



August 4, 2010

Mr. Christopher Meyer
CEC Project Manager
Attn: Docket No. 08-AFC-13
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814-5512

DOCKET	
08-AFC-13	
DATE	<u>AUG 04 2010</u>
RECD.	<u>AUG 04 2010</u>

RE: Calico Solar (formerly Solar One) Project (08-AFC-13)
Applicant's Submittal of Additional Air Quality Analysis Discussed at the August 4, 2010
Hearing

Dear Mr. Meyer:

Tessera Solar hereby submits the Applicant's Additional Air Quality Analysis Discussed at the August 4, 2010 Hearing. I certify under penalty of perjury that the foregoing is true, correct, and complete to the best of my knowledge.

Sincerely,

Felicia L. Bellows
Vice President of Development

**Attachment AQ-1
Calico Solar
Construction Emissions
(July 27, 2010 revision)**

Calico Solar
Table 2.2-1b rev.
Estimated Daily Maximum Construction Emissions of Criteria Pollutants (lbs/day)
(Month 6)

Activity	PM ₁₀	PM _{2.5}	CO	ROG	NO _x	SO _x
On-Site Construction Emissions						
On-Site Combustion Emissions						
Construction Equipment	17.34	15.98	267.06	49.34	294.17	0.29
Worker Vehicles	0.68	0.52	47.85	3.29	4.46	0.07
Security Vehicles	0.01	0.01	1.33	0.03	0.02	0.01
Onsite generators	4.32	4.21	74.89	8.11	81.06	36.37
Bridge Construction Delivery Trucks	0.03	0.03	0.22	0.10	0.49	0.00
Other Delivery Trucks	1.80	1.61	14.60	5.36	29.38	0.04
Subtotal of On-site Combustion Emissions	24.18	22.36	405.95	66.24	409.57	36.77
On-Site Fugitive Emissions						
Construction Equipment	33.54	7.54				
Storage piles	17.95	3.98				
Worker Vehicles	84.50	11.45				
Security Vehicles	6.76	0.93				
Onsite generators	-	-				
Bridge Construction Delivery Trucks	5.18	0.74				
Other Delivery Trucks	325.68	44.77				
Subtotal of On-Site Fugitive Emissions	473.61	69.42				
Subtotal of On-Site Emissions	497.80	91.78	405.95	66.24	409.57	36.77
Off-Site On-Road Emissions						
Off-Site Combustion Emissions						
Worker Vehicles	2.50	1.39	201.75	6.01	24.13	0.23
Onsite generators	-	-	-	-	-	-
Bridge Construction Delivery Trucks	0.45	0.38	2.46	0.54	12.24	0.01
Other Delivery Trucks	7.89	6.72	43.23	9.46	214.71	0.23
Subtotal of Off-Site Combustion Emissions	10.84	8.49	247.44	16.01	251.08	0.48
Off-Site Paved Road Fugitive Dust Emissions						
Worker Vehicles	15.23	2.28				
Onsite generators	-	-				
Bridge Construction Delivery Trucks	4.86	0.62				
Other Delivery Trucks	85.17	10.93				
Subtotal of Off-Site Fugitive Emissions	105.25	13.83				
Subtotal of Off-Site Emissions	116.09	22.32	247.44	16.01	251.08	0.48
Total Maximum Daily Emissions	613.89	114.10	653.39	82.25	660.65	37.24

Calico Solar

Table 2.2-2b rev.

Estimated Maximum Annual Construction Emissions of Criteria Pollutants (tons/year)
(Month 2 to 13)

Activity	PM ₁₀	PM _{2.5}	CO	ROG	NO _x	SO _x
On-Site Construction Emissions						
On-Site Combustion Emissions						
Construction Equipment	1.989	1.832	28.854	5.669	31.700	0.032
Worker Vehicles	0.071	0.054	4.966	0.342	0.463	0.007
Security Vehicles	0.001	0.001	0.208	0.005	0.003	0.001
Onsite generators	0.673	0.657	11.683	1.264	12.645	5.673
Bridge Construction Delivery Trucks	0.003	0.002	0.019	0.009	0.041	0.000
Other Delivery Trucks	0.254	0.228	2.078	0.741	4.139	0.005
Subtotal of On-site Combustion Emissions	2.99	2.77	47.81	8.03	48.99	5.72
On-Site Fugitive Dust Emissions						
Construction Equipment	3.57	0.75				
Storage piles	1.64	0.36				
Worker Vehicles	8.77	1.19				
Security Vehicles	1.05	0.15				
Onsite generators	-	-				
Bridge Construction Delivery Trucks	0.43	0.06				
Other Delivery Trucks	45.91	6.34				
Subtotal of On-Site Fugitive Emissions	61.37	8.85				
Subtotal of On-Site Emissions	64.36	11.63	47.81	8.03	48.99	5.72
Off-Site On-Road Emissions						
Off-Site Combustion Emissions						
Worker Vehicles	0.26	0.14	20.94	0.62	2.50	0.02
Onsite generators	-	-	-	-	-	-
Bridge Construction Delivery Trucks	0.04	0.03	0.21	0.04	1.02	0.00
Other Delivery Trucks	0.99	0.84	5.42	1.19	26.93	0.03
Subtotal of Off-Site Combustion Emissions	1.29	1.02	26.57	1.86	30.46	0.05
Off-Site Paved Road Fugitive Emissions						
Worker Vehicles	1.58	0.24				
Onsite generators	-	-				
Bridge Construction Delivery Trucks	0.40	0.05				
Other Delivery Trucks	10.68	1.37				
Subtotal of Off-Site Fugitive Emissions	12.67	1.66				
Subtotal of Off-Site Emissions	13.95	2.68	26.57	1.86	30.46	0.05
Total Maximum Annual Emissions	78.32	14.30	74.37	9.89	79.45	5.77

**Estimated Annual Maximum Construction Greenhouse Gases Emissions
(metric tonnes/year)
(Month 2 to 13)**

Activity	CO ₂	CH ₄	N ₂ O	CO ₂ e
On-Site Construction Emissions				
On-Site Combustion Emissions				
Construction Equipment	2,764.96	0.82	-	2,782.21
Worker Vehicles	645.58	0.06	0.06	664.84
Security Vehicles	29.29	0.01	0.01	31.75
Onsite generators	2,041.95	0.08	0.02	2,049.88
Bridge Construction Delivery Trucks	4.26	0.00	0.00	4.26
Other Delivery Trucks	480.11	0.00	0.00	480.83
Subtotal of On-site Combustion Emissions	5,966.17	0.98	0.09	6,013.77
On-Site Fugitive Dust Emissions				
Construction Equipment				
Storage piles				
Worker Vehicles				
Security Vehicles				
Onsite generators				
Bridge Construction Delivery Trucks				
Other Delivery Trucks				
Subtotal of On-Site Fugitive Emissions				
Subtotal of On-Site Emissions	5,966.17	0.98	0.09	6,013.77
Off-Site On-Road Emissions				
Off-Site Combustion Emissions				
Worker Vehicles	2,156.37	0.52	0.48	2,314.67
Onsite generators	2,156.37	0.52	0.48	2,314.67
Bridge Construction Delivery Trucks	-	-	-	-
Other Delivery Trucks	2,717.80	0.01	0.01	2,720.39
Subtotal of Off-Site Combustion Emissions	4,976.94	0.53	0.48	5,137.93
Off-Site Paved Road Fugitive Emissions				
Worker Vehicles				
Onsite generators				
Bridge Construction Delivery Trucks				
Other Delivery Trucks				
Subtotal of Off-Site Fugitive Emissions				
Subtotal of Off-Site Emissions	4,976.94	0.53	0.48	5,137.93
Total Maximum Annual Emissions	10,943.10	1.50	0.57	11,151.70

Note

1. To be consistency to on-site emissions, months 6 was used to represent the daily/month and months 2-13 was used to represent the annual construction off-site (on-road) emissions.

Calico Solar

Estimated Entire Construction Period Emissions of GHG Pollutants (tons)

Activity	CO ₂	CH ₄	N ₂ O	CO ₂ e
On-Site Construction Emissions				
On-Site Combustion Emissions				
Construction Equipment	5456.20	2.02	0.00	5498.55
Worker Vehicles	1816.674	0.177	0.163	1870.852
Security Vehicles	110.326	0.035	0.027	119.582
Onsite generators	14428.640	0.569	0.142	14484.649
All Delivery Trucks	1433.941	0.008	0.008	1436.472
Subtotal of On-site Combustion Emissions	23245.78	2.81	0.34	23410.10
On-Site Fugitive Dust Emissions				
Construction Equipment				
Worker Vehicles				
Security Vehicles				
All Delivery Trucks				
Subtotal of On-Site Fugitive Emissions				
Subtotal of On-Site Emissions	23245.78	2.81	0.34	23410.10
Off-Site On-Road Emissions				
Off-Site Combustion Emissions				
Worker Vehicles	6068.04	1.46	1.34	6513.50
All Delivery Trucks	9901.78	0.03	0.03	9911.23
Subtotal of Off-Site Combustion Emissions	15969.82	1.49	1.37	16424.73
Off-Site Paved Road Fugitive Emissions				
Worker Vehicles				
All Delivery Trucks				
Subtotal of Off-Site Fugitive Emissions				
Subtotal of Off-Site Emissions	15969.82	1.49	1.37	16424.73
Total Entire Construction Period Emissions	39215.59	4.29	1.71	39834.84

Table 2.2-7b rev.
Estimated Entire Construction Period Greenhouse Gases Emissions
(metric tonnes)

Activity	CO ₂	CH ₄	N ₂ O	CO ₂ e
On-Site Construction Emissions				
On-Site Combustion Emissions				
Construction Equipment	4,949.78	1.83	-	4,988.20
Worker Vehicles	1,648.06	0.16	0.15	1,697.21
Security Vehicles	100.09	0.03	0.02	108.48
Onsite generators	13,089.44	0.52	0.13	13,140.25
All Delivery Trucks	1,300.85	0.01	0.01	1,303.15
Subtotal of On-site Combustion Emissions	21,088.21	2.55	0.31	21,237.29
On-Site Fugitive Dust Emissions				
Construction Equipment				
Worker Vehicles				
Security Vehicles				
All Delivery Trucks				
Subtotal of On-Site Fugitive Emissions				
Subtotal of On-Site Emissions	21,088.21	2.55	0.31	21,237.29
Off-Site On-Road Emissions				
Off-Site Combustion Emissions				
Worker Vehicles	5,504.83	1.32	1.21	5,908.95
All Delivery Trucks	8,982.74	0.03	0.03	8,991.32
Subtotal of Off-Site Combustion Emissions	14,487.57	1.35	1.24	14,900.27
Off-Site Paved Road Fugitive Emissions				
Worker Vehicles				
All Delivery Trucks				
Subtotal of Off-Site Fugitive Emissions				
Subtotal of Off-Site Emissions	14,487.57	1.35	1.24	14,900.27
Total Entire Construction Period Emissions	35,575.79	3.89	1.55	36,137.55

Calico Solar

Temporary Portable Diesel Generator Emissions

One 75kW and one 500kW diesel engines which are both registered in the State Portable Equipment Registration Program (PERP).

Pollutant	Power rating (kW)	Emission Factor (g/kW/hr)			hr/ day	day/ month	month/ year	Tier 2 Emissions			Tier 3 Emissions			Interim Tier 4 Emissions		
		Tier 2	Tier 3	Interim Tier 4				lb/hr	lb/day	ton/yr	lb/hr	lb/day	ton/yr	lb/hr	lb/day	ton/yr
ROG	75	0.66	0.40	0.19	16	26	12	0.11	1.74	0.27	0.07	1.06	0.16	0.03	0.50	0.08
	500	0.64	0.40	0.19	16	26	12	0.70	11.28	1.76	0.44	7.05	1.10	0.21	3.35	0.52
NOx	75	6.60	4.00	3.40	16	26	12	1.09	17.44	2.72	0.66	10.57	1.65	0.56	8.99	1.40
	500	6.40	4.00	2.00	16	26	12	7.05	112.78	17.59	4.41	70.48	11.00	2.20	35.24	5.50
CO	75	5.00	5.00	5.00	16	26	12	0.83	13.22	2.06	0.83	13.22	2.06	0.83	13.22	2.06
	500	3.50	3.50	3.50	16	26	12	3.85	61.67	9.62	3.85	61.67	9.62	3.85	61.67	9.62
PM10	75	0.30	0.30	0.02	16	26	12	0.05	0.79	0.12	0.05	0.79	0.12	0.00	0.05	0.01
	500	0.20	0.20	0.02	16	26	12	0.22	3.52	0.55	0.22	3.52	0.55	0.02	0.35	0.05

Notes:

- VOC emission limit is assumed to be 10% of the NMHC+NOx emission standard; NOx emission limit is conservatively assumed to be the same as the NMHC+NOx emission standard;
- 75kW and 500kW engines will be complied with Tier 3 and Tier 2 standards, respectively.

