.5	52	104	0.1%	1	1			0.1%	99	80	26	33			
	Container2000	Auxiliary	4,649			1	1	10.5	52	104	0.1%	1	1	0	0	0.1%	99	80	26	33	981	2,180	1,035
	Container2000	Auxiliary Boiler				1	1	10.5	52	104	0.1%	1	1	0	0	0.1%	99	80	26	33	325	325	325
	Container3000	Propulsion	29,107	1999	23	1	1	10.5	52	104	0.1%	1	1	0	0	0.1%	99	80	26	33			
	Container3000	Auxiliary	3,919			1	1	10.5	52	104	0.1%	1	1	0	0	0.1%	99	80	26	33	602	2,063	516
	Container3000	Auxiliary Boiler				1	1	10.5	52	104	0.1%	1	1	0	0	0.1%	99	80	26	33	474	474	474
	Container4000	Propulsion	41,323	2000	24					0	0.1%			0	0	0.1%	0	0	0	0			
	Container4000	Auxiliary	7,058			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,434	2,523	1,161
	Container4000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	492	492	492
	Container5000	Propulsion	50,247	2002	25					0	0.1%					0.1%	0	0	0	0			
	Container5000	Auxiliary	8,228			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,176	4,200	1,008
	Container5000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	630	630	630
	Container6000	Propulsion	60,580	2006	25	1	1	10.5	94	188	0.1%	1				0.1%	179	145	47	60			
	Container6000	Auxiliary	10,631			1	1	10.5	94	188	0.1%	1	0	0	0	0.1%	179	145	47	60	1,425	2,178	986
	Container6000	Auxiliary Boiler				1	1	10.5	94	188	0.1%	1	0	0	0	0.1%	179	145	47	60	565	565	565
	Container7000	Propulsion	57,217	2006	25	1	1	10.5	8	16	0.1%			0	0	0.1%	15	12	4	5			
	Container7000	Auxiliary	10,771			1	1	10.5	8	16	0.1%	0	0	0	0	0.1%	15	12	4	5	1,539	3,434	1,066
	Container7000	Auxiliary Boiler				1	1	10.5	8	16	0.1%	0	0	0	0	0.1%	15	12	4	5	551	551	551
	Container8000	Propulsion	66,868	2006	25					0	0.1%					0.1%	0	0	0	0			
	Container8000	Auxiliary	10,911			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,416	3,158	980
	Container8000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	525	525	525
	Container9000	Propulsion	67,428	2007	25	0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0			
	Container9000	Auxiliary	11,520			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,502	3,350	1,040
	Container9000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	547	547	547
	Container10000	Propulsion	68,034	2007	25					0	0.1%					0.1%	0	0	0	0			
	Container10000	Auxiliary	na			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,751	3,675	1,270
	Container10000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	574	574	574
	Container11000	Propulsion	68,639	2008	25					0	0.1%					0.1%	0	0	0	0			
	Container11000	Auxiliary	na			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	2,000	4,000	1,500
	Container11000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	600	600	600
	Container12000	Propulsion	67,399	2010	25					0	0.1%					0.1%	0	0	0	0			
	Container12000	Auxiliary	na			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	2,500	4,500	2,000
	Container12000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	600	600	600
	Container13000	Propulsion																					
	Container13000	Auxiliary																					
	Container13000	Auxiliary Boiler																					
	Container14000	Propulsion																					
	Container14000	Auxiliary																					
	Container14000	Auxiliary Boiler																					
Total 2015						**4**	**4**		**206**	**412**		**3**	**2**	**0**	**0**		**391**	**317**	**103**	**132**			

Table B1.23 **Operational OGV Emissions Without Mitigation - Proposed Project and Alternatives**

			Vessel Characteristics			Activity														Average Auxiliary Load (kW)		
	Vessel Type	Engine/Source Type	Engine Rating (kW)	Vessel Year	Max Rated Speed (knots)	Peak Day Berth Calls	Peak Day Transits	Peak Day Hotelling Time Per Vessel (hr/day)	Annual Berth Calls	Annual Transits	Peak Day Fuel Sulfur	Peak Day Number of Transits in Compliance with VSRP in Zone 3	Peak Day Number of Transits in Compliance with VSRP in Zone 4	Peak Day Number of Vessels using AMP	Peak Day Number of Transits with Slide Valves	Annual Fuel Sulfur	Annual Number of Transits in Compliance with VSRP in Zone 3	Annual Number of Transits in Compliance with VSRP in Zone 4	Annual Number of Vessels using AMP	Annual Number of Transits with Slide Valves	Transit	Maneuvering	Berth/ Anchorage
Alternative 3 Reduced Project																						
2016	Container1000	Propulsion	15,627	2004	20					0	0.1%					0.1%	0	0	0	0			
	Container1000	Auxiliary	4,421			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	396	942	297
	Container1000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	241	241	241
	Container2000	Propulsion	22,469	2004	22	1	1	10.5	52	104	0.1%	1	1			0.1%	99	80	26	33			
	Container2000	Auxiliary	4,649			1	1	10.5	52	104	0.1%	1	1	0	0	0.1%	99	80	26	33	981	2,180	1,035
	Container2000	Auxiliary Boiler				1	1	10.5	52	104	0.1%	1	1	0	0	0.1%	99	80	26	33	325	325	325
	Container3000	Propulsion	29,107	1999	23	1	1	10.5	52	104	0.1%	1	1	0	0	0.1%	99	80	26	33			
	Container3000	Auxiliary	3,919			1	1	10.5	52	104	0.1%	1	1	0	0	0.1%	99	80	26	33	602	2,063	516
	Container3000	Auxiliary Boiler				1	1	10.5	52	104	0.1%	1	1	0	0	0.1%	99	80	26	33	474	474	474
	Container4000	Propulsion	41,323	2000	24					0	0.1%			0	0	0.1%	0	0	0	0			
	Container4000	Auxiliary	7,058			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,434	2,523	1,161
	Container4000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	492	492	492
	Container5000	Propulsion	50,247	2002	25					0	0.1%					0.1%	0	0	0	0			
	Container5000	Auxiliary	8,228			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,176	4,200	1,008
	Container5000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	630	630	630
	Container6000	Propulsion	60,580	2006	25	1	1	10.5	94	188	0.1%	1				0.1%	179	145	47	60			
	Container6000	Auxiliary	10,631			1	1	10.5	94	188	0.1%	1	0	0	0	0.1%	179	145	47	60	1,425	2,178	986
	Container6000	Auxiliary Boiler				1	1	10.5	94	188	0.1%	1	0	0	0	0.1%	179	145	47	60	565	565	565
	Container7000	Propulsion	57,217	2006	25	1	1	10.5	8	16	0.1%			0	0	0.1%	15	12	4	5			
	Container7000	Auxiliary	10,771			1	1	10.5	8	16	0.1%	0	0	0	0	0.1%	15	12	4	5	1,539	3,434	1,066
	Container7000	Auxiliary Boiler				1	1	10.5	8	16	0.1%	0	0	0	0	0.1%	15	12	4	5	551	551	551
	Container8000	Propulsion	66,868	2006	25					0	0.1%					0.1%	0	0	0	0			
	Container8000	Auxiliary	10,911			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,416	3,158	980
	Container8000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	525	525	525
	Container9000	Propulsion	67,428	2007	25	0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0			
	Container9000	Auxiliary	11,520			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,502	3,350	1,040
	Container9000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	547	547	547
	Container10000	Propulsion	68,034	2007	25					0	0.1%					0.1%	0	0	0	0			
	Container10000	Auxiliary	na			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,751	3,675	1,270
	Container10000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	574	574	574
	Container11000	Propulsion	68,639	2008	25					0	0.1%					0.1%	0	0	0	0			
	Container11000	Auxiliary	na			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	2,000	4,000	1,500
	Container11000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	600	600	600
	Container12000	Propulsion	67,399	2010	25					0	0.1%					0.1%	0	0	0	0			
	Container12000	Auxiliary	na			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	2,500	4,500	2,000
	Container12000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	600	600	600
	Container13000	Propulsion																				
	Container13000	Auxiliary																				
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Total 2016						**4**	**4**		**206**	**412**		**3**	**2**	**0**	**0**		**391**	**317**	**103**	**132**			

Table B1.23 **Operational OGV Emissions Without Mitigation - Proposed Project and Alternatives**

			Vessel Characteristics			Activity														Average Auxiliary Load (kW)		
	Vessel Type	Engine/Source Type	Engine Rating (kW)	Vessel Year	Max Rated Speed (knots)	Peak Day Berth Calls	Peak Day Transits	Peak Day Hotelling Time Per Vessel (hr/day)	Annual Berth Calls	Annual Transits	Peak Day Fuel Sulfur	Peak Day Number of Transits in Compliance with VSRP in Zone 3	Peak Day Number of Transits in Compliance with VSRP in Zone 4	Peak Day Number of Vessels using AMP	Peak Day Number of Transits with Slide Valves	Annual Fuel Sulfur	Annual Number of Transits in Compliance with VSRP in Zone 3	Annual Number of Transits in Compliance with VSRP in Zone 4	Annual Number of Vessels using AMP	Annual Number of Transits with Slide Valves	Transit	Maneuvering	Berth/ Anchorage
Alternative 3 Reduced Project																						
2017	Container1000	Propulsion	15,627	2004	20					0	0.1%					0.1%	0	0	0	0			
	Container1000	Auxiliary	4,421			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	396	942	297
	Container1000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	241	241	241
	Container2000	Propulsion	22,469	2004	22	1	1	10.5	52	104	0.1%	1	1	1		0.1%	99	80	36	33			
	Container2000	Auxiliary	4,649			1	1	10.5	52	104	0.1%	1	1	1	0	0.1%	99	80	36	33	981	2,180	1,035
	Container2000	Auxiliary Boiler				1	1	10.5	52	104	0.1%	1	1	1	0	0.1%	99	80	36	33	325	325	325
	Container3000	Propulsion	29,107	1999	23	1	1	10.5	52	104	0.1%	1	1	1	0	0.1%	99	80	36	33			
	Container3000	Auxiliary	3,919			1	1	10.5	52	104	0.1%	1	1	1	0	0.1%	99	80	36	33	602	2,063	516
	Container3000	Auxiliary Boiler				1	1	10.5	52	104	0.1%	1	1	1	0	0.1%	99	80	36	33	474	474	474
	Container4000	Propulsion	41,323	2000	24					0	0.1%			0	0	0.1%	0	0	0	0			
	Container4000	Auxiliary	7,058			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,434	2,523	1,161
	Container4000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	492	492	492
	Container5000	Propulsion	50,247	2002	25					0	0.1%					0.1%	0	0	0	0			
	Container5000	Auxiliary	8,228			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,176	4,200	1,008
	Container5000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	630	630	630
	Container6000	Propulsion	60,580	2006	25	1	1	19.0	52	104	0.1%	1				0.1%	99	80	36	33			
	Container6000	Auxiliary	10,631			1	1	19.0	52	104	0.1%	1	0	0	0	0.1%	99	80	36	33	1,425	2,178	986
	Container6000	Auxiliary Boiler				1	1	19.0	52	104	0.1%	1	0	0	0	0.1%	99	80	36	33	565	565	565
	Container7000	Propulsion	57,217	2006	25					0	0.1%		0	0	0	0.1%	0	0	0	0			
	Container7000	Auxiliary	10,771			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,539	3,434	1,066
	Container7000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	551	551	551
	Container8000	Propulsion	66,868	2006	25	0	0	0.0	0	0	0.1%					0.1%	0	0	0	0			
	Container8000	Auxiliary	10,911			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,416	3,158	980
	Container8000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	525	525	525
	Container9000	Propulsion	67,428	2007	25	0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0			
	Container9000	Auxiliary	11,520			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,502	3,350	1,040
	Container9000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	547	547	547
	Container10000	Propulsion	68,034	2007	25	1	1	19.0	50	100	0.1%					0.1%	95	77	35	32			
	Container10000	Auxiliary	na			1	1	19.0	50	100	0.1%	0	0	0	0	0.1%	95	77	35	32	1,751	3,675	1,270
	Container10000	Auxiliary Boiler				1	1	19.0	50	100	0.1%	0	0	0	0	0.1%	95	77	35	32	574	574	574
	Container11000	Propulsion	68,639	2008	25					0	0.1%					0.1%	0	0	0	0			
	Container11000	Auxiliary	na			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	2,000	4,000	1,500
	Container11000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	600	600	600
	Container12000	Propulsion	67,399	2010	25					0	0.1%					0.1%	0	0	0	0			
	Container12000	Auxiliary	na			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	2,500	4,500	2,000
	Container12000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	600	600	600
	Container13000	Propulsion																				
	Container13000	Auxiliary																				
	Container13000	Auxiliary Boiler																				
	Container14000	Propulsion																				
	Container14000	Auxiliary																				
	Container14000	Auxiliary Boiler																				
Total 2017						**4**	**4**		**206**	**412**		**3**	**2**	**2**	**0**		**391**	**317**	**144**	**132**			

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			Vessel Characteristics			Activity														Average Auxiliary Load (kW)		
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Alternative 3 Reduced Project																						
2020	Container1000	Propulsion	15,627	2004	20					0	0.1%					0.1%	0	0	0	0			
	Container1000	Auxiliary	4,421			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	396	942	297
	Container1000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	241	241	241
	Container2000	Propulsion	22,469	2004	22	1	1	10.5	52	104	0.1%	1	1	1		0.1%	99	80	42	33			
	Container2000	Auxiliary	4,649			1	1	10.5	52	104	0.1%	1	1	1	0	0.1%	99	80	42	33	981	2,180	1,035
	Container2000	Auxiliary Boiler				1	1	10.5	52	104	0.1%	1	1	1	0	0.1%	99	80	42	33	325	325	325
	Container3000	Propulsion	29,107	1999	23	1	1	10.5	52	104	0.1%	1	1	1	0	0.1%	99	80	42	33			
	Container3000	Auxiliary	3,919			1	1	10.5	52	104	0.1%	1	1	1	0	0.1%	99	80	42	33	602	2,063	516
	Container3000	Auxiliary Boiler				1	1	10.5	52	104	0.1%	1	1	1	0	0.1%	99	80	42	33	474	474	474
	Container4000	Propulsion	41,323	2000	24					0	0.1%				0	0.1%	0	0	0	0			
	Container4000	Auxiliary	7,058			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,434	2,523	1,161
	Container4000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	492	492	492
	Container5000	Propulsion	50,247	2002	25					0	0.1%					0.1%	0	0	0	0			
	Container5000	Auxiliary	8,228			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,176	4,200	1,008
	Container5000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	630	630	630
	Container6000	Propulsion	60,580	2006	25	1	1	19.0	26	52	0.1%	1		1		0.1%	49	40	21	17			
	Container6000	Auxiliary	10,631			1	1	19.0	26	52	0.1%	1	0	1	0	0.1%	49	40	21	17	1,425	2,178	986
	Container6000	Auxiliary Boiler				1	1	19.0	26	52	0.1%	1	0	1	0	0.1%	49	40	21	17	565	565	565
	Container7000	Propulsion	57,217	2006	25		0			0	0.1%		0		0	0.1%	0	0	0	0			
	Container7000	Auxiliary	10,771			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,539	3,434	1,066
	Container7000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	551	551	551
	Container8000	Propulsion	66,868	2006	25	1	1	10.5	52	104	0.1%	1				0.1%	99	80	42	33			
	Container8000	Auxiliary	10,911			1	1	10.5	52	104	0.1%	1	0	0	0	0.1%	99	80	42	33	1,416	3,158	980
	Container8000	Auxiliary Boiler				1	1	10.5	52	104	0.1%	1	0	0	0	0.1%	99	80	42	33	525	525	525
	Container9000	Propulsion	67,428	2007	25	0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0			
	Container9000	Auxiliary	11,520			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,502	3,350	1,040
	Container9000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	547	547	547
	Container10000	Propulsion	68,034	2007	25	1	1	10.5	50	100	0.1%		0			0.1%	95	77	40	32			
	Container10000	Auxiliary	na			1	1	10.5	50	100	0.1%	0	0	0	0	0.1%	95	77	40	32	1,751	3,675	1,270
	Container10000	Auxiliary Boiler				1	1	10.5	50	100	0.1%	0	0	0	0	0.1%	95	77	40	32	574	574	574
	Container11000	Propulsion	68,639	2008	25					0	0.1%					0.1%	0	0	0	0			
	Container11000	Auxiliary	na			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	2,000	4,000	1,500
	Container11000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	600	600	600
	Container12000	Propulsion	67,399	2010	25					0	0.1%					0.1%	0	0	0	0			
	Container12000	Auxiliary	na			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	2,500	4,500	2,000
	Container12000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	600	600	600
	Container13000	Propulsion																					
	Container13000	Auxiliary																					
	Container13000	Auxiliary Boiler																					
	Container14000	Propulsion																					
	Container14000	Auxiliary																					
	Container14000	Auxiliary Boiler																					
Total 2020						**5**	**5**		**232**	**464**		**4**	**2**	**3**	**0**		**441**	**357**	**186**	**148**			

Table B1.23 **Operational OGV Emissions Without Mitigation - Proposed Project and Alternatives**

			Vessel Characteristics			Activity														Average Auxiliary Load (kW)		
	Vessel Type	Engine/Source Type	Engine Rating (kW)	Vessel Year	Max Rated Speed (knots)	Peak Day Berth Calls	Peak Day Transits	Peak Day Hotelling Time Per Vessel (hr/day)	Annual Berth Calls	Annual Transits	Peak Day Fuel Sulfur	Peak Day Number of Transits in Compliance with VSRP in Zone 3	Peak Day Number of Transits in Compliance with VSRP in Zone 4	Peak Day Number of Vessels using AMP	Peak Day Number of Transits with Slide Valves	Annual Fuel Sulfur	Annual Number of Transits in Compliance with VSRP in Zone 3	Annual Number of Transits in Compliance with VSRP in Zone 4	Annual Number of Vessels using AMP	Annual Number of Transits with Slide Valves	Transit	Maneuvering	Berth/ Anchorage
Alternative 3 Reduced Project																						
2026	Container1000	Propulsion	15,627	2004	20					0	0.1%					0.1%	0	0	0	0			
	Container1000	Auxiliary	4,421			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	396	942	297
	Container1000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	241	241	241
	Container2000	Propulsion	22,469	2004	22	1	1	10.5	52	104	0.1%	1	1	1		0.1%	99	80	42	33			
	Container2000	Auxiliary	4,649			1	1	10.5	52	104	0.1%	1	1	1	0	0.1%	99	80	42	33	981	2,180	1,035
	Container2000	Auxiliary Boiler				1	1	10.5	52	104	0.1%	1	1	1	0	0.1%	99	80	42	33	325	325	325
	Container3000	Propulsion	29,107	1999	23	1	1	10.5	52	104	0.1%	1	1	1	0	0.1%	99	80	42	33			
	Container3000	Auxiliary	3,919			1	1	10.5	52	104	0.1%	1	1	1	0	0.1%	99	80	42	33	602	2,063	516
	Container3000	Auxiliary Boiler				1	1	10.5	52	104	0.1%	1	1	1	0	0.1%	99	80	42	33	474	474	474
	Container4000	Propulsion	41,323	2000	24					0	0.1%				0	0.1%	0	0	0	0			
	Container4000	Auxiliary	7,058			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,434	2,523	1,161
	Container4000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	492	492	492
	Container5000	Propulsion	50,247	2002	25					0	0.1%					0.1%	0	0	0	0			
	Container5000	Auxiliary	8,228			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,176	4,200	1,008
	Container5000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	630	630	630
	Container6000	Propulsion	60,580	2006	25	1	1	19.0	26	52	0.1%	1		1		0.1%	49	40	21	17			
	Container6000	Auxiliary	10,631			1	1	19.0	26	52	0.1%	1	0	1	0	0.1%	49	40	21	17	1,425	2,178	986
	Container6000	Auxiliary Boiler				1	1	19.0	26	52	0.1%	1	0	1	0	0.1%	49	40	21	17	565	565	565
	Container7000	Propulsion	57,217	2006	25		0			0	0.1%	0	0		0	0.1%	0	0	0	0			
	Container7000	Auxiliary	10,771			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,539	3,434	1,066
	Container7000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	551	551	551
	Container8000	Propulsion	66,868	2006	25	0	0	0.0	0	0	0.1%					0.1%	0	0	0	0			
	Container8000	Auxiliary	10,911			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,416	3,158	980
	Container8000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	525	525	525
	Container9000	Propulsion	67,428	2007	25	0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0			
	Container9000	Auxiliary	11,520			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	1,502	3,350	1,040
	Container9000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	547	547	547
	Container10000	Propulsion	68,034	2007	25	2	2	10.5	102	204	0.1%	1	0			0.1%	194	157	82	65			
	Container10000	Auxiliary	na			2	2	10.5	102	204	0.1%	1	0	0	0	0.1%	194	157	82	65	1,751	3,675	1,270
	Container10000	Auxiliary Boiler				2	2	10.5	102	204	0.1%	1	0	0	0	0.1%	194	157	82	65	574	574	574
	Container11000	Propulsion	68,639	2008	25					0	0.1%		0			0.1%	0	0	0	0			
	Container11000	Auxiliary	na			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	2,000	4,000	1,500
	Container11000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	600	600	600
	Container12000	Propulsion	67,399	2010	25					0	0.1%					0.1%	0	0	0	0			
	Container12000	Auxiliary	na			0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	2,500	4,500	2,000
	Container12000	Auxiliary Boiler				0	0	0.0	0	0	0.1%	0	0	0	0	0.1%	0	0	0	0	600	600	600
	Container13000	Propulsion																				
	Container13000	Auxiliary																				
	Container13000	Auxiliary Boiler																				
	Container14000	Propulsion																				
	Container14000	Auxiliary																				
	Container14000	Auxiliary Boiler																				
Total 2026						**5**	**5**		**232**	**464**		**4**	**2**	**3**	**0**		**441**	**357**	**186**	**148**			

Table B1.24 **OGV Control Factors**

	PM10	PM2.5	DPM	NOx	SOx	CO	HC	VOC	CO2	CH4	N2O	Connect/Disconnect Time(hr)
2012												
AMP Control Factor	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	3
Fuel Slide Valve Control Factor	25%	25%	25%	30%								

Source: 2011 POLA Emissions Inventory.

Source: CARB OGV Shore Power Regulation.

Table B1.25 **OGV Control Compliance**

	Unmitigated					Mitigated	
	Sulfur Content	VSRP Zone 3 (PZ to 20nm)	VSRP Zone 4 (20nm-40nm)	AMP	Slide Valves	VSRP Zone 4 (20nm-40nm)	AMP
2012	0.50%	100%	77%	actual inventory	actual inventory	not applicable to baseline	not applicable to baseline
2015	0.10%	95%	77%	50%	32%	77%	50%
2016	0.10%	95%	77%	50%	32%	77%	50%
2017	0.10%	95%	77%	70%	32%	95%	70%
2020	0.10%	95%	77%	80%	32%	95%	80%
2026	0.10%	95%	77%	80%	32%	95%	91%

Source:

1. Sulfur Content: CARB's Low Sulfur Fuel for Marine Auxiliary Engines, Main Engines, and Auxiliary Boilers.
2. Assumed that all vessels followed CARB's Fuel Switch Regulation within CARB's 2012+ in-state boundary and used distillate fuel with average sulfur content of 0.5% in 2012 and 0.1% after 1/1/2014. All ship routes and analyzed zones fall within CARB's 2012+ in-state boundary.
3. VSRP compliance: during baseline (Starcrest 2013); during future years (LAHD 2011 APL EIS/EIR)

4. Unmitigated AMP: CARB's Regulation to Reduce Emissions from Diesel Auxiliary Engines on OGVs While at Berth in California Ports
5. Slide valves: assumed 32% of all vessel calls (POLA 2011 Inventory).
6. AMP mitigation is applied in 2026. In 2026, NYK vessels will meet 95% AMP and non-NYK vessels will meet the regulatory requirement of 80%. Given that NYK vessels in 2026 are projected to be 56% of total, the composite mitigation is: 80% + [(100%-80%) * 56% * 95%] = 90.6%.

Table B1.26 **2012 OGV Average Hotelling Times/Load** **Future Years**

Category	Engine Type	Avg Hotelling Time (hrs) At Anchorage	Avg Hotelling Time (hrs) At Berth		Avg Hotelling Time (hrs) At Berth	At Anchorage
Container1000	Auxiliary	88	20		50	16.8
Container1000	Auxiliary Boiler	88	20		50	
Container2000	Auxiliary	32	25		50	30.7
Container2000	Auxiliary Boiler	32	25		50	
Container4000	Auxiliary	0	11		50	7.4
Container4000	Auxiliary Boiler	0	11		50	
Container5000	Auxiliary	2	76		50	3.8
Container5000	Auxiliary Boiler	2	76		50	
Container6000	Auxiliary	54	82		50	6.8
Container6000	Auxiliary Boiler	54	82		50	
Container7000	Auxiliary	0	80		50	0
Container7000	Auxiliary Boiler	0	80		50	
Reefer	Auxiliary	4	8		50	
Reefer	Auxiliary Boiler	4	47		50	
				average:	50	13.1

Source:
Starcrest provided 2012 YTI data.
Future years:

Average time at berth: POLA, AECom berth and yard capacity calculations. Hotelling time will not increase in future years because increased throughput is handled with more cranes.
Average time at anchorage: 2012 POLA Inventory, Table 3.28 Average Hotelling Times at Anchorage by Vessel Type.