Reference:

- CARB offroad emission factor (<http://www.arb.ca.gov/msprog/offroad/offroadci.pdf>)
- CARB PERP program (<http://www.arb.ca.gov/portable/portable.htm>)

Daily Emissions

Power rating (kW)	Emission Tier	Emissions (lb/day)									
		PM10	PM2.5	CO	ROG	NOx	SOx	CO ₂	CH ₄	N ₂ O	CO ₂ e
75	3	0.79	0.77	13.22	1.06	10.57	5.05	2,004.97	0.08	0.02	2,012.76
500	3	3.52	3.44	61.67	7.05	70.48	31.31	12,423.67	0.49	0.12	12,471.89
Total		4.32	4.21	74.89	8.11	81.06	36.37	14,428.64	0.57	0.14	14,484.65

Annual Emissions

Power rating (kW)	Emission Tier	Emissions (ton/yr)									
		PM10	PM2.5	CO	ROG	NOx	SOx	CO ₂	CH ₄	N ₂ O	CO ₂ e
75	3	0.12	0.12	2.06	0.16	1.65	0.79	312.78	0.01	0.00	313.99
500	3	0.55	0.54	9.62	1.10	11.00	4.88	1,938.09	0.08	0.02	1,945.62
Total		0.67	0.66	11.68	1.26	12.64	5.67	2,250.87	0.09	0.02	2,259.61

Notes:

- PM2.5 emission factors determined using guidance from SCAQMD Final - Methodology to Calculate PM2.5 and PM2.5 Significance Thresholds 10/1/2006, Appendix A - Updated CEIDARS Table with PM2.5 Fractions
- Fuel usage information (from vendor data):
 - 75kW engine: 5.6 gallon/hr max.
 - 500kW engine: 34.7 gallon/hr max.
- other parameters (sulfur content and fuel density) from EPA AP-42.
- Greenhouse gas emission factors from CCAR General Reporting Protocol V3.1 January 2009 Tables C.7 and C.9
- Greenhouse Gas Global Warming Potential (GWP) - Intergovernmental Panel on Climate Change, Second Assessment Report (1996)
 - CO₂ GWP (SAR, 1996) = 1
 - CH₄ GWP (SAR, 1996) = 21
 - N₂O GWP (SAR, 1996) = 310

**Calico Solar
Construction Equipment Projection (850 MW)**

Construction Equipment Description	HP	D	G	P	Month After Construction Start (number of equipment per day)																																																		
					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41										
Air Compressor	50	X			1	1	1	1	3	3	3	3	3	2	2	2	2	2	2	2	2	1	1																																
Asphalt Paver	120	X				1																																																	
Backhoe	120	X			3	9	6	6	6	6	6	6	5	4	4	4	4	4	4	4	4	1	1	1																															
Compactor	120	X			2	4	4	4	4	4	4	3	3	3	3	3	2	2	2																																				
Crane small	175	X			1	3	5	6	6	8	8	8	8	8	7	7	7	9	9	7	6	6	5	5	5	5	5	5	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4								
Crane large	500	X			1	1	1	4	4	4	4	1																																											
Dozer	250	X			1	1	1	1	1	1	1	1	1																																										
Generator	50	X			1	1	1	2	2	5	5	5	5	7	7	7	7	3	3	3	3	3	2	2	2	2	2	1	1	1																									
Grader	175	X			2	4	4	4	4	4	3	2	2	1																																									
Light Tower	50	X					1	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1																														
Loader	250	X			2	4	4	6	6	5	4	3	3	2	1	1	1	3	3	3	2	1																																	
Maxi Sneeker (Trencher)	50	X				2	2	2	2	5	5	5	5	5	5	5	5	5	5	5	5	5	2	2	1																														
Skid Steer (Bobcat)	50	X				1	1	2	2	4	3	3	3	2	2	2	2	4	4	4	4	4																																	
Welding Machine	50	X				1	2	3	5	5	5	5	5	5	5	5	3	3	3	3	2	1	1	1	0																														
Equipment fueled with Propane																																																							
Aerial Lift	120			X	2	6	6	6	6	6	6	6	3	3	2	2	2	5	6	6	6	6	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	6	6	6	6	6	6	6				
Fork Lift	50			X	2	6	8	8	8	8	8	8	8	8	8	8	8	9	7	7	7	7	7	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6				
Telehandler	120			X			1	1	2	6	5	5	3	3	3	3	3	5	8	6	5	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3				
Vehicles with Onroad Engines for Emissions Estimates																																																							
Concrete Delivery Truck for general construction	250	X			2	6	6																																																
Concrete Delivery Truck for bridge	250	X			1	1	1	1	1	5	1																																												
Concrete Pump Truck for bridge	250	X			1	1	1	1	1	1	1																																												
Dump Truck	250	X			3	8	8	7	5	5	5	5	3																																										
Flatbed Truck	250	X			2	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	8	8	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	
Staff & Security Truck	187	/			6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6			
Pickup Truck	175		X		11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11		
Water/Solltac Truck	250	X			5	14	8	8	7	7	5	5	5	5	5	5	5	5	5	5	5	5	5	5	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3		
General Materials Delivery Truck for general construction	250	X				3	3	3	3	3	3	3	3																																										
General Materials Delivery Truck for bridge	250	X			2	2	2	2	2	12	2																																												
Suncatcher Pedestals Delivery Truck	250	X					3	3	3	3	1																																												
Stirling Engines Delivery Truck	250	X			6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6		
Suncatcher Metal Supports Delivery Truck	250	X			11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Suncatcher Mirrors Delivery Truck	250	X			7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
Electrical and Control Systems Delivery Truck	250	X			2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Azimuth and Elevation Drive Delivery Truck	250	X			2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Water Delivery Trucks	450	X			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Worker Passenger Vehicles	100	/			67	180	249	219	219	479	487	385	334	305	305	305	357	341	347	332	325	280	247	226	209	208	208	208	208	208	208	208	208	208	208	208	208	208	208	208	208	208	208	208	208	208	208	208	208	208	208	208			
Total					146	315	380	356	359	646	634	520	459	421	416	416	466	463	472	450	437	379	330	308	292	290	287	286	286	279	278	236	234	234	234	234	228	252	252	256	219	214	214	214	214	213	213	213	213	213	213	213			

Note:
 1. abbreviation:
 HP=horsepower
 G=gasoline
 D=diesel
 P=propane
 2. max numbers of equipment and vehicles per month = 646
 3. It is assumed the numbers of worker passenger vehicles are the numbers of workers divided by 1.5.

Calico Solar

Description	Activity	Make / Model	Fuel	Quantity per day per month	Frequency	Horse-power	Vehicle Weight (tons)	Max Daily Onsite Distance per Vehicle (mile/day)	Assumed distance percentage to drive on onsite sealed roads	Assumed distance percentage to drive on onsite unpaved roads	Assumed distance percentage to drive on onsite paved roads	Max Daily Offsite Round-trip Distance per Vehicle within MDAQMD jurisdictional area (mile/day)	Offsite Travel to and from	Onsite Travel description
Concrete Delivery Truck for general construction			Diesel	variable - from construction equipment schedule	Daily	250	20	7	90%	10%	0%	74	Barstow	most concrete will be delivered to the MSC area
Concrete Delivery Truck for bridge			Diesel	variable - from construction equipment schedule	Daily	250	20	1.6	90%	10%	0%	74	Barstow	most concrete will be delivered to the bridge construction area
Concrete Pump Truck for bridge			Diesel	variable - from construction equipment schedule	Daily	250	20	0.1	90%	10%	0%	0	on-site only	concrete pump will be used mostly in the MSC area
Dump Truck			Diesel	variable - from construction equipment schedule	Daily	250	20	6.8	50%	50%	0%	0	on-site only	from the MSC area to the any construction area of the site
Flatbed Truck			Diesel	variable - from construction equipment schedule	Daily	250	10	27.2	100%	0%	0%	0	on-site only	delivers materials to installation location
Staff & Security Truck	Site Inspections & Security	Toyota Highlander or similar	Gasoline - Hybrid	6	Daily	187	2.25	48	100%	0%	0%	0	on-site only	travels mainly perimeter and main access road
Pickup Truck			Gasoline	variable - from construction equipment schedule	Daily	175	4	6.8	95%	5%	0%	0	on-site only	from the MSC area to the any construction area of the site
Water/Soiltac Truck			Diesel	variable - from construction equipment schedule	Daily	250	20	13.6	25%	75%	0%	0	on-site only	from the MSC area to the any construction area of the site
General Materials Delivery Truck for general construction	General Construction Materials	transport truck	Diesel	variable - from construction equipment schedule	Daily	250	20	7	100%	0%	0%	74	Barstow	most materials will be delivered to the MSC area
General Materials Delivery Truck for bridge	General Construction Materials	transport truck	Diesel	variable - from construction equipment schedule	Daily	250	20	1.6	100%	0%	0%	74	Barstow	most materials will be delivered to the bridge construction area
Suncatcher Delivery Trucks	Suncatcher Pedestals	transport truck	Diesel	variable - from construction equipment schedule	Daily	250	20	7	50%	50%	0%	200	Phoenix	delivers pedestals to installation location
	Stirling Engines	transport truck	Diesel	6	Daily	250	20	7	100%	0%	0%	160	railroad from Detroit to LA and then transported by truck	delivers materials to MSC
	Suncatcher Metal Supports	transport truck	Diesel	11	Daily	250	20	7	100%	0%	0%	180	from near Phoenix or Los Angeles area.	delivers materials to MSC
	Suncatcher Mirrors	transport truck	Diesel	7	Daily	250	20	7	100%	0%	0%	160	railroad from Detroit to LA and then transported by truck	delivers materials to MSC
	Electrical and Control Systems	transport truck	Diesel	2	Daily	250	20	7	100%	0%	0%	200	Phoenix	delivers materials to MSC
	Azimuth and Elevation Drive	transport truck	Diesel	2	Daily	250	20	7	100%	0%	0%	160	railroad from Midwest to LA and then transported by truck	delivers materials to MSC
Water Delivery Trucks	No water truck will be used to transport water from offsite	3700 gal truck	Diesel	0	Daily	300	0		100%	0%	0%			
Worker Passenger Vehicles	Community to Work	Passenger vehicles	Gasoline & diesel	variable - from construction equipment schedule	Daily	100	2	9	100%	0%	0%	74	Barstow	half to MSC and the other half to the main laydown area

Note:

- Vehicles with variable quantities, the quantity per month can be found in Table 5.2-19 Revised Construction Equipment Projection
- The average distance from the Project site entrance to bridge construction area, MSC, and the main laydown area is about 0.8, 3.5, and 5.5 miles, one-way, respectively.
- The average distance between the MSC and the main laydown area is about 2 miles.
- The fence line perimeter is approximately 30 miles. Each security vehicle is assumed to travel from the MSC around the perimeter plus one trip to the center of north fenced property (1.8 miles) and the center of south fenced property (5 miles) and back (and plus additional 10% for misc trips) = approximately 48 miles.
- Average distance from main service complex to center of north and south portion of the site is 1.8 and 5 miles, respectively. Thus, the average round trip distance for each dump truck, pickup truck, and concrete pump truck travels is 6.8 [(1.8+5)*2] miles.
- The water delivery truck will not be used in this project since the project is going to use the on-site water.
- The distance from the Project site to Barstow is about 37 miles.
- Deliveries coming from Detroit will travel by rail to Los Angeles then by transport truck to the site.
- The distance from the Project site to the edge of the MDAQMD jurisdictional area toward Los Angeles is about 80 miles.
- The distance from the Project site to the edge of the MDAQMD jurisdictional area toward Phoenix is about 100 miles.
- On-site travelling:
 Delivery Trucks: mostly from the Project site entrance to the MSC (3.5 miles).
 Worker Passenger Vehicles: from the Project site entrance to either the laydown area in the MSC (3.5 miles) or the main laydown area (5.5 miles).
 Concrete Pump Trucks: mostly in the bridge construction area (traveling less than 0.1 miles per day).
 Flatbed Truck: assumed to make 4 trips per day to SunCatcher installation locations delivering assembled dishes and misc parts
 Water/Soiltac Truck: assumed to make 2 trips per day to SunCatcher installation locations to watering or sealing the soiltac product.
 Construction laydown area is sealed

**Calico Solar
Combustion Exhaust Emissions On-site (short-term)**

Highest activity and emissions occur in month 6,
 construction schedule = 12 hours per day 7 am to 7 pm
 delivery trucks can arrive at the site anytime during the day or night
 pedestal installation = 16 hours per day