Table B1.27 **Vessel Speed Parameters**

	Arrivals		Future Years	
Category	Avg Transit PZ-20 Speed (knots)	Avg Transit 20-40 Speed (knots)	Average Transit PZ-20 Speed (knots)	Average Transit 20-40 Speed (knots)
Container1000	9.4	10.4		
Container2000	9.1	10.7		
Container4000	8.0	12.3		
Container5000	9.8	10.5	9.6	11.3
Container6000	10.7	12.6		
Container7000	9.3	9.4		
Reefer	11.0	13.5		
	Departures			
Category	Avg Transit PZ-20 Speed (knots)	Avg Transit 20-40 Speed (knots)		
Container1000	11.2	12.0		
Container2000	10.4	10.8		
Container4000	9.7	16.8		
Container5000	10.8	11.3	10.7	13.4
Container6000	11.1	14.9		
Container7000	10.3	12.3		
Reefer	11.4	15.8		
Crane delivery ship		maximum rated	9.0	
Manuvering Time (Average of all arrivals and departures)				
1.10	hours			

Source:
Speed information provided by Starcrest for container ships and reefers.

Table B1.28 **Maximum Rated Vessel Speed**

Category	Speed (knots)
Container1000	19.9
Container2000	21.6
Container3000	22.5
Container4000	23.9
Container5000	25.1
Container6000	25.1
Container7000	25.3
Container8000	25.0
Container9000	25.1
All Other Vessel Categories	25.1
Reefer	19.3
Crane delivery ship	9.0

Source:

Maximum rated speed information obtained from 2011 POLA Inventory, Table 3.26, Vessel Type Characteristics. Crane delivery ship treated as a general cargo ship.

Table B1.29 **Transit Distances (nm)**

			Zone 1: Harbor	Zone 2: Breakwater to PZ		Zone 3: PZ to 20nm		Zone 4: 20nm to 40nm		Zone 5: 40 nm to 50nm SCAB overwater boundary	Zone 6: 50nm to 170nm State Over-Water Boundary
% Calls By Route	**Arrival**	**Departure**		Arrival	Departure	Arrival	Departure	Arrival	Departure		
East	0%	0%	3.7	7.63	7.63	25.75	25.75	0	0		
North	46%	38%	3.7	8.57	7.63	21.91	21.68	21.37	20.75		
South	36%	34%	3.7	8.47	7.36	11.11	12.55	20.18	19.92		
West	18%	28%	3.7	8.58	8.58	18.97	18.97	21.12	21.12		
	100%	100%									
Average Distance			3.7	8.17		17.65		20.73		10	120

Source:

Starcrest

Table B1.30 **Emission Factors for OGV Propulsion Power using Residual Oil, g/kW-hr**

Engine	Model Year	PM10	PM2.5	DPM	NOx	SOx	CO	HC	VOC	CO2	CH4	N2O
Slow Speed Diesel [1]	≤1999	1.5	1.2	1.5	18.1	10.5	1.4	0.6	0.63	620	0.012	0.031
Medium Speed Diesel [2]	≤1999	1.5	1.2	1.5	14.0	11.5	1.1	0.5	0.53	683	0.010	0.031
Slow Speed Diesel	**2000-2010[3]**	**1.5**	**1.2**	**1.5**	**17.0**	**10.5**	**1.4**	**0.6**	**0.63**	**620**	**0.012**	**0.031**
Medium Speed Diesel [2]	2000-2010	1.5	1.2	1.5	13.0	11.5	1.1	0.5	0.53	683	0.010	0.031
Slow Speed Diesel	2011-2015	1.5	1.2	1.5	15.3	10.5	1.4	0.6	0.63	620	0.012	0.031
Medium Speed Diesel [2]	2011-2015	1.5	1.2	1.5	11.2	11.5	1.1	0.5	0.53	683	0.010	0.031
Gas Turbine	all	0.05	0.04	0	6.1	16.5	0.2	0.1	0.11	970	0.002	0.08
Steam Ship	all	0.8	0.64	0	2.1	16.5	0.2	0.1	0.11	970	0.002	0.08
Slow Speed Diesel in ECA	2016+	1.5	1.2	1.5	3.4	10.5	1.4	0.6	0.63	620	0.012	0.031
Medium Speed Diesel [2] in ECA	2016+	1.5	1.2	1.5	3.1	11.5	1.1	0.5	0.53	683	0.010	0.031

Notes:

1. Slow speed diesel: engine speed < 150 rpm; assumed as default for propulsion engines

2. Medium speed diesel: engine speed > 150 rpm (500 rpm typical). Per MARPOL Annex VI: NOx emission factor for Tier I = 45^{n}-0.2; Tier II = 44^{n}-0.23, Tier III = 9^{n}-0.2.
Fuel sulfur content: 2.7%

3. MARPOL Annex VI NOx emission limits (bold type) applied 100%. SOx is represented for 2.7% sulfur fuel content and is adjusted in calculations.
Tier 3 standards are required for vessels built on or after January 1, 2016 and that operate in an ECA. At the 65th session (May 2013), MEPC agreed to consider a draft amendment to postpone the date for the implementation of Tier 3 NOx standards applicable within ECAs from 2016 to 2021. The draft amendments will be considered for adoption during 66th session of MEPC in March 2014.
Calculations do not take credit for Tier 3 vessels because it cannot be guaranteed what portion of vessels calling at the YTI terminal will be Tier 3 and in which year.

Source: POLA 2012 Emissions Inventory, Tables 3.5 and 3.6; IMO requirements for ECAs.

Table B1.31 **Low Load Adjustment Factors - Propulsion Engines**

Load	PM10	PM2.5	DPM	NOx	SOx	CO	HC	VOC	CO2	CH4	N2O
2% docking load	7.29	7.29	7.29	4.63	1.00	9.70	21.18	21.18	1.00	21.18	4.63
3% transit load	4.33	4.33	4.33	2.92	1.00	6.49	11.68	11.68	1.00	11.68	2.92
4% transit load	3.09	3.09	3.09	2.21	1.00	4.86	7.71	7.71	1.00	7.71	2.21
5% transit load	2.44	2.44	2.44	1.83	1.00	3.90	5.61	5.61	1.00	5.61	1.83
6% transit load	2.04	2.04	2.04	1.60	1.00	3.26	4.35	4.35	1.00	4.35	1.60
7% transit load	1.79	1.79	1.79	1.45	1.00	2.80	3.52	3.52	1.00	3.52	1.45
8% transit load	1.61	1.61	1.61	1.35	1.00	2.45	2.95	2.95	1.00	2.95	1.35
9% transit load	1.48	1.48	1.48	1.27	1.00	2.18	2.52	2.52	1.00	2.52	1.27
10% transit load	1.38	1.38	1.38	1.22	1.00	1.97	2.18	2.18	1.00	2.18	1.22
11% transit load	1.30	1.30	1.30	1.17	1.00	1.79	1.96	1.96	1.00	1.96	1.17
12% transit load	1.24	1.24	1.24	1.14	1.00	1.64	1.76	1.76	1.00	1.76	1.14
13% transit load	1.19	1.19	1.19	1.11	1.00	1.52	1.60	1.60	1.00	1.60	1.11
14% transit load	1.15	1.15	1.15	1.08	1.00	1.41	1.47	1.47	1.00	1.47	1.08
15% transit load	1.11	1.11	1.11	1.06	1.00	1.32	1.36	1.36	1.00	1.36	1.06
16% transit load	1.08	1.08	1.08	1.05	1.00	1.24	1.26	1.26	1.00	1.26	1.05
17% transit load	1.06	1.06	1.06	1.03	1.00	1.17	1.18	1.18	1.00	1.18	1.03
18% transit load	1.04	1.04	1.04	1.02	1.00	1.11	1.11	1.11	1.00	1.11	1.02
19% transit load	1.02	1.02	1.02	1.01	1.00	1.05	1.05	1.05	1.00	1.05	1.01
20% transit load	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Source: POLA 2012 Emissions Inventory, Table 3.9.

Table B1.32 **AMP Electricity Consumption Emission Factors (lb/MW-hr)**

PM10	PM2.5	DPM	NOx	SOx	CO	HC	VOC	CO2	CH4	N2O
0.04	0.04	0.04	0.4192	0.1822	0.2		0.01	658.68	0.02894	0.00617

Source:
CO, VOC, and PM criteria pollutant emission factors are from SCAQMD 1993 CEQA Handbook, Table A9-11-B.
NOx and SOx emission factors are from eGrid 2012, Version 1.0, Year 2009 Summary Tables.
GHG emission factors are from The Climate Registry, 2013 Default Emission Factors, Table 14.1 (US Emission Factors by eGrid Subregion CAMX.

Table B1.33 **Reefer OGV Refrigerant Loss**

	Charge (mton)	Annual Loss (%)	Refrigerant Type
Reefer OGV	3	20%	HCFC-22

Fugitive CO2e emissions determined by: Charge (mton) * Annual Loss (%) * Time Spent in Study Area (yr) * GWP

Source: UN Environmental Programme 2006 and 2010 Report of the Refrigeration, Air Conditioning and Heat Pumps Technical Options Committee. Available online: http://ozone.unep.org/teap/Reports/RTOC/. Last accessed April 2013.

Table B1.34 **Emission Factors for OGV Auxiliary Power using Residual Oil, g/kW-hr**

Model Year	PM10	PM2.5	DPM	NOx	SOx	CO	HC	VOC	CO2	CH4	N2O
≤1999	1.5	1.2	1.5	14.7	12.3	1.1	0.4	0.42	683	0.08	0.031
2000-2010	1.5	1.2	1.5	13.0	12.3	1.1	0.4	0.42	683	0.08	0.031
2011-2015	1.5	1.2	1.5	11.2	12.3	1.1	0.4	0.42	683	0.08	0.031
2016+	1.5	1.2	1.5	3.1	12.3	1.1	0.4	0.42	683	0.08	0.031

Source: POLA 2012 Emissions Inventory, Tables 3.10 and 3.11; IMO requirements for ECAs.

Table B1.35 **Emission Factors for OGV Auxiliary Boilers using Residual Oil, g/kW-hr**

Engine	PM10	PM2.5	DPM	NOx	SOx	CO	HC	VOC	CO2	CH4	N2O
Steam Boiler	0.8	0.64	0	2.1	16.5	0.2	0.1	0.11	970	0.002	0.08

Source: POLA 2012 Emissions Inventory, Tables 3.14 and 3.15.

Table B1.36 **Fuel Correction Factors**

Fuel	Sulfur Content	PM10	PM2.5	DPM	NOx	SOx	CO	HC	VOC	CO2	CH4	N2O
HFO	1.5%	0.82	0.82	0.82	1.00	0.555	1.00	1.00	1.00	1.00	1.00	1.00
MDO	1.5%	0.47	0.47	0.47	0.90	0.555	1.00	1.00	1.00	1.00	1.00	0.90
MGO	0.5%	0.25	0.25	0.25	0.94	0.185	1.00	1.00	1.00	0.95	1.00	0.94
MGO	0.41%	0.23	0.23	0.23	0.94	0.152	1.00	1.00	1.00	0.95	1.00	0.94
MGO	0.4%	0.23	0.23	0.23	0.94	0.148	1.00	1.00	1.00	0.95	1.00	0.94
MGO	0.3%	0.21	0.21	0.21	0.94	0.111	1.00	1.00	1.00	0.95	1.00	0.94
MGO	0.2%	0.19	0.19	0.19	0.94	0.074	1.00	1.00	1.00	0.95	1.00	0.94
MGO	0.1%	0.17	0.17	0.17	0.94	0.037	1.00	1.00	1.00	0.95	1.00	0.94

Source: POLA 2012 Emissions Inventory, Table 3.17.

Table B1.37 Harbor Craft Data, Operations

			HC Characteristics							OGV Activity			HC Energy Demand			
Year	HC Classification	Engine Typ	Engine Count per HC	HC Average MY	HC Average HP	HC Average kW	Load Factor	HC Activity per HC (hr/trip)	HC Count per OGV	Peak Day OGV Transit (one-way trips/day)	Average Day OGV Transits (one-way trips/day)	Average Annual OGV Transits (one-way trips/yr)	Peak Day HC Energy Demand (kW-hr/day)	Average Day HC Energy Demand (kW-hr/day)	Annual HC Energy Demand (kW-hr/yr)	Engine Tier
NOP CEQA Baseline																
	Assist Tugboat	Propulsion	2	2004	2,046	1,526	0.31	2.9	2	3	0.9	324	8,119	2,402	876,882	Tier 1
		Auxiliary	2	2007	185	138	0.43	2.9	2	3	0.9	324	1,018	301	109,980	Tier 2
Proposed Project																
2015	Assist Tugboat	Propulsion	2	2004	2,046	1,526	0.31	2.9	2	4	1.1	412	10,826	3,055	1,115,048	Tier 1
		Auxiliary	2	2007	185	138	0.43	2.9	2	4	1.1	412	1,358	383	139,851	Tier 2
2016	Assist Tugboat	Propulsion	2	2004	2,046	1,526	0.31	2.9	2	4	1.1	412	10,826	3,055	1,115,048	Tier 1
		Auxiliary	2	2007	185	138	0.43	2.9	2	4	1.1	412	1,358	383	139,851	Tier 2
2017	Assist Tugboat	Propulsion	2	2004	2,046	1,526	0.31	2.9	2	4	1.1	412	10,826	3,055	1,115,048	Tier 1
		Auxiliary	2	2007	185	138	0.43	2.9	2	4	1.1	412	1,358	383	139,851	Tier 2
2020	Assist Tugboat	Propulsion	2	2017	2,046	1,526	0.31	2.9	2	4	1.1	412	10,826	3,055	1,115,048	Tier 4
		Auxiliary	2	2007	185	138	0.43	2.9	2	4	1.1	412	1,358	383	139,851	Tier 2
2026	Assist Tugboat	Propulsion	2	2017	2,046	1,526	0.31	2.9	2	4	1.1	412	10,826	3,055	1,115,048	Tier 4
		Auxiliary	2	2020	185	138	0.43	2.9	2	4	1.1	412	1,358	383	139,851	Tier 3
Alternative 1 No Project																
2015	Assist Tugboat	Propulsion	2	2004	2,046	1,526	0.31	2.9	2	4	1.1	412	10,826	3,055	1,115,048	Tier 1
		Auxiliary	2	2007	185	138	0.43	2.9	2	4	1.1	412	1,358	383	139,851	Tier 2
2016	Assist Tugboat	Propulsion	2	2004	2,046	1,526	0.31	2.9	2	4	1.1	412	10,826	3,055	1,115,048	Tier 1
		Auxiliary	2	2007	185	138	0.43	2.9	2	4	1.1	412	1,358	383	139,851	Tier 2
2017	Assist Tugboat	Propulsion	2	2004	2,046	1,526	0.31	2.9	2	4	1.1	412	10,826	3,055	1,115,048	Tier 1
		Auxiliary	2	2007	185	138	0.43	2.9	2	4	1.1	412	1,358	383	139,851	Tier 2
2020	Assist Tugboat	Propulsion	2	2017	2,046	1,526	0.31	2.9	2	4	1.1	412	10,826	3,055	1,115,048	Tier 4
		Auxiliary	2	2007	185	138	0.43	2.9	2	4	1.1	412	1,358	383	139,851	Tier 2
2026	Assist Tugboat	Propulsion	2	2017	2,046	1,526	0.31	2.9	2	4	1.1	412	10,826	3,055	1,115,048	Tier 4
		Auxiliary	2	2020	185	138	0.43	2.9	2	4	1.1	412	1,358	383	139,851	Tier 3
Alternative 2 No Federal Action = NEPA Baseline																
2015	Assist Tugboat	Propulsion	2	2004	2,046	1,526	0.31	2.9	2	4	1.1	412	10,826	3,055	1,115,048	Tier 1
		Auxiliary	2	2007	185	138	0.43	2.9	2	4	1.1	412	1,358	383	139,851	Tier 2
2016	Assist Tugboat	Propulsion	2	2004	2,046	1,526	0.31	2.9	2	4	1.1	412	10,826	3,055	1,115,048	Tier 1
		Auxiliary	2	2007	185	138	0.43	2.9	2	4	1.1	412	1,358	383	139,851	Tier 2
2017	Assist Tugboat	Propulsion	2	2004	2,046	1,526	0.31	2.9	2	4	1.1	412	10,826	3,055	1,115,048	Tier 1
		Auxiliary	2	2007	185	138	0.43	2.9	2	4	1.1	412	1,358	383	139,851	Tier 2
2020	Assist Tugboat	Propulsion	2	2017	2,046	1,526	0.31	2.9	2	4	1.1	412	10,826	3,055	1,115,048	Tier 4
		Auxiliary	2	2007	185	138	0.43	2.9	2	4	1.1	412	1,358	383	139,851	Tier 2
2026	Assist Tugboat	Propulsion	2	2017	2,046	1,526	0.31	2.9	2	4	1.1	412	10,826	3,055	1,115,048	Tier 4
		Auxiliary	2	2020	185	138	0.43	2.9	2	4	1.1	412	1,358	383	139,851	Tier 3

Table B1.37 Harbor Craft Data, Operations

			HC Characteristics							OGV Activity			HC Energy Demand			
Year	HC Classification	Engine Typ	Engine Count per HC	HC Average MY	HC Average HP	HC Average kW	Load Factor	HC Activity per HC (hr/trip)	HC Count per OGV	Peak Day OGV Transit (one-way trips/day)	Average Day OGV Transits (one-way trips/day)	Average Annual OGV Transits (one-way trips/yr)	Peak Day HC Energy Demand (kW-hr/day)	Average Day HC Energy Demand (kW-hr/day)	Annual HC Energy Demand (kW-hr/yr)	Engine Tier
Alternative 3 Reduced Project																
2015	Assist Tugboat	Propulsion	2	2004	2,046	1,526	0.31	2.9	2	4	1.1	412	10,826	3,055	1,115,048	Tier 1
		Auxiliary	2	2007	185	138	0.43	2.9	2	4	1.1	412	1,358	383	139,851	Tier 2
2016	Assist Tugboat	Propulsion	2	2004	2,046	1,526	0.31	2.9	2	4	1.1	412	10,826	3,055	1,115,048	Tier 1
		Auxiliary	2	2007	185	138	0.43	2.9	2	4	1.1	412	1,358	383	139,851	Tier 2
2017	Assist Tugboat	Propulsion	2	2004	2,046	1,526	0.31	2.9	2	4	1.1	412	10,826	3,055	1,115,048	Tier 1
		Auxiliary	2	2007	185	138	0.43	2.9	2	4	1.1	412	1,358	383	139,851	Tier 2
2020	Assist Tugboat	Propulsion	2	2017	2,046	1,526	0.31	2.9	2	5	1.3	464	13,532	3,440	1,255,782	Tier 4
		Auxiliary	2	2007	185	138	0.43	2.9	2	5	1.3	464	1,697	432	157,502	Tier 2
2026	Assist Tugboat	Propulsion	2	2017	2,046	1,526	0.31	2.9	2	5	1.3	464	13,532	3,440	1,255,782	Tier 4
		Auxiliary	2	2020	185	138	0.43	2.9	2	5	1.3	464	1,697	432	157,502	Tier 3

Notes and Source:
Applicable engine Tier is identified based on the EPA requirements for new engines and ARB harbor craft compliance schedule and average model year.
Example:

2004 MY engine (Tier 1 per EPA standards) would have to be replaced at the end of 2017, based on ARB's compliance schedule. At that time, the engine will need to be replaced with the relevant Tier engine applicable at the time (Tier 4).
Emission Factors:
EPA emission standards, which are reported as NOx+THC, were convered by Nox and HC assuming 95% and 5% are Nox and HC, respectively, per Carl Moyer Program guidelines.
SOx emission factor is based on 15 ppm fuel sulfur content.

PM2.5 is 89% of PM10, per SCAQMD 2006 Final Methodology to Calculate PM2.5 and PM 2.5 Significance Thresholds, Table 5.

CO2 and N20 emission factors are from IVL: Methodology for Calculating Emissions from Ships: Update on Emission Factors, 2004, also summarized in POLA 2009 Emissions Inventory, Appendix B. CH4 is 2% of HC, per IVL study.
There are no mitigation measures for operational HC. HC controls are implemented Port-wide via CAAP measures.
Information provided by Starcrest

Table B1.38 HC Activity, Operations

Hours required to assist OGV from pilot station to berth	1.43
Operating hours/day	16

Notes:
Assumed to equal the average of OGV transit times in Zone 1 (harbor transit) times 1.3 to account for tug movement and assist time (2011 APL EIR/EIS, Appendix E, Table 1.3-221).

Load factors and emission factors for harbor craft used in operations are the same as for those used in construction. See construction tables.

Information provided by Starcrest
Information provided by YTI

Table B1.39 Cargo Handling Equipment Activity and Emission Factors

Year	Equipment Type	Engine Characteristics: Average MY	Power (kW)	Power (hp)	Electric/Diesel	Load Factor	Location	Activity: Peak Day (hr/day)	Average Annual (hr/yr)	Peak Day Work (kw-hr/day)	Average Annual Work (kw-hr/yr)	Emission Factors: PM10 (g/kW-hr)	PM2.5 (g/kW-hr)	DPM (g/kW-hr)	NOX (g/kW-hr)	SOX (g/kW-hr)	CO (g/kW-hr)	VOC (g/kW-hr)	CO2 (g/kW-hr)	CH4 (g/kW-hr)	N2O (g/kW-hr)
Baseline																					
2012	Electric Wharf Crane	1997			electric		YTI														
	Forklift (diesel)	2006	142	191	diesel	0.30	YTI	80	5,637	3,420	240,955	0.14	0.13	0.14	6.45	0.01	1.64	0.40	761.40	0.01	0.01
	Rub-trd Gantry Crane	2005	336	451	diesel	0.20	YTI	96	21,704	6,460	1,460,425	0.10	0.09	0.10	5.06	0.01	1.57	0.38	761.40	0.01	0.01
	Sweeper	2008	179	240	diesel	0.68	YTI	6	2,086	696	253,873	0.28	0.26	0.28	6.87	0.01	2.49	0.53	718.02	0.04	0.02
	Top handler (terminal)	2005	237	318	diesel	0.59	YTI	288	50,629	40,309	7,086,169	0.08	0.07	0.08	5.62	0.01	1.63	0.41	761.40	0.01	0.01
	Top handler (TICTF)	2005	237	318	diesel	0.59	TICTF	32	6,777	4,479	948,527	0.08	0.07	0.08	5.62	0.01	1.63	0.41	761.40	0.01	0.01
	Yard tractor (terminal)	2005	150	201	diesel	0.39	YTI	1,280	171,929	74,852	10,054,091	0.05	0.05	0.05	1.82	0.01	1.53	0.15	761.40	0.00	0.01
	Yard tractor (TICTF)	2005	150	201	diesel	0.39	TICTF	128	21,758	7,485	1,272,368	0.05	0.05	0.05	1.82	0.01	1.53	0.15	761.40	0.00	0.01
										gal/day	gal/yr	(lb/1000 gal)	(lb/1000 gal)	(lb/1000 gal)	(lb/1000 gal)	(lb/1000 gal)	(lb/1000 gal)	(lb/1000 gal)	g/gal		
	Forklift (propane)		43	58	propane	0.30	YTI			6	1,726	5.00	5.00		139.00	0.35	129.00	83.00	5590		
Total 2012 Baseline																					
Proposed Project																					
2015	Electric Wharf Crane	1997			electric		YTI														
	Forklift (diesel)	2006	142	191	diesel	0.30	YTI	99	6,961	4,223	297,563	0.08	0.07	0.08	3.62	0.01	1.46	0.26	761.40	0.00	0.01
	Rub-trd Gantry Crane	2005	336	451	diesel	0.20	YTI	119	26,803	7,977	1,803,525	0.03	0.02	0.03	2.90	0.01	1.49	0.29	761.40	0.01	0.01
	Sweeper	2008	179	240	diesel	0.68	YTI	6	2,086	696	253,873	0.28	0.26	0.28	6.87	0.01	2.49	0.53	718.02	0.04	0.02
	Top handler (terminal)	2005	237	318	diesel	0.59	YTI	356	62,523	49,779	8,750,930	0.03	0.03	0.03	3.31	0.01	1.61	0.35	761.40	0.01	0.01
	Top handler (TICTF)	2005	237	318	diesel	0.59	TICTF	40	8,369	5,531	1,171,365	0.03	0.03	0.03	3.31	0.01	1.61	0.35	761.40	0.01	0.01
	Yard tractor (terminal)	2005	150	201	diesel	0.39	YTI	1,581	212,320	92,437	12,416,110	0.02	0.01	0.02	0.63	0.01	1.50	0.10	761.40	0.00	0.01
	Yard tractor (TICTF)	2005	150	201	diesel	0.39	TICTF	158	26,870	9,244	1,571,286	0.02	0.01	0.02	0.63	0.01	1.50	0.10	761.40	0.00	0.01
										ga/day	gal/yr								g/gal	(g/kW-hr)	(g/kW-hr)
	Forklift (propane)		43	58	propane	0.30	YTI			7	2,131	5.00	5.00	0.00	139.00	0.35	129.00	83.00	5590	0.02	0.00
2016	Electric Wharf Crane	1997			electric		YTI														
	Forklift (diesel)	2006	142	191	diesel	0.30	YTI	102	7,175	4,352	306,680	0.05	0.05	0.05	2.73	0.01	1.43	0.22	761.40	0.00	0.01
	Rub-trd Gantry Crane	2005	336	451	diesel	0.20	YTI	122	27,624	8,222	1,858,783	0.02	0.02	0.02	2.66	0.01	1.49	0.30	761.40	0.01	0.01
	Sweeper	2008	179	240	diesel	0.68	YTI	6	2,086	696	253,873	0.28	0.26	0.28	6.87	0.01	2.49	0.53	718.02	0.04	0.02
	Top handler (terminal)	2005	237	318	diesel	0.59	YTI	367	64,439	51,304	9,019,051	0.03	0.02	0.03	2.95	0.01	1.61	0.34	761.40	0.01	0.01
	Top handler (TICTF)	2005	237	318	diesel	0.59	TICTF	41	8,626	5,700	1,207,255	0.03	0.02	0.03	2.95	0.01	1.61	0.34	761.40	0.01	0.01
	Yard tractor (terminal)	2005	150	201	diesel	0.39	YTI	1,629	218,826	95,269	12,796,529	0.01	0.01	0.01	0.46	0.01	1.51	0.09	761.40	0.00	0.01
	Yard tractor (TICTF)	2005	150	201	diesel	0.39	TICTF	163	27,693	9,527	1,619,429	0.01	0.01	0.01	0.46	0.01	1.51	0.09	761.40	0.00	0.01
										ga/day	gal/yr								g/gal	(g/kW-hr)	(g/kW-hr)
	Forklift (propane)		43	58	propane	0.30	YTI			7	2,197	5.00	5.00	0.00	139.00	0.35	129.00	83.00	5590	0.02	0.00
2017	Electric Wharf Crane	1997			electric		YTI														
	Forklift (diesel)	2006	142	191	diesel	0.30	YTI	111	7,811	4,738	333,878	0.03	0.03	0.03	1.85	0.01	1.40	0.18	761.40	0.00	0.01
	Rub-trd Gantry Crane	2005	336	451	diesel	0.20	YTI	133	30,074	8,951	2,023,630	0.02	0.02	0.02	2.35	0.01	1.49	0.29	761.40	0.01	0.01
	Sweeper	2008	179	240	diesel	0.68	YTI	6	2,086	696	253,873	0.28	0.26	0.28	6.87	0.01	2.49	0.53	718.02	0.04	0.02
	Top handler (terminal)	2005	237	318	diesel	0.59	YTI	399	70,154	55,854	9,818,911	0.03	0.02	0.03	2.55	0.01	1.60	0.32	761.40	0.01	0.01
	Top handler (TICTF)	2005	237	318	diesel	0.59	TICTF	44	9,391	6,206	1,314,321	0.03	0.02	0.03	2.55	0.01	1.60	0.32	761.40	0.01	0.01
	Yard tractor (terminal)	2005	150	201	diesel	0.39	YTI	1,774	238,232	103,718	13,931,396	0.01	0.01	0.01	0.34	0.01	1.51	0.08	761.40	0.00	0.01