EMISSION FACTORS

Equipment	Load Factor	Hours/Day	Horsepower	Emission factors (ton/hr)										Emission rate per piece of equipment (lb/hr)									
				PM ₁₀	PM _{2.5}	CO	ROG	NO _x	SO ₂	CO ₂	CH ₄	N ₂ O	CO _{2e}	PM ₁₀	PM _{2.5}	CO	ROG	NO _x	SO ₂	CO ₂	CH ₄	N ₂ O	CO _{2e}
Equipment fueled with Propane																							
Aerial Lift	0.51	6	120	1.39E-06	1.39E-06	7.09E-04	2.48E-06	1.02E-04	0.00E+00	1.56E-02	2.08E-05	0.00E+00	1.61E-02	2.78E-03	2.78E-03	1.42E+00	4.95E-03	2.03E-01	0.00E+00	3.12E+01	4.15E-02	0.00E+00	3.21E+01
Fork Lift	0.30	4	50	8.14E-07	8.14E-07	1.48E-04	1.41E-06	6.05E-05	0.00E+00	9.15E-03	1.18E-05	0.00E+00	9.40E-03	1.63E-03	1.63E-03	2.95E-01	2.82E-03	1.21E-01	0.00E+00	1.80E+01	2.38E-02	0.00E+00	1.88E+01
Telehandler	0.51	6	120	1.39E-06	1.39E-06	7.09E-04	2.48E-06	1.02E-04	0.00E+00	1.56E-02	2.08E-05	0.00E+00	1.61E-02	2.78E-03	2.78E-03	1.42E+00	4.95E-03	2.03E-01	0.00E+00	3.12E+01	4.15E-02	0.00E+00	3.21E+01
Onsite Miles per Day Travelled per Vehicle																							
		Hours/Day	Vehicle Weight (lbs)	Emission factors (g/mile)																			
Concrete Delivery Truck for general construction	7	12	40,000	1.69E+00	1.52E+00	1.25E+01	5.91E+00	2.79E+01	3.00E-02	3.17E+03	5.10E-03	4.80E-03	3.17E+03	2.18E-03	1.95E-03	1.61E-02	7.59E-03	3.58E-02	3.85E-05	4.07E+00	6.55E-06	6.17E-06	4.07E+00
Concrete Delivery Truck for bridge	1.6	12	40,000	1.69E+00	1.52E+00	1.25E+01	5.91E+00	2.79E+01	3.00E-02	3.17E+03	5.10E-03	4.80E-03	3.17E+03	4.98E-04	4.47E-04	3.67E-03	1.73E-03	8.18E-03	8.81E-06	9.30E-01	1.50E-06	1.41E-06	9.30E-01
Concrete Pump Truck for bridge	0.1	12	40,000	1.69E+00	1.52E+00	1.25E+01	5.91E+00	2.79E+01	3.00E-02	3.17E+03	5.10E-03	4.80E-03	3.17E+03	3.11E-05	2.79E-05	2.29E-04	1.08E-04	5.11E-04	5.51E-07	5.81E-02	9.36E-08	8.81E-08	5.81E-02
Dump Truck	6.8	12	40,000	1.69E+00	1.52E+00	1.25E+01	5.91E+00	2.79E+01	3.00E-02	3.17E+03	5.10E-03	4.80E-03	3.17E+03	2.11E-03	1.90E-03	1.56E-02	7.37E-03	3.48E-02	3.74E-05	3.95E+00	6.37E-06	5.99E-06	3.95E+00
Flatbed Truck	27.2	12	20,000	5.80E+01	5.19E+01	5.22E+00	4.53E-01	9.31E+00	1.40E-02	1.51E+03	1.10E-03	1.70E-03	1.51E+03	2.90E-03	2.59E-03	2.61E-02	2.26E-03	4.65E-02	6.99E-05	7.51E+00	5.49E-06	8.49E-06	7.52E+00
Staff & Security Truck	48	24	4,500	1.00E-02	1.00E-02	2.10E+00	5.50E-02	3.00E-02	9.00E-03	3.26E+02	1.04E-01	8.13E-02	3.54E+02	4.41E-05	4.41E-05	9.25E-03	2.42E-04	1.32E-04	3.96E-05	1.44E+00	4.56E-04	3.58E-04	1.56E+00
Pickup Truck	6.8	12	8,000	7.20E-02	5.47E-02	5.04E+00	3.47E-01	4.70E-01	7.00E-03	7.22E+02	7.04E-02	6.47E-02	7.44E+02	8.99E-05	6.83E-05	6.29E-03	4.33E-04	5.87E-04	8.74E-06	9.01E-01	8.79E-05	8.08E-05	9.28E-01
Water/Soiltec Truck	13.6	12	40,000	1.69E+00	1.52E+00	1.25E+01	5.91E+00	2.79E+01	3.00E-02	3.17E+03	5.10E-03	4.80E-03	3.17E+03	4.23E-03	3.89E-03	3.12E-02	1.47E-02	6.96E-02	7.49E-05	7.90E+00	1.27E-05	1.20E-05	7.91E+00
General Materials Delivery Truck for general cons	7	24	40,000	1.69E+00	1.52E+00	1.25E+01	5.91E+00	2.79E+01	3.00E-02	3.17E+03	5.10E-03	4.80E-03	3.17E+03	1.09E-03	9.77E-04	8.03E-03	3.79E-03	1.79E-02	1.93E-05	2.03E+00	3.28E-06	3.08E-06	2.03E+00
General Materials Delivery Truck for bridge	1.6	24	40,000	1.69E+00	1.52E+00	1.25E+01	5.91E+00	2.79E+01	3.00E-02	3.17E+03	5.10E-03	4.80E-03	3.17E+03	2.49E-04	2.23E-04	1.83E-03	8.67E-04	4.09E-03	4.41E-06	4.65E-01	7.49E-07	7.05E-07	4.65E-01
Suncatcher Pedestals Delivery Truck	7	24	40,000	1.69E+00	1.52E+00	1.25E+01	5.91E+00	2.79E+01	3.00E-02	3.17E+03	5.10E-03	4.80E-03	3.17E+03	1.09E-03	9.77E-04	8.03E-03	3.79E-03	1.79E-02	1.93E-05	2.03E+00	3.28E-06	3.08E-06	2.03E+00
Stirling Engines Delivery Truck	7	24	40,000	1.69E+00	1.52E+00	1.25E+01	5.91E+00	2.79E+01	3.00E-02	3.17E+03	5.10E-03	4.80E-03	3.17E+03	1.09E-03	9.77E-04	8.03E-03	3.79E-03	1.79E-02	1.93E-05	2.03E+00	3.28E-06	3.08E-06	2.03E+00
Suncatcher Metal Supports Delivery Truck	7	24	40,000	1.69E+00	1.52E+00	1.25E+01	5.91E+00	2.79E+01	3.00E-02	3.17E+03	5.10E-03	4.80E-03	3.17E+03	1.09E-03	9.77E-04	8.03E-03	3.79E-03	1.79E-02	1.93E-05	2.03E+00	3.28E-06	3.08E-06	2.03E+00
Suncatcher Mirrors Delivery Truck	7	24	40,000	1.69E+00	1.52E+00	1.25E+01	5.91E+00	2.79E+01	3.00E-02	3.17E+03	5.10E-03	4.80E-03	3.17E+03	1.09E-03	9.77E-04	8.03E-03	3.79E-03	1.79E-02	1.93E-05	2.03E+00	3.28E-06	3.08E-06	2.03E+00
Electrical and Control Systems Delivery Truck	7	24	40,000	1.69E+00	1.52E+00	1.25E+01	5.91E+00	2.79E+01	3.00E-02	3.17E+03	5.10E-03	4.80E-03	3.17E+03	1.09E-03	9.77E-04	8.03E-03	3.79E-03	1.79E-02	1.93E-05	2.03E+00	3.28E-06	3.08E-06	2.03E+00
Azimuth and Elevation Drive Delivery Truck	7	24	40,000	1.69E+00	1.52E+00	1.25E+01	5.91E+00	2.79E+01	3.00E-02	3.17E+03	5.10E-03	4.80E-03	3.17E+03	1.09E-03	9.77E-04	8.03E-03	3.79E-03	1.79E-02	1.93E-05	2.03E+00	3.28E-06	3.08E-06	2.03E+00
Water Delivery Trucks	0	24	-	5.80E-01	5.19E-01	5.22E+00	4.53E-01	9.31E+00	1.40E-02	1.51E+03	1.10E-03	1.70E-03	1.51E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Worker Passenger Vehicles	9	24	4,000	7.20E-02	5.47E-02	5.04E+00	3.47E-01	4.70E-01	7.00E-03	7.22E+02	7.04E-02	6.47E-02	7.44E+02	6.99E-05	6.83E-05	6.29E-03	4.33E-04	5.87E-04	5.78E-06	5.96E-01	5.81E-05	5.34E-05	6.14E-01

Notes:

- Emission factors from CARB Off-road Mobile Source Emission Factors (2006-2020) for diesel and propane equipment. (2009 data used).
 Dozer = Crawler Tractor
 Loader = Rubber Tired Loader
 Backhoe = Tractors/Loaders/Backhoes
 Light Tower = Other Construction Equipment
- Utilization Load Factors from SCAQMD
- PM_{2.5} emission factors obtained by multiplying the PM₁₀ emissions by PM_{2.5} fraction in SCAQMD CEIDARS list for onroad or offroad diesel vehicles.
- For propane equipment assumed PM₁₀ and PM_{2.5} Fraction of total PM is 1.000
- Onroad vehicle emissions from EMFAC2007 model. The vehicle description in EMFAC2007 model are as follows:
 - Flatbed Truck and Water Delivery Truck are Medium-Heavy-Duty (MHD-DSL)
 - Staff & Security Truck (gasoline) is Light-Heavy-Duty (LDT-CAT)
 - Worker Passenger Vehicle and Pickup Truck are Passenger Car (LD-ALL)
 - Concrete Delivery Truck, Concrete Pump Truck, Dump Truck, Water/Soiltec Truck, General Materials Delivery Trucks, Suncatcher Pedestals Delivery Truck, Stirling Engines Delivery Truck, Suncatcher Metal Supports Delivery Truck, Suncatcher Mirrors Delivery Truck, Electrical and Control Systems Delivery Truck, and Azimuth & Elevation Drive Delivery Truck are all Heavy-Heavy-Duty (HH-DLSL)
- The emissions of "Toyota Highlander Hybrid" (Staff & Security Truck) meet the Tier 2/Bin 3 Federal emissions standard (reference source 3) and its performance is 27 mile/gallon in city (from Toyota website)
- SO₂ emission factors for the Toyota Highlander Hybrid are from EMFAC2007 - Light-Duty Trucks (LDT-CAT).
- CH₄ and N₂O emission factors for the running vehicles are from Reference source 1: Table C.4, California Climate Action Registry General Reporting Protocol Version 3.1, January 2009. Hybrid Truck is assumed to be gasoline light truck here.
- Greenhouse Gas Global Warming Potential (GWP) - Intergovernmental Panel on Climate Change, Second Assessment Report (1996)
 CO₂ GWP (SAR, 1996) = 1
 CH₄ GWP (SAR, 1996) = 21
 N₂O GWP (SAR, 1996) = 310

MONTHLY EMISSIONS (month 1-20)

Table with 48 columns: Equipment, Month 1 Daily Emissions (lb/day), Month 2 Daily Emissions (lb/day), Month 3 Daily Emissions (lb/day), Month 4 Daily Emissions (lb/day). Rows include Diesel Construction Equipment, Vehicles with Onroad Engines for Emissions Estimates, and Worker Passenger Vehicles.

MONTHLY EMISSIONS (month 21-41)

Table with 48 columns: Equipment, Month 21 Daily Emissions (lb/day), Month 22 Daily Emissions (lb/day), Month 23 Daily Emissions (lb/day), Month 24 Daily Emissions (lb/day). Rows include Diesel Construction Equipment, Vehicles with Onroad Engines for Emissions Estimates, and Worker Passenger Vehicles.

Month 9 Daily Emissions (lb/day)											Month 10 Daily Emissions (lb/day)											Month 11 Daily Emissions (lb/day)											Month 12 Daily Emissions (lb/day)													
Quantity	PM ₁₀	PM _{2.5}	CO	ROG	NO _x	SO ₂	CO ₂	CH ₄	N ₂ O	CO ₂ e	Quantity	PM ₁₀	PM _{2.5}	CO	ROG	NO _x	SO ₂	CO ₂	CH ₄	N ₂ O	CO ₂ e	Quantity	PM ₁₀	PM _{2.5}	CO	ROG	NO _x	SO ₂	CO ₂	CH ₄	N ₂ O	CO ₂ e	Quantity	PM ₁₀	PM _{2.5}	CO	ROG	NO _x	SO ₂	CO ₂	CH ₄	N ₂ O	CO ₂ e			
3.00	0.46	0.42	4.89	2.03	4.13	0.00	384.50	0.18	-	388.36	2.00	0.31	0.28	3.26	1.36	2.75	0.00	256.33	0.12	-	258.90	2.00	0.31	0.28	3.26	1.36	2.75	0.00	256.33	0.12	-	258.90	2.00	0.31	0.28	3.26	1.36	2.75	0.00	256.33	0.12	-	258.90			
5.00	1.45	1.33	10.21	2.56	15.95	0.02	1,457.42	0.23	-	1,462.27	4.00	1.16	1.07	8.17	2.05	12.76	0.01	1,165.94	0.18	-	1,169.82	4.00	1.16	1.07	8.17	2.05	12.76	0.01	1,165.94	0.18	-	1,169.82	4.00	1.16	1.07	8.17	2.05	12.76	0.01	1,165.94	0.18	-	1,169.82			
3.00	1.08	1.00	7.06	2.03	12.48	0.01	997.19	0.18	-	1,001.04	3.00	1.08	1.00	7.06	2.03	12.48	0.01	997.19	0.18	-	1,001.04	3.00	1.08	1.00	7.06	2.03	12.48	0.01	997.19	0.18	-	1,001.04	3.00	1.08	1.00	7.06	2.03	12.48	0.01	997.19	0.18	-	1,001.04			
8.00	2.22	2.04	20.12	4.99	38.36	0.04	3,313.65	0.45	-	3,323.11	8.00	2.22	2.04	20.12	4.99	38.36	0.04	3,313.65	0.45	-	3,323.11	8.00	2.22	2.04	20.12	4.99	38.36	0.04	3,313.65	0.45	-	3,323.11	8.00	2.22	2.04	20.12	4.99	38.36	0.04	3,313.65	0.45	-	3,323.11			
1.00	0.56	0.51	4.06	1.45	13.75	0.01	1,175.16	0.13	-	1,177.91	1.00	0.56	0.51	4.06	1.45	13.75	0.01	1,175.16	0.13	-	1,177.91	1.00	0.56	0.51	4.06	1.45	13.75	0.01	1,175.16	0.13	-	1,177.91	1.00	0.56	0.51	4.06	1.45	13.75	0.01	1,175.16	0.13	-	1,177.91			
5.00	1.27	1.17	12.96	5.02	13.05	0.02	1,359.44	0.45	-	1,367.94	7.00	1.78	1.64	18.14	7.02	19.11	0.02	1,901.82	0.63	-	1,915.12	7.00	1.78	1.64	18.14	7.02	19.11	0.02	1,901.82	0.63	-	1,915.12	7.00	1.78	1.64	18.14	7.02	19.11	0.02	1,901.82	0.63	-	1,915.12			
2.00	1.09	1.00	10.30	2.42	18.81	0.02	1,723.44	0.22	-	1,728.03	1.00	0.54	0.50	5.15	1.21	9.41	0.01	861.72	0.11	-	864.02	1.00	0.54	0.50	5.15	1.21	9.41	0.01	861.72	0.11	-	864.02	1.00	0.54	0.50	5.15	1.21	9.41	0.01	861.72	0.11	-	864.02			
2.00	0.39	0.36	4.36	1.54	4.14	0.01	416.11	0.14	-	419.02	2.00	0.39	0.36	4.36	1.54	4.14	0.01	416.11	0.14	-	419.02	2.00	0.39	0.36	4.36	1.54	4.14	0.01	416.11	0.14	-	419.02	2.00	0.39	0.36	4.36	1.54	4.14	0.01	416.11	0.14	-	419.02			
3.00	1.09	1.01	8.18	2.90	29.82	0.03	2,893.51	0.26	-	2,899.00	2.00	0.73	0.67	5.45	1.93	19.88	0.02	1,929.00	0.17	-	1,932.67	2.00	0.73	0.67	5.45	1.93	19.88	0.02	1,929.00	0.17	-	1,932.67	2.00	0.73	0.67	5.45	1.93	19.88	0.02	1,929.00	0.17	-	1,932.67			
5.00	1.70	1.56	18.32	7.71	15.19	0.02	1,381.31	0.70	-	1,395.91	5.00	1.70	1.56	18.32	7.71	15.19	0.02	1,381.31	0.70	-	1,395.91	5.00	1.70	1.56	18.32	7.71	15.19	0.02	1,381.31	0.70	-	1,395.91	5.00	1.70	1.56	18.32	7.71	15.19	0.02	1,381.31	0.70	-	1,395.91			
3.00	0.48	0.44	5.59	1.75	5.49	0.01	569.08	0.16	-	572.39	2.00	0.32	0.30	3.73	1.17	3.66	0.00	379.38	0.11	-	381.59	2.00	0.32	0.30	3.73	1.17	3.66	0.00	379.38	0.11	-	381.59	2.00	0.32	0.30	3.73	1.17	3.66	0.00	379.38	0.11	-	381.59			
5.00	0.78	0.72	8.22	3.36	7.37	0.01	700.24	0.30	-	706.61	5.00	0.78	0.72	8.22	3.36	7.37	0.01	700.24	0.30	-	706.61	5.00	0.78	0.72	8.22	3.36	7.37	0.01	700.24	0.30	-	706.61	5.00	0.78	0.72	8.22	3.36	7.37	0.01	700.24	0.30	-	706.61			
3.00	0.05	0.05	26.02	0.09	3.73	-	573.47	0.76	-	589.48	3.00	0.05	0.05	26.02	0.09	3.73	-	573.47	0.76	-	589.48	3.00	0.05	0.05	26.02	0.09	3.73	-	573.47	0.76	-	589.48	3.00	0.05	0.05	26.02	0.09	3.73	-	573.47	0.76	-	589.48			
8.00	0.05	0.05	8.50	0.08	3.49	-	526.89	0.68	-	541.17	8.00	0.05	0.05	8.50	0.08	3.49	-	526.89	0.68	-	541.17	8.00	0.05	0.05	8.50	0.08	3.49	-	526.89	0.68	-	541.17	8.00	0.05	0.05	8.50	0.08	3.49	-	526.89	0.68	-	541.17			
3.00	0.05	0.05	26.02	0.09	3.73	-	573.47	0.76	-	589.48	3.00	0.05	0.05	26.02	0.09	3.73	-	573.47	0.76	-	589.48	3.00	0.05	0.05	26.02	0.09	3.73	-	573.47	0.76	-	589.48	3.00	0.05	0.05	26.02	0.09	3.73	-	573.47	0.76	-	589.48			
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3.00	0.08	0.07	0.56	0.27	1.25	0.00	142.24	0.00	0.00	142.31	10.00	0.35	0.31	3.13	0.27	5.58	0.01	901.67	0.00	0.00	902.00	10.00	0.35	0.31	3.13	0.27	5.58	0.01	901.67	0.00	0.00	902.00	10.00	0.35	0.31	3.13	0.27	5.58	0.01	901.67	0.00	0.00	902.00			
10.00	0.35	0.31	3.13	0.27	5.58	0.01	901.67	0.00	0.00	902.00	10.00	0.35	0.31	3.13	0.27	5.58	0.01	901.67	0.00	0.00	902.00	10.00	0.35	0.31	3.13	0.27	5.58	0.01	901.67	0.00	0.00	902.00	10.00	0.35	0.31	3.13	0.27	5.58	0.01	901.67	0.00	0.00	902.00			
11.00	0.01	0.01	0.83	0.06	0.08	0.00	118.97	0.01	0.01	122.52	11.00	0.01	0.01	0.83	0.06	0.08	0.00	118.97	0.01	0.01	122.52	11.00	0.01	0.01	0.83	0.06	0.08	0.00	118.97	0.01	0.01	122.52	11.00	0.01	0.01	0.83	0.06	0.08	0.00	118.97	0.01	0.01	122.52			
5.00	0.25	0.23	1.87	0.88	4.17	0.00	474.12	0.00	0.00	474.36	5.00	0.25	0.23	1.87	0.88	4.17	0.00	474.12	0.00	0.00	474.36	5.00	0.25	0.23	1.87	0.88	4.17	0.00	474.12	0.00	0.00	474.36	5.00	0.25	0.23	1.87	0.88	4.17	0.00	474.12	0.00	0.00	474.36			
3.00	0.08	0.07	0.58	0.27	1.29	0.00	146.42	0.00	0.00	146.49	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
6.00	0.16	0.14	1.16	0.55	2.58	0.00	292.84	0.00	0.00	292.99	6.00	0.16	0.14	1.16	0.55	2.58	0.00	292.84	0.00	0.00	292.99	6.00	0.16	0.14	1.16	0.55	2.58	0.00	292.84	0.00	0.00	292.99	6.00	0.16	0.14	1.16	0.55	2.58	0.00	292.84	0.00	0.00	292.99			
11.00	0.29	0.26	2.12	1.00	4.73	0.01	536.87	0.00	0.00	537.14	11.00	0.29	0.26	2.12	1.00	4.73	0.01	536.87	0.00	0.00	537.14	11.00	0.29	0.26	2.12	1.00	4.73	0.01	536.87	0.00	0.00	537.14	11.00	0.29	0.26	2.12	1.00	4.73	0.01	536.87	0.00	0.00	537.14			
7.00	0.18	0.16	1.35	0.64	3.01	0.00	341.65	0.00	0.00	341.82	7.00	0.18	0.16	1.35	0.64	3.01	0.00	341.65	0.00	0.00	341.82	7.00	0.18	0.16	1.35	0.64	3.01	0.00	341.65	0.00	0.00	341.82	7.00	0.18	0.16	1.35	0.64	3.01	0.00	341.65	0.00	0.00	341.82			
2.00	0.05	0.05	0.39	0.18	0.86	0.00	97.61	0.00	0.00	97.66	2.00	0.05	0.05	0.39	0.18	0.86	0.00	97.61	0.00	0.00	97.66	2.00	0.05	0.05	0.39	0.18	0.86	0.00	97.61	0.00	0.00	97.66	2.00	0.05	0.05	0.39	0.18	0.86	0.00	97.61	0.00	0.00	97.66			
2.00	0.05	0.05	0.39	0.18	0.86	0.00	97.61	0.00	0.00	97.66	2.00	0.05	0.05	0.39	0.18	0.86	0.00	97.61	0.00	0.00	97.66	2.00	0.05	0.05	0.39	0.18	0.86	0.00	97.61	0.00	0.00	97.66	2.00	0.05	0.05	0.39	0.18	0.86	0.00	97.61	0.00	0.00	97.66			
334.00	0.48	0.38	33.36	9.30	8.11	0.05	4,781.25	0.47	0.43	4,823.34	305.00	0.44	0.33	30.47	2.10	2.84	0.04	4,366.11	0.43	0.39	4,496.32	305.00	0.44	0.33	30.47	2.10	2.84	0.04	4,366.11	0.43	0.39	4,496.32	305.00	0.44	0.33	30.47	2.10	2.84	0.04	4,366.11	0.43	0.39	4,496.32			
459.00	14.71	13.43	221.85	44.66	217.63	0.28	26,182.11	6.16	0.49	26,464.66	421.00	13.51	12.34	209.59	41.98	194.53	0.25	23,586.12	5.94	0.46	23,852.67	416.00	11.75	10.72	196.46	37.69	155.39	0.21	19,979.38	5.31	0.46	20,232.53	416.00	11.75	10.72	196.46	37.69	155.39	0.21	19,979.38	5.31	0.46	20,232.53			