Table B1.39 Cargo Handling Equipment Activity and Emission Factors

		Engine Characteristics						Activity				Emission Factors									
Year	Equipment Type	Average MY	Power	Power	Electric/Diesel	Load Factor	Location	Peak Day	Average Annual	Peak Day Work	Average Annual Work	PM10	PM2.5	DPM	NOX	SOX	CO	VOC	CO2	CH4	N2O
	Yard tractor (TICTF)	2005	150	201	diesel	0.39	TICTF	177	30,149	10,372	1,763,049	0.01	0.01	0.01	0.34	0.01	1.51	0.08	761.40	0.00	0.01
										ga/day	gal/yr								g/gal	(g/kW-hr)	(g/kW-hr)
	Forklift (propane)		43	58	propane	0.30	YTI			8	2,392	5.00	5.00	0.00	139.00	0.35	129.00	83.00	5590	0.02	0.00
2020	Electric Wharf Crane	1997			electric		YTI														
	Forklift (diesel)	2006	142	191	diesel	0.30	YTI	128	9,033	5,480	386,103	0.02	0.02	0.02	1.24	0.01	1.39	0.16	761.40	0.00	0.01
	Rub-trd Gantry Crane	2005	336	451	diesel	0.20	YTI	154	34,778	10,351	2,340,168	0.02	0.02	0.02	1.69	0.01	1.49	0.27	761.40	0.01	0.01
	Sweeper	2008	179	240	diesel	0.68	YTI	6	2,086	696	253,873	0.28	0.26	0.28	6.87	0.01	2.49	0.53	718.02	0.04	0.02
	Top handler (terminal)	2005	237	318	diesel	0.59	YTI	461	81,127	64,591	11,354,791	0.02	0.02	0.02	1.75	0.01	1.58	0.28	761.40	0.01	0.01
	Top handler (TICTF)	2005	237	318	diesel	0.59	TICTF	51	10,859	7,177	1,519,908	0.02	0.02	0.02	1.75	0.01	1.58	0.28	761.40	0.01	0.01
	Yard tractor (terminal)	2005	150	201	diesel	0.39	YTI	2,051	275,497	119,942	16,110,554	0.01	0.01	0.01	0.28	0.01	1.54	0.07	761.40	0.00	0.01
	Yard tractor (TICTF)	2005	150	201	diesel	0.39	TICTF	205	34,865	11,994	2,038,827	0.01	0.01	0.01	0.28	0.01	1.54	0.07	761.40	0.00	0.01
										ga/day	gal/yr								g/gal	(g/kW-hr)	(g/kW-hr)
	Forklift (propane)		43	58	propane	0.30	YTI			9	2,766	5.00	5.00	0.00	139.00	0.35	129.00	83.00	5590	0.02	0.00
2026	Electric Wharf Crane	1997			electric		YTI														
	Forklift (diesel)	2006	142	191	diesel	0.30	YTI	154	10,826	6,567	462,747	0.02	0.02	0.02	0.89	0.01	1.41	0.17	761.40	0.00	0.01
	Rub-trd Gantry Crane	2005	336	451	diesel	0.20	YTI	184	41,682	12,406	2,804,707	0.02	0.02	0.02	0.79	0.01	1.44	0.20	761.40	0.00	0.01
	Sweeper	2008	179	240	diesel	0.68	YTI	6	2,086	696	253,873	0.28	0.26	0.28	6.87	0.01	2.49	0.53	718.02	0.04	0.02
	Top handler (terminal)	2005	237	318	diesel	0.59	YTI	553	97,232	77,413	13,608,793	0.02	0.02	0.02	0.79	0.01	1.53	0.21	761.40	0.00	0.01
	Top handler (TICTF)	2005	237	318	diesel	0.59	TICTF	61	13,015	8,601	1,821,620	0.02	0.02	0.02	0.79	0.01	1.53	0.21	761.40	0.00	0.01
	Yard tractor (terminal)	2005	150	201	diesel	0.39	YTI	2,458	330,185	143,751	19,308,606	0.01	0.01	0.01	0.26	0.01	1.52	0.06	761.40	0.00	0.01
	Yard tractor (TICTF)	2005	150	201	diesel	0.39	TICTF	246	41,786	14,375	2,443,547	0.01	0.01	0.01	0.26	0.01	1.52	0.06	761.40	0.00	0.01
										ga/day	gal/yr								g/gal	(g/kW-hr)	(g/kW-hr)
	Forklift (propane)		43	58	propane	0.30	YTI			11	3,315	5.00	5.00	0.00	139.00	0.35	129.00	83.00	5590	0.02	0.00
Alternative 1 No Project																					
2015	Electric Wharf Crane	1997			electric		YTI	158													
	Forklift (diesel)	2006	142	191	diesel	0.30	YTI	99	6,961	4,223	297,563	0.08	0.07	0.08	3.62	0.01	1.46	0.26	761.40	0.00	0.01
	Rub-trd Gantry Crane	2005	336	451	diesel	0.20	YTI	119	26,803	7,977	1,803,525	0.03	0.02	0.03	2.90	0.01	1.49	0.29	761.40	0.01	0.01
	Sweeper	2008	179	240	diesel	0.68	YTI	6	2,086	696	253,873	0.28	0.26	0.28	6.87	0.01	2.49	0.53	718.02	0.04	0.02
	Top handler (terminal)	2005	237	318	diesel	0.59	YTI	356	62,523	49,779	8,750,930	0.03	0.03	0.03	3.31	0.01	1.61	0.35	761.40	0.01	0.01
	Top handler (TICTF)	2005	237	318	diesel	0.59	TICTF	40	8,369	5,531	1,171,365	0.03	0.03	0.03	3.31	0.01	1.61	0.35	761.40	0.01	0.01
	Yard tractor (terminal)	2005	150	201	diesel	0.39	YTI	1,581	212,320	92,437	12,416,110	0.02	0.01	0.02	0.63	0.01	1.50	0.10	761.40	0.00	0.01
	Yard tractor (TICTF)	2005	150	201	diesel	0.39	TICTF	158	26,870	9,244	1,571,286	0.02	0.01	0.02	0.63	0.01	1.50	0.10	761.40	0.00	0.01
										ga/day	gal/yr								g/gal	(g/kW-hr)	(g/kW-hr)
	Forklift (propane)		43	58	propane	0.30	YTI			7	2,131	5.00	5.00	0.00	139.00	0.35	129.00	83.00	5590	0.02	0.00
2016	Electric Wharf Crane	1997			electric		YTI														
	Forklift (diesel)	2006	142	191	diesel	0.30	YTI	102	7,175	4,352	306,680	0.05	0.05	0.05	2.73	0.01	1.43	0.22	761.40	0.00	0.01
	Rub-trd Gantry Crane	2005	336	451	diesel	0.20	YTI	122	27,624	8,222	1,858,783	0.02	0.02	0.02	2.66	0.01	1.49	0.30	761.40	0.01	0.01
	Sweeper	2008	179	240	diesel	0.68	YTI	6	2,086	696	253,873	0.28	0.26	0.28	6.87	0.01	2.49	0.53	718.02	0.04	0.02
	Top handler (terminal)	2005	237	318	diesel	0.59	YTI	367	64,439	51,304	9,019,051	0.03	0.02	0.03	2.95	0.01	1.61	0.34	761.40	0.01	0.01
	Top handler (TICTF)	2005	237	318	diesel	0.59	TICTF	41	8,626	5,700	1,207,255	0.03	0.02	0.03	2.95	0.01	1.61	0.34	761.40	0.01	0.01
	Yard tractor (terminal)	2005	150	201	diesel	0.39	YTI	1,629	218,826	95,269	12,796,529	0.01	0.01	0.01	0.46	0.01	1.51	0.09	761.40	0.00	0.01
	Yard tractor (TICTF)	2005	150	201	diesel	0.39	TICTF	163	27,693	9,527	1,619,429	0.01	0.01	0.01	0.46	0.01	1.51	0.09	761.40	0.00	0.01
										ga/day	gal/yr								g/gal	(g/kW-hr)	(g/kW-hr)
	Forklift (propane)		43	58	propane	0.30	YTI			7	2,197	5.00	5.00	0.00	139.00	0.35	129.00	83.00	5590	0.02	0.00

Table B1.39 Cargo Handling Equipment Activity and Emission Factors

Year	Equipment Type	Engine Characteristics: Average MY	Power	Power	Electric/Diesel	Load Factor	Location	Activity: Peak Day	Average Annual	Peak Day Work	Average Annual Work	Emission Factors: PM10	PM2.5	DPM	NOX	SOX	CO	VOC	CO2	CH4	N2O
2017	Electric Wharf Crane	1997			electric		YTI														
	Forklift (diesel)	2006	142	191	diesel	0.30	YTI	105	7,394	4,486	316,064	0.03	0.03	0.03	1.85	0.01	1.40	0.18	761.40	0.00	0.01
	Rub-trd Gantry Crane	2005	336	451	diesel	0.20	YTI	126	28,469	8,473	1,915,661	0.02	0.02	0.02	2.35	0.01	1.49	0.29	761.40	0.01	0.01
	Sweeper	2008	179	240	diesel	0.68	YTI	6	2,086	696	253,873	0.28	0.26	0.28	6.87	0.01	2.49	0.53	718.02	0.04	0.02
	Top handler (terminal)	2005	237	318	diesel	0.59	YTI	378	66,411	52,874	9,295,033	0.03	0.02	0.03	2.55	0.01	1.60	0.32	761.40	0.01	0.01
	Top handler (TICTF)	2005	237	318	diesel	0.59	TICTF	42	8,889	5,875	1,244,197	0.03	0.02	0.03	2.55	0.01	1.60	0.32	761.40	0.01	0.01
	Yard tractor (terminal)	2005	150	201	diesel	0.39	YTI	1,679	225,522	98,185	13,188,101	0.01	0.01	0.01	0.34	0.01	1.51	0.08	761.40	0.00	0.01
	Yard tractor (TICTF)	2005	150	201	diesel	0.39	TICTF	168	28,540	9,818	1,668,984	0.01	0.01	0.01	0.34	0.01	1.51	0.08	761.40	0.00	0.01
										ga/day	gal/yr								g/gal	(g/kW-hr)	(g/kW-hr)
	Forklift (propane)		43	58	propane	0.30	YTI			7	2,264	5.00	5.00	0.00	139.00	0.35	129.00	83.00	5590	0.02	0.00
2020	Electric Wharf Crane	1997			electric		YTI														
	Forklift (diesel)	2006	142	191	diesel	0.30	YTI	115	8,095	4,910	346,002	0.02	0.02	0.02	1.24	0.01	1.39	0.16	761.40	0.00	0.01
	Rub-trd Gantry Crane	2005	336	451	diesel	0.20	YTI	138	31,166	9,276	2,097,117	0.02	0.02	0.02	1.69	0.01	1.49	0.27	761.40	0.01	0.01
	Sweeper	2008	179	240	diesel	0.68	YTI	6	2,086	696	253,873	0.28	0.26	0.28	6.87	0.01	2.49	0.53	718.02	0.04	0.02
	Top handler (terminal)	2005	237	318	diesel	0.59	YTI	414	72,701	57,883	10,175,478	0.02	0.02	0.02	1.75	0.01	1.58	0.28	761.40	0.01	0.01
	Top handler (TICTF)	2005	237	318	diesel	0.59	TICTF	46	9,732	6,431	1,362,050	0.02	0.02	0.02	1.75	0.01	1.58	0.28	761.40	0.01	0.01
	Yard tractor (terminal)	2005	150	201	diesel	0.39	YTI	1,838	246,884	107,485	14,437,306	0.01	0.01	0.01	0.28	0.01	1.54	0.07	761.40	0.00	0.01
	Yard tractor (TICTF)	2005	150	201	diesel	0.39	TICTF	184	31,244	10,748	1,827,073	0.01	0.01	0.01	0.28	0.01	1.54	0.07	761.40	0.00	0.01
										ga/day	gal/yr								g/gal	(g/kW-hr)	(g/kW-hr)
	Forklift (propane)		43	58	propane	0.30	YTI			8	2,478	5.00	5.00	0.00	139.00	0.35	129.00	83.00	5590	0.02	0.00
2026	Electric Wharf Crane	1997			electric		YTI														
	Forklift (diesel)	2006	142	191	diesel	0.30	YTI	136	9,575	5,809	409,288	0.02	0.02	0.02	0.89	0.01	1.41	0.17	761.40	0.00	0.01
	Rub-trd Gantry Crane	2005	336	451	diesel	0.20	YTI	163	36,867	10,972	2,480,692	0.02	0.02	0.02	0.79	0.01	1.44	0.20	761.40	0.00	0.01
	Sweeper	2008	179	240	diesel	0.68	YTI	6	2,086	696	253,873	0.28	0.26	0.28	6.87	0.01	2.49	0.53	718.02	0.04	0.02
	Top handler (terminal)	2005	237	318	diesel	0.59	YTI	489	85,999	68,470	12,036,632	0.02	0.02	0.02	0.79	0.01	1.53	0.21	761.40	0.00	0.01
	Top handler (TICTF)	2005	237	318	diesel	0.59	TICTF	54	11,511	7,608	1,611,176	0.02	0.02	0.02	0.79	0.01	1.53	0.21	761.40	0.00	0.01
	Yard tractor (terminal)	2005	150	201	diesel	0.39	YTI	2,174	292,040	127,144	17,077,972	0.01	0.01	0.01	0.26	0.01	1.52	0.06	761.40	0.00	0.01
	Yard tractor (TICTF)	2005	150	201	diesel	0.39	TICTF	217	36,958	12,714	2,161,256	0.01	0.01	0.01	0.26	0.01	1.52	0.06	761.40	0.00	0.01
										ga/day	gal/yr								g/gal	(g/kW-hr)	(g/kW-hr)
	Forklift (propane)		43	58	propane	0.30	YTI			9	2,932	5.00	5.00	0.00	139.00	0.35	129.00	83.00	5590	0.02	0.00
Alternative 2 No Federal Action																					
2015	Electric Wharf Crane	1997			electric		YTI														
	Forklift (diesel)	2006	142	191	diesel	0.30	YTI	99	6,961	4,223	297,563	0.08	0.07	0.08	3.62	0.01	1.46	0.26	761.40	0.00	0.01
	Rub-trd Gantry Crane	2005	336	451	diesel	0.20	YTI	119	26,803	7,977	1,803,525	0.03	0.02	0.03	2.90	0.01	1.49	0.29	761.40	0.01	0.01
	Sweeper	2008	179	240	diesel	0.68	YTI	6	2,086	696	253,873	0.28	0.26	0.28	6.87	0.01	2.49	0.53	718.02	0.04	0.02
	Top handler (terminal)	2005	237	318	diesel	0.59	YTI	356	62,523	49,779	8,750,930	0.03	0.03	0.03	3.31	0.01	1.61	0.35	761.40	0.01	0.01
	Top handler (TICTF)	2005	237	318	diesel	0.59	TICTF	40	8,369	5,531	1,171,365	0.03	0.03	0.03	3.31	0.01	1.61	0.35	761.40	0.01	0.01
	Yard tractor (terminal)	2005	150	201	diesel	0.39	YTI	1,581	212,320	92,437	12,416,110	0.02	0.01	0.02	0.63	0.01	1.50	0.10	761.40	0.00	0.01
	Yard tractor (TICTF)	2005	150	201	diesel	0.39	TICTF	158	26,870	9,244	1,571,286	0.02	0.01	0.02	0.63	0.01	1.50	0.10	761.40	0.00	0.01
										ga/day	gal/yr								g/gal	(g/kW-hr)	(g/kW-hr)
	Forklift (propane)		43	58	propane	0.30	YTI			7	2,131	5.00	5.00	0.00	139.00	0.35	129.00	83.00	5590	0.02	0.00

Table B1.39 Cargo Handling Equipment Activity and Emission Factors

		Engine Characteristics						Activity				Emission Factors									
Year	Equipment Type	Average MY	Power	Power	Electric/Diesel	Load Factor	Location	Peak Day	Average Annual	Peak Day Work	Average Annual Work	PM10	PM2.5	DPM	NOX	SOX	CO	VOC	CO2	CH4	N2O
2016	Electric Wharf Crane	1997			electric		YTI														
	Forklift (diesel)	2006	142	191	diesel	0.30	YTI	102	7,175	4,352	306,680	0.05	0.05	0.05	2.73	0.01	1.43	0.22	761.40	0.00	0.01
	Rub-trd Gantry Crane	2005	336	451	diesel	0.20	YTI	122	27,624	8,222	1,858,783	0.02	0.02	0.02	2.66	0.01	1.49	0.30	761.40	0.01	0.01
	Sweeper	2008	179	240	diesel	0.68	YTI	6	2,086	696	253,873	0.28	0.26	0.28	6.87	0.01	2.49	0.53	718.02	0.04	0.02
	Top handler (terminal)	2005	237	318	diesel	0.59	YTI	367	64,439	51,304	9,019,051	0.03	0.02	0.03	2.95	0.01	1.61	0.34	761.40	0.01	0.01
	Top handler (TICTF)	2005	237	318	diesel	0.59	TICTF	41	8,626	5,700	1,207,255	0.03	0.02	0.03	2.95	0.01	1.61	0.34	761.40	0.01	0.01
	Yard tractor (terminal)	2005	150	201	diesel	0.39	YTI	1,629	218,826	95,269	12,796,529	0.01	0.01	0.01	0.46	0.01	1.51	0.09	761.40	0.00	0.01
	Yard tractor (TICTF)	2005	150	201	diesel	0.39	TICTF	163	27,693	9,527	1,619,429	0.01	0.01	0.01	0.46	0.01	1.51	0.09	761.40	0.00	0.01
										ga/day	gal/yr								g/gal	(g/kW-hr)	(g/kW-hr)
	Forklift (propane)		43	58	propane	0.30	YTI			7	2,197	5.00	5.00	0.00	139.00	0.35	129.00	83.00	5590	0.02	0.00
2017	Electric Wharf Crane	1997			electric		YTI														
	Forklift (diesel)	2006	142	191	diesel	0.30	YTI	105	7,394	4,486	316,064	0.03	0.03	0.03	1.85	0.01	1.40	0.18	761.40	0.00	0.01
	Rub-trd Gantry Crane	2005	336	451	diesel	0.20	YTI	126	28,469	8,473	1,915,661	0.02	0.02	0.02	2.35	0.01	1.49	0.29	761.40	0.01	0.01
	Sweeper	2008	179	240	diesel	0.68	YTI	6	2,086	696	253,873	0.28	0.26	0.28	6.87	0.01	2.49	0.53	718.02	0.04	0.02
	Top handler (terminal)	2005	237	318	diesel	0.59	YTI	378	66,411	52,874	9,295,033	0.03	0.02	0.03	2.55	0.01	1.60	0.32	761.40	0.01	0.01
	Top handler (TICTF)	2005	237	318	diesel	0.59	TICTF	42	8,889	5,875	1,244,197	0.03	0.02	0.03	2.55	0.01	1.60	0.32	761.40	0.01	0.01
	Yard tractor (terminal)	2005	150	201	diesel	0.39	YTI	1,679	225,522	98,185	13,188,101	0.01	0.01	0.01	0.34	0.01	1.51	0.08	761.40	0.00	0.01
	Yard tractor (TICTF)	2005	150	201	diesel	0.39	TICTF	168	28,540	9,818	1,668,984	0.01	0.01	0.01	0.34	0.01	1.51	0.08	761.40	0.00	0.01
										ga/day	gal/yr								g/gal	(g/kW-hr)	(g/kW-hr)
	Forklift (propane)		43	58	propane	0.30	YTI			7	2,264	5.00	5.00	0.00	139.00	0.35	129.00	83.00	5590	0.02	0.00
2020	Electric Wharf Crane	1997			electric		YTI														
	Forklift (diesel)	2006	142	191	diesel	0.30	YTI	115	8,095	4,910	346,002	0.02	0.02	0.02	1.24	0.01	1.39	0.16	761.40	0.00	0.01
	Rub-trd Gantry Crane	2005	336	451	diesel	0.20	YTI	138	31,166	9,276	2,097,117	0.02	0.02	0.02	1.69	0.01	1.49	0.27	761.40	0.01	0.01
	Sweeper	2008	179	240	diesel	0.68	YTI	6	2,086	696	253,873	0.28	0.26	0.28	6.87	0.01	2.49	0.53	718.02	0.04	0.02
	Top handler (terminal)	2005	237	318	diesel	0.59	YTI	414	72,701	57,883	10,175,478	0.02	0.02	0.02	1.75	0.01	1.58	0.28	761.40	0.01	0.01
	Top handler (TICTF)	2005	237	318	diesel	0.59	TICTF	46	9,732	6,431	1,362,050	0.02	0.02	0.02	1.75	0.01	1.58	0.28	761.40	0.01	0.01
	Yard tractor (terminal)	2005	150	201	diesel	0.39	YTI	1,838	246,884	107,485	14,437,306	0.01	0.01	0.01	0.28	0.01	1.54	0.07	761.40	0.00	0.01
	Yard tractor (TICTF)	2005	150	201	diesel	0.39	TICTF	184	31,244	10,748	1,827,073	0.01	0.01	0.01	0.28	0.01	1.54	0.07	761.40	0.00	0.01
										ga/day	gal/yr								g/gal	(g/kW-hr)	(g/kW-hr)
	Forklift (propane)		43	58	propane	0.30	YTI			8	2,478	5.00	5.00	0.00	139.00	0.35	129.00	83.00	5590	0.02	0.00
2026	Electric Wharf Crane	1997			electric		YTI														
	Forklift (diesel)	2006	142	191	diesel	0.30	YTI	136	9,575	5,809	409,288	0.02	0.02	0.02	0.89	0.01	1.41	0.17	761.40	0.00	0.01
	Rub-trd Gantry Crane	2005	336	451	diesel	0.20	YTI	163	36,867	10,972	2,480,692	0.02	0.02	0.02	0.79	0.01	1.44	0.20	761.40	0.00	0.01
	Sweeper	2008	179	240	diesel	0.68	YTI	6	2,086	696	253,873	0.28	0.26	0.28	6.87	0.01	2.49	0.53	718.02	0.04	0.02
	Top handler (terminal)	2005	237	318	diesel	0.59	YTI	489	85,999	68,470	12,036,632	0.02	0.02	0.02	0.79	0.01	1.53	0.21	761.40	0.00	0.01
	Top handler (TICTF)	2005	237	318	diesel	0.59	TICTF	54	11,511	7,608	1,611,176	0.02	0.02	0.02	0.79	0.01	1.53	0.21	761.40	0.00	0.01
	Yard tractor (terminal)	2005	150	201	diesel	0.39	YTI	2,174	292,040	127,144	17,077,972	0.01	0.01	0.01	0.26	0.01	1.52	0.06	761.40	0.00	0.01
	Yard tractor (TICTF)	2005	150	201	diesel	0.39	TICTF	217	36,958	12,714	2,161,256	0.01	0.01	0.01	0.26	0.01	1.52	0.06	761.40	0.00	0.01
										ga/day	gal/yr								g/gal	(g/kW-hr)	(g/kW-hr)
	Forklift (propane)		43	58	propane	0.30	YTI			9	2,932	5.00	5.00	0.00	139.00	0.35	129.00	83.00	5590	0.02	0.00

Table B1.39 Cargo Handling Equipment Activity and Emission Factors

		Engine Characteristics						Activity				Emission Factors									
Year	Equipment Type	Average MY	Power	Power	Electric/Diesel	Load Factor	Location	Peak Day	Average Annual	Peak Day Work	Average Annual Work	PM10	PM2.5	DPM	NOX	SOX	CO	VOC	CO2	CH4	N2O
Alternative 3 Reduced Project																					
2015	Electric Wharf Crane	1997			electric		YTI														
	Forklift (diesel)	2006	142	191	diesel	0.30	YTI	99	6,961	4,223	297,563	0.08	0.07	0.08	3.62	0.01	1.46	0.26	761.40	0.00	0.01
	Rub-trd Gantry Crane	2005	336	451	diesel	0.20	YTI	119	26,803	7,977	1,803,525	0.03	0.02	0.03	2.90	0.01	1.49	0.29	761.40	0.01	0.01
	Sweeper	2008	179	240	diesel	0.68	YTI	6	2,086	696	253,873	0.28	0.26	0.28	6.87	0.01	2.49	0.53	718.02	0.04	0.02
	Top handler (terminal)	2005	237	318	diesel	0.59	YTI	356	62,523	49,779	8,750,930	0.03	0.03	0.03	3.31	0.01	1.61	0.35	761.40	0.01	0.01
	Top handler (TICTF)	2005	237	318	diesel	0.59	TICTF	40	8,369	5,531	1,171,365	0.03	0.03	0.03	3.31	0.01	1.61	0.35	761.40	0.01	0.01
	Yard tractor (terminal)	2005	150	201	diesel	0.39	YTI	1,581	212,320	92,437	12,416,110	0.02	0.01	0.02	0.63	0.01	1.50	0.10	761.40	0.00	0.01
	Yard tractor (TICTF)	2005	150	201	diesel	0.39	TICTF	158	26,870	9,244	1,571,286	0.02	0.01	0.02	0.63	0.01	1.50	0.10	761.40	0.00	0.01
										ga/day	gal/yr								g/gal	(g/kW-hr)	(g/kW-hr)
	Forklift (propane)		43	58	propane	0.30	YTI			7	2,131	5.00	5.00	0.00	139.00	0.35	129.00	83.00	5590	0.02	0.00
2016	Electric Wharf Crane	1997			electric		YTI														
	Forklift (diesel)	2006	142	191	diesel	0.30	YTI	102	7,175	4,352	306,680	0.05	0.05	0.05	2.73	0.01	1.43	0.22	761.40	0.00	0.01
	Rub-trd Gantry Crane	2005	336	451	diesel	0.20	YTI	122	27,624	8,222	1,858,783	0.02	0.02	0.02	2.66	0.01	1.49	0.30	761.40	0.01	0.01
	Sweeper	2008	179	240	diesel	0.68	YTI	6	2,086	696	253,873	0.28	0.26	0.28	6.87	0.01	2.49	0.53	718.02	0.04	0.02
	Top handler (terminal)	2005	237	318	diesel	0.59	YTI	367	64,439	51,304	9,019,051	0.03	0.02	0.03	2.95	0.01	1.61	0.34	761.40	0.01	0.01
	Top handler (TICTF)	2005	237	318	diesel	0.59	TICTF	41	8,626	5,700	1,207,255	0.03	0.02	0.03	2.95	0.01	1.61	0.34	761.40	0.01	0.01
	Yard tractor (terminal)	2005	150	201	diesel	0.39	YTI	1,629	218,826	95,269	12,796,529	0.01	0.01	0.01	0.46	0.01	1.51	0.09	761.40	0.00	0.01
	Yard tractor (TICTF)	2005	150	201	diesel	0.39	TICTF	163	27,693	9,527	1,619,429	0.01	0.01	0.01	0.46	0.01	1.51	0.09	761.40	0.00	0.01
										ga/day	gal/yr								g/gal	(g/kW-hr)	(g/kW-hr)
	Forklift (propane)		43	58	propane	0.30	YTI			7	2,197	5.00	5.00	0.00	139.00	0.35	129.00	83.00	5590	0.02	0.00
2017	Electric Wharf Crane	1997			electric		YTI														
	Forklift (diesel)	2006	142	191	diesel	0.30	YTI	111	7,811	4,738	333,878	0.03	0.03	0.03	1.85	0.01	1.40	0.18	761.40	0.00	0.01
	Rub-trd Gantry Crane	2005	336	451	diesel	0.20	YTI	133	30,074	8,951	2,023,630	0.02	0.02	0.02	2.35	0.01	1.49	0.29	761.40	0.01	0.01
	Sweeper	2008	179	240	diesel	0.68	YTI	6	2,086	696	253,873	0.28	0.26	0.28	6.87	0.01	2.49	0.53	718.02	0.04	0.02
	Top handler (terminal)	2005	237	318	diesel	0.59	YTI	399	70,154	55,854	9,818,911	0.03	0.02	0.03	2.55	0.01	1.60	0.32	761.40	0.01	0.01
	Top handler (TICTF)	2005	237	318	diesel	0.59	TICTF	44	9,391	6,206	1,314,321	0.03	0.02	0.03	2.55	0.01	1.60	0.32	761.40	0.01	0.01
	Yard tractor (terminal)	2005	150	201	diesel	0.39	YTI	1,774	238,232	103,718	13,931,396	0.01	0.01	0.01	0.34	0.01	1.51	0.08	761.40	0.00	0.01
	Yard tractor (TICTF)	2005	150	201	diesel	0.39	TICTF	177	30,149	10,372	1,763,049	0.01	0.01	0.01	0.34	0.01	1.51	0.08	761.40	0.00	0.01
										ga/day	gal/yr								g/gal	(g/kW-hr)	(g/kW-hr)
	Forklift (propane)		43	58	propane	0.30	YTI			8	2,392	5.00	5.00	0.00	139.00	0.35	129.00	83.00	5590	0.02	0.00
2020	Electric Wharf Crane	1997			electric		YTI														
	Forklift (diesel)	2006	142	191	diesel	0.30	YTI	128	9,033	5,480	386,103	0.02	0.02	0.02	1.24	0.01	1.39	0.16	761.40	0.00	0.01
	Rub-trd Gantry Crane	2005	336	451	diesel	0.20	YTI	154	34,778	10,351	2,340,168	0.02	0.02	0.02	1.69	0.01	1.49	0.27	761.40	0.01	0.01
	Sweeper	2008	179	240	diesel	0.68	YTI	6	2,086	696	253,873	0.28	0.26	0.28	6.87	0.01	2.49	0.53	718.02	0.04	0.02
	Top handler (terminal)	2005	237	318	diesel	0.59	YTI	461	81,127	64,591	11,354,791	0.02	0.02	0.02	1.75	0.01	1.58	0.28	761.40	0.01	0.01
	Top handler (TICTF)	2005	237	318	diesel	0.59	TICTF	51	10,859	7,177	1,519,908	0.02	0.02	0.02	1.75	0.01	1.58	0.28	761.40	0.01	0.01
	Yard tractor (terminal)	2005	150	201	diesel	0.39	YTI	2,051	275,497	119,942	16,110,554	0.01	0.01	0.01	0.28	0.01	1.54	0.07	761.40	0.00	0.01
	Yard tractor (TICTF)	2005	150	201	diesel	0.39	TICTF	205	34,865	11,994	2,038,827	0.01	0.01	0.01	0.28	0.01	1.54	0.07	761.40	0.00	0.01
										ga/day	gal/yr								g/gal	(g/kW-hr)	(g/kW-hr)
	Forklift (propane)		43	58	propane	0.30	YTI			9	2,766	5.00	5.00	0.00	139.00	0.35	129.00	83.00	5590	0.02	0.00

Table B1.39 Cargo Handling Equipment Activity and Emission Factors

		Engine Characteristics						Activity				Emission Factors									
Year	Equipment Type	Average MY	Power	Power	Electric/Diesel	Load Factor	Location	Peak Day	Average Annual	Peak Day Work	Average Annual Work	PM10	PM2.5	DPM	NOX	SOX	CO	VOC	CO2	CH4	N2O
2026	Electric Wharf Crane	1997			electric		YTI														
	Forklift (diesel)	2006	142	191	diesel	0.30	YTI	154	10,826	6,567	462,747	0.02	0.02	0.02	0.89	0.01	1.41	0.17	761.40	0.00	0.01
	Rub-trd Gantry Crane	2005	336	451	diesel	0.20	YTI	184	41,682	12,406	2,804,707	0.02	0.02	0.02	0.79	0.01	1.44	0.20	761.40	0.00	0.01
	Sweeper	2008	179	240	diesel	0.68	YTI	6	2,086	696	253,873	0.28	0.26	0.28	6.87	0.01	2.49	0.53	718.02	0.04	0.02
	Top handler (terminal)	2005	237	318	diesel	0.59	YTI	553	97,232	77,413	13,608,793	0.02	0.02	0.02	0.79	0.01	1.53	0.21	761.40	0.00	0.01
	Top handler (TICTF)	2005	237	318	diesel	0.59	TICTF	61	13,015	8,601	1,821,620	0.02	0.02	0.02	0.79	0.01	1.53	0.21	761.40	0.00	0.01
	Yard tractor (terminal)	2005	150	201	diesel	0.39	YTI	2,458	330,185	143,751	19,308,606	0.01	0.01	0.01	0.26	0.01	1.52	0.06	761.40	0.00	0.01
	Yard tractor (TICTF)	2005	150	201	diesel	0.39	TICTF	246	41,786	14,375	2,443,547	0.01	0.01	0.01	0.26	0.01	1.52	0.06	761.40	0.00	0.01
										ga/day	gal/yr								g/gal	(g/kW-hr)	(g/kW-hr)
	Forklift (propane)		43	58	propane	0.30	YTI			11	3,315	5.00	5.00	0.00	139.00	0.35	129.00	83.00	5590	0.02	0.00

Notes and Source:

SOx emission factor is based on 15 ppm fuel sulfur content. OFFROAD2007 for Other Industrial Equipment.

PM2.5 is 89% of PM10, per SCAQMD 2006 Final Methodology to Calculate PM2.5 and PM 2.5 Significance Thresholds, Table 5.

CO2 and N2O emission factors for diesel equipment are from APL EIR/EIS Appendix E, Table 1.6-46, GHG Emission Factors for Diesel and LPG CHE, 2011. CH4 is 2% of HC.

Emission Factors for propane:

Criteria pollutant emission factors are from SCAQMD Annual Emission Report Guidance Document. http://www.aqmd.gov/webappl/help/aer/index.html

CO2 emission factors for propane equipment are from APL EIR/EIS Appendix E, Table 1.6-46, GHG Emission Factors for Diesel and LPG CHE, 2011.

Operating schedule: Most work is done during 2 main shifts (each 8 hours).

NO, PM, VOC, CO emission factors were obtained by running CARB's CHEI Model

Mitigation preempted by CARB regulatory requirements.

Information provided by YTI

Table B1.40 Refrigerated Containers - Genset Exhaust and Refrigerant Loss

	Genset Characteristics		Activity								Used in genset exhaust calculations.		
	Average Genset Engine Power (hp)	Load Factor	Annual TEUs	TEU Factor	Total Annual Containers	Refrigerated Containers Percent of Total Containers	Total Annual Refrigerated Containers	Percent Using Gensets	Genset Quantity (gensets/yr)	Genset Runtime (hr/genset)	Peak Day Activity Factor	Peak Daily Runtime (hr/day)	Annual Runtime (hr/yr)
Baseline													
2012	34	0.46	996,109	1.726	577,120	3.1%	17,660	25%	4,495	3.10	0.0034	47	13,935
Proposed Project													
2015	34	0.46	1,230,126	1.750	702,929	4.0%	28,047	21%	5,764	3.10	0.0035	63	17,867
2016	34	0.46	1,267,816	1.750	724,466	4.0%	28,906	21%	5,940	3.10	0.0036	66	18,414
2017	34	0.46	1,380,253	1.750	788,716	4.0%	31,470	21%	6,467	3.10	0.0036	73	20,048
2020	34	0.46	1,596,153	1.750	912,087	4.0%	36,392	21%	7,479	3.10	0.0036	85	23,183
2026	34	0.46	1,913,000	1.750	1,093,143	4.0%	43,616	21%	8,963	3.10	0.0036	101	27,786
Alternative 1 No Project													
2015	34	0.46	1,230,126	1.750	702,929	4.0%	28,047	21%	5,764	3.10	0.0035	63	17,867
2016	34	0.46	1,267,816	1.750	724,466	4.0%	28,906	21%	5,940	3.10	0.0036	66	18,414
2017	34	0.46	1,306,611	1.750	746,635	4.0%	29,791	21%	6,122	3.10	0.0036	69	18,978
2020	34	0.46	1,430,376	1.750	817,358	4.0%	32,613	21%	6,702	3.10	0.0036	76	20,776
2026	34	0.46	1,692,000	1.750	966,857	4.0%	38,578	21%	7,928	3.10	0.0036	90	24,576
Alternative 2 No Federal Action													
2015	34	0.46	1,230,126	1.750	702,929	4.0%	28,047	21%	5,764	3.10	0.0035	63	17,867
2016	34	0.46	1,267,816	1.750	724,466	4.0%	28,906	21%	5,940	3.10	0.0036	66	18,414
2017	34	0.46	1,306,611	1.750	746,635	4.0%	29,791	21%	6,122	3.10	0.0036	69	18,978
2020	34	0.46	1,430,376	1.750	817,358	4.0%	32,613	21%	6,702	3.10	0.0036	76	20,776
2026	34	0.46	1,692,000	1.750	966,857	4.0%	38,578	21%	7,928	3.10	0.0036	90	24,576
Alternative 3 Reduced Project													
2015	34	0.46	1,230,126	1.750	702,929	4.0%	28,047	21%	5,764	3.10	0.0035	63	17,867
2016	34	0.46	1,267,816	1.750	724,466	4.0%	28,906	21%	5,940	3.10	0.0036	66	18,414
2017	34	0.46	1,380,253	1.750	788,716	4.0%	31,470	21%	6,467	3.10	0.0036	73	20,048
2020	34	0.46	1,596,153	1.750	912,087	4.0%	36,392	21%	7,479	3.10	0.0036	85	23,183
2026	34	0.46	1,913,000	1.750	1,093,143	4.0%	43,616	21%	8,963	3.10	0.0036	101	27,786

Source:

1. Genset average engine power and load factors are from CARB. Airborne Toxic Control Measure for In-Use Diesel-Fueled TRU and TRU Generator Sets, and Facilities where TRUs Operate. August 2011.
   Appendix C included as an appendix to the Staff Report: Initial Statement of Reasons, Table III-1: Annual Hours of Operation, Average Engine Power and Load Factors for TRUs Eligible for ULETRU Extention
   Online: http://www.arb.ca.gov/regact/2011/tru2011/truisor.pdf
2. Genset activity information was provided by YTI.
3. YTI (Doug Hansen) - there are no TRUs (Transport Refrigeration Units with refrigeration systems powered by integral internal combustion engines). All refrigerated containers that require active refrigeration are powered by external gensets.
4. PM10 emission factor: TRU ATCM, http://www.arb.ca.gov/diesel/tru/tru.htm. Frequently Asked Questions and Guidelines for Compliance with the TRU ATCM. Tables 1 and 2. http://www.arb.ca.gov/diesel/tru/documents/faq.pdf
5. PM2.5 is 97.6% of PM10. Source: Table A, CEIDARS Table with PM2.5 Fractions (for internal combusion). SCAQMD website: http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html
6. All emission factors, except PM10, are from CalEEMod, Appendix D, Table 3.4 (based on OFFROAD2007). OFFROAD2007 was used because OFFROAD2011 does not have genset or TRU category.
   Use of OFFROAD2007 is appropriate because OFFROAD2011 updated population profiles and activity, but continued to use Offroad2007 emission factors and deterioration rates.
7. Peak day activity factor for trucks was used to estimate the peak day factor for TRUs since the gensets are used just prior to or just after truck or rail transport (most cargo would go by truck).
8. Refrigerant Loss = charge capacity (kg/container) * # containers (containers/yr) * operating emission factor (%) * dwell time onsite (days/container)
   Charge capacity was obtained from The Climate Registry General Protocol, Version 1.1. Table 16.3 Default Emission Factors for Refrigeration / Air Conditioning Equipment. 2008. 5 kg.

Operating Loss Emission Factor was obtained from United Nations Environment Programme (UNEP). Report of the Refrigeration, Air Conditioning and Heat Pumps Technical Options Committee. Table 6-5: Estimate of Approximate Refrigerant Emissions. 2010. 10% per year.

10. YTI (Doug Hansen, 7/31/2013) provided average on-site reefer dwell times: Year 2012: 3.75 days Years 2013+: 3.66 days
11. R404A refrigerant

Blen	HFC32	HFC125	HFC134a	HFC143a
R404A	na	44%	4%	52%

Table B1.40

	Used in refrigerant loss calculations.			Genset Emission Factors (g/hp-hr)									
	Refrigerant Charge (kg/container)	Operating Emission Factor (%/yr)	Dwell Time Onsite (days)	PM10	PM2.5	DPM	NOX	SOX	CO	HC	VOC	CO2	CH4
Baseline													
2012	5	10%	3.75	0.45	0.44	0.45	5.38	0.007	5.03		1.746	568.299	0.157
Proposed Project													
2015	5	10%	3.66	0.205	0.20	0.205	4.12	0.007	4.538		1.281	568.299	0.115
2016	5	10%	3.66	0.145	0.14	0.145	3.68	0.007	4.410		1.146	568.299	0.103
2017	5	10%	3.66	0.128	0.12	0.128	3.56	0.007	4.292		1.017	568.299	0.091
2020	5	10%	3.66	0.055	0.05	0.055	3.25	0.007	3.995		0.691	568.299	0.062
2026	5	10%	3.66	0.03	0.03	0.03	3.32	0.007	3.758		0.440	568.299	0.039
Alternative 1 No P													
2015	5	10%	3.66	0.205	0.20	0.205	4.12	0.007	4.538		1.281	568.299	0.115
2016	5	10%	3.66	0.145	0.14	0.145	3.68	0.007	4.41		1.146	568.299	0.103
2017	5	10%	3.66	0.128	0.12	0.128	3.56	0.007	4.292		1.017	568.299	0.091
2020	5	10%	3.66	0.055	0.05	0.055	3.25	0.007	3.995		0.691	568.299	0.062
2026	5	10%	3.66	0.03	0.03	0.03	3.32	0.007	3.758		0.44	568.299	0.039
Alternative 2 No F													
2015	5	10%	3.66	0.205	0.20	0.205	4.12	0.007	4.538		1.281	568.299	0.115
2016	5	10%	3.66	0.145	0.14	0.145	3.68	0.007	4.41		1.146	568.299	0.103
2017	5	10%	3.66	0.128	0.12	0.128	3.56	0.007	4.292		1.017	568.299	0.091
2020	5	10%	3.66	0.055	0.05	0.055	3.25	0.007	3.995		0.691	568.299	0.062
2026	5	10%	3.66	0.03	0.03	0.03	3.32	0.007	3.758		0.44	568.299	0.039
Alternative 3 Redu													
2015	5	10%	3.66	0.205	0.20	0.205	4.12	0.007	4.538		1.281	568.299	0.115
2016	5	10%	3.66	0.145	0.14	0.145	3.68	0.007	4.41		1.146	568.299	0.103
2017	5	10%	3.66	0.128	0.12	0.128	3.56	0.007	4.292		1.017	568.299	0.091
2020	5	10%	3.66	0.055	0.05	0.055	3.25	0.007	3.995		0.691	568.299	0.062
2026	5	10%	3.66	0.03	0.03	0.03	3.32	0.007	3.758		0.44	568.299	0.039

Table B1.41 Wharf Cranes Activity and Emission Factors

	Activity			Emission Factors (lb/kW-hr)		
	Annual TEUs	Electrical Energy Consumption (kW-hr)	Energy Consumption Factor (kW-hr/TEU)	CO2	CH4	N2O
Baseline						
2012	996,109	3,820,800	3.84	0.65868	0.00002894	0.00000617
Proposed Project						
2015	1,230,126	4,718,425	3.84	0.65868	0.00002894	0.00000617
2016	1,267,816	4,862,993	3.84	0.65868	0.00002894	0.00000617
2017	1,380,253	5,294,271	3.84	0.65868	0.00002894	0.00000617
2020	1,596,153	6,122,404	3.84	0.65868	0.00002894	0.00000617
2026	1,913,000	7,337,742	3.84	0.65868	0.00002894	0.00000617
Alternative 1 No Project						
2015	1,230,126	4,718,425	3.84	0.65868	0.00002894	0.00000617
2016	1,267,816	4,862,993	3.84	0.65868	0.00002894	0.00000617
2017	1,306,611	5,011,800	3.84	0.65868	0.00002894	0.00000617
2020	1,430,376	5,486,529	3.84	0.65868	0.00002894	0.00000617
2026	1,692,000	6,490,046	3.84	0.65868	0.00002894	0.00000617
Alternative 2 No Federal Action						
2015	1,230,126	4,718,425	3.84	0.65868	0.00002894	0.00000617
2016	1,267,816	4,862,993	3.84	0.65868	0.00002894	0.00000617
2017	1,306,611	5,011,800	3.84	0.65868	0.00002894	0.00000617
2020	1,430,376	5,486,529	3.84	0.65868	0.00002894	0.00000617
2026	1,692,000	6,490,046	3.84	0.65868	0.00002894	0.00000617
Alternative 3 Reduced Project						
2015	1,230,126	4,718,425	3.84	0.65868	0.00002894	0.00000617
2016	1,267,816	4,862,993	3.84	0.65868	0.00002894	0.00000617
2017	1,380,253	5,294,271	3.84	0.65868	0.00002894	0.00000617
2020	1,596,153	6,122,404	3.84	0.65868	0.00002894	0.00000617
2026	1,913,000	7,337,742	3.84	0.65868	0.00002894	0.00000617

Source:
Emission factors: The Climate Registry. General Protocol v.2 Update Tables, Table 14.1 US Emission Factors by eGRID Subregion. Updated April 2013.
Electrical energy consumption in 2012 was provided by YTI.
Electrical energy consumption factor was calculated based on YTI projections.