Month 29 Daily Emissions (lb/day)											Month 30 Daily Emissions (lb/day)											Month 31 Daily Emissions (lb/day)											Month 32 Daily Emissions (lb/day)										
Quantity	PM ₁₀																																										

Month 13 Daily Emissions (lb/day)										Month 14 Daily Emissions (lb/day)										Month 15 Daily Emissions (lb/day)										Month 16 Daily Emissions (lb/day)										Month 17 Daily Emissions (lb/day)																															
Quantity	Mo 13	PM ₁₀	PM _{2.5}	CO	ROG	NO _x	SO ₂	CO ₂	CH ₄	N ₂ O	CO ₂ e	Quantity	Mo 14	PM ₁₀	PM _{2.5}	CO	ROG	NO _x	SO ₂	CO ₂	CH ₄	N ₂ O	CO ₂ e	Quantity	Mo 15	PM ₁₀	PM _{2.5}	CO	ROG	NO _x	SO ₂	CO ₂	CH ₄	N ₂ O	CO ₂ e	Quantity	Mo 16	PM ₁₀	PM _{2.5}	CO	ROG	NO _x	SO ₂	CO ₂	CH ₄	N ₂ O	CO ₂ e	Quantity	Mo 17	PM ₁₀	PM _{2.5}	CO	ROG	NO _x	SO ₂	CO ₂	CH ₄	N ₂ O	CO ₂ e												
2.00	0.31	0.28	3.26	1.36	2.75	0.00	256.33	0.12	-	-	258.90	2.00	0.31	0.28	3.26	1.36	2.75	0.00	256.33	0.12	-	-	258.90	2.00	0.31	0.28	3.26	1.36	2.75	0.00	256.33	0.12	-	-	258.90	2.00	0.31	0.28	3.26	1.36	2.75	0.00	256.33	0.12	-	-	258.90	2.00	0.31	0.28	3.26	1.36	2.75	0.00	256.33	0.12	-	-	258.90												
4.00	1.16	1.07	8.17	2.05	12.76	0.01	1,165.94	0.18	-	-	1,169.82	4.00	1.16	1.07	8.17	2.05	12.76	0.01	1,165.94	0.18	-	-	1,169.82	4.00	1.16	1.07	8.17	2.05	12.76	0.01	1,165.94	0.18	-	-	1,169.82	4.00	1.16	1.07	8.17	2.05	12.76	0.01	1,165.94	0.18	-	-	1,169.82	4.00	1.16	1.07	8.17	2.05	12.76	0.01	1,165.94	0.18	-	-	1,169.82												
3.00	1.08	1.00	7.06	2.03	12.48	0.01	997.19	0.18	-	-	1,001.04	3.00	1.08	1.00	7.06	2.03	12.48	0.01	997.19	0.18	-	-	1,001.04	3.00	1.08	1.00	7.06	2.03	12.48	0.01	997.19	0.18	-	-	1,001.04	3.00	1.08	1.00	7.06	2.03	12.48	0.01	997.19	0.18	-	-	1,001.04	3.00	1.08	1.00	7.06	2.03	12.48	0.01	997.19	0.18	-	-	1,001.04												
7.00	1.94	1.79	17.61	4.37	33.56	0.03	2,899.44	0.39	-	-	2,907.72	7.00	1.94	1.79	17.61	4.37	33.56	0.03	2,899.44	0.39	-	-	2,907.72	7.00	1.94	1.79	17.61	4.37	33.56	0.03	2,899.44	0.39	-	-	2,907.72	7.00	1.94	1.79	17.61	4.37	33.56	0.03	2,899.44	0.39	-	-	2,907.72	7.00	1.94	1.79	17.61	4.37	33.56	0.03	2,899.44	0.39	-	-	2,907.72												
7.00	1.78	1.64	18.14	7.02	19.11	0.02	1,901.82	0.63	-	-	1,915.12	7.00	1.78	1.64	18.14	7.02	19.11	0.02	1,901.82	0.63	-	-	1,915.12	7.00	1.78	1.64	18.14	7.02	19.11	0.02	1,901.82	0.63	-	-	1,915.12	7.00	1.78	1.64	18.14	7.02	19.11	0.02	1,901.82	0.63	-	-	1,915.12	7.00	1.78	1.64	18.14	7.02	19.11	0.02	1,901.82	0.63	-	-	1,915.12												
2.00	0.39	0.36	4.36	1.54	4.14	0.01	416.11	0.14	-	-	419.02	2.00	0.39	0.36	4.36	1.54	4.14	0.01	416.11	0.14	-	-	419.02	2.00	0.39	0.36	4.36	1.54	4.14	0.01	416.11	0.14	-	-	419.02	2.00	0.39	0.36	4.36	1.54	4.14	0.01	416.11	0.14	-	-	419.02	2.00	0.39	0.36	4.36	1.54	4.14	0.01	416.11	0.14	-	-	419.02												
1.00	0.36	0.34	2.73	0.97	9.94	0.01	964.50	0.09	-	-	966.33	1.00	0.36	0.34	2.73	0.97	9.94	0.01	964.50	0.09	-	-	966.33	1.00	0.36	0.34	2.73	0.97	9.94	0.01	964.50	0.09	-	-	966.33	1.00	0.36	0.34	2.73	0.97	9.94	0.01	964.50	0.09	-	-	966.33	1.00	0.36	0.34	2.73	0.97	9.94	0.01	964.50	0.09	-	-	966.33												
5.00	1.70	1.56	18.32	7.71	15.19	0.02	1,381.31	0.70	-	-	1,395.91	5.00	1.70	1.56	18.32	7.71	15.19	0.02	1,381.31	0.70	-	-	1,395.91	5.00	1.70	1.56	18.32	7.71	15.19	0.02	1,381.31	0.70	-	-	1,395.91	5.00	1.70	1.56	18.32	7.71	15.19	0.02	1,381.31	0.70	-	-	1,395.91	5.00	1.70	1.56	18.32	7.71	15.19	0.02	1,381.31	0.70	-	-	1,395.91												
2.00	0.32	0.30	3.73	1.17	3.66	0.00	379.38	0.11	-	-	381.59	2.00	0.32	0.30	3.73	1.17	3.66	0.00	379.38	0.11	-	-	381.59	2.00	0.32	0.30	3.73	1.17	3.66	0.00	379.38	0.11	-	-	381.59	2.00	0.32	0.30	3.73	1.17	3.66	0.00	379.38	0.11	-	-	381.59	2.00	0.32	0.30	3.73	1.17	3.66	0.00	379.38	0.11	-	-	381.59												
3.00	0.47	0.43	4.93	2.02	4.42	0.01	420.14	0.18	-	-	423.96	3.00	0.47	0.43	4.93	2.02	4.42	0.01	420.14	0.18	-	-	423.96	3.00	0.47	0.43	4.93	2.02	4.42	0.01	420.14	0.18	-	-	423.96	3.00	0.47	0.43	4.93	2.02	4.42	0.01	420.14	0.18	-	-	423.96	3.00	0.47	0.43	4.93	2.02	4.42	0.01	420.14	0.18	-	-	423.96												
2.00	0.03	0.03	17.34	0.06	2.49	-	382.31	0.51	-	-	392.99	2.00	0.03	0.03	17.34	0.06	2.49	-	382.31	0.51	-	-	392.99	2.00	0.03	0.03	17.34	0.06	2.49	-	382.31	0.51	-	-	392.99	2.00	0.03	0.03	17.34	0.06	2.49	-	382.31	0.51	-	-	392.99	2.00	0.03	0.03	17.34	0.06	2.49	-	382.31	0.51	-	-	392.99												
8.00	0.05	0.05	8.50	0.08	3.49	-	526.89	0.68	-	-	541.17	8.00	0.05	0.05	8.50	0.08	3.49	-	526.89	0.68	-	-	541.17	8.00	0.05	0.05	8.50	0.08	3.49	-	526.89	0.68	-	-	541.17	8.00	0.05	0.05	8.50	0.08	3.49	-	526.89	0.68	-	-	541.17	8.00	0.05	0.05	8.50	0.08	3.49	-	526.89	0.68	-	-	541.17												
3.00	0.05	0.05	26.02	0.09	3.73	-	573.47	0.76	-	-	589.48	3.00	0.05	0.05	26.02	0.09	3.73	-	573.47	0.76	-	-	589.48	3.00	0.05	0.05	26.02	0.09	3.73	-	573.47	0.76	-	-	589.48	3.00	0.05	0.05	26.02	0.09	3.73	-	573.47	0.76	-	-	589.48	3.00	0.05	0.05	26.02	0.09	3.73	-	573.47	0.76	-	-	589.48												
5.00	0.09	0.09	43.36	0.15	6.22	-	955.78	1.27	-	-	982.47	5.00	0.09	0.09	43.36	0.15	6.22	-	955.78	1.27	-	-	982.47	5.00	0.09	0.09	43.36	0.15	6.22	-	955.78	1.27	-	-	982.47	5.00	0.09	0.09	43.36	0.15	6.22	-	955.78	1.27	-	-	982.47	5.00	0.09	0.09	43.36	0.15	6.22	-	955.78	1.27	-	-	982.47												
6.00	0.10	0.10	52.03	0.18	7.46	-	1,146.94	1.52	-	-	1,178.96	6.00	0.10	0.10	52.03	0.18	7.46	-	1,146.94	1.52	-	-	1,178.96	6.00	0.10	0.10	52.03	0.18	7.46	-	1,146.94	1.52	-	-	1,178.96	6.00	0.10	0.10	52.03	0.18	7.46	-	1,146.94	1.52	-	-	1,178.96	6.00	0.10	0.10	52.03	0.18	7.46	-	1,146.94	1.52	-	-	1,178.96												
7.00	0.04	0.04	7.43	0.07	3.05	-	461.03	0.60	-	-	473.52	7.00	0.04	0.04	7.43	0.07	3.05	-	461.03	0.60	-	-	473.52	7.00	0.04	0.04	7.43	0.07	3.05	-	461.03	0.60	-	-	473.52	7.00	0.04	0.04	7.43	0.07	3.05	-	461.03	0.60	-	-	473.52	7.00	0.04	0.04	7.43	0.07	3.05	-	461.03	0.60	-	-	473.52												
6.00	0.10	0.10	52.03	0.18	7.46	-	1,146.94	1.52	-	-	1,178.96	6.00	0.10	0.10	52.03	0.18	7.46	-	1,146.94	1.52	-	-	1,178.96	6.00	0.10	0.10	52.03	0.18	7.46	-	1,146.94	1.52	-	-	1,178.96	6.00	0.10	0.10	52.03	0.18	7.46	-	1,146.94	1.52	-	-	1,178.96	6.00	0.10	0.10	52.03	0.18	7.46	-	1,146.94	1.52	-	-	1,178.96												
5.00	0.09	0.09	43.36	0.15	6.22	-	955.78	1.27	-	-	982.47	5.00	0.09	0.09	43.36	0.15	6.22	-	955.78	1.27	-	-	982.47	5.00	0.09	0.09	43.36	0.15	6.22	-	955.78	1.27	-	-	982.47	5.00	0.09	0.09	43.36	0.15	6.22	-	955.78	1.27	-	-	982.47	5.00	0.09	0.09	43.36	0.15	6.22	-	955.78	1.27	-	-	982.47												
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10.00	0.35	0.31	3.13	0.27	5.58	0.01	901.67	0.00	0.00	0.00	902.00	10.00	0.35	0.31	3.13	0.27	5.58	0.01	901.67	0.00	0.00	0.00	902.00	10.00	0.35	0.31	3.13	0.27	5.58	0.01	901.67	0.00	0.00	0.00	902.00	10.00	0.35	0.31	3.13	0.27	5.58	0.01	901.67	0.00	0.00	0.00	902.00	10.00	0.35	0.31	3.13	0.27	5.58	0.01	901.67	0.00	0.00	0.00	902.00												
6.00	0.01	0.01	1.33	0.03	0.02	0.01	206.99	0.07	0.05	0.05	224.36	6.00	0.01	0.01	1.33	0.03	0.02	0.01	206.99	0.07	0.05	0.05	224.36	6.00	0.01	0.01	1.33	0.03	0.02	0.01	206.99	0.07	0.05	0.05	224.36	6.00	0.01	0.01	1.33	0.03	0.02	0.01	206.99	0.07	0.05	0.05	224.36	6.00	0.01	0.01	1.33	0.03	0.02	0.01	206.99	0.07	0.05	0.05	224.36												
11.00	0.01	0.01	0.83	0.06	0.08	0.00	118.97	0.01	0.01	0.01	122.52	11.00	0.01	0.01	0.83	0.06	0.08	0.00	118.97	0.01	0.01	0.01	122.52	11.00	0.01	0.01	0.83	0.06	0.08	0.00	118.97	0.01	0.01	0.01	122.52	11.00	0.01	0																																	