Table B1.42 TRU Activity and Emission Factors

	Activity					Emission Factors (lb/kW-hr)		
	Total Annual Refrigerated Containers	TEU Factor	Reefer Dwell Time (days)	Average Energy Consumption Factor (kW/TEU)	Annual Electrical Energy Consumption (kW-hr)	CO2	CH4	N2O
Baseline								
2012	17,660	1.726	3.75	5.50	15,088,063	0.65868	0.0000289	0.00000617
Proposed Project								
2015	28,047	1.750	3.66	5.50	23,712,509	0.65868	0.0000289	0.00000617
2016	28,906	1.750	3.66	5.50	24,439,040	0.65868	0.0000289	0.00000617
2017	31,470	1.750	3.66	5.50	26,606,430	0.65868	0.0000289	0.00000617
2020	36,392	1.750	3.66	5.50	30,768,224	0.65868	0.0000289	0.00000617
2026	43,616	1.750	3.66	5.50	36,875,922	0.65868	0.0000289	0.00000617
Alternative 1 No Project								
2015	28,047	1.750	3.66	5.50	23,712,509	0.65868	0.0000289	0.00000617
2016	28,906	1.750	3.66	5.50	24,439,040	0.65868	0.0000289	0.00000617
2017	29,791	1.750	3.66	5.50	25,186,871	0.65868	0.0000289	0.00000617
2020	32,613	1.750	3.66	5.50	27,572,626	0.65868	0.0000289	0.00000617
2026	38,578	1.750	3.66	5.50	32,615,818	0.65868	0.0000289	0.00000617
Alternative 2 No Federal Action								
2015	28,047	1.750	3.66	5.50	23,712,509	0.65868	0.0000289	0.00000617
2016	28,906	1.750	3.66	5.50	24,439,040	0.65868	0.0000289	0.00000617
2017	29,791	1.750	3.66	5.50	25,186,871	0.65868	0.0000289	0.00000617
2020	32,613	1.750	3.66	5.50	27,572,626	0.65868	0.0000289	0.00000617
2026	38,578	1.750	3.66	5.50	32,615,818	0.65868	0.0000289	0.00000617
Alternative 3 Reduced Project								
2015	28,047	1.750	3.66	5.50	23,712,509	0.65868	0.0000289	0.00000617
2016	28,906	1.750	3.66	5.50	24,439,040	0.65868	0.0000289	0.00000617
2017	31,470	1.750	3.66	5.50	26,606,430	0.65868	0.0000289	0.00000617
2020	36,392	1.750	3.66	5.50	30,768,224	0.65868	0.0000289	0.00000617
2026	43,616	1.750	3.66	5.50	36,875,922	0.65868	0.0000289	0.00000617

Source:
1. YTI (Doug Hansen, 7/31/2013) provided average on-site reefer dwell times: Year 2012: 3.75 days Years 2013+: 3.66 days
2. Reefer power consumption factor: Container Handbook, Cargo Loss Prevention Information from German Marine Insurers.
http://www.containerhandbuch.de/chb_e/wild/index.html?/chb_e/wild/wild_08_01_02.html
5.5 kW/TEU
Emission factors: The Climate Registry. General Protocol v.2 Update Tables, Table 14.1 US Emission Factors by eGRID Subregion. Updated April 2013.

Table B1.43 On-Dock Train Trips

Year	Annual On-Dock Train Trips			Peak Daily On-Dock Train Trips		
	No. of Trains (trains/yr)	Average Length (ft/train)	Average Consist Size (locos/train)	No. of Trains (trains/day)	Average Length (ft/train)	Average Consist Size (locos/train)
CEQA Baseline						
2012	725	8,000	4.00	3	8,000	4.00
Proposed Project / Alternative 3 (Reduced Project)						
2017	916	8,660	4.33	3	8,667	4.33
2020	1,059	8,660	4.33	4	9,000	4.50
2026	1,269	8,660	4.33	5	8,800	4.40
Alternative 1 (No Project) / Alternative 2 (No Federal Action)						
2017	867	8,660	4.33	3	8,667	4.33
2020	949	8,660	4.33	3	8,667	4.33
2026	1,075	8,660	4.33	4	9,000	4.50

Notes:

1. Train activity data are summarized from the the QuickTrip - Train Builder Model.

Table B1.44 Off-Dock Train Trips

Year	Annual Off-Dock Train Trips			Peak Daily Off-Dock Train Trips		
	No. of Trains (trains/yr)	Average Length (ft/train)	Average Consist Size (locos/train)	No. of Trains (trains/day)	Average Length (ft/train)	Average Consist Size (locos/train)
CEQA Baseline						
2012	178	8,000	4.00	0.5	8,000	4.00
Proposed Project / Alternative 3 (Reduced Project)						
2017	136	8,333	4.17	0.4	8,333	4.17
2020	157	8,333	4.17	0.5	8,333	4.17
2026	189	8,333	4.17	0.6	8,333	4.17
Alternative 1 (No Project) / Alternative 2 (No Federal Action)						
2017	129	8,333	4.17	0.4	8,333	4.17
2020	141	8,333	4.17	0.4	8,333	4.17
2026	217	8,333	4.17	0.7	8,333	4.17

Notes:

1. Train activity data are summarized from the the QuickTrip - Train Builder Model.

Table B1.45 Train Travel within the SCAB

Year	Annual Train Travel by Train Length (train-miles/yr)				Total Annual Train Travel (gross ton-mi/yr)	Peak Daily Train Travel by Train Length (train-miles/day)				Total Peak Day Train Travel (gross ton-mi/day)
	12,000 ft	10,000 ft	8,000 ft	6,000 ft		12,000 ft	10,000 ft	8,000 ft	6,000 ft	
CEQA Baseline										
2012	0	30,517	40,689	30,517	8.14E+08	0	131	137	131	3.20E+06
Proposed Project / Alternative 3 (Reduced Project)										
2017	0	37,507	83,580	0	1.04E+09	0	124	270	0	3.39E+06
2020	0	43,374	96,653	0	1.21E+09	0	241	276	0	4.61E+06
2026	0	51,983	115,840	0	1.45E+09	0	242	401	0	5.63E+06
Alternative 1 (No Project) / Alternative 2 (No Federal Action)										
2017	0	35,506	79,120	0	9.88E+08	0	123	268	0	3.37E+06
2020	0	38,869	86,615	0	1.08E+09	0	124	271	0	3.41E+06
2026	0	45,035	103,255	0	1.28E+09	0	244	292	0	4.78E+06

Notes:

1. Train weight is approximately 1 gross ton per foot of length (HDR, Bill Burgel email, 8/12/2010).
2. Train miles are summarized from the the QuickTrip - Train Builder Model.

Table B1.46 Train Travel between the SCAB Boundary and CA Border

Year	Annual No. of Trains Crossing the SCAB Boundary (trains/yr)				Percent of Trains by Carrier		Train Travel Distance (mi/train)			Total Annual Train Travel (gross ton-mi/yr)
	12,000 ft	10,000 ft	8,000 ft	6,000 ft	BNSF	UP	BNSF	UP	Weighted Average	
CEQA Baseline										
2012	0	280	373	280	60%	40%	191	184	188	1.40E+09
Proposed Project / Alternative 3 (Reduced Project)										
2017	0	338	753	0	52%	48%	191	184	188	1.76E+09
2020	0	391	871	0	52%	48%	191	184	188	2.04E+09
2026	0	468	1,044	0	52%	48%	191	184	188	2.45E+09
Alternative 1 (No Project) / Alternative 2 (No Federal Action)										
2017	0	320	713	0	52%	48%	191	184	188	1.67E+09
2020	0	350	781	0	52%	48%	191	184	188	1.83E+09
2026	0	407	933	0	52%	48%	191	184	188	2.16E+09

Notes:

1. Train weight is approximately 1 gross ton per foot of length (HDR, Bill Burgel email, 8/12/2010).
2. Train miles are summarized from the the QuickTrip - Train Builder Model.
3. The distances from the SCAB boundary to California border were measured with Google Earth.

Table B1.47 Container Throughput by Rail

Year	Terminal Throughput (TEU/yr)	Annual TEUs by Rail	
		On-Dock (TEU/yr)	Off-Dock (TEU/yr)
CEQA Baseline			
2012	996,109	348,638	85,674
Proposed Project / Alternative 3 (Reduced Project)			
2015	1,230,126	430,544	61,506
2016	1,267,816	443,736	63,391
2017	1,380,253	483,089	69,013
2020	1,596,153	558,654	79,808
2026	1,913,000	669,550	95,650
Alternative 1 (No Project) / Alternative 2 (No Federal Action)			
2015	1,230,126	430,544	61,506
2016	1,267,816	443,736	63,391
2017	1,306,611	457,314	65,331
2020	1,430,376	500,632	71,519
2026	1,692,000	567,000	109,800

Notes:

1. Annual TEUs by rail for 2012, 2017, 2020, and 2026 were provided by Cambridge Systematics (Chiranjivi Bhamidipati, August 14, 2013).
2. TEUs by rail for 2015 and 2016 were scaled from 2017 data by terminal throughput.

Table B1.48 Line Haul Locomotive Activity On-Port and Within Off-Dock Rail Yards

Year	Average Line Haul Locomotive Size (hp)	On-Dock Line Haul Locomotive load factor	Locomotive Operating Hours on Port (hr/loco per train)	Line Haul Locomotive Activity On-Port				Line Haul Locomotive Activity Within Off-Dock Rail Yards			
				Annual No. of Locomotives (locos/yr)	Peak Daily No. of Locomotives (locos/day)	Annual Work Done by Locomotives (hp-hr/yr)	Peak Daily Work Done by Locomotives (hp-hr/day)	Annual No. of Locomotives (locos/yr)	Peak Daily No. of Locomotives (locos/day)	Annual Work Done by Locomotives (hp-hr/yr)	Peak Daily Work Done by Locomotives (hp-hr/day)
CEQA Baseline											
2012	4,000	0.28	1.75	2,902	12	5.64E+06	2.33E+04	713	2.1	1.39E+06	4.05E+03
Proposed Project / Alternative 3 (Reduced Project)											
2015	4,000	0.28	1.75	3,534	13	6.86E+06	2.53E+04	505	1.5	9.82E+05	3.00E+03
2016	4,000	0.28	1.75	3,642	13	7.07E+06	2.53E+04	521	1.6	1.01E+06	3.09E+03
2017	4,000	0.28	1.75	3,965	13	7.70E+06	2.53E+04	567	1.7	1.10E+06	3.37E+03
2020	4,000	0.28	1.75	4,585	18	8.91E+06	3.50E+04	656	2.0	1.27E+06	3.90E+03
2026	4,000	0.28	1.75	5,495	22	1.07E+07	4.27E+04	786	2.4	1.53E+06	4.67E+03
Alternative 1 (No Project) / Alternative 2 (No Federal Action)											
2015	4,000	0.28	1.75	3,534	13	6.86E+06	2.53E+04	505	1.5	9.82E+05	3.00E+03
2016	4,000	0.28	1.75	3,642	13	7.07E+06	2.53E+04	521	1.6	1.01E+06	3.09E+03
2017	4,000	0.28	1.75	3,753	13	7.29E+06	2.53E+04	537	1.6	1.04E+06	3.19E+03
2020	4,000	0.28	1.75	4,109	13	7.98E+06	2.53E+04	588	1.8	1.14E+06	3.49E+03
2026	4,000	0.28	1.75	4,654	18	9.04E+06	3.50E+04	902	2.8	1.75E+06	5.36E+03

Notes:

1. The line haul locomotive load factor is consistent with the POLA Inventory of Air Emissions - 2012. The load factor corresponds to the EPA line haul locomotive duty cycle.
2. The line haul locomotive operating hours on port is consistent with the POLA Inventory of Air Emissions - 2012, and is the average of eastbound (2.5 hr) and westbound (1 hr).
3. Off-dock locomotive activity assumes the same locomotive size, load factor, and operating hours per locomotive as on-port activity.
4. The annual numbers of locomotives in 2015 and 2016 were scaled from 2017 values by the annual TEUs by rail. Peak daily numbers of on-port locomotives were conservatively assumed to be equal to 2017 values.

Table B1.49 Peak Daily Line Haul Locomotive Work - Train Travel within the SCAB

Year	Peak Day Train Travel (gross ton-mi/day)	Fuel consumption factor for Class I railroads (gal/thousand gross ton-mi) [1]	Fuel consumption rate - Line haul locomotive (bhp-hr/gal) [2]	Peak Daily Work Done by Line Haul Locomotives (hp-hr/day)
CEQA Baseline				
2012	3.20E+06	0.999	20.8	66,394
Proposed Project / Alternative 3 (Reduced Project)				
2015	3.35E+06	0.999	20.8	69,640
2016	3.36E+06	0.999	20.8	69,866
2017	3.39E+06	0.999	20.8	70,543
2020	4.61E+06	0.999	20.8	95,889
2026	5.63E+06	0.999	20.8	116,983
Alternative 1 (No Project) / Alternative 2 (No Federal Action)				
2015	3.35E+06	0.999	20.8	69,640
2016	3.36E+06	0.999	20.8	69,866
2017	3.37E+06	0.999	20.8	70,125
2020	3.41E+06	0.999	20.8	70,827
2026	4.78E+06	0.999	20.8	99,289

Notes:

1. Source: POLA Inventory of Air Emissions - 2012, pg. 123.
2. Source: EPA Technical Highlights: Emission Factors for Locomotives, EPA-420-F-09-025. April 2009.
3. The gross ton-miles in 2015 and 2016 were scaled from 2017 values by the ratio of peak daily no. of locomotives (on-dock and off-dock).

Table B1.50 Annual Line Haul Locomotive Work - Train Travel within California

Year	Annual Train Travel (gross ton-mi/yr)	Fuel consumption factor for Class I railroads (gal/thousand gross ton-mi) [1]	Fuel consumption rate - Line haul locomotive (bhp-hr/gal) [2]	Annual Work Done by Line Haul Locomotives (hp-hr/yr)
CEQA Baseline				
2012	2.22E+09	0.999	20.8	4.61E+07
Proposed Project / Alternative 3 (Reduced Project)				
2015	2.50E+09	0.999	20.8	5.20E+07
2016	2.58E+09	0.999	20.8	5.36E+07
2017	2.81E+09	0.999	20.8	5.84E+07
2020	3.25E+09	0.999	20.8	6.75E+07
2026	3.89E+09	0.999	20.8	8.09E+07
Alternative 1 (No Project) / Alternative 2 (No Federal Action)				
2015	2.50E+09	0.999	20.8	5.20E+07
2016	2.58E+09	0.999	20.8	5.36E+07
2017	2.66E+09	0.999	20.8	5.52E+07
2020	2.91E+09	0.999	20.8	6.05E+07
2026	3.44E+09	0.999	20.8	7.15E+07

Notes:

1. Source: POLA Inventory of Air Emissions - 2012, pg. 123.
2. Source: EPA Technical Highlights: Emission Factors for Locomotives, EPA-420-F-09-025. April 2009.
3. The gross ton-miles in 2015 and 2016 were scaled from 2017 values by the ratio of peak daily no. of locomotives (on-dock and off-dock).

Table B1.51 Yard Locomotive Activity

	Daily TEUs Handled at On-Dock Rail Yard			On-Dock PHL Yard Locomotive Use		Yard Locomotive Average In-Use Horsepower (bhp)	Work Done by Yard Locomotives On-Dock		Work Done by Yard Locomotives Off-Dock	
Year	Average Day (TEU/day)	Peak Day Factor	Peak Day (TEU/day)	Average Day (loco-hr/day)	Peak Day (loco-hr/day)		Annual (hp-hr/yr)	Peak Day (hp-hr/day)	Annual (hp-hr/yr)	Peak Day (hp-hr/day)
CEQA Baseline										
2012	955	1.08	1,032	5.7	6.2	240	4.99E+05	1.48E+03	1.23E+05	3.63E+02
Proposed Project / Alternative 3 (Reduced Project)										
2015	1,180	1.08	1,274	7.0	7.6	240	6.17E+05	1.82E+03	8.81E+04	2.61E+02
2016	1,216	1.08	1,313	7.3	7.8	240	6.36E+05	1.88E+03	9.08E+04	2.69E+02
2017	1,324	1.08	1,429	7.9	8.5	240	6.92E+05	2.05E+03	9.88E+04	2.92E+02
2020	1,531	1.08	1,653	9.1	9.9	240	8.00E+05	2.37E+03	1.14E+05	3.38E+02
2026	1,834	1.08	1,981	10.9	11.8	240	9.59E+05	2.84E+03	1.37E+05	4.05E+02
Alternative 1 (No Project) / Alternative 2 (No Federal Action)										
2015	1,180	1.08	1,274	7.0	7.6	240	6.17E+05	1.82E+03	8.81E+04	2.61E+02
2016	1,216	1.08	1,313	7.3	7.8	240	6.36E+05	1.88E+03	9.08E+04	2.69E+02
2017	1,253	1.08	1,353	7.5	8.1	240	6.55E+05	1.94E+03	9.36E+04	2.77E+02
2020	1,372	1.08	1,481	8.2	8.8	240	7.17E+05	2.12E+03	1.02E+05	3.03E+02
2026	1,553	1.08	1,678	9.3	10.0	240	8.12E+05	2.40E+03	1.57E+05	4.65E+02

Notes:

1. Yard locomotive use is assumed to be proportional to the TEUs moved by rail.
2. Yard locomotive average in-use horsepower is derived from event recorder data provided by PHL (POLA 2007 Emission Inventory, page 138-139).
3. Work done by yard locomotives off-dock is scaled from work done on-dock by the annual TEUs by rail on-dock v. off-dock.

Table B1.52 Emission Factors for Project-Related Line Haul Locomotives

	Emission Factors (g/bhp-hr)								
Year	**VOC**	**CO**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**
2012	0.36	1.28	5.96	0.023	0.20	0.18	494	0.013	0.040
2013	0.33	1.28	5.96	0.005	0.18	0.17	494	0.013	0.040
2014	0.31	1.28	5.96	0.005	0.17	0.16	494	0.013	0.040
2015	0.29	1.28	5.96	0.005	0.16	0.15	494	0.013	0.040
2016	0.26	1.28	5.82	0.005	0.15	0.14	494	0.013	0.040
2017	0.23	1.28	5.48	0.005	0.14	0.13	494	0.013	0.040
2018	0.21	1.28	5.19	0.005	0.13	0.12	494	0.013	0.040
2019	0.20	1.28	4.95	0.005	0.12	0.11	494	0.013	0.040
2020	0.18	1.28	4.76	0.005	0.11	0.10	494	0.013	0.040
2021	0.17	1.28	4.52	0.005	0.11	0.10	494	0.013	0.040
2022	0.16	1.28	4.28	0.005	0.10	0.09	494	0.013	0.040
2023	0.15	1.28	4.04	0.005	0.09	0.08	494	0.013	0.040
2024	0.14	1.28	3.80	0.005	0.08	0.08	494	0.013	0.040
2025	0.13	1.28	3.56	0.005	0.08	0.07	494	0.013	0.040
2026	0.13	1.28	3.32	0.005	0.07	0.07	494	0.013	0.040
2027	0.12	1.28	3.13	0.005	0.07	0.06	494	0.013	0.040
2028	0.11	1.28	2.93	0.005	0.06	0.06	494	0.013	0.040
2029	0.10	1.28	2.74	0.005	0.05	0.05	494	0.013	0.040
2030	0.10	1.28	2.55	0.005	0.05	0.04	494	0.013	0.040
2031	0.09	1.28	2.36	0.005	0.05	0.04	494	0.013	0.040
2032	0.08	1.28	2.21	0.005	0.04	0.04	494	0.013	0.040
2033	0.08	1.28	2.07	0.005	0.04	0.04	494	0.013	0.040
2034	0.07	1.28	1.92	0.005	0.03	0.03	494	0.013	0.040
2035	0.07	1.28	1.78	0.005	0.03	0.03	494	0.013	0.040
2036	0.06	1.28	1.68	0.005	0.03	0.03	494	0.013	0.040
2037	0.06	1.28	1.59	0.005	0.03	0.03	494	0.013	0.040
2038	0.06	1.28	1.49	0.005	0.02	0.02	494	0.013	0.040
2039	0.06	1.28	1.39	0.005	0.02	0.02	494	0.013	0.040
2040	0.05	1.28	1.35	0.005	0.02	0.02	494	0.013	0.040

Notes:

1. Emission factors for VOC, NOx, and PM10 were calculated from g/gal factors published in EPA Technical Highlights: Emission Factors for Locomotives, EPA-420-F-09-025, April 2009, except for NOx in 2012-2015. NOx emission factors in 2012-2015 reflect compliance with the 2005 MOU, and are based on the 2011 compliance report (the latest available). By 2016, the EPA emission factors become cleaner than the MOU emission factor; therefore, national fleet average emission factors for NOx were used starting in 2016.
2. VOC emission factors equal 1.053 x HC emission factors, per EPA Regulatory Impact Analysis: Control of Emissions of Air Pollution from Locomotive Engines and Marine Compression Ignition Engines Less than 30 Liters Per Cylinder, EPA-420-R-08-001a, May 2008, page 3-77.
3. Emission factor for CO from EPA Locomotive Emission Standards - Regulatory Support Document, April 1998.
4. PM2.5 emissions are assumed to be 92% of PM10 emissions (POLA 2012 Air Emissions Inventory, pg. 115).
5. GHG emissions factors (CO2, N2O, and CH4) are from the POLA 2012 Air Emissions Inventory, Table 6.6.
6. PM, PM10, and DPM emissions from locomotives are assumed to be equivalent (POLA 2012 Air Emissions Inventory, pg. 115).
7. Emission factors for SOx were calculated using mass balance based on fuel sulfur content, assuming all sulfur is converted to SO2. The average line haul locomotive fuel mixture is assumed to be 100% out of state fuel for arriving locomotives, and 90% California ULSD and 10% out of state fuel for departing locomotives. (Starcrest, personal communication with Joseph Ray, April 12, 2013).
8. California ULSD fuel is assumed to have an average sulfur content of 15 ppm for all project analysis years. Out of state fuel is assumed to have an average sulfur content of 123 ppm through 2012, and 15 ppm starting 2013 in response to the EPA Nonroad Diesel Fuel Rule (15 ppm in-use is required by 12/1/2012). The 2012 EPA diesel fuel sulfur content is from Table 3.4-8a of EPA's Final Regulatory Analysis: Control of Emissions from Nonroad Diesel Engines, EPA-420-R-04-007, May 2004.
9. Emission factors assume a line haul locomotive fuel consumption rate of 20.8 bhp-hr per gallon of fuel, from EPA Technical Highlights: Emission Factors for Locomotives, EPA-420-F-09-025, April 2009.

Table B1.53 Emission Factors for Off-Dock Switch Locomotives

	Emission Factors (g/bhp-hr)								
Year	**VOC**	**CO**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**
2012	0.92	1.83	14.93	0.006	0.34	0.31	678	0.017	0.050
2013	0.92	1.83	14.80	0.006	0.33	0.30	678	0.017	0.050
2014	0.88	1.83	14.28	0.006	0.32	0.29	678	0.017	0.050
2015	0.87	1.83	14.14	0.006	0.32	0.29	678	0.017	0.050
2016	0.83	1.83	13.68	0.006	0.30	0.28	678	0.017	0.050
2017	0.82	1.83	13.55	0.006	0.30	0.27	678	0.017	0.050
2018	0.80	1.83	13.29	0.006	0.29	0.27	678	0.017	0.050
2019	0.79	1.83	13.16	0.006	0.29	0.27	678	0.017	0.050
2020	0.73	1.83	12.30	0.006	0.27	0.25	678	0.017	0.050
2021	0.72	1.83	12.17	0.006	0.26	0.24	678	0.017	0.050
2022	0.68	1.83	11.64	0.006	0.26	0.24	678	0.017	0.050
2023	0.66	1.83	11.32	0.006	0.24	0.22	678	0.017	0.050
2024	0.62	1.83	10.66	0.006	0.23	0.21	678	0.017	0.050
2025	0.55	1.83	9.87	0.006	0.21	0.19	678	0.017	0.050
2026	0.53	1.83	9.47	0.006	0.20	0.19	678	0.017	0.050
2027	0.51	1.83	9.08	0.006	0.20	0.18	678	0.017	0.050
2028	0.48	1.83	8.68	0.006	0.18	0.17	678	0.017	0.050
2029	0.45	1.83	8.29	0.006	0.18	0.16	678	0.017	0.050
2030	0.43	1.83	7.83	0.006	0.16	0.15	678	0.017	0.050
2031	0.40	1.83	7.37	0.006	0.16	0.15	678	0.017	0.050
2032	0.38	1.83	6.91	0.006	0.14	0.13	678	0.017	0.050
2033	0.35	1.83	6.45	0.006	0.14	0.13	678	0.017	0.050
2034	0.33	1.83	5.99	0.006	0.13	0.12	678	0.017	0.050
2035	0.30	1.83	5.53	0.006	0.11	0.10	678	0.017	0.050
2036	0.28	1.83	5.07	0.006	0.11	0.10	678	0.017	0.050
2037	0.26	1.83	4.67	0.006	0.10	0.09	678	0.017	0.050
2038	0.25	1.83	4.41	0.006	0.09	0.08	678	0.017	0.050
2039	0.24	1.83	4.14	0.006	0.09	0.08	678	0.017	0.050
2040	0.22	1.83	3.95	0.006	0.08	0.07	678	0.017	0.050

Notes:

1. Emission factors for VOC, NOx, and PM10 were calculated from g/gal factors published in EPA Technical Highlights: Emission Factors for Locomotives, EPA-420-F-09-025, April 2009.
2. VOC emission factors equal 1.053 x HC emission factors, per EPA Regulatory Impact Analysis: Control of Emissions of Air Pollution from Locomotive Engines and Marine Compression Ignition Engines Less than 30 Liters Per Cylinder, EPA-420-R-08-001a, May 2008, page 3-77.
3. Emission factor for CO from EPA Locomotive Emission Standards - Regulatory Support Document, April 1998.
4. PM2.5 emissions are assumed to be 92% of PM10 emissions (POLA 2012 Air Emissions Inventory, pg. 115).
5. GHG emissions factors (CO2, N2O, and CH4) are from the POLA 2012 Air Emissions Inventory, Table 6.2.
6. PM, PM10, and DPM emissions from locomotives are assumed to be equivalent (POLA 2012 Air Emissions Inventory, pg. 115).
7. Emission factors for SOx were calculated using mass balance based on fuel sulfur content, assuming all sulfur is converted to SO2. The California ULSD fuel sulfur content is 15 ppm.
8. Emission factors assume a switch locomotive fuel consumption rate of 15.2 bhp-hr per gallon of fuel, from EPA Technical Highlights: Emission Factors for Locomotives, EPA-420-F-09-025, April 2009.

Table B1.54 Emission Factors for PHL Locomotives

Analysis	PHL Locomotive Fleet Mix			PHL Composite Fleet Emission Factors (g/bhp-hr)								
Year	Tier 3/4	Gensets	Tier 4	VOC	CO	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4
2012	0.727	0.273	-	0.211	1.743	4.192	0.006	0.040	0.037	678	0.017	0.050
2013	0.727	0.273	-	0.211	1.743	4.192	0.006	0.040	0.037	678	0.017	0.050
2014	0.727	0.273	-	0.211	1.743	4.192	0.006	0.040	0.037	678	0.017	0.050
2015	0.727	0.273	-	0.211	1.743	4.192	0.006	0.040	0.037	678	0.017	0.050
2016	0.727	0.273	-	0.211	1.743	4.192	0.006	0.040	0.037	678	0.017	0.050
2017	0.727	0.273	-	0.211	1.743	4.192	0.006	0.040	0.037	678	0.017	0.050
2018	0.727	0.273	-	0.211	1.743	4.192	0.006	0.040	0.037	678	0.017	0.050
2019	0.727	0.273	-	0.211	1.743	4.192	0.006	0.040	0.037	678	0.017	0.050
2020	0.727	0.273	-	0.211	1.743	4.192	0.006	0.040	0.037	678	0.017	0.050
2021	0.727	0.273	-	0.211	1.743	4.192	0.006	0.040	0.037	678	0.017	0.050
2022	0.727	0.182	0.091	0.214	1.772	3.976	0.006	0.037	0.034	678	0.017	0.050
2023	0.727	-	0.273	0.222	1.830	3.545	0.006	0.030	0.028	678	0.017	0.050
2024	0.727	-	0.273	0.222	1.830	3.545	0.006	0.030	0.028	678	0.017	0.050
2025	0.727	-	0.273	0.222	1.830	3.545	0.006	0.030	0.028	678	0.017	0.050
2026	0.727	-	0.273	0.222	1.830	3.545	0.006	0.030	0.028	678	0.017	0.050
2027	0.727	-	0.273	0.222	1.830	3.545	0.006	0.030	0.028	678	0.017	0.050
2028	0.727	-	0.273	0.222	1.830	3.545	0.006	0.030	0.028	678	0.017	0.050
2029	0.727	-	0.273	0.222	1.830	3.545	0.006	0.030	0.028	678	0.017	0.050
2030	0.727	-	0.273	0.222	1.830	3.545	0.006	0.030	0.028	678	0.017	0.050
2031	0.727	-	0.273	0.222	1.830	3.545	0.006	0.030	0.028	678	0.017	0.050
2032	0.727	-	0.273	0.222	1.830	3.545	0.006	0.030	0.028	678	0.017	0.050
2033	0.727	-	0.273	0.222	1.830	3.545	0.006	0.030	0.028	678	0.017	0.050
2034	0.727	-	0.273	0.222	1.830	3.545	0.006	0.030	0.028	678	0.017	0.050
2035	0.727	-	0.273	0.222	1.830	3.545	0.006	0.030	0.028	678	0.017	0.050
2036	0.727	-	0.273	0.222	1.830	3.545	0.006	0.030	0.028	678	0.017	0.050
2037	0.318	-	0.682	0.145	1.830	2.114	0.006	0.022	0.020	678	0.017	0.050
2038	0.136	-	0.864	0.110	1.830	1.477	0.006	0.018	0.016	678	0.017	0.050
2039	-	-	1.000	0.084	1.830	1.000	0.006	0.015	0.014	678	0.017	0.050
2040	-	-	1.000	0.084	1.830	1.000	0.006	0.015	0.014	678	0.017	0.050

Notes:

1. VOC emission factors equal 1.053 x HC emission factors, per EPA Regulatory Impact Analysis: Control of Emissions of Air Pollution from Locomotive Engines and Marine Compression Ignition Engines Less than 30 Liters Per Cylinder, EPA-420-R-08-001a, May 2008, page 3-77.
2. The Gensets are assumed to turn over to Tier 4 locomotives based on a 15-year repower schedule. Tier 3/4 locomotives are assumed to be replaced with Tier 4 locomotives after 30 years.
3. GHG emissions factors (CO2, N2O, and CH4) are from the POLA 2012 Air Emissions Inventory, Table 6.2.
4. PM2.5 emissions are assumed to be 92% of PM10 emissions (POLA 2012 Air Emissions Inventory, pg. 115).
5. PM and PM10 emissions from locomotives are assumed to be equivalent (POLA 2012 Air Emissions Inventory, pg. 115).
6. Emission factors for SOx were calculated using mass balance based on fuel sulfur content, assuming all sulfur is converted to SO2. Switcher locomotives are assumed to use 100% California ULSD with an average fuel sulfur content of 15 ppm (POLA 2012 Air Emissions Inventory, pg. 115.)
7. Emission factors for SOx assume a switch locomotive fuel consumption rate of 15.2 bbhp-hr per gallon of fuel, from EPA Technical Highlights: Emission Factors for Locomotives, EPA-420-F-09-025, April 2009.

Table B1.55 Trucks Idling On- and Off-Site

Year	Daily Trips	Annual Trips	Avg. On-Site Idling Time (min/trip)	Total On-Site Idling Time (hr/day)	Total On-Site Idling Time (hr/yr)	Avg. Off-Site Idling Time (min/trip)	Total Off-Site Idling Time (hr/day)	Total Off-Site Idling Time (hr/yr)	Percent LNG Trucks
CEQA Baseline									
2012	3,081	907,176	12	616	181,435	10	513	151,196	10%
Proposed Project / Alternative 3 (Reduced Project)									
2015	3,300	931,410	12	660	186,282	10	550	155,235	10%
2016	3,401	946,086	12	680	189,217	10	567	157,681	10%
2017	3,703	1,014,899	12	741	202,980	10	617	169,150	10%
2020	4,220	1,156,692	12	844	231,338	10	703	192,782	10%
2026	4,918	1,347,939	12	984	269,588	10	820	224,656	10%
Alternative 1 (No Project) / Alternative 2 (No Federal Action)									
2015	3,300	931,410	12	660	186,282	10	550	155,235	10%
2016	3,401	946,086	12	680	189,217	10	567	157,681	10%
2017	3,505	960,749	12	701	192,150	10	584	160,125	10%
2020	3,782	1,036,557	12	756	207,311	10	630	172,760	10%
2026	4,461	1,222,690	12	892	244,538	10	743	203,782	10%

Notes:

1. On-site iding time represents 6 minutes at the in-gate, 10 minutes on terminal, and 8 minutes at the out gate per round trip, which equates to 12 minutes per one-way trip, for all analysis years (Source: YTI, 6/7/2013).
2. Trips are one-way trips.

Table B1.56 Trucks Driving On-Site

Year	Daily Trips	Annual Trips	On-Site Driving Distance (mi/trip)	Total On-Site VMT (mi/day)	Total On-Site VMT (mi/yr)	Percent LNG Trucks
CEQA Baseline						
2012	3,081	907,176	0.75	2,311	680,382	10%
Proposed Project / Alternative 3 (Reduced Project)						
2015	3,300	931,410	0.75	2,475	698,557	10%
2016	3,401	946,086	0.75	2,551	709,564	10%
2017	3,703	1,014,899	0.75	2,777	761,174	10%
2020	4,220	1,156,692	0.75	3,165	867,519	10%
2026	4,918	1,347,939	0.75	3,688	1,010,954	10%
Alternative 1 (No Project) / Alternative 2 (No Federal Action)						
2015	3,300	931,410	0.75	2,475	698,557	10%
2016	3,401	946,086	0.75	2,551	709,564	10%
2017	3,505	960,749	0.75	2,629	720,562	10%
2020	3,782	1,036,557	0.75	2,836	777,418	10%
2026	4,461	1,222,690	0.75	3,346	917,018	10%

Notes:

1. Average on-site driving distance is 1.5 miles per truck, or 0.75 miles per one-way trip (Source: YTI, 6/7/2013).
2. Trips are one-way trips.
3. On-site driving speed is 10 mph (Source: YTI, 6/7/2013).

Table B1.57 Employee Vehicles Driving On-Site

Year	Daily Trips	Annual Trips	On-Site Driving Distance (mi/trip)	Total On-Site VMT (mi/day)	Total On-Site VMT (mi/yr)
CEQA Baseline					
2012	1,401	412,547	0.5	701	206,274
Proposed Project / Alternative 3 (Reduced Project)					
2015	1,730	488,305	0.5	865	244,152
2016	1,783	495,999	0.5	892	247,999
2017	1,941	532,075	0.5	971	266,037
2020	2,209	605,379	0.5	1,104	302,689
2026	2,535	694,813	0.5	1,268	347,407
Alternative 1 (No Project) / Alternative 2 (No Federal Action)					
2015	1,730	488,305	0.5	865	244,152
2016	1,783	495,999	0.5	892	247,999
2017	1,838	503,686	0.5	919	251,843
2020	2,209	605,379	0.5	1,104	302,689
2026	2,253	617,521	0.5	1,127	308,760

Notes:

1. Average on-site driving distance represents the distance from the guard shack to the ILWU parking lot.
2. Trips are one-way trips.
3. On-site driving speed is 10 mph (Source: YTI, 6/7/2013).

Table B1.58 Trucks and Employee Vehicles Driving Off-Site within the South Coast Air Basin

	Daily Trips		Daily VMT	
Year	**Autos**	**Trucks**	**Autos**	**Trucks**
CEQA Baseline				
2012	1,401	3,081	14,877	61,309
Proposed Project / Alternative 3 (Reduced Project)				
2015	1,730	3,300	17,963	65,978
2016	1,783	3,401	18,514	67,999
2017	1,941	3,703	20,159	74,027
2020	2,209	4,220	22,887	84,668
2026	2,535	4,918	26,255	98,567
Alternative 1 (No Project) / Alternative 2 (No Federal Action)				
2015	1,730	3,300	17,963	65,978
2016	1,783	3,401	18,514	67,999
2017	1,838	3,505	19,080	70,080
2020	2,209	3,782	22,871	75,992
2026	2,253	4,461	23,344	87,886

Notes:
1. VMT is within the South Coast Air Basin.
2. VMT was calculated link-by-link and summed. Link-based data were provided by the traffic study (CSI, personal communication with Sean McAtee, 7/19/2013).
3. Trips are one-way trips.

Table B1.59 Trucks and Employee Vehicles Driving Off-Site within California

	Annual Trips		Annual VMT	
Year	**Autos**	**Trucks**	**Autos**	**Trucks**
CEQA Baseline				
2012	412,547	907,176	4,409,151	20,897,252
Proposed Project / Alternative 3 (Reduced Project)				
2015	488,305	931,410	5,098,871	21,706,068
2016	495,999	946,086	5,179,213	22,048,077
2017	532,075	1,014,899	5,556,890	23,650,717
2020	605,379	1,156,692	6,309,006	27,109,430
2026	694,813	1,347,939	7,237,443	31,577,381
Alternative 1 (No Project) / Alternative 2 (No Federal Action)				
2015	488,305	931,410	5,098,871	21,706,068
2016	495,999	946,086	5,179,213	22,048,077
2017	503,686	960,749	5,259,492	22,389,814
2020	605,379	1,036,557	6,304,543	24,326,240
2026	617,521	1,222,690	6,434,983	28,195,559

Notes:
1. VMT is within California.
2. VMT was calculated link-by-link and summed. Link-based data were provided by the traffic study (CSI, personal communication with Sean McAtee, 7/19/2013).
3. Trips are one-way trips.

Table B1.60 Emission Factors for Diesel Drayage Trucks

Year	Speed (mph)	Emission Factors (g/mi) or (g/hr) for idle												
		VOC	CO	NOx	SOx	PM10 Exhaust	PM10 Tire Wear	PM10 Brake Wear	DPM	PM2.5 Exhaust	PM2.5 Tire & Brake Wear	CO2	N2O	CH4
2012	Idle	4.54E+00	1.66E+01	2.83E+01	3.96E-02	6.29E-02	0.00E+00	0.00E+00	6.29E-02	5.79E-02	0.00E+00	4.93E+03	1.59E-01	2.54E-01
2012	5	3.09E+00	7.34E+00	1.86E+01	1.71E-02	1.02E-01	3.60E-02	6.17E-02	1.02E-01	9.34E-02	3.55E-02	4.08E+03	5.88E-02	1.73E-01
2012	10	1.80E+00	4.59E+00	1.39E+01	1.71E-02	8.68E-02	3.60E-02	6.17E-02	8.68E-02	7.99E-02	3.55E-02	3.37E+03	5.88E-02	1.00E-01
2012	15	9.13E-01	2.68E+00	1.05E+01	1.71E-02	7.43E-02	3.60E-02	6.17E-02	7.43E-02	6.84E-02	3.55E-02	2.77E+03	5.88E-02	5.10E-02
2012	20	3.92E-01	1.47E+00	7.91E+00	1.71E-02	6.30E-02	3.60E-02	6.17E-02	6.30E-02	5.80E-02	3.55E-02	2.18E+03	5.88E-02	2.19E-02
2012	25	3.41E-01	1.38E+00	7.11E+00	1.71E-02	5.92E-02	3.60E-02	6.17E-02	5.92E-02	5.45E-02	3.55E-02	2.04E+03	5.88E-02	1.91E-02
2012	30	2.97E-01	1.32E+00	6.42E+00	1.71E-02	5.78E-02	3.60E-02	6.17E-02	5.78E-02	5.32E-02	3.55E-02	1.91E+03	5.88E-02	1.66E-02
2012	35	2.59E-01	1.28E+00	5.85E+00	1.71E-02	5.89E-02	3.60E-02	6.17E-02	5.89E-02	5.42E-02	3.55E-02	1.81E+03	5.88E-02	1.44E-02
2012	40	2.26E-01	1.26E+00	5.40E+00	1.71E-02	6.25E-02	3.60E-02	6.17E-02	6.25E-02	5.75E-02	3.55E-02	1.72E+03	5.88E-02	1.26E-02
2012	45	2.00E-01	1.27E+00	5.07E+00	1.71E-02	6.85E-02	3.60E-02	6.17E-02	6.85E-02	6.30E-02	3.55E-02	1.66E+03	5.88E-02	1.11E-02
2012	50	1.79E-01	1.31E+00	4.86E+00	1.71E-02	7.70E-02	3.60E-02	6.17E-02	7.70E-02	7.08E-02	3.55E-02	1.62E+03	5.88E-02	1.00E-02
2012	55	1.64E-01	1.37E+00	4.78E+00	1.71E-02	8.80E-02	3.60E-02	6.17E-02	8.80E-02	8.10E-02	3.55E-02	1.60E+03	5.88E-02	9.20E-03
2015	Idle	4.53E+00	1.66E+01	2.79E+01	4.06E-02	5.76E-02	0.00E+00	0.00E+00	5.76E-02	5.30E-02	0.00E+00	4.93E+03	1.63E-01	2.53E-01
2015	5	4.03E+00	9.64E+00	2.13E+01	1.67E-02	1.01E-01	3.60E-02	6.17E-02	1.01E-01	9.27E-02	3.55E-02	4.08E+03	5.74E-02	2.25E-01
2015	10	2.35E+00	6.01E+00	1.60E+01	1.67E-02	9.25E-02	3.60E-02	6.17E-02	9.25E-02	8.51E-02	3.55E-02	3.37E+03	5.74E-02	1.31E-01
2015	15	1.19E+00	3.49E+00	1.20E+01	1.67E-02	8.44E-02	3.60E-02	6.17E-02	8.44E-02	7.76E-02	3.55E-02	2.77E+03	5.74E-02	6.66E-02
2015	20	5.12E-01	1.89E+00	9.10E+00	1.67E-02	7.58E-02	3.60E-02	6.17E-02	7.58E-02	6.97E-02	3.55E-02	2.18E+03	5.74E-02	2.86E-02
2015	25	4.48E-01	1.78E+00	8.16E+00	1.67E-02	7.24E-02	3.60E-02	6.17E-02	7.24E-02	6.66E-02	3.55E-02	2.04E+03	5.74E-02	2.50E-02
2015	30	3.90E-01	1.71E+00	7.36E+00	1.67E-02	7.19E-02	3.60E-02	6.17E-02	7.19E-02	6.61E-02	3.55E-02	1.91E+03	5.74E-02	2.18E-02
2015	35	3.41E-01	1.67E+00	6.70E+00	1.67E-02	7.43E-02	3.60E-02	6.17E-02	7.43E-02	6.84E-02	3.55E-02	1.81E+03	5.74E-02	1.90E-02
2015	40	2.98E-01	1.66E+00	6.17E+00	1.67E-02	7.97E-02	3.60E-02	6.17E-02	7.97E-02	7.33E-02	3.55E-02	1.73E+03	5.74E-02	1.66E-02
2015	45	2.63E-01	1.68E+00	5.79E+00	1.67E-02	8.80E-02	3.60E-02	6.17E-02	8.80E-02	8.10E-02	3.55E-02	1.66E+03	5.74E-02	1.47E-02
2015	50	2.35E-01	1.73E+00	5.54E+00	1.67E-02	9.93E-02	3.60E-02	6.17E-02	9.93E-02	9.14E-02	3.55E-02	1.62E+03	5.74E-02	1.31E-02
2015	55	2.15E-01	1.82E+00	5.44E+00	1.67E-02	1.14E-01	3.60E-02	6.17E-02	1.14E-01	1.05E-01	3.55E-02	1.61E+03	5.74E-02	1.20E-02
2016	Idle	4.53E+00	1.66E+01	2.79E+01	4.06E-02	5.76E-02	0.00E+00	0.00E+00	5.76E-02	5.30E-02	0.00E+00	4.93E+03	1.63E-01	2.53E-01
2016	5	4.23E+00	1.01E+01	2.16E+01	1.67E-02	1.07E-01	3.60E-02	6.17E-02	1.07E-01	9.80E-02	3.55E-02	4.08E+03	5.74E-02	2.36E-01
2016	10	2.46E+00	6.30E+00	1.63E+01	1.67E-02	9.77E-02	3.60E-02	6.17E-02	9.77E-02	8.99E-02	3.55E-02	3.37E+03	5.74E-02	1.37E-01
2016	15	1.25E+00	3.66E+00	1.22E+01	1.67E-02	8.92E-02	3.60E-02	6.17E-02	8.92E-02	8.21E-02	3.55E-02	2.76E+03	5.74E-02	6.98E-02
2016	20	5.37E-01	1.98E+00	9.25E+00	1.67E-02	8.01E-02	3.60E-02	6.17E-02	8.01E-02	7.37E-02	3.55E-02	2.18E+03	5.74E-02	3.00E-02
2016	25	4.69E-01	1.87E+00	8.29E+00	1.67E-02	7.65E-02	3.60E-02	6.17E-02	7.65E-02	7.04E-02	3.55E-02	2.04E+03	5.74E-02	2.62E-02
2016	30	4.09E-01	1.79E+00	7.48E+00	1.67E-02	7.59E-02	3.60E-02	6.17E-02	7.59E-02	6.98E-02	3.55E-02	1.91E+03	5.74E-02	2.29E-02
2016	35	3.57E-01	1.75E+00	6.80E+00	1.67E-02	7.85E-02	3.60E-02	6.17E-02	7.85E-02	7.22E-02	3.55E-02	1.81E+03	5.74E-02	1.99E-02
2016	40	3.13E-01	1.74E+00	6.27E+00	1.67E-02	8.42E-02	3.60E-02	6.17E-02	8.42E-02	7.75E-02	3.55E-02	1.72E+03	5.74E-02	1.75E-02
2016	45	2.76E-01	1.76E+00	5.88E+00	1.67E-02	9.30E-02	3.60E-02	6.17E-02	9.30E-02	8.56E-02	3.55E-02	1.66E+03	5.74E-02	1.54E-02
2016	50	2.47E-01	1.82E+00	5.63E+00	1.67E-02	1.05E-01	3.60E-02	6.17E-02	1.05E-01	9.65E-02	3.55E-02	1.62E+03	5.74E-02	1.38E-02
2016	55	2.26E-01	1.90E+00	5.52E+00	1.67E-02	1.20E-01	3.60E-02	6.17E-02	1.20E-01	1.10E-01	3.55E-02	1.60E+03	5.74E-02	1.26E-02
2017	Idle	4.53E+00	1.66E+01	2.79E+01	4.07E-02	5.76E-02	0.00E+00	0.00E+00	5.76E-02	5.30E-02	0.00E+00	4.93E+03	1.63E-01	2.53E-01
2017	5	4.36E+00	1.04E+01	2.16E+01	1.67E-02	1.11E-01	3.60E-02	6.17E-02	1.11E-01	1.03E-01	3.55E-02	4.07E+03	5.73E-02	2.44E-01
2017	10	2.54E+00	6.50E+00	1.63E+01	1.67E-02	1.02E-01	3.60E-02	6.17E-02	1.02E-01	9.39E-02	3.55E-02	3.36E+03	5.73E-02	1.42E-01
2017	15	1.29E+00	3.77E+00	1.22E+01	1.67E-02	9.32E-02	3.60E-02	6.17E-02	9.32E-02	8.57E-02	3.55E-02	2.76E+03	5.73E-02	7.20E-02
2017	20	5.54E-01	2.05E+00	9.25E+00	1.67E-02	8.37E-02	3.60E-02	6.17E-02	8.37E-02	7.70E-02	3.55E-02	2.18E+03	5.73E-02	3.10E-02
2017	25	4.84E-01	1.93E+00	8.29E+00	1.67E-02	7.99E-02	3.60E-02	6.17E-02	7.99E-02	7.35E-02	3.55E-02	2.03E+03	5.73E-02	2.71E-02
2017	30	4.22E-01	1.85E+00	7.48E+00	1.67E-02	7.94E-02	3.60E-02	6.17E-02	7.94E-02	7.30E-02	3.55E-02	1.91E+03	5.73E-02	2.36E-02
2017	35	3.68E-01	1.80E+00	6.80E+00	1.67E-02	8.21E-02	3.60E-02	6.17E-02	8.21E-02	7.55E-02	3.55E-02	1.80E+03	5.73E-02	2.06E-02
2017	40	3.23E-01	1.79E+00	6.27E+00	1.67E-02	8.80E-02	3.60E-02	6.17E-02	8.80E-02	8.10E-02	3.55E-02	1.72E+03	5.73E-02	1.80E-02
2017	45	2.85E-01	1.82E+00	5.88E+00	1.67E-02	9.72E-02	3.60E-02	6.17E-02	9.72E-02	8.94E-02	3.55E-02	1.66E+03	5.73E-02	1.59E-02
2017	50	2.55E-01	1.87E+00	5.63E+00	1.67E-02	1.10E-01	3.60E-02	6.17E-02	1.10E-01	1.01E-01	3.55E-02	1.62E+03	5.73E-02	1.42E-02
2017	55	2.33E-01	1.97E+00	5.52E+00	1.67E-02	1.25E-01	3.60E-02	6.17E-02	1.25E-01	1.15E-01	3.55E-02	1.60E+03	5.73E-02	1.30E-02
2020	Idle	4.53E+00	1.66E+01	2.79E+01	4.09E-02	5.76E-02	0.00E+00	0.00E+00	5.76E-02	5.30E-02	0.00E+00	4.93E+03	1.65E-01	2.53E-01
2020	5	4.28E+00	1.02E+01	1.96E+01	1.66E-02	1.18E-01	3.60E-02	6.17E-02	1.18E-01	1.08E-01	3.55E-02	4.05E+03	5.69E-02	2.39E-01
2020	10	2.49E+00	6.38E+00	1.47E+01	1.66E-02	1.08E-01	3.60E-02	6.17E-02	1.08E-01	9.91E-02	3.55E-02	3.34E+03	5.69E-02	1.39E-01
2020	15	1.26E+00	3.70E+00	1.11E+01	1.66E-02	9.83E-02	3.60E-02	6.17E-02	9.83E-02	9.04E-02	3.55E-02	2.74E+03	5.69E-02	7.06E-02
2020	20	5.44E-01	2.01E+00	8.36E+00	1.66E-02	8.83E-02	3.60E-02	6.17E-02	8.83E-02	8.12E-02	3.55E-02	2.17E+03	5.69E-02	3.04E-02
2020	25	4.75E-01	1.89E+00	7.50E+00	1.66E-02	8.43E-02	3.60E-02	6.17E-02	8.43E-02	7.76E-02	3.55E-02	2.02E+03	5.69E-02	2.65E-02
2020	30	4.14E-01	1.82E+00	6.76E+00	1.66E-02	8.37E-02	3.60E-02	6.17E-02	8.37E-02	7.70E-02	3.55E-02	1.90E+03	5.69E-02	2.31E-02
2020	35	3.61E-01	1.77E+00	6.15E+00	1.66E-02	8.66E-02	3.60E-02	6.17E-02	8.66E-02	7.97E-02	3.55E-02	1.79E+03	5.69E-02	2.02E-02
2020	40	3.16E-01	1.76E+00	5.67E+00	1.66E-02	9.28E-02	3.60E-02	6.17E-02	9.28E-02	8.54E-02	3.55E-02	1.71E+03	5.69E-02	1.77E-02
2020	45	2.79E-01	1.78E+00	5.32E+00	1.66E-02	1.03E-01	3.60E-02	6.17E-02	1.03E-01	9.44E-02	3.55E-02	1.65E+03	5.69E-02	1.56E-02
2020	50	2.50E-01	1.84E+00	5.09E+00	1.66E-02	1.16E-01	3.60E-02	6.17E-02	1.16E-01	1.06E-01	3.55E-02	1.61E+03	5.69E-02	1.40E-02
2020	55	2.28E-01	1.93E+00	4.99E+00	1.66E-02	1.32E-01	3.60E-02	6.17E-02	1.32E-01	1.22E-01	3.55E-02	1.59E+03	5.69E-02	1.28E-02
2026	Idle	4.53E+00	1.66E+01	2.79E+01	4.09E-02	5.76E-02	0.00E+00	0.00E+00	5.76E-02	5.30E-02	0.00E+00	4.93E+03	1.65E-01	2.53E-01
2026	5	2.76E+00	6.63E+00	9.45E+00	1.66E-02	1.05E-01	3.60E-02	6.17E-02	1.05E-01	9.66E-02	3.55E-02	3.96E+03	5.69E-02	1.54E-01
2026	10	1.61E+00	4.13E+00	7.11E+00	1.66E-02	9.63E-02	3.60E-02	6.17E-02	9.63E-02	8.86E-02	3.55E-02	3.27E+03	5.69E-02	8.98E-02
2026	15	8.17E-01	2.40E+00	5.35E+00	1.66E-02	8.79E-02	3.60E-02	6.17E-02	8.79E-02	8.09E-02	3.55E-02	2.69E+03	5.69E-02	4.56E-02
2026	20	3.51E-01	1.30E+00	4.04E+00	1.66E-02	7.89E-02	3.60E-02	6.17E-02	7.89E-02	7.26E-02	3.55E-02	2.12E+03	5.69E-02	1.96E-02
2026	25	3.07E-01	1.23E+00	3.62E+00	1.66E-02	7.53E-02	3.60E-02	6.17E-02	7.53E-02	6.93E-02	3.55E-02	1.98E+03	5.69E-02	1.71E-02
2026	30	2.67E-01	1.18E+00	3.27E+00	1.66E-02	7.48E-02	3.60E-02	6.17E-02	7.48E-02	6.88E-02	3.55E-02	1.86E+03	5.69E-02	1.49E-02
2026	35	2.33E-01	1.15E+00	2.97E+00	1.66E-02	7.73E-02	3.60E-02	6.17E-02	7.73E-02	7.11E-02	3.55E-02	1.75E+03	5.69E-02	1.30E-02
2026	40	2.04E-01	1.14E+00	2.74E+00	1.66E-02	8.30E-02	3.60E-02	6.17E-02	8.30E-02	7.64E-02	3.55E-02	1.67E+03	5.69E-02	1.14E-02
2026	45	1.80E-01	1.15E+00	2.57E+00	1.66E-02	9.16E-02	3.60E-02	6.17E-02	9.16E-02	8.43E-02	3.55E-02	1.62E+03	5.69E-02	1.01E-02
2026	50	1.61E-01	1.19E+00	2.46E+00	1.66E-02	1.03E-01	3.60E-02	6.17E-02	1.03E-01	9.51E-02	3.55E-02	1.58E+03	5.69E-02	9.00E-03
2026	55	1.47E-01	1.25E+00	2.41E+00	1.66E-02	1.18E-01	3.60E-02	6.17E-02	1.18E-01	1.09E-01	3.55E-02	1.56E+03	5.69E-02	8.20E-03