Monthly Comparison of Construction Equipment Emissions:

Month of Construction	Total Equipment Quantity	Daily Emissions (lb/day)									
		PM ₁₀	PM _{2.5}	CO	ROG	NO _x	SO _x	CO ₂	CH ₄	N ₂ O	CO _{2e}
1	146	6.48	5.92	79.24	16.89	115.23	0.13	12513.05	1.96	0.152	12601.17
2	315	14.22	13.00	169.89	36.24	232.05	0.26	25578.48	4.88	0.289	25773.79
3	380	13.28	12.12	202.19	34.93	224.44	0.26	25024.69	5.33	0.387	25185.55
4	356	16.32	14.93	228.34	43.71	291.78	0.33	32168.05	6.13	0.348	32404.71
5	359	17.05	15.61	244.99	46.85	299.13	0.34	32914.05	6.69	0.348	33162.51
6	646	19.67	18.14	331.06	58.13	328.51	0.40	39443.93	8.89	0.692	39842.02
7	634	19.61	18.99	312.08	54.75	303.12	0.38	37005.55	8.40	0.692	37386.32
8	520	15.71	14.34	277.47	47.19	240.96	0.30	29541.06	7.66	0.560	29875.69
9	459	14.71	13.43	221.85	44.66	217.53	0.28	26182.11	6.16	0.495	26464.86
10	421	13.51	12.34	209.59	41.98	194.53	0.25	23986.12	5.94	0.457	24352.67
11	416	11.75	10.72	186.46	37.69	155.39	0.21	19979.38	5.31	0.457	20232.53
12	416	11.75	10.72	186.46	37.69	155.39	0.21	19979.38	5.31	0.457	20232.53
13	466	11.51	10.49	188.37	36.71	152.93	0.21	20443.67	5.26	0.524	20716.48
14	463	13.88	12.68	248.90	41.22	215.03	0.27	26281.29	6.88	0.504	26562.00
15	472	13.58	12.40	202.71	40.63	215.92	0.26	26797.86	7.93	0.511	27122.96
16	450	12.41	11.33	251.56	37.99	193.42	0.24	24378.97	7.01	0.462	24678.75
17	437	11.54	10.53	234.93	35.47	175.07	0.22	22474.03	6.54	0.483	22761.15
18	379	7.88	7.17	184.87	26.46	116.25	0.16	16430.64	5.19	0.425	16671.51
19	330	5.13	4.64	119.98	16.50	75.95	0.11	11775.33	3.27	0.363	11962.60
20	308	4.95	4.48	116.25	15.68	74.36	0.11	11346.64	3.18	0.356	11523.57
21	292	5.59	5.07	120.08	16.83	103.36	0.13	14099.74	3.16	0.334	14269.71
22	290	5.25	4.76	116.31	15.28	100.32	0.13	13909.16	3.02	0.333	13975.78
23	287	4.95	4.49	113.39	14.16	96.57	0.13	13411.46	2.95	0.332	13576.53
24	286	4.69	4.25	110.80	13.16	93.85	0.12	13139.77	2.86	0.332	13302.94
25	286	4.69	4.25	110.80	13.16	93.85	0.12	13139.77	2.86	0.332	13302.94
26	279	2.93	2.63	94.03	8.50	51.21	0.08	8865.19	2.47	0.332	9019.99
27	278	2.67	2.39	91.44	7.50	48.48	0.08	8593.50	2.38	0.332	8748.40
28	236	2.61	2.35	87.25	7.21	46.09	0.07	7992.27	2.32	0.278	8127.24
29	234	2.51	2.26	86.50	6.86	46.42	0.07	7802.62	2.32	0.278	7937.49
30	234	2.51	2.26	86.50	6.86	46.42	0.07	7802.62	2.32	0.278	7937.49
31	234	2.51	2.26	86.50	6.86	46.42	0.07	7802.62	2.32	0.278	7937.49
32	228	2.48	2.22	80.13	6.80	43.81	0.07	7407.46	1.81	0.278	7531.62
33	252	2.51	2.25	82.52	6.96	44.03	0.07	7751.02	1.84	0.309	7885.43
34	252	2.51	2.25	82.52	6.96	44.03	0.07	7751.02	1.84	0.309	7885.43
35	256	2.58	2.32	117.21	7.08	49.01	0.07	8515.65	2.86	0.309	8671.40
36	219	2.52	2.28	113.52	6.83	46.66	0.07	7985.99	2.81	0.261	8125.94
37	214	2.35	2.12	111.95	6.69	45.87	0.06	7535.15	2.81	0.261	7674.94
38	214	2.35	2.12	111.95	6.69	45.87	0.06	7535.15	2.81	0.261	7674.94
39	214	2.35	2.12	111.95	6.69	45.87	0.06	7535.15	2.81	0.261	7674.94
40	213	2.35	2.12	111.85	6.69	45.86	0.06	7520.84	2.80	0.260	7660.20
41	213	2.35	2.12	111.85	6.69	45.86	0.06	7520.84	2.80	0.260	7660.20
MAX VALUE (lb/day)	646	19.67	18.14	331.06	58.13	328.51	0.40	39443.93	8.89	0.692	39842.02

Months for Annual Construction		Annual Emissions (ton/year)									
		PM ₁₀	PM _{2.5}	CO	ROG	NO _x	SO _x	CO ₂	CH ₄	N ₂ O	CO _{2e}
1	12	2.25	2.06	34.71	6.51	35.86	0.043	4222.61	0.94	0.0694	4263.94
2	13	2.32	2.12	36.12	6.77	36.35	0.045	4325.70	0.99	0.0742	4369.44
3	14	2.31	2.11	36.89	6.83	36.12	0.045	4334.58	1.01	0.0768	4379.69
4	15	2.32	2.12	37.94	6.91	36.01	0.045	4345.93	1.05	0.0785	4392.25
5	16	2.27	2.07	38.24	6.83	34.74	0.043	4244.67	1.06	0.0803	4291.81
6	17	2.19	2.00	38.11	6.68	33.12	0.042	4108.95	1.06	0.0821	4156.59
7	18	2.04	1.86	36.21	6.27	30.36	0.039	3809.78	1.01	0.0787	3855.38
8	19	1.86	1.70	33.71	5.77	27.41	0.035	3481.78	0.94	0.0747	3524.74
9	20	1.72	1.57	31.62	5.36	25.24	0.033	3245.26	0.88	0.0721	3286.16
10	21	1.61	1.46	30.29	5.00	23.76	0.031	3088.19	0.84	0.0700	3127.62
11	22	1.50	1.36	29.08	4.66	22.53	0.029	2961.09	0.81	0.0684	2999.22
12	23	1.41	1.28	28.13	4.35	21.77	0.028	2876.71	0.78	0.0667	2912.70
13	24	1.32	1.20	27.15	4.03	20.97	0.027	2786.79	0.74	0.0651	2822.61
14	25	1.23	1.12	26.14	3.73	20.20	0.026	2691.84	0.71	0.0626	2726.24
15	26	1.09	0.99	24.12	3.30	18.07	0.024	2465.69	0.66	0.0604	2488.19
16	27	0.94	0.86	21.84	2.87	15.90	0.021	2229.03	0.58	0.0581	2293.29
17	28	0.82	0.74	19.50	2.47	14.01	0.019	2016.01	0.52	0.0553	2044.12
18	29	0.70	0.63	17.57	2.10	12.33	0.017	1825.28	0.47	0.0526	1851.42
19	30	0.63	0.57	16.29	1.84	11.43	0.016	1713.11	0.43	0.0507	1737.87
20	31	0.60	0.54	15.86	1.72	11.04	0.015	1661.47	0.42	0.0484	1685.55
21	32	0.56	0.51	15.39	1.60	10.64	0.015	1610.26	0.40	0.0484	1633.65
22	33	0.52	0.47	14.90	1.47	9.87	0.014	1527.73	0.38	0.0480	1550.66
23	34	0.49	0.44	14.46	1.36	9.14	0.013	1448.97	0.37	0.0477	1471.48
24	35	0.46	0.41	14.51	1.27	8.52	0.012	1365.33	0.37	0.0474	1407.72
25	36	0.43	0.39	14.55	1.19	7.84	0.012	1318.33	0.37	0.0465	1340.42
26	37	0.40	0.36	14.56	1.11	7.31	0.011	1245.47	0.36	0.0456	1267.25
27	38	0.39	0.35	14.79	1.08	7.24	0.011	1228.18	0.37	0.0446	1249.77
28	39	0.39	0.35	15.06	1.07	7.21	0.011	1214.42	0.37	0.0437	1235.84
29	40	0.38	0.35	15.38	1.07	7.18	0.010	1208.29	0.38	0.0435	1229.77
30	41	0.38	0.34	15.71	1.06	7.17	0.010	1204.63	0.39	0.0432	1226.16
MAX VALUE (ton/year)		2.32	2.12	38.24	6.91	36.35	0.04	4345.93	1.06	0.0821	4392.25

Combustion Exhaust Emissions On-site (annual)

Maximum annual construction on-site exhausted emissions occurs in months 2-13.
Construction Assumptions - 26 days per month

Equipment	Number of Vehicles per year	Hours/Day	Emission rate per piece of equipment (lb/hr)										Annual Emissions (ton/year)										Number of Vehicles (entire construction period)	entire construction period emissions (ton)									
			PM ₁₀	PM _{2.5}	CO	ROG	NO _x	SO ₂	CO ₂	CH ₄	N ₂ O	CO _{2e}	PM ₁₀	PM _{2.5}	CO	ROG	NO _x	SO ₂	CO ₂	CH ₄	N ₂ O	CO _{2e}		PM ₁₀	PM _{2.5}	CO	ROG	NO _x	SO ₂	CO ₂	CH ₄	N ₂ O	CO _{2e}
Diesel Construction Equipment																																	
Air Compressor	26	6	0.027	0.025	0.283	0.118	0.239	0.000	22.251	0.011	0.000	22.474	0.05	0.05	0.55	0.23	0.47	0.00	43.32	0.02	0.00	43.72	37	0.07	0.07	0.78	0.33	0.66	0.00	61.65	0.03	0.00	62.27
Asphalt Paver	1	7	0.085	0.078	0.522	0.164	0.968	0.001	69.134	0.015	0.000	69.444	0.01	0.01	0.05	0.02	0.09	0.00	6.36	0.00	0.00	6.39	1	0.01	0.01	0.05	0.02	0.09	0.00	6.36	0.00	0.00	6.39
Backhoe	66	6	0.051	0.047	0.362	0.091	0.566	0.001	51.682	0.008	0.000	51.854	0.25	0.23	1.75	0.44	2.74	0.00	250.09	0.04	0.00	250.93	88	0.33	0.31	2.34	0.59	3.65	0.00	333.46	0.05	0.00	334.57
Compactor	42	6	0.064	0.059	0.417	0.120	0.738	0.001	58.936	0.011	0.000	59.163	0.20	0.18	1.28	0.37	2.27	0.00	181.49	0.03	0.00	182.18	53	0.25	0.23	1.62	0.47	2.87	0.00	229.02	0.04	0.00	229.91
Crane small	81	5	0.054	0.049	0.488	0.121	0.929	0.001	80.272	0.011	0.000	80.502	0.29	0.27	2.65	0.66	5.05	0.00	436.16	0.06	0.00	437.40	218	0.79	0.72	7.13	1.77	13.59	0.01	1173.86	0.16	0.00	1177.21
Crane large	19	7	0.068	0.063	0.662	0.182	1.771	0.002	179.940	0.016	0.000	180.284	0.12	0.11	1.13	0.31	3.01	0.00	305.78	0.03	0.00	306.37	35	0.21	0.20	2.07	0.57	5.54	0.01	563.28	0.05	0.00	564.36
Dozer	9	7	0.078	0.072	0.574	0.205	1.942	0.002	165.982	0.018	0.000	166.371	0.06	0.06	0.48	0.17	1.61	0.00	137.49	0.02	0.00	137.81	14	0.10	0.09	0.74	0.26	2.50	0.00	213.88	0.02	0.00	214.38
Generator	54	9	0.029	0.026	0.292	0.113	0.307	0.000	30.595	0.010	0.000	30.810	0.18	0.16	1.82	0.70	1.92	0.00	190.72	0.06	0.00	192.06	83	0.27	0.25	2.80	1.08	2.95	0.00	293.15	0.10	0.00	295.20
Grader	28	7	0.078	0.072	0.740	0.174	1.352	0.001	123.810	0.016	0.000	124.140	0.20	0.18	1.88	0.44	3.42	0.00	313.67	0.04	0.00	314.50	36	0.25	0.23	2.41	0.57	4.40	0.00	403.28	0.05	0.00	404.36
Light Tower	19	7	0.026	0.024	0.293	0.103	0.278	0.000	27.964	0.009	0.000	28.160	0.05	0.04	0.54	0.19	0.51	0.00	51.39	0.02	0.00	51.75	32	0.08	0.07	0.91	0.32	0.86	0.00	86.55	0.03	0.00	87.16
Loader	40	6	0.056	0.052	0.421	0.149	1.534	0.002	148.843	0.013	0.000	149.126	0.19	0.17	1.42	0.50	5.17	0.01	501.54	0.05	0.00	502.49	54	0.26	0.24	1.91	0.68	6.98	0.01	677.08	0.06	0.00	678.37
Maxi Sheeker (Trencher)	48	8	0.040	0.037	0.436	0.184	0.362	0.000	32.888	0.017	0.000	33.236	0.21	0.20	2.29	0.96	1.90	0.00	172.39	0.09	0.00	174.21	78	0.34	0.32	3.71	1.56	3.08	0.00	280.13	0.14	0.00	283.09
Skid Steer (Bobcat)	27	7	0.022	0.020	0.250	0.078	0.246	0.000	25.496	0.007	0.000	25.645	0.06	0.05	0.65	0.20	0.64	0.00	66.58	0.02	0.00	66.97	47	0.10	0.09	1.14	0.36	1.12	0.00	115.90	0.03	0.00	116.58
Welding Machine	49	5	0.029	0.027	0.304	0.124	0.273	0.000	25.935	0.011	0.000	26.171	0.10	0.09	1.05	0.43	0.94	0.00	89.21	0.04	0.00	90.02	63	0.13	0.12	1.35	0.55	1.21	0.00	114.70	0.05	0.00	115.74
Equipment fueled with Propane																																	
Aerial Lift	54	6	0.003	0.003	1.417	0.005	0.203	0.000	31.235	0.042	0.000	32.107	0.01	0.01	6.09	0.02	0.87	0.00	134.19	0.18	0.00	137.94	159	0.04	0.04	17.93	0.06	2.57	0.00	395.12	0.53	0.00	406.15
Fork Lift	94	4	0.002	0.002	0.295	0.003	0.121	0.000	18.295	0.024	0.000	18.791	0.01	0.01	1.30	0.01	0.53	0.00	80.48	0.10	0.00	82.66	214	0.02	0.02	2.95	0.03	1.21	0.00	183.22	0.24	0.00	185.19
Telehandler	35	6	0.003	0.003	1.417	0.005	0.203	0.000	31.235	0.042	0.000	32.107	0.01	0.01	3.95	0.01	0.57	0.00	86.98	0.12	0.00	89.40	131	0.03	0.03	14.77	0.05	2.12	0.00	325.54	0.43	0.00	334.63
Vehicles with Onroad Engines for Emissions Estimates																																	
Concrete Delivery Truck for general construction	12	12	0.002	0.002	0.016	0.008	0.036	0.000	4.067	0.000	0.000	4.069	0.00	0.00	0.03	0.01	0.07	0.00	7.61	0.00	0.00	7.62	14	0.00	0.00	0.04	0.02	0.08	0.00	8.88	0.00	0.00	8.89
Concrete Delivery Truck for bridge	10	12	0.000	0.000	0.004	0.002	0.008	0.000	0.930	0.000	0.000	0.930	0.00	0.00	0.01	0.00	0.01	0.00	1.45	0.00	0.00	1.45	11	0.00	0.00	0.01	0.00	0.01	0.00	1.60	0.00	0.00	1.60
Concrete Pump Truck for bridge	6	12	0.000	0.000	0.000	0.000	0.001	0.000	0.058	0.000	0.000	0.058	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.05	7	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.06
Dump Truck	46	12	0.002	0.002	0.016	0.007	0.035	0.000	3.953	0.001	0.000	3.953	0.02	0.01	0.11	0.05	0.25	0.00	28.35	0.00	0.00	28.37	56	0.02	0.02	0.14	0.06	0.30	0.00	34.52	0.00	0.00	34.53
Flatbed Truck	120	12	0.003	0.003	0.026	0.002	0.046	0.000	7.514	0.000	0.000	7.517	0.05	0.05	0.49	0.04	0.87	0.00	140.66	0.00	0.00	140.71	310	0.14	0.13	1.26	0.11	2.25	0.00	363.37	0.00	0.00	363.51
Staff & Security Truck	72	24	0.000	0.000	0.009	0.000	0.000	0.000	1.437	0.000	0.000	1.558	0.00	0.00	0.21	0.01	0.00	0.00	32.29	0.01	0.01	35.00	246	0.00	0.00	0.71	0.02	0.01	0.00	110.33	0.03	0.00	110.58
Pickup Truck	132	12	0.000	0.000	0.006	0.000	0.001	0.000	0.901	0.000	0.000	0.928	0.00	0.00	0.13	0.01	0.01	0.00	18.56	0.00	0.00	19.11	451	0.01	0.00	0.44	0.03	0.04	0.00	63.41	0.01	0.01	65.30
Water/Solitaic Truck	79	12	0.004	0.004	0.031	0.015	0.070	0.000	7.902	0.000	0.000	7.906	0.05	0.05	0.38	0.18	0.86	0.00	97.38	0.00	0.00	97.43	160	0.11	0.09	0.78	0.37	1.74	0.00	197.23	0.00	0.00	197.33
General Materials Delivery Truck for general cons	24	24	0.001	0.001	0.008	0.004	0.018	0.000	2.034	0.000	0.000	2.035	0.01	0.01	0.06	0.03	0.13	0.00	15.23	0.00	0.00	15.24	24	0.01	0.01	0.06	0.03	0.13	0.00	15.23	0.00	0.00	15.24
General Materials Delivery Truck for bridge	22	24	0.000	0.000	0.002	0.001	0.004	0.000	0.465	0.000	0.000	0.465	0.00	0.00	0.01	0.01	0.03	0.00	3.19	0.00	0.00	3.19	24	0.00	0.00	0.01	0.01	0.03	0.00	3.48	0.00	0.00	3.48
Suncatcher Pedestals Delivery Truck	13	24	0.001	0.001	0.008	0.004	0.018	0.000	2.034	0.000	0.000	2.035	0.00	0.00	0.03	0.02	0.07	0.00	8.25	0.00	0.00	8.25	28	0.01	0.01	0.07	0.03	0.16	0.00	17.77	0.00	0.00	17.77
Stirling Engines Delivery Truck	72	24	0.001	0.001	0.008	0.004	0.018	0.000	2.034	0.000	0.000	2.035	0.02	0.02	0.18	0.09	0.40	0.00	45.68	0.00	0.00	45.71	246	0.08	0.07	0.62	0.29	1.37	0.00	156.08	0.00	0.00	156.16
Suncatcher Metal Supports Delivery Truck	132	24	0.001	0.001	0.008	0.004	0.018	0.000	2.034	0.000	0.000	2.035	0.04	0.04	0.33	0.16	0.74	0.00	83.75	0.00	0.00	83.79	451	0.15	0.14	1.13	0.53	2.52	0.00	286.15	0.00	0.00	286.30
Suncatcher Mirrors Delivery Truck	84	24	0.001	0.001	0.008	0.004	0.018	0.000	2.034	0.000	0.000	2.035	0.03	0.03	0.21	0.10	0.47	0.00	53.30	0.00	0.00	53.32	287	0.10	0.09	0.72	0.34	1.60	0.00	182.10	0.00	0.00	182.19
Electrical and Control Systems Delivery Truck	24	24	0.001	0.001	0.008	0.004	0.018	0.000	2.034	0.000	0.000	2.035	0.01	0.01	0.06	0.03	0.13	0.00	15.23	0.00	0.00	15.24	82	0.03	0.02	0.21	0.10	0.46	0.00	52.03	0.00	0.00	52.05
Azimuth and Elevation Drive Delivery Truck	24	24	0.001	0.001	0.008	0.004	0.018	0.000	2.034	0.000	0.000																						

Calico Solar

Fugitive Dust Emissions (on-site)

Peak month = 6

Maximum annual construction on-site exhausted emissions occurs in months 2-13.

Travel on sealed roads (paved)

$E = [k * (SL/2)^{0.65} * (W/3)^{1.5} * C] * (1 - P/4N)$

EPA AP-42 Section 13.2.1 Paved Roads Equation 2
E = particulate emission factor (lb/VMT),

k = particle size multiplier for particle size range and units of interest

7.4 SL = road surface silt loading (grams per square meter) (g/m²),

W = average weight (tons) of the vehicles traveling the road, and

C = emission factor for 1980's vehicle fleet exhaust, brake wear and tire wear.

from Table 13.2.1-4 for Municipal solid waste landfill

constants

Solar One Technicians

	PM _{2.5}	PM ₁₀
k	0.0024	0.016
C	0.00036	0.00047

23 P = Mean number of days per year with at least 0.01 inches of precipitation (from Daggett FAA Airport Station)

365 N = number of days in the year (averaging period)

Vehicle Type	Number of Vehicles (month 6)	Max Daily Distance per Vehicle (mile/day)	Assumed distance percentage to drive on sealed roads	Max Daily Distance per drive on sealed roads (mile/day)	Max Daily VMT (all vehicles)	Mean Vehicle Weight (tons)	Max. Operating Hours / Day	Number of Vehicles per year (months 2-13)	Max Annual VMT (all vehicles)	PM _{2.5} EF (lbs/VMT)	PM ₁₀ EF (lbs/VMT)
Diesel Construction Equipment											
Air Compressor	3	0	0%	0.0	0	0.5	6	26	0	0.000	0.002
Asphalt Paver	0	0.2	0%	0.0	0	25	7	1	0	0.133	0.886
Backhoe	6	0	0%	0.0	0	11	6	66	0	0.038	0.258
Compactor	4	0	0%	0.0	0	10	6	42	0	0.033	0.224
Crane small	8	0.5	50%	0.3	2	10	5	81	526.5	0.033	0.224
Crane large	4	0.5	0%	0.0	0	35	7	19	0	0.220	1.468
Dozer	1	0	0%	0.0	0	20	7	9	0	0.095	0.634
Generator	5	0	0%	0.0	0	0.5	9	54	0	0.000	0.002
Grader	4	0	0%	0.0	0	20	7	28	0	0.095	0.634
Light Tower	2	0	0%	0.0	0	0.25	7	19	0	0.000	0.000
Loader	5	0	0%	0.0	0	25	6	40	0	0.133	0.886
Maxi Sneaker (Trencher)	5	0	0%	0.0	0	5	8	48	0	0.012	0.079
Skid Steer (Bobcat)	4	0	0%	0.0	0	2	7	27	0	0.003	0.020
Welding Machine	5	0	0%	0.0	0	0.5	5	49	0	0.000	0.002
Equipment fueled with Propane											
Aerial Lift	6	1	50%	0.5	3	4	6	54	702	0.008	0.056
Fork Lift	8	1	50%	0.5	4	3	4	94	1222	0.005	0.036
Telehandler	6	1	50%	0.5	3	3	6	35	455	0.005	0.036
Vehicles with Onroad Engines for Emissions Estimates											
Concrete Delivery Truck for general construction	0	7	90%	6.3	0	20	12	12	1965.6	0.095	0.634
Concrete Delivery Truck for bridge	5	1.6	90%	1.4	7	20	12	10	374.4	0.095	0.634
Concrete Pump Truck for bridge	1	0.1	90%	0.1	0	20	12	6	14.04	0.095	0.634
Dump Truck	5	6.8	50%	3.4	17	20	12	46	4066.4	0.095	0.634
Flatbed Truck	10	27.2	100%	27.2	272	10	12	120	84864	0.033	0.224
Staff & Security Truck	6	48	100%	48.0	288	2.25	24	72	89856	0.003	0.023
Pickup Truck	11	6.8	95%	6.5	71	4	12	132	22170.72	0.008	0.056
Water/Soilac Truck	7	13.6	25%	3.4	24	20	12	79	6993.6	0.095	0.634
General Materials Delivery Truck for general construction	3	7	100%	7.0	21	20	24	24	4368	0.095	0.634
General Materials Delivery Truck for bridge	12	1.6	100%	1.6	19	20	24	22	915.2	0.095	0.634
Suncatcher Pedestals Delivery Truck	3	7	50%	3.5	11	20	24	13	1183	0.095	0.634
Suncatcher Metal Supports Delivery Truck	6	7	100%	7.0	42	20	24	72	13104	0.095	0.634
Suncatcher Mirrors Delivery Truck	11	7	100%	7.0	77	20	24	132	24024	0.095	0.634
Electrical and Control Systems Delivery Truck	7	7	100%	7.0	49	20	24	84	15288	0.095	0.634
Azimuth and Elevation Drive Delivery Truck	2	7	100%	7.0	14	20	24	24	4368	0.095	0.634
Water Delivery Trucks	0	0	100%	0.0	0	0	24	0	0.000	0.000	0.000
Worker Passenger Vehicles	479	9	100%	9.0	4311	2	24	3824	894816	0.003	0.020