Notes:

1. Emission Rates were obtained from EMFAC2011.
2. Baseline Age distribution to forecast 2015+ fleet was taken from POLA 2011 Drayage Truck (HDV) distribution.
3. 2012 Age distribution and the composite Emission Factors are same as used for POLA's 2012 Emission Inventory.
4. Ports Clean Truck Program and CARB's regulation which bans pre 2010 drayage trucks starting in January 1, 2021 are reflected.
5. Growth Factors based on file "2013 terminal allocation modified 2009 forecast YTI EIR specific 051613" send by the Port.
6. Source: Starcrest. Personal communication with Archana Agrawal. 7/24/2013.

Table B1.61 Emission Factors for Drayage Trucks Using LNG

		Emission Factors (g/mi) or (g/hr) for idle												
Year	Speed (mph)	VOC	CO	NOx	SOx	PM10 Exhaust	PM10 Tire Wear	PM10 Brake Wear	DPM	PM2.5 Exhaust	PM2.5 Tire & Brake Wear	CO2	N2O	CH4
2012	Idle	4.54E+00	1.66E+01	2.83E+01	3.96E-02	6.29E-02	0.00E+00	0.00E+00	0.00E+00	5.79E-02	0.00E+00	4.50E+03	8.75E-01	9.83E+00
2012	5	3.09E+00	7.34E+00	1.86E+01	1.71E-02	1.02E-01	3.60E-02	6.17E-02	0.00E+00	9.34E-02	3.55E-02	3.72E+03	1.75E-01	1.97E+00
2012	10	1.80E+00	4.59E+00	1.39E+01	1.71E-02	8.68E-02	3.60E-02	6.17E-02	0.00E+00	7.99E-02	3.55E-02	3.07E+03	1.75E-01	1.97E+00
2012	15	9.13E-01	2.68E+00	1.05E+01	1.71E-02	7.43E-02	3.60E-02	6.17E-02	0.00E+00	6.84E-02	3.55E-02	2.52E+03	1.75E-01	1.97E+00
2012	20	3.92E-01	1.47E+00	7.91E+00	1.71E-02	6.30E-02	3.60E-02	6.17E-02	0.00E+00	5.80E-02	3.55E-02	1.99E+03	1.75E-01	1.97E+00
2012	25	3.41E-01	1.38E+00	7.11E+00	1.71E-02	5.92E-02	3.60E-02	6.17E-02	0.00E+00	5.45E-02	3.55E-02	1.86E+03	1.75E-01	1.97E+00
2012	30	2.97E-01	1.32E+00	6.42E+00	1.71E-02	5.78E-02	3.60E-02	6.17E-02	0.00E+00	5.32E-02	3.55E-02	1.74E+03	1.75E-01	1.97E+00
2012	35	2.59E-01	1.28E+00	5.85E+00	1.71E-02	5.89E-02	3.60E-02	6.17E-02	0.00E+00	5.42E-02	3.55E-02	1.65E+03	1.75E-01	1.97E+00
2012	40	2.26E-01	1.26E+00	5.40E+00	1.71E-02	6.25E-02	3.60E-02	6.17E-02	0.00E+00	5.75E-02	3.55E-02	1.57E+03	1.75E-01	1.97E+00
2012	45	2.00E-01	1.27E+00	5.07E+00	1.71E-02	6.85E-02	3.60E-02	6.17E-02	0.00E+00	6.30E-02	3.55E-02	1.52E+03	1.75E-01	1.97E+00
2012	50	1.79E-01	1.31E+00	4.86E+00	1.71E-02	7.70E-02	3.60E-02	6.17E-02	0.00E+00	7.08E-02	3.55E-02	1.48E+03	1.75E-01	1.97E+00
2012	55	1.64E-01	1.37E+00	4.78E+00	1.71E-02	8.80E-02	3.60E-02	6.17E-02	0.00E+00	8.10E-02	3.55E-02	1.46E+03	1.75E-01	1.97E+00
2015	Idle	4.53E+00	1.66E+01	2.79E+01	4.06E-02	5.76E-02	0.00E+00	0.00E+00	0.00E+00	5.30E-02	0.00E+00	4.50E+03	8.75E-01	9.83E+00
2015	5	4.03E+00	9.64E+00	2.13E+01	1.67E-02	1.01E-01	3.60E-02	6.17E-02	0.00E+00	9.27E-02	3.55E-02	3.72E+03	1.75E-01	1.97E+00
2015	10	2.35E+00	6.01E+00	1.60E+01	1.67E-02	9.25E-02	3.60E-02	6.17E-02	0.00E+00	8.51E-02	3.55E-02	3.07E+03	1.75E-01	1.97E+00
2015	15	1.19E+00	3.49E+00	1.20E+01	1.67E-02	8.44E-02	3.60E-02	6.17E-02	0.00E+00	7.76E-02	3.55E-02	2.52E+03	1.75E-01	1.97E+00
2015	20	5.12E-01	1.89E+00	9.10E+00	1.67E-02	7.58E-02	3.60E-02	6.17E-02	0.00E+00	6.97E-02	3.55E-02	1.99E+03	1.75E-01	1.97E+00
2015	25	4.48E-01	1.78E+00	8.16E+00	1.67E-02	7.24E-02	3.60E-02	6.17E-02	0.00E+00	6.66E-02	3.55E-02	1.86E+03	1.75E-01	1.97E+00
2015	30	3.90E-01	1.71E+00	7.36E+00	1.67E-02	7.19E-02	3.60E-02	6.17E-02	0.00E+00	6.61E-02	3.55E-02	1.74E+03	1.75E-01	1.97E+00
2015	35	3.41E-01	1.67E+00	6.70E+00	1.67E-02	7.43E-02	3.60E-02	6.17E-02	0.00E+00	6.84E-02	3.55E-02	1.65E+03	1.75E-01	1.97E+00
2015	40	2.98E-01	1.66E+00	6.17E+00	1.67E-02	7.97E-02	3.60E-02	6.17E-02	0.00E+00	7.33E-02	3.55E-02	1.57E+03	1.75E-01	1.97E+00
2015	45	2.63E-01	1.68E+00	5.79E+00	1.67E-02	8.80E-02	3.60E-02	6.17E-02	0.00E+00	8.10E-02	3.55E-02	1.52E+03	1.75E-01	1.97E+00
2015	50	2.35E-01	1.73E+00	5.54E+00	1.67E-02	9.93E-02	3.60E-02	6.17E-02	0.00E+00	9.14E-02	3.55E-02	1.48E+03	1.75E-01	1.97E+00
2015	55	2.15E-01	1.82E+00	5.44E+00	1.67E-02	1.14E-01	3.60E-02	6.17E-02	0.00E+00	1.05E-01	3.55E-02	1.46E+03	1.75E-01	1.97E+00
2016	Idle	4.53E+00	1.66E+01	2.79E+01	4.06E-02	5.76E-02	0.00E+00	0.00E+00	0.00E+00	5.30E-02	0.00E+00	4.50E+03	8.75E-01	9.83E+00
2016	5	4.23E+00	1.01E+01	2.16E+01	1.67E-02	1.07E-01	3.60E-02	6.17E-02	0.00E+00	9.80E-02	3.55E-02	3.72E+03	1.75E-01	1.97E+00
2016	10	2.46E+00	6.30E+00	1.63E+01	1.67E-02	9.77E-02	3.60E-02	6.17E-02	0.00E+00	8.99E-02	3.55E-02	3.07E+03	1.75E-01	1.97E+00
2016	15	1.25E+00	3.66E+00	1.22E+01	1.67E-02	8.92E-02	3.60E-02	6.17E-02	0.00E+00	8.21E-02	3.55E-02	2.52E+03	1.75E-01	1.97E+00
2016	20	5.37E-01	1.98E+00	9.25E+00	1.67E-02	8.01E-02	3.60E-02	6.17E-02	0.00E+00	7.37E-02	3.55E-02	1.99E+03	1.75E-01	1.97E+00
2016	25	4.69E-01	1.87E+00	8.29E+00	1.67E-02	7.65E-02	3.60E-02	6.17E-02	0.00E+00	7.04E-02	3.55E-02	1.86E+03	1.75E-01	1.97E+00
2016	30	4.09E-01	1.79E+00	7.48E+00	1.67E-02	7.59E-02	3.60E-02	6.17E-02	0.00E+00	6.98E-02	3.55E-02	1.74E+03	1.75E-01	1.97E+00
2016	35	3.57E-01	1.75E+00	6.80E+00	1.67E-02	7.85E-02	3.60E-02	6.17E-02	0.00E+00	7.22E-02	3.55E-02	1.65E+03	1.75E-01	1.97E+00
2016	40	3.13E-01	1.74E+00	6.27E+00	1.67E-02	8.42E-02	3.60E-02	6.17E-02	0.00E+00	7.75E-02	3.55E-02	1.57E+03	1.75E-01	1.97E+00
2016	45	2.76E-01	1.76E+00	5.88E+00	1.67E-02	9.30E-02	3.60E-02	6.17E-02	0.00E+00	8.56E-02	3.55E-02	1.52E+03	1.75E-01	1.97E+00
2016	50	2.47E-01	1.82E+00	5.63E+00	1.67E-02	1.05E-01	3.60E-02	6.17E-02	0.00E+00	9.65E-02	3.55E-02	1.48E+03	1.75E-01	1.97E+00
2016	55	2.26E-01	1.90E+00	5.52E+00	1.67E-02	1.20E-01	3.60E-02	6.17E-02	0.00E+00	1.10E-01	3.55E-02	1.46E+03	1.75E-01	1.97E+00
2017	Idle	4.53E+00	1.66E+01	2.79E+01	4.07E-02	5.76E-02	0.00E+00	0.00E+00	0.00E+00	5.30E-02	0.00E+00	4.50E+03	8.75E-01	9.83E+00
2017	5	4.36E+00	1.04E+01	2.16E+01	1.67E-02	1.11E-01	3.60E-02	6.17E-02	0.00E+00	1.03E-01	3.55E-02	3.71E+03	1.75E-01	1.97E+00
2017	10	2.54E+00	6.50E+00	1.63E+01	1.67E-02	1.02E-01	3.60E-02	6.17E-02	0.00E+00	9.39E-02	3.55E-02	3.07E+03	1.75E-01	1.97E+00
2017	15	1.29E+00	3.77E+00	1.22E+01	1.67E-02	9.32E-02	3.60E-02	6.17E-02	0.00E+00	8.57E-02	3.55E-02	2.52E+03	1.75E-01	1.97E+00
2017	20	5.54E-01	2.05E+00	9.25E+00	1.67E-02	8.37E-02	3.60E-02	6.17E-02	0.00E+00	7.70E-02	3.55E-02	1.99E+03	1.75E-01	1.97E+00
2017	25	4.84E-01	1.93E+00	8.29E+00	1.67E-02	7.99E-02	3.60E-02	6.17E-02	0.00E+00	7.35E-02	3.55E-02	1.85E+03	1.75E-01	1.97E+00
2017	30	4.22E-01	1.85E+00	7.48E+00	1.67E-02	7.94E-02	3.60E-02	6.17E-02	0.00E+00	7.30E-02	3.55E-02	1.74E+03	1.75E-01	1.97E+00
2017	35	3.68E-01	1.80E+00	6.80E+00	1.67E-02	8.21E-02	3.60E-02	6.17E-02	0.00E+00	7.55E-02	3.55E-02	1.65E+03	1.75E-01	1.97E+00
2017	40	3.23E-01	1.79E+00	6.27E+00	1.67E-02	8.80E-02	3.60E-02	6.17E-02	0.00E+00	8.10E-02	3.55E-02	1.57E+03	1.75E-01	1.97E+00
2017	45	2.85E-01	1.82E+00	5.88E+00	1.67E-02	9.72E-02	3.60E-02	6.17E-02	0.00E+00	8.94E-02	3.55E-02	1.52E+03	1.75E-01	1.97E+00
2017	50	2.55E-01	1.87E+00	5.63E+00	1.67E-02	1.10E-01	3.60E-02	6.17E-02	0.00E+00	1.01E-01	3.55E-02	1.48E+03	1.75E-01	1.97E+00
2017	55	2.33E-01	1.97E+00	5.52E+00	1.67E-02	1.25E-01	3.60E-02	6.17E-02	0.00E+00	1.15E-01	3.55E-02	1.46E+03	1.75E-01	1.97E+00
2020	Idle	4.53E+00	1.66E+01	2.79E+01	4.09E-02	5.76E-02	0.00E+00	0.00E+00	0.00E+00	5.30E-02	0.00E+00	4.50E+03	8.75E-01	9.83E+00
2020	5	4.28E+00	1.02E+01	1.96E+01	1.66E-02	1.18E-01	3.60E-02	6.17E-02	0.00E+00	1.08E-01	3.55E-02	3.69E+03	1.75E-01	1.97E+00
2020	10	2.49E+00	6.38E+00	1.47E+01	1.66E-02	1.08E-01	3.60E-02	6.17E-02	0.00E+00	9.91E-02	3.55E-02	3.05E+03	1.75E-01	1.97E+00
2020	15	1.26E+00	3.70E+00	1.11E+01	1.66E-02	9.83E-02	3.60E-02	6.17E-02	0.00E+00	9.04E-02	3.55E-02	2.50E+03	1.75E-01	1.97E+00
2020	20	5.44E-01	2.01E+00	8.36E+00	1.66E-02	8.83E-02	3.60E-02	6.17E-02	0.00E+00	8.12E-02	3.55E-02	1.97E+03	1.75E-01	1.97E+00
2020	25	4.75E-01	1.89E+00	7.50E+00	1.66E-02	8.43E-02	3.60E-02	6.17E-02	0.00E+00	7.76E-02	3.55E-02	1.84E+03	1.75E-01	1.97E+00
2020	30	4.14E-01	1.82E+00	6.76E+00	1.66E-02	8.37E-02	3.60E-02	6.17E-02	0.00E+00	7.70E-02	3.55E-02	1.73E+03	1.75E-01	1.97E+00
2020	35	3.61E-01	1.77E+00	6.15E+00	1.66E-02	8.66E-02	3.60E-02	6.17E-02	0.00E+00	7.97E-02	3.55E-02	1.64E+03	1.75E-01	1.97E+00
2020	40	3.16E-01	1.76E+00	5.67E+00	1.66E-02	9.28E-02	3.60E-02	6.17E-02	0.00E+00	8.54E-02	3.55E-02	1.56E+03	1.75E-01	1.97E+00
2020	45	2.79E-01	1.78E+00	5.32E+00	1.66E-02	1.03E-01	3.60E-02	6.17E-02	0.00E+00	9.44E-02	3.55E-02	1.51E+03	1.75E-01	1.97E+00
2020	50	2.50E-01	1.84E+00	5.09E+00	1.66E-02	1.16E-01	3.60E-02	6.17E-02	0.00E+00	1.06E-01	3.55E-02	1.47E+03	1.75E-01	1.97E+00
2020	55	2.28E-01	1.93E+00	4.99E+00	1.66E-02	1.32E-01	3.60E-02	6.17E-02	0.00E+00	1.22E-01	3.55E-02	1.45E+03	1.75E-01	1.97E+00
2026	Idle	4.53E+00	1.66E+01	2.79E+01	4.09E-02	5.76E-02	0.00E+00	0.00E+00	0.00E+00	5.30E-02	0.00E+00	4.50E+03	8.75E-01	9.83E+00
2026	5	2.76E+00	6.63E+00	9.45E+00	1.66E-02	1.05E-01	3.60E-02	6.17E-02	0.00E+00	9.66E-02	3.55E-02	3.61E+03	1.75E-01	1.97E+00
2026	10	1.61E+00	4.13E+00	7.11E+00	1.66E-02	9.63E-02	3.60E-02	6.17E-02	0.00E+00	8.86E-02	3.55E-02	2.98E+03	1.75E-01	1.97E+00
2026	15	8.17E-01	2.40E+00	5.35E+00	1.66E-02	8.79E-02	3.60E-02	6.17E-02	0.00E+00	8.09E-02	3.55E-02	2.45E+03	1.75E-01	1.97E+00
2026	20	3.51E-01	1.30E+00	4.04E+00	1.66E-02	7.89E-02	3.60E-02	6.17E-02	0.00E+00	7.26E-02	3.55E-02	1.93E+03	1.75E-01	1.97E+00
2026	25	3.07E-01	1.23E+00	3.62E+00	1.66E-02	7.53E-02	3.60E-02	6.17E-02	0.00E+00	6.93E-02	3.55E-02	1.80E+03	1.75E-01	1.97E+00
2026	30	2.67E-01	1.18E+00	3.27E+00	1.66E-02	7.48E-02	3.60E-02	6.17E-02	0.00E+00	6.88E-02	3.55E-02	1.69E+03	1.75E-01	1.97E+00
2026	35	2.33E-01	1.15E+00	2.97E+00	1.66E-02	7.73E-02	3.60E-02	6.17E-02	0.00E+00	7.11E-02	3.55E-02	1.60E+03	1.75E-01	1.97E+00
2026	40	2.04E-01	1.14E+00	2.74E+00	1.66E-02	8.30E-02	3.60E-02	6.17E-02	0.00E+00	7.64E-02	3.55E-02	1.53E+03	1.75E-01	1.97E+00
2026	45	1.80E-01	1.15E+00	2.57E+00	1.66E-02	9.16E-02	3.60E-02	6.17E-02	0.00E+00	8.43E-02	3.55E-02	1.47E+03	1.75E-01	1.97E+00
2026	50	1.61E-01	1.19E+00	2.46E+00	1.66E-02	1.03E-01	3.60E-02	6.17E-02	0.00E+00	9.51E-02	3.55E-02	1.44E+03	1.75E-01	1.97E+00
2026	55	1.47E-01	1.25E+00	2.41E+00	1.66E-02	1.18E-01	3.60E-02	6.17E-02	0.00E+00	1.09E-01	3.55E-02	1.42E+03	1.75E-01	1.97E+00

Notes:

1. Emission factors for trucks using LNG are assumed to be the same as diesel trucks except for DPM (set to zero) and GHG.
2. The CO2 emission factor for LNG drayage trucks was derived from the emission factor for diesel drayage trucks by (a) scaling by the ratio of CO2 emission factors per gallon of fuel for diesel and LNG (from the 2012 Climate Registry Default Emission Factors, Table 13.1), and (b) scaling by the ratio of fuel consumed by conserving fuel heat content and applying a 15% thermal efficiency penalty to LNG (National Renewable Energy Laboratory, July 1999. "Using LNG as a Fuel in Heavy-Duty Tractors". NREL/SR-540-24146. Page 3).
3. N2O and CH4 emission factors are from the 2012 Climate Registry Default Emission Factors (The Climate Registry, 1/6/2012), Table 13.6.

Table B1.62 Emission Factors for Automobiles

		Emission Factors (g/mi) or (g/hr) for idle												
Analysis Year	Speed (mph)	VOC	CO	NOx	SOx	PM10 Exhaust	PM10 Tire Wear	PM10 Brake Wear	DPM	PM2.5 Exhaust	PM2.5 Tire & Brake Wear	CO2	N2O	CH4
2012	Idle	1.92E+00	2.41E+01	2.09E+00	2.29E-02	8.27E-02	0.00E+00	0.00E+00	1.93E-03	7.56E-02	0.00E+00	6.23E+03	3.63E-01	6.09E-01
2012	5	3.85E-01	4.82E+00	4.19E-01	4.58E-03	1.65E-02	8.00E-03	3.67E-02	3.85E-04	1.51E-02	1.77E-02	1.25E+03	7.26E-02	1.22E-01
2012	10	2.60E-01	4.04E+00	3.60E-01	4.58E-03	1.08E-02	8.00E-03	3.67E-02	3.40E-04	9.87E-03	1.77E-02	9.26E+02	7.26E-02	1.22E-01
2012	15	1.84E-01	3.48E+00	3.18E-01	4.58E-03	7.41E-03	8.00E-03	3.67E-02	2.70E-04	6.76E-03	1.77E-02	7.12E+02	7.26E-02	1.22E-01
2012	20	1.36E-01	3.06E+00	2.87E-01	4.58E-03	5.35E-03	8.00E-03	3.67E-02	2.19E-04	4.88E-03	1.77E-02	5.69E+02	7.26E-02	1.22E-01
2012	25	1.06E-01	2.74E+00	2.64E-01	4.58E-03	4.06E-03	8.00E-03	3.67E-02	1.82E-04	3.70E-03	1.77E-02	4.73E+02	7.26E-02	1.22E-01
2012	30	8.64E-02	2.49E+00	2.49E-01	4.58E-03	3.23E-03	8.00E-03	3.67E-02	1.54E-04	2.94E-03	1.77E-02	4.06E+02	7.26E-02	1.22E-01
2012	35	7.43E-02	2.29E+00	2.39E-01	4.58E-03	2.70E-03	8.00E-03	3.67E-02	1.34E-04	2.46E-03	1.77E-02	3.63E+02	7.26E-02	1.22E-01
2012	40	6.71E-02	2.16E+00	2.31E-01	4.58E-03	2.37E-03	8.00E-03	3.67E-02	1.19E-04	2.15E-03	1.77E-02	3.37E+02	7.26E-02	1.22E-01
2012	45	6.34E-02	2.06E+00	2.27E-01	4.58E-03	2.18E-03	8.00E-03	3.67E-02	1.08E-04	1.98E-03	1.77E-02	3.26E+02	7.26E-02	1.22E-01
2012	50	6.31E-02	2.00E+00	2.29E-01	4.58E-03	2.11E-03	8.00E-03	3.67E-02	1.00E-04	1.91E-03	1.77E-02	3.25E+02	7.26E-02	1.22E-01
2012	55	6.60E-02	2.00E+00	2.36E-01	4.58E-03	2.13E-03	8.00E-03	3.67E-02	9.57E-05	1.93E-03	1.77E-02	3.36E+02	7.26E-02	1.22E-01
2012	60	7.31E-02	2.06E+00	2.52E-01	4.58E-03	2.27E-03	8.00E-03	3.67E-02	9.35E-05	2.05E-03	1.77E-02	3.57E+02	7.26E-02	1.22E-01
2012	65	8.47E-02	2.22E+00	2.69E-01	4.58E-03	2.53E-03	8.00E-03	3.67E-02	9.38E-05	2.29E-03	1.77E-02	3.98E+02	7.26E-02	1.22E-01
2015	Idle	1.33E+00	1.74E+01	1.57E+00	2.29E-02	6.48E-02	0.00E+00	0.00E+00	1.19E-03	5.95E-02	0.00E+00	5.74E+03	3.63E-01	6.02E-01
2015	5	2.66E-01	3.48E+00	3.14E-01	4.58E-03	1.30E-02	8.00E-03	3.67E-02	2.38E-04	1.19E-02	1.77E-02	1.15E+03	7.27E-02	1.20E-01
2015	10	1.80E-01	2.97E+00	2.70E-01	4.58E-03	8.40E-03	8.00E-03	3.67E-02	2.09E-04	7.72E-03	1.77E-02	8.52E+02	7.27E-02	1.20E-01
2015	15	1.27E-01	2.58E+00	2.38E-01	4.58E-03	5.73E-03	8.00E-03	3.67E-02	1.66E-04	5.26E-03	1.77E-02	6.56E+02	7.27E-02	1.20E-01
2015	20	9.33E-02	2.29E+00	2.14E-01	4.58E-03	4.11E-03	8.00E-03	3.67E-02	1.34E-04	3.77E-03	1.77E-02	5.25E+02	7.27E-02	1.20E-01
2015	25	7.25E-02	2.06E+00	1.97E-01	4.58E-03	3.10E-03	8.00E-03	3.67E-02	1.11E-04	2.85E-03	1.77E-02	4.35E+02	7.27E-02	1.20E-01
2015	30	5.92E-02	1.88E+00	1.85E-01	4.58E-03	2.46E-03	8.00E-03	3.67E-02	9.46E-05	2.26E-03	1.77E-02	3.74E+02	7.27E-02	1.20E-01
2015	35	5.09E-02	1.73E+00	1.77E-01	4.58E-03	2.05E-03	8.00E-03	3.67E-02	8.23E-05	1.88E-03	1.77E-02	3.34E+02	7.27E-02	1.20E-01
2015	40	4.60E-02	1.63E+00	1.70E-01	4.58E-03	1.80E-03	8.00E-03	3.67E-02	7.34E-05	1.64E-03	1.77E-02	3.11E+02	7.27E-02	1.20E-01
2015	45	4.37E-02	1.55E+00	1.67E-01	4.58E-03	1.65E-03	8.00E-03	3.67E-02	6.71E-05	1.51E-03	1.77E-02	3.00E+02	7.27E-02	1.20E-01
2015	50	4.36E-02	1.50E+00	1.68E-01	4.58E-03	1.59E-03	8.00E-03	3.67E-02	6.29E-05	1.46E-03	1.77E-02	3.00E+02	7.27E-02	1.20E-01
2015	55	4.59E-02	1.48E+00	1.73E-01	4.58E-03	1.62E-03	8.00E-03	3.67E-02	6.06E-05	1.48E-03	1.77E-02	3.09E+02	7.27E-02	1.20E-01
2015	60	5.10E-02	1.50E+00	1.85E-01	4.58E-03	1.72E-03	8.00E-03	3.67E-02	6.01E-05	1.57E-03	1.77E-02	3.29E+02	7.27E-02	1.20E-01
2015	65	5.95E-02	1.59E+00	1.97E-01	4.58E-03	1.93E-03	8.00E-03	3.67E-02	6.15E-05	1.76E-03	1.77E-02	3.66E+02	7.27E-02	1.20E-01
2016	Idle	1.18E+00	1.57E+01	1.44E+00	2.29E-02	6.23E-02	0.00E+00	0.00E+00	1.00E-03	5.74E-02	0.00E+00	5.55E+03	3.63E-01	6.02E-01
2016	5	2.36E-01	3.13E+00	2.87E-01	4.58E-03	1.25E-02	8.00E-03	3.67E-02	2.01E-04	1.15E-02	1.77E-02	1.11E+03	7.27E-02	1.20E-01
2016	10	1.60E-01	2.69E+00	2.47E-01	4.58E-03	8.06E-03	8.00E-03	3.67E-02	1.77E-04	7.42E-03	1.77E-02	8.25E+02	7.27E-02	1.20E-01
2016	15	1.12E-01	2.35E+00	2.17E-01	4.58E-03	5.48E-03	8.00E-03	3.67E-02	1.40E-04	5.04E-03	1.77E-02	6.35E+02	7.27E-02	1.20E-01
2016	20	8.27E-02	2.09E+00	1.95E-01	4.58E-03	3.93E-03	8.00E-03	3.67E-02	1.13E-04	3.61E-03	1.77E-02	5.08E+02	7.27E-02	1.20E-01
2016	25	6.42E-02	1.89E+00	1.79E-01	4.58E-03	2.96E-03	8.00E-03	3.67E-02	9.39E-05	2.72E-03	1.77E-02	4.21E+02	7.27E-02	1.20E-01
2016	30	5.24E-02	1.72E+00	1.68E-01	4.58E-03	2.34E-03	8.00E-03	3.67E-02	7.99E-05	2.15E-03	1.77E-02	3.62E+02	7.27E-02	1.20E-01
2016	35	4.51E-02	1.59E+00	1.61E-01	4.58E-03	1.95E-03	8.00E-03	3.67E-02	6.96E-05	1.79E-03	1.77E-02	3.23E+02	7.27E-02	1.20E-01
2016	40	4.08E-02	1.49E+00	1.55E-01	4.58E-03	1.71E-03	8.00E-03	3.67E-02	6.21E-05	1.57E-03	1.77E-02	3.01E+02	7.27E-02	1.20E-01
2016	45	3.88E-02	1.42E+00	1.52E-01	4.58E-03	1.57E-03	8.00E-03	3.67E-02	5.69E-05	1.44E-03	1.77E-02	2.90E+02	7.27E-02	1.20E-01
2016	50	3.88E-02	1.37E+00	1.52E-01	4.58E-03	1.51E-03	8.00E-03	3.67E-02	5.35E-05	1.39E-03	1.77E-02	2.90E+02	7.27E-02	1.20E-01
2016	55	4.09E-02	1.34E+00	1.57E-01	4.58E-03	1.53E-03	8.00E-03	3.67E-02	5.18E-05	1.40E-03	1.77E-02	2.99E+02	7.27E-02	1.20E-01
2016	60	4.55E-02	1.35E+00	1.67E-01	4.58E-03	1.63E-03	8.00E-03	3.67E-02	5.18E-05	1.50E-03	1.77E-02	3.18E+02	7.27E-02	1.20E-01
2016	65	5.32E-02	1.43E+00	1.78E-01	4.58E-03	1.83E-03	8.00E-03	3.67E-02	5.35E-05	1.68E-03	1.77E-02	3.55E+02	7.27E-02	1.20E-01
2017	Idle	1.04E+00	1.40E+01	1.32E+00	2.29E-02	6.09E-02	0.00E+00	0.00E+00	8.46E-04	5.63E-02	0.00E+00	5.35E+03	3.63E-01	6.02E-01
2017	5	2.08E-01	2.81E+00	2.63E-01	4.58E-03	1.22E-02	8.00E-03	3.67E-02	1.69E-04	1.13E-02	1.77E-02	1.07E+03	7.27E-02	1.20E-01
2017	10	1.41E-01	2.43E+00	2.26E-01	4.58E-03	7.85E-03	8.00E-03	3.67E-02	1.49E-04	7.25E-03	1.77E-02	7.94E+02	7.27E-02	1.20E-01
2017	15	9.87E-02	2.13E+00	1.99E-01	4.58E-03	5.32E-03	8.00E-03	3.67E-02	1.18E-04	4.91E-03	1.77E-02	6.12E+02	7.27E-02	1.20E-01
2017	20	7.26E-02	1.90E+00	1.79E-01	4.58E-03	3.80E-03	8.00E-03	3.67E-02	9.52E-05	3.51E-03	1.77E-02	4.89E+02	7.27E-02	1.20E-01
2017	25	5.63E-02	1.72E+00	1.64E-01	4.58E-03	2.86E-03	8.00E-03	3.67E-02	7.90E-05	2.63E-03	1.77E-02	4.06E+02	7.27E-02	1.20E-01
2017	30	4.59E-02	1.57E+00	1.53E-01	4.58E-03	2.26E-03	8.00E-03	3.67E-02	6.72E-05	2.08E-03	1.77E-02	3.49E+02	7.27E-02	1.20E-01
2017	35	3.95E-02	1.45E+00	1.46E-01	4.58E-03	1.88E-03	8.00E-03	3.67E-02	5.86E-05	1.73E-03	1.77E-02	3.11E+02	7.27E-02	1.20E-01
2017	40	3.58E-02	1.36E+00	1.41E-01	4.58E-03	1.64E-03	8.00E-03	3.67E-02	5.25E-05	1.51E-03	1.77E-02	2.90E+02	7.27E-02	1.20E-01
2017	45	3.41E-02	1.30E+00	1.38E-01	4.58E-03	1.51E-03	8.00E-03	3.67E-02	4.82E-05	1.39E-03	1.77E-02	2.79E+02	7.27E-02	1.20E-01
2017	50	3.42E-02	1.25E+00	1.38E-01	4.58E-03	1.45E-03	8.00E-03	3.67E-02	4.56E-05	1.34E-03	1.77E-02	2.79E+02	7.27E-02	1.20E-01
2017	55	3.60E-02	1.22E+00	1.42E-01	4.58E-03	1.47E-03	8.00E-03	3.67E-02	4.44E-05	1.35E-03	1.77E-02	2.88E+02	7.27E-02	1.20E-01
2017	60	4.01E-02	1.22E+00	1.52E-01	4.58E-03	1.57E-03	8.00E-03	3.67E-02	4.47E-05	1.44E-03	1.77E-02	3.07E+02	7.27E-02	1.20E-01
2017	65	4.71E-02	1.28E+00	1.61E-01	4.58E-03	1.76E-03	8.00E-03	3.67E-02	4.67E-05	1.62E-03	1.77E-02	3.42E+02	7.27E-02	1.20E-01
2020	Idle	7.67E-01	1.06E+01	1.05E+00	2.28E-02	6.06E-02	0.00E+00	0.00E+00	5.34E-04	5.62E-02	0.00E+00	4.78E+03	3.64E-01	6.02E-01
2020	5	1.53E-01	2.13E+00	2.10E-01	4.56E-03	1.21E-02	8.00E-03	3.67E-02	1.07E-04	1.12E-02	1.77E-02	9.56E+02	7.27E-02	1.20E-01
2020	10	1.04E-01	1.88E+00	1.80E-01	4.56E-03	7.74E-03	8.00E-03	3.67E-02	9.38E-05	7.18E-03	1.77E-02	7.10E+02	7.27E-02	1.20E-01
2020	15	7.23E-02	1.67E+00	1.58E-01	4.56E-03	5.21E-03	8.00E-03	3.67E-02	7.37E-05	4.83E-03	1.77E-02	5.47E+02	7.27E-02	1.20E-01
2020	20	5.30E-02	1.51E+00	1.42E-01	4.56E-03	3.70E-03	8.00E-03	3.67E-02	5.96E-05	3.43E-03	1.77E-02	4.37E+02	7.27E-02	1.20E-01
2020	25	4.10E-02	1.37E+00	1.29E-01	4.56E-03	2.76E-03	8.00E-03	3.67E-02	4.95E-05	2.56E-03	1.77E-02	3.62E+02	7.27E-02	1.20E-01
2020	30	3.34E-02	1.25E+00	1.21E-01	4.56E-03	2.17E-03	8.00E-03	3.67E-02	4.22E-05	2.01E-03	1.77E-02	3.12E+02	7.27E-02	1.20E-01
2020	35	2.88E-02	1.16E+00	1.15E-01	4.56E-03	1.80E-03	8.00E-03	3.67E-02	3.70E-05	1.67E-03	1.77E-02	2.78E+02	7.27E-02	1.20E-01
2020	40	2.62E-02	1.09E+00	1.10E-01	4.56E-03	1.57E-03	8.00E-03	3.67E-02	3.34E-05	1.45E-03	1.77E-02	2.59E+02	7.27E-02	1.20E-01
2020	45	2.51E-02	1.03E+00	1.07E-01	4.56E-03	1.44E-03	8.00E-03	3.67E-02	3.11E-05	1.33E-03	1.77E-02	2.50E+02	7.27E-02	1.20E-01
2020	50	2.53E-02	9.83E-01	1.07E-01	4.56E-03	1.38E-03	8.00E-03	3.67E-02	2.99E-05	1.28E-03	1.77E-02	2.49E+02	7.27E-02	1.20E-01
2020	55	2.68E-02	9.52E-01	1.10E-01	4.56E-03	1.40E-03	8.00E-03	3.67E-02	2.97E-05	1.30E-03	1.77E-02	2.58E+02	7.27E-02	1.20E-01
2020	60	3.00E-02	9.36E-01	1.17E-01	4.56E-03	1.50E-03	8.00E-03	3.67E-02	3.08E-05	1.39E-03	1.77E-02	2.74E+02	7.27E-02	1.20E-01
2020	65	3.56E-02	9.65E-01	1.25E-01	4.56E-03	1.69E-03	8.00E-03	3.67E-02	3.34E-05	1.56E-03	1.77E-02	3.05E+02	7.27E-02	1.20E-01
2026	Idle	5.81E-01	7.76E+00	7.87E-01	2.31E-02	6.50E-02	0.00E+00	0.00E+00	2.34E-04	6.03E-02	0.00E+00	4.42E+03	3.64E-01	6.10E-01
2026	5	1.16E-01	1.55E+00	1.57E-01	4.61E-03	1.30E-02	8.00E-03	3.67E-02	4.68E-05	1.21E-02	1.77E-02	8.84E+02	7.29E-02	1.22E-01
2026	10	7.90E-02	1.40E+00	1.35E-01	4.61E-03	8.23E-03	8.00E-03	3.67E-02	4.06E-05	7.63E-03	1.77E-02	6.57E+02	7.29E-02	1.22E-01
2026	15	5.50E-02	1.27E+00	1.19E-01	4.61E-03	5.49E-03	8.00E-03	3.67E-02	3.14E-05	5.09E-03	1.77E-02	5.05E+02	7.29E-02	1.22E-01
2026	20	4.03E-02	1.15E+00	1.06E-01	4.61E-03	3.86E-03	8.00E-03	3.67E-02	2.52E-05	3.58E-03	1.77E-02	4.04E+02	7.29E-02	1.22E-01
2026	25	3.13E-02	1.05E+00	9.71E-02	4.61E-03	2.87E-03	8.00E-03	3.67E-02	2.10E-05	2.66E-03	1.77E-02	3.35E+02	7.29E-02	1.22E-01
2026	30	2.56E-02	9.69E-01	9.04E-02	4.61E-03	2.24E-03	8.00E-03	3.67E-02	1.81E-05	2.08E-03	1.77E-02	2.88E+02	7.29E-02	1.22E-01
2026	35	2.22E-02	8.96E-01	8.58E-02	4.61E-03	1.85E-03	8.00E-03	3.67E-02	1.62E-05	1.71E-03	1.77E-02	2.57E+02	7.29E-02	1.22E-01
2026	40	2.03E-02	8.40E-01	8.20E-02	4.61E-03	1.60E-03	8.00E-03	3.67E-02	1.50E-05	1.49E-03	1.77E-02	2.39E+02	7.29E-02	1.22E-01
2026	45	1.97E-02	7.94E-01	7.99E-02	4.61E-03	1.47E-03	8.00E-03	3.67E-02	1.45E-05	1.36E-03	1.77E-02	2.31E+02	7.29E-02	1.22E-01
2026	50	2.01E-02	7.56E-01	7.95E-02	4.61E-03	1.42E-03	8.00E-03	3.67E-02	1.47E-05	1.31E-03	1.77E-02	2.31E+02	7.29E-02	1.22E-01
2026	55	2.16E-02	7.25E-01	8.17E-02	4.61E-03	1.44E-03	8.00E-03	3.67E-02	1.56E-05	1.34E-03	1.77E-02	2.38E+02	7.29E-02	1.22E-01
2026	60	2.45E-02	7.08E-01	8.64E-02	4.61E-03	1.54E-03	8.00E-03	3.67E-02	1.74E-05	1.43E-03	1.77E-02	2.53E+02	7.29E-02	1.22E-01
2026	65	2.95E-02	7.23E-01	9.16E-02	4.61E-03	1.74E-03	8.00E-03	3.67E-02	2.06E-05	1.62E-03	1.77E-02	2.82E+02	7.29E-02	1.22E-01

Notes:

1. Criteria pollutant and CO2 emission factors are from EMFAC2011.
2. Idle emission factors were derived from the running exhaust emission factors at 5 mph, in accordance with EMFAC2011 guidance.
3. EMFAC2011 vehicle categories for the emission factors include Passenger Cars, Light Duty Trucks, Medium Duty Trucks, and Motorcycles.
4. CO2 emission factors include the Pavley and LCFS regulations.
5. CH4 and N2O emission factors are from the 2012 Climate Registry Default Emission Factors (The Climate Registry, 1/6/2012). Tables 13.4 (Motorcycles) and 13.5 (all other vehicles). For each vehicle category, the oldest model year range was conservatively selected.

Table B1.63 Paved Road Dust Emission Factor Derivation

Emission Source	(sL) Silt Loading (g/m2)	(k) Particle Size Multiplier - PM10 (g/VMT)	(k) Particle Size Multiplier - PM2.5 (g/VMT)	(W) Average Vehicle Weight on Road (tons)	(E) Uncontrolled PM10 Emission Factor (g/VMT)	(E) Uncontrolled PM2.5 Emission Factor (g/VMT)
Onsite Drayage Trucks	0.6	1.00	0.25	18.9	12.59	3.15
Onsite Autos	0.6	1.00	0.25	2.4	1.53	0.38
Offsite Roadway (all vehicles) <500 ADT	0.6	1.00	0.25	2.4	1.53	0.38
Offsite Roadway (all vehicles) 500-5000 ADT	0.2	1.00	0.25	2.4	0.56	0.14
Offsite Roadway (all vehicles) 5000-10000 ADT	0.06	1.00	0.25	2.4	0.19	0.05
Offsite Roadway (all vehicles) >10000 ADT	0.03	1.00	0.25	2.4	0.10	0.03
Offsite Roadway (all vehicles) >10000 ADT Limited Access	0.015	1.00	0.25	2.4	0.05	0.01

Notes:

1. Emission factors are calculated using Equation 1 of AP-42 Section 13.2.1 (Jan 2011). Because the emissions are primarily used for peak day or peak hour calculations, the downward adjustment due to annual precipitation (in Equation 2) was not made.
2. Emission factors exclude engine exhaust, tire wear, and brake wear.
3. The equation is: $E = k (sL)^{0.91} \times (W)^{1.02}$

Table B1.64 Annualization Factors for YTI Truck Trips

Year	Percent of YTI Activity on Weekdays	Average-to-Peak Month Factor	Annualization Factor
2012	12.24%	1.0061	294.5
2015	--	--	282.2
2016	--	--	278.2
2017	15.00%	1.116	274.1
2020	15.00%	1.116	274.1
2026	15.00%	1.116	274.1

Notes:

1. Annualization factors are multiplied by the peak day trips to obtain annual trips.
2. Annualization factors are computed by converting peak month to average month, accounting for weekend/weekday split, and then expanding to 5*52 weekdays in a year.
3. Years 2015 and 2016 were interpolated.
4. Source: Cambridge Systematics, personal communication from Sean McAtee, 7/29/2013.

Table B1.65 **Conformity Analysis Emissions Without Mitigation - Proposed Project (tons/year)**

	PM10	PM2.5	NOX	SOX	CO	VOC
2015						
Sheet Piling 1	0.1	0.1	3.8	0.0	2.1	0.3
Sheet Piling 2	0.1	0.1	3.8	0.0	2.1	0.3
Dredging - Maximum of Ocean Disposal and Upland Disposal	0.3	0.2	7.4	0.0	0.7	0.1
Crane Rail Extension	0.1	0.1	1.4	0.0	0.7	0.1
2 LAHD Crane Relocation (B217-220)	0.0	0.0	0.9	0.0	0.5	0.1
2 YTI Crane Relocation/Realignment (B217-220)	0.0	0.0	0.3	0.0	0.1	0.0
4 New YTI Crane Delivery (B217-220)	0.0	0.0	1.3	0.1	0.2	0.0
6 Crane Height Raising and Boom Extension (4 cranes at B212-213, 2 cranes at B217-220)	0.1	0.1	1.4	0.0	1.0	0.1
Total 2015	**0.8**	**0.6**	**20.3**	**0.1**	**7.3**	**1.0**
De Minimis Level	100.0	100.0	10.0	100.0	100.0	10.0
Exceeds de minimis?	No	No	Yes	No	No	No
2016						
Sheet and King Pile Installation 1	0.2	0.2	5.7	0.0	3.5	0.4
Sheet and King Pile Installation 2	0.2	0.2	5.3	0.0	3.0	0.4
Dredging - Maximum of Ocean Disposal and Upland Disposal	0.3	0.2	7.4	0.0	1.0	0.1
Total 2016	**0.7**	**0.6**	**18.5**	**0.0**	**7.5**	**1.0**
De Minimis Level	100.0	100.0	10.0	100.0	100.0	10.0
Exceeds de minimis?	No	No	Yes	No	No	No

Notes:

Only those construction elements that would result due to the federal action are included in the conformity analysis. The USACE has authority over mobile and stationary sources while they are on-site or at berth, but no authority over mobile sources while they are in transit to/from the site (E-mail communication with Theresa Stevens, USACE. March 17, 2014).

Table B1.66 **Conformity Analysis Emissions With Mitigation - Proposed Project (tons/year)**

	PM10	PM2.5	NOX	SOX	CO	VOC
2015						
Sheet Piling 1	0.0	0.0	2.0	0.0	1.2	0.2
Sheet Piling 2	0.0	0.0	1.9	0.0	1.2	0.2
Dredging - Maximum of Ocean Disposal and Upland Disposal	0.1	0.1	2.3	0.0	1.4	0.2
Crane Rail Extension	0.0	0.0	0.7	0.0	0.6	0.1
2 LAHD Crane Relocation (B217-220)	0.0	0.0	0.5	0.0	0.3	0.0
2 YTI Crane Relocation/Realignment (B217-220)	0.0	0.0	0.1	0.0	0.1	0.0
4 New YTI Crane Delivery (B217-220)	0.0	0.0	1.2	0.1	0.2	0.0
6 Crane Height Raising and Boom Extension (4 cranes at B212-213, 2 cranes at B217-220)	0.0	0.0	0.7	0.0	0.7	0.1
Total 2015	**0.3**	**0.2**	**9.4**	**0.1**	**5.7**	**0.8**
De Minimis Level	70.0	100.0	10.0	100.0	100.0	10.0
Exceeds de minimis?	No	No	No	No	No	No
2016						
Sheet and King Pile Installation 1	0.1	0.1	3.0	0.0	2.0	0.3
Sheet and King Pile Installation 2	0.1	0.1	2.8	0.0	1.7	0.2
Dredging - Maximum of Ocean Disposal and Upland Disposal	0.4	0.2	3.9	0.0	2.0	0.2
Total 2016	**0.5**	**0.3**	**9.6**	**0.0**	**5.7**	**0.7**
De Minimis Level	70.0	100.0	10.0	100.0	100.0	10.0
Exceeds de minimis?	No	No	No	No	No	No

Notes:

Only those construction elements that would result due to the federal action are included in the conformity analysis. The USACE has authority over mobile and stationary sources while they are on-site or at berth, but no authority over mobile sources while they are in transit to/from the site (E-mail communication with Theresa Stevens, USACE. March 17, 2014).