Vehicle Type	Watering Control Efficiency		PM ₁₀ Emissions (lb/hr)		PM ₁₀ Emissions (lb/day)		% of daily emissions	PM ₁₀ Emissions (tons/year)		PM _{2.5} Emissions (lb/hr)		PM _{2.5} Emissions (lb/day)		PM _{2.5} Emissions (tons/year)	
	Unmitigated	Mitigated	Unmitigated	Mitigated	Unmitigated	Mitigated		Unmitigated	Mitigated	Unmitigated	Mitigated	Unmitigated	Mitigated	Unmitigated	Mitigated
Diesel Construction Equipment															
Air Compressor	0%	0%	0.00	0.00	0.00	0.00	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asphalt Paver	0%	0%	0.00	0.00	0.00	0.00	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Backhoe	0%	0%	0.00	0.00	0.00	0.00	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Compactor	0%	0%	0.00	0.00	0.00	0.00	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crane small	0%	0%	0.09	0.09	0.45	0.45	0.13%	0.06	0.06	0.01	0.01	0.07	0.07	0.01	0.01
Crane large	0%	0%	0.00	0.00	0.00	0.00	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dozer	0%	0%	0.00	0.00	0.00	0.00	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Generator	0%	0%	0.00	0.00	0.00	0.00	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grader	0%	0%	0.00	0.00	0.00	0.00	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Light Tower	0%	0%	0.00	0.00	0.00	0.00	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loader	0%	0%	0.00	0.00	0.00	0.00	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maxi Sneaker (Trencher)	0%	0%	0.00	0.00	0.00	0.00	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Skid Steer (Bobcat)	0%	0%	0.00	0.00	0.00	0.00	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Welding Machine	0%	0%	0.00	0.00	0.00	0.00	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Equipment fueled with Propane															
Aerial Lift	0%	0%	0.03	0.03	0.17	0.17	0.05%	0.02	0.02	0.00	0.00	0.02	0.02	0.00	0.00
Fork Lift	0%	0%	0.04	0.04	0.15	0.15	0.04%	0.02	0.02	0.01	0.01	0.02	0.02	0.00	0.00
Telehandler	0%	0%	0.02	0.02	0.11	0.11	0.03%	0.01	0.01	0.00	0.00	0.02	0.02	0.00	0.00
Vehicles with Onroad Engines for Emissions Estimates															
Concrete Delivery Truck for general construction	0%	0%	0.00	0.00	0.00	0.00	0.00%	0.62	0.62	0.00	0.00	0.00	0.00	0.09	0.09
Concrete Delivery Truck for bridge	0%	0%	0.38	0.38	4.56	4.56	1.33%	0.12	0.12	0.06	0.06	0.68	0.68	0.02	0.02
Concrete Pump Truck for bridge	0%	0%	0.06	0.06	0.06	0.06	0.02%	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
Dump Truck	0%	0%	0.90	0.90	10.78	10.78	3.13%	1.29	1.29	0.13	0.13	1.61	1.61	0.19	0.19
Flatbed Truck	0%	0%	5.07	5.07	60.89	60.89	17.70%	9.50	9.50	0.75	0.75	9.06	9.06	1.41	1.41
Staff & Security Truck	0%	0%	0.28	0.28	6.76	6.76	1.97%	1.05	1.05	0.04	0.04	0.93	0.93	0.15	0.15
Pickup Truck	0%	0%	0.33	0.33	4.00	4.00	1.16%	0.62	0.62	0.05	0.05	0.58	0.58	0.09	0.09
Water/Soilac Truck	0%	0%	1.26	1.26	15.09	15.09	4.39%	2.21	2.21	0.19	0.19	2.26	2.26	0.33	0.33
General Materials Delivery Truck for general construction	0%	0%	0.55	0.55	13.31	13.31	3.87%	1.38	1.38	0.08	0.08	1.99	1.99	0.21	0.21
General Materials Delivery Truck for bridge	0%	0%	0.51	0.51	12.17	12.17	3.54%	0.29	0.29	0.08	0.08	1.82	1.82	0.04	0.04
Suncatcher Pedestals Delivery Truck	0%	0%	0.28	0.28	6.66	6.66	1.94%	0.38	0.38	0.04	0.04	1.00	1.00	0.06	0.06
Suncatcher Metal Supports Delivery Truck	0%	0%	1.11	1.11	26.63	26.63	7.74%	4.15	4.15	0.17	0.17	3.98	3.98	0.62	0.62
Suncatcher Mirrors Delivery Truck	0%	0%	2.03	2.03	49.82	49.82	14.19%	7.62	7.62	0.30	0.30	7.30	7.30	1.14	1.14
Electrical and Control Systems Delivery Truck	0%	0%	0.37	0.37	8.88	8.88	2.58%	1.38	1.38	0.06	0.06	1.33	1.33	0.21	0.21
Azimuth and Elevation Drive Delivery Truck	0%	0%	0.37	0.37	8.88	8.88	2.58%	1.38	1.38	0.06	0.06	1.33	1.33	0.21	0.21
Water Delivery Trucks	0%	0%	0.00	0.00	0.00	0.00	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Passenger Vehicles	0%	0%	3.52	3.52	84.50	84.50	24.57%	8.77	8.77	0.48	0.48	11.45	11.45	1.19	1.19
TOTAL Fugitive emissions for vehicles traveled on sealed roads (paved)			18.44	18.44	343.93	343.93		45.74	45.74	2.70	2.70	50.09	50.09	6.69	6.69

Travel on unpaved surfaces

$E = k * (s/12)^a * (W/3)^b * [(365 - P)/365]$

EPA AP-42 Section 13.2.2 Unpaved Roads Equations 1a and 2

E = size-specific emission factor (lb/VMT)

k, a, b = empirical constants

8.5 s = surface material silt content (%)

Construction sites - Scraper routes

W = mean vehicle weight (tons)

constants

	PM _{2.5}	PM ₁₀	Industrial Roads
k	0.15	1.5	
a	0.9	0.9	
b	0.45	0.45	

23 P = Mean number of days per year with at least 0.01 inches of precipitation (from Daggett FAA Airport Station)

Vehicle Type	Number of Vehicles (month 6)	Max Daily Distance per Vehicle (mile/day)	Assumed distance to drive on unpaved roads	Max Daily Distance per Vehicle to drive on unpaved roads (mile/day)	Max Daily VMT (all vehicles)	Mean Vehicle Weight (tons)	Max. Operating Hours / Day	Number of Vehicles per year (months 2-13)	Max Annual VMT (all vehicles)	PM _{2.5} EF (lbs/VMT)	PM ₁₀ EF (lbs/VMT)
Diesel Construction Equipment											
Air Compressor	3	0	100%	0	0	0.5	6	26	0	0.046	0.460
Asphalt Paver	0	0.2	100%	0.2	0	25	7	1	5.2	0.268	2.676
Backhoe	6	0	100%	0	0	11	6	66	0	0.185	1.849
Compactor	4	0	100%	0	0	10	6	42	0	0.177	1.771
Crane small	8	0.5	50%	0.25	2	10	5	81	526.5	0.177	1.771
Crane large	4	0.5	100%	0.5	2	35	7	19	247	0.311	3.113
Dozer	1	0	100%	0	0	20	7	9	0	0.242	2.420
Generator	5	0	100%	0	0	0.5	9	54	0	0.046	0.460
Grader	4	0	100%	0	0	20	7	28	0	0.242	2.420
Light Tower	2	0	100%	0	0	0.25	7	19	0	0.034	0.337
Loader	5	0	100%	0	0	25	6	40	0	0.268	2.676
Maxi Sneaker (Trencher)	5	0	100%	0	0	5	8	48	0	0.130	1.297
Skid Steer (Bobcat)	4	0	100%	0	0	2	7	27	0	0.086	0.859
Welding Machine	5	0	100%	0	0	0.5	5	49	0	0.046	0.460
Equipment fueled with Propane											
Aerial Lift	6	1	50%	0.5	3	4	6	54	702	0.117	1.173
Fork Lift	8	1	50%	0.5	4	3	4	94	1222	0.103	1.030
Telehandler	6	1	50%	0.5	3	3	6	35	455	0.103	1.030
Vehicles with Onroad Engines for Emissions Estimates											
Concrete Delivery Truck for general construction	0	7	10%	0.7	0	20	12	12	218.4	0.242	2.420
Concrete Delivery Truck for bridge	5	1.6	10%	0.16	1	20	12	10	41.6	0.242	2.420
Concrete Pump Truck for bridge	1	0.1	10%	0.01	0	20	12	6	1.56	0.242	2.420
Dump Truck	5	6.8	50%	3.4	17	20	12	46	4066.4	0.242	2.420
Flatbed Truck	10	27.2	0%	0	0	10	12	120	0	0.177	1.771
Staff & Security Truck	6	48	0%	0	0	2.25	24	72	0	0.091	0.905
Pickup Truck	11	6.8	5%	0.34	4	4	12	132	1166.88	0.117	1.173
Water/Soiltac Truck	7	13.6	75%	10.2	71	20	12	79	20950.8	0.242	2.420
General Materials Delivery Truck for general construction	3	7	0%	0	0	20	24	24	0	0.242	2.420
General Materials Delivery Truck for bridge	12	1.6	0%	0	0	20	24	22	0	0.242	2.420
Suncatcher Pedestals Delivery Truck	3	7	50%	3.5	11	20	24	13	1183	0.242	2.420
Stirling Engines Delivery Truck	6	7	0%	0	0	20	24	72	0	0.242	2.420
Suncatcher Metal Supports Delivery Truck	11	7	0%	0	0	20	24	132	0	0.242	2.420
Suncatcher Mirrors Delivery Truck	7	7	0%	0	0	20	24	84	0	0.242	2.420
Electrical and Control Systems Delivery Truck	2	7	0%	0	0	20	24	24	0	0.242	2.420
Azimuth and Elevation Drive Delivery Truck	2	7	0%	0	0	20	24	24	0	0.242	2.420
Water Delivery Trucks	0	0	0%	0	0	0	24	0	0	0.000	0.000
Worker Passenger Vehicles	479	9	0%	0	0	2	24	3824	0	0.086	0.859

Vehicle Type	Watering Control Efficiency		PM ₁₀ Emissions (lb/hr)		PM ₁₀ Emissions (lb/day)		% of daily emissions	PM ₁₀ Emissions (tons/year)		PM _{2.5} Emissions (lb/hr)		PM _{2.5} Emissions (lb/day)		PM _{2.5} Emissions (tons/year)	
	Unmitigated	Mitigated	Unmitigated	Mitigated	Unmitigated	Mitigated		Unmitigated	Mitigated	Unmitigated	Mitigated	Unmitigated	Mitigated	Unmitigated	Mitigated
Diesel Construction Equipment															
Air Compressor	0%	68%	0.00	0.00	0.00	0.00	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asphalt Paver	0%	68%	0.00	0.00	0.00	0.00	0.00%	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Backhoe	0%	68%	0.00	0.00	0.00	0.00	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Compactor	0%	68%	0.00	0.00	0.00	0.00	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crane small	0%	68%	0.69	0.22	3.54	1.13	1.33%	0.47	0.15	0.07	0.02	0.35	0.11	0.05	0.01
Crane large	0%	68%	0.90	0.29	6.23	1.99	2.34%	0.38	0.12	0.09	0.03	0.62	0.20	0.04	0.01
Dozer	0%	68%	0.00	0.00	0.00	0.00	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Generator	0%	68%	0.00	0.00	0.00	0.00	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grader	0%	68%	0.00	0.00	0.00	0.00	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Light Tower	0%	68%	0.00	0.00	0.00	0.00	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loader	0%	68%	0.00	0.00	0.00	0.00	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maxi Sneaker (Trencher)	0%	68%	0.00	0.00	0.00	0.00	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Skid Steer (Bobcat)	0%	68%	0.00	0.00	0.00	0.00	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Welding Machine	0%	68%	0.00	0.00	0.00	0.00	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Equipment fueled with Propane															
Aerial Lift	0%	68%	0.57	0.18	3.52	1.13	1.32%	0.41	0.13	0.06	0.02	0.35	0.11	0.04	0.01
Fork Lift	0%	68%	1.14	0.37	4.12	1.32	1.55%	0.63	0.20	0.11	0.04	0.41	0.13	0.06	0.02
Telehandler	0%	68%	0.51	0.16	3.09	0.99	1.16%	0.23	0.08	0.05	0.02	0.31	0.10	0.02	0.01
Vehicles with Onroad Engines for Emissions Estimates															
Concrete Delivery Truck for general construction	0%	68%	0.00	0.00	1.94	0.62	0.73%	0.05	0.02	0.02	0.01	0.19	0.06	0.01	0.00
Concrete Delivery Truck for bridge	0%	68%	0.16	0.05	0.82	0.27	0.33%	0.06	0.02	0.01	0.00	0.00	0.00	0.00	0.00
Concrete Pump Truck for bridge	0%	68%	0.00	0.00	0.02	0.01	0.01%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dump Truck	0%	68%	3.45	1.10	41.14	13.16	15.46%	4.92	1.57	0.34	0.11	4.11	1.32	0.49	0.16
Flatbed Truck	0%	68%	0.00	0.00	0.00	0.00	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Staff & Security Truck	0%	68%	0.00	0.00	0.00	0.00	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pickup Truck	0%	68%	0.37	0.12	4.39	1.40	1.65%	0.68	0.22	0.04	0.01	0.44	0.14	0.07	0.02
Water/Soiltac Truck	0%	68%	14.40	4.61	172.78	55.29	64.91%	25.35	8.11	1.44	0.46	17.28	5.53	2.53	0.81
General Materials Delivery Truck for general construction	0%	68%	0.00	0.00	0.00	0.00	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
General Materials Delivery Truck for bridge	0%	68%	0.00	0.00	0.00	0.00	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Suncatcher Pedestals Delivery Truck	0%	68%	1.06	0.34	25.41	8.13	9.55%	1.43	0.46	0.11	0.03	2.54	0.81	0.14	0.05
Stirling Engines Delivery Truck	0%	68%	0.00	0.00	0.00	0.00	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Suncatcher Metal Supports Delivery Truck	0%	68%	0.00	0.00	0.00	0.00	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Suncatcher Mirrors Delivery Truck	0%	68%	0.00	0.00	0.00	0.00	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Electrical and Control Systems Delivery Truck	0%	68%	0.00	0.00	0.00	0.00	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Azimuth and Elevation Drive Delivery Truck	0%	68%	0.00	0.00	0.00	0.00	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Water Delivery Trucks	0%	68%	0.00	0.00	0.00	0.00	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Passenger Vehicles	0%	68%	0.00	0.00	0.00	0.00	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL Fugitive emissions for vehicles traveled on unpaved surfaces			23.23	7.43	266.18	85.18		34.84	11.15	2.32	0.74	26.62	8.52	3.48	1.11

Water efficiency from CEQA Table 11-4 maximum value for watering active sites 2 times daily

Bulldozing & grading
 EPA AP-42 Section 11.9
 $E = p \cdot 1 \cdot s^{1.5} / M^{1.4}$
 PM10 Emissions from bulldozing (lb/hr) Table 11.9-1 EMISSION FACTOR EQUATIONS FOR UNCONTROLLED OPEN DUST SOURCES AT WESTERN SURFACE COAL MINES (Overburden)
 0.75 p = particle size multiplier for PM10
 6.9 s = Silt content (%) (from Table 11.9-3 for bulldozers overburden)
 7.9 M = Moisture content of surface material (%) (from Table 11.9-3 for bulldozers overburden)
 0.75 lb/hr of PM10

$E = p \cdot 5.7 \cdot s^{1.2} / M^{1.3}$
 PM2.5 Emissions from bulldozing (lb/hr) Table 11.9-1 EMISSION FACTOR EQUATIONS FOR UNCONTROLLED OPEN DUST SOURCES AT WESTERN SURFACE COAL MINES (Overburden)
 0.105 p = particle size multiplier for PM2.5
 6.9 s = Silt content (%) (from Table 11.9-3 for bulldozers overburden)
 7.9 M = Moisture content of surface material (%) (from Table 11.9-3 for bulldozers overburden)
 0.41 lb/hr of PM2.5

$E = p \cdot 0.051 \cdot s^{2.0}$
 PM10 Emissions from grading (lb/VMT) Table 11.9-1 EMISSION FACTOR EQUATIONS FOR UNCONTROLLED OPEN DUST SOURCES AT WESTERN SURFACE COAL MINES (Overburden)
 0.6 p = particle size multiplier for PM10
 7.1 S = mean vehicle speed (mph) (from Table 11.9-3 for grader)
 1.54 lb/VMT of PM10

$E = p \cdot 0.040 \cdot s^{2.5}$
 PM2.5 Emissions from grading (lb/VMT) Table 11.9-1 EMISSION FACTOR EQUATIONS FOR UNCONTROLLED OPEN DUST SOURCES AT WESTERN SURFACE COAL MINES (Overburden)
 0.031 p = particle size multiplier for PM2.5
 7.1 S = mean vehicle speed (mph) (from Table 11.9-3 for grader)
 0.17 lb/VMT of PM2.5

Equipment	Quantity/ month	Hours/ Day	VMT/day/ vehicle	Watering Control Efficiency	PM10 Emissions (lb/day)	PM2.5 Emissions (lb/day)	Number of Vehicles per year (months 2-13)	VMT/year/ vehicle	PM10 Emissions (ton/yr)	PM2.5 Emissions (ton/yr)
Compactor	4	6	2	68%	3.95	0.43	42	2184	0.539	0.059
Dozer	1	7		68%	1.71	0.94	9		0.200	0.110
Maxi Sneaker (Trencher)	5	8	2	68%	4.94	0.53	48	2496	0.616	0.067
Grader	4	7	4	68%	7.90	0.85	28	2912	0.719	0.078
Skid Steer (Bobcat)	4	7		68%	7.17	3.94	27		0.629	0.346
					Grading Total	16.78	1.81		1.87	0.20
					Bulldozing Total	8.87	4.88		0.83	0.46
					Total	25.66	6.69		2.70	0.66

12 months of earth work
 12 total construction hours per work day
 26 construction days per month

Water efficiency from CEQA Table 11-4 maximum value for watering active sites 2 times daily

Dirt Piling or Material Handling
 EPA AP-42 Chapter 13.2.4 Eq. 1
 $E = k \cdot 0.0032 \cdot (U/5)^{1.3} / (M/2)^{1.4}$
 PM10 Emissions from Material Handling (lb/ton) from EPA AP-42 Chapter 13.2.4 Eq. 1
 E = Emission factor (lb/ton material handled)
 7.45 U = Mean Wind speed (mph) (from 1991-1995 Imperial Co. airport data)
 12 M = Moisture content of surface material (%) (from Table 13.2.4-1 for cover at municipal landfill)

	PM ₁₀	PM _{2.5}
0.00003 lb/ton of PM2.5	0.053	0.35
0.00022 lb/ton of PM10		

Equipment	Quantity/month	Hours/ Day	Material Handled per Day (ton)	Watering Control Efficiency	PM10 Emissions (lb/day)	PM2.5 Emissions (lb/day)	Number of Vehicles per year (months 2-13)	Material Handled per year (ton)	PM10 Emissions (ton/yr)	PM2.5 Emissions (ton/yr)
Backhoe	6	6	3,236	68%	0.2268	0.0343	66	1009503	0.035	0.005
Loader	5	6	3,236	68%	0.2268	0.0343	40	1009503	0.035	0.005
Dump Truck	5	12	6,471	68%	0.4536	0.0687	6	2,019,006	0.071	0.011
					Total	0.91	0.14		0.14	0.02

Water efficiency from CEQA Table 11-4 maximum value for watering active sites 2 times daily

Assume 50% soil movement from loaders and 50% from backhoes

4,654 yd³/day
 1,452,006 yd³/project
 6,471 ton/day
 2,019,006 tons/project
 2781 density of soil (lb/yd³)
 (USDA NRCS Physical Soil Properties for Niland Fine Sand and Rositas Fine Sand soil)
 0.5 depth of disturbance (yards)

total project
 600 acres = 1,452,000 cubic yds, assume depth of soils moved is 3000 total acres disturbed as described in Table 3-17 of Project Description
 only a small portion of this soil is picked up and moved via dump truck

Cover Storage Pile
 $E = 1.7 \cdot G^{1.5} \cdot (365-H)/235 \cdot I^{1.5} \cdot J$
 SCAQMD Table A9-9-E
 PM10 Emission factor from wind erosion of storage piles per day per acre
 15 G = Silt content (%) (from CEQA Handbook Table A9-9-E-1 for blended ore and dirt)
 23 H = Number of days with >= 0.01 inches of precipitation per year (from Daggett FAA Airport Station)
 34 I = Percentage of time that the unobstructed wind speed exceeds 12 mph at mean pile height
 0.5 J = Fraction of TSP that is PM10 = 0.5
 28.039 lb/acre/day

wind speed percentage based on 2005 wind speed data as recorded at Daggett FAA Airport station

Source	Quantity	Size of Pile (acre)	Hours/Day	Days/Year per Pile	Watering Control Efficiency	PM10 Emissions (lb/day)	PM2.5 Emissions (lb/day)	PM10 Emissions (tons/yr)	PM2.5 Emissions (tons/yr)
Cover Storage Pile	2	1	24	182.5	68%	17.95	3.98	1.64	0.36

Water efficiency from CEQA Table 11-4 maximum value for watering active sites 2 times daily

pile size assumed
 piles present only for 6 months

Vehicle Type	Number of Vehicles (month 6)	Max Daily Distance per Vehicle (mile/day)	Month 6 construction on-site fugitive dust				Months 2-13 construction on-site fugitive dust				
			Sealed Road - PM ₁₀ Fugitive Emissions	Paved Road - PM ₁₀ Fugitive Emissions	Unpaved Road - PM ₁₀ Fugitive Emissions	Earthmoving Equipment - PM ₁₀ Fugitive Emissions	Total PM ₁₀ Fugitive Emissions	Sealed Road - PM ₁₀ Fugitive Emissions	Paved Road - PM ₁₀ Fugitive Emissions	Unpaved Road - PM ₁₀ Fugitive Emissions	Earthmoving Equipment - PM ₁₀ Fugitive Emissions
			lb/day				ton/year				
Construction on-site fugitive dust PM10											
Diesel Construction Equipment											
Air Compressor	3	0	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Asphalt Paver	0	0.2	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Backhoe	6	0	0.00	0.00	0.00	0.23	0.23	0.00	0.00	0.00	0.04
Compactor	4	0	0.00	0.00	0.00	3.95	3.95	0.00	0.00	0.00	0.54
Crane small	8	0.5	0.45	0.00	1.13		1.58	0.06	0.00	0.15	0.21
Crane large	4	0.5	0.00	0.00	1.99		1.99	0.00	0.00	0.12	0.12
Dozer	1	0	0.00	0.00	0.00	1.71	1.71	0.00	0.00	0.00	0.20
Generator	5	0	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Grader	4	0	0.00	0.00	0.00	7.90	7.90	0.00	0.00	0.00	0.72
Light Tower	2	0	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Loader	5	0	0.00	0.00	0.00	0.23	0.23	0.00	0.00	0.00	0.04
Maxi Sneeker (Trencher)	5	0	0.00	0.00	0.00	4.94	4.94	0.00	0.00	0.00	0.62
Skid Steer (Bobcat)	4	0	0.00	0.00	0.00	7.17	7.17	0.00	0.00	0.00	0.63
Welding Machine	5	0	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Equipment fueled with Propane											
Aerial Lift	6	1	0.17	0.00	1.13		1.29	0.02	0.00	0.13	0.15
Fork Lift	8	1	0.15	0.00	1.32		1.46	0.02	0.00	0.20	0.22
Telehandler	6	1	0.11	0.00	0.99		1.10	0.01	0.00	0.08	0.08
Vehicles with Onroad Engines for Emissions Estimates											
Concrete Delivery Truck for general construction	0	7	0.00	0.00	0.00		0.00	0.62	0.00	0.08	0.71
Concrete Delivery Truck for bridge	5	1.6	4.56	0.00	0.62		5.18	0.12	0.00	0.02	0.13
Concrete Pump Truck for bridge	1	0.1	0.06	0.00	0.01		0.06	0.00	0.00	0.00	0.01
Dump Truck	5	6.8	10.78	0.00	13.16	0.45	24.40	1.29	0.00	1.57	2.93
Flatbed Truck	10	27.2	60.89	0.00	0.00		60.89	9.50	0.00	0.00	9.50
Staff & Security Truck	6	48	6.76	0.00	0.00		6.76	1.05	0.00	0.00	1.05
Pickup Truck	11	6.8	4.00	0.00	1.40		5.40	0.62	0.00	0.22	0.84
Water/Soiltac Truck	7	13.6	15.09	0.00	55.29		70.38	2.21	0.00	8.11	10.33
General Materials Delivery Truck for general construction	3	7	13.31	0.00	0.00		13.31	1.38	0.00	0.00	1.38
General Materials Delivery Truck for bridge	12	1.6	12.17	0.00	0.00		12.17	0.29	0.00	0.00	0.29
Suncatcher Pedestals Delivery Truck	3	7	6.65	0.00	8.13		14.79	0.38	0.00	0.46	0.83
Stirling Engines Delivery Truck	6	7	26.63	0.00	0.00		26.63	4.15	0.00	0.00	4.15
Suncatcher Metal Supports Delivery Truck	11	7	48.82	0.00	0.00		48.82	7.62	0.00	0.00	7.62
Suncatcher Mirrors Delivery Truck	7	7	31.07	0.00	0.00		31.07	4.85	0.00	0.00	4.85
Electrical and Control Systems Delivery Truck	2	7	8.88	0.00	0.00		8.88	1.38	0.00	0.00	1.38
Azimuth and Elevation Drive Delivery Truck	2	7	8.88	0.00	0.00		8.88	1.38	0.00	0.00	1.38
Water Delivery Trucks	0	0	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Worker Passenger Vehicles	479	9	84.50	0.00	0.00		84.50	8.77	0.00	0.00	8.77
Storage piles						17.95	17.95	0.00	0.00	1.64	1.64
			343.93	0.00	85.18	44.51	473.61	45.74	0.00	11.15	4.48

Vehicle Type	Number of Vehicles (month 6)	Max Daily Distance per Vehicle (mile/day)	Month 6 construction on-site fugitive dust				Months 2-13 construction on-site fugitive dust				
			Sealed Road - PM _{2.5} Fugitive Emissions	Paved Road - PM _{2.5} Fugitive Emissions	Unpaved Road - PM _{2.5} Fugitive Emissions	Earthmoving Equipment - PM _{2.5} Fugitive Emissions	Total PM _{2.5} Fugitive Emissions	Sealed Road - PM _{2.5} Fugitive Emissions	Paved Road - PM _{2.5} Fugitive Emissions	Unpaved Road - PM _{2.5} Fugitive Emissions	Earthmoving Equipment - PM _{2.5} Fugitive Emissions
			lb/day				ton/year				
Construction on-site fugitive dust PM2.5											
Diesel Construction Equipment											
Air Compressor	3	0	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Asphalt Paver	0	0.2	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Backhoe	6	0	0.00	0.00	0.00	0.03	0.03	0.00	0.00	0.00	0.01
Compactor	4	0	0.00	0.00	0.00	0.43	0.43	0.00	0.00	0.00	0.06
Crane small	8	0.5	0.07	0.00	0.11		0.18	0.01	0.00	0.01	0.02
Crane large	4	0.5	0.00	0.00	0.20		0.20	0.00	0.00	0.01	0.01
Dozer	1	0	0.00	0.00	0.00	0.94	0.94	0.00	0.00	0.00	0.11
Generator	5	0	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Grader	4	0	0.00	0.00	0.00	0.85	0.85	0.00	0.00	0.00	0.08
Light Tower	2	0	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Loader	5	0	0.00	0.00	0.00	0.03	0.03	0.00	0.00	0.00	0.01
Maxi Sneeker (Trencher)	5	0	0.00	0.00	0.00	0.53	0.53	0.00	0.00	0.00	0.07
Skid Steer (Bobcat)	4	0	0.00	0.00	0.00	3.94	3.94	0.00	0.00	0.00	0.35
Welding Machine	5	0	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Equipment fueled with Propane											
Aerial Lift	6	1	0.02	0.00	0.11		0.14	0.00	0.00	0.01	0.02
Fork Lift	8	1	0.02	0.00	0.13		0.15	0.00	0.00	0.02	0.02
Telehandler	6	1	0.02	0.00	0.10		0.11	0.00	0.00	0.01	0.01
Vehicles with Onroad Engines for Emissions Estimates											
Concrete Delivery Truck for general construction	0	7	0.00	0.00	0.00		0.00	0.09	0.00	0.01	0.10
Concrete Delivery Truck for bridge	5	1.6	0.68	0.00	0.06		0.74	0.02	0.00	0.00	0.02
Concrete Pump Truck for bridge	1	0.1	0.01	0.00	0.00		0.01	0.00	0.00	0.00	0.00
Dump Truck	5	6.8	1.61	0.00	1.32	0.07	3.00	0.19	0.00	0.16	0.36
Flatbed Truck	10	27.2	9.06	0.00	0.00		9.06	1.41	0.00	0.00	1.41
Staff & Security Truck	6	48	0.93	0.00	0.00		0.93	0.15	0.00	0.00	0.15
Pickup Truck	11	6.8	0.58	0.00	0.14		0.72	0.09	0.00	0.02	0.11
Water/Soiltac Truck	7	13.6	2.26	0.00	5.53		7.79	0.33	0.00	0.81	1.14
General Materials Delivery Truck for general construction	3	7	1.99	0.00	0.00		1.99	0.21	0.00	0.00	0.21
General Materials Delivery Truck for bridge	12	1.6	1.82	0.00	0.00		1.82	0.04	0.00	0.00	0.04
Suncatcher Pedestals Delivery Truck	3	7	1.00	0.00	0.81		1.81	0.06	0.00	0.05	0.10
Stirling Engines Delivery Truck	6	7	3.98	0.00	0.00		3.98	0.62	0.00	0.00	0.62
Suncatcher Metal Supports Delivery Truck	11	7	7.30	0.00	0.00		7.30	1.14	0.00	0.00	1.14
Suncatcher Mirrors Delivery Truck	7	7	4.65	0.00	0.00		4.65	0.72	0.00	0.00	0.72
Electrical and Control Systems Delivery Truck	2	7	1.33	0.00	0.00		1.33	0.21	0.00	0.00	0.21
Azimuth and Elevation Drive Delivery Truck	2	7	1.33	0.00	0.00		1.33	0.21	0.00	0.00	0.21
Water Delivery Trucks	0	0	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Worker Passenger Vehicles	479	9	11.45	0.00	0.00		11.45	1.19	0.00	0.00	1.19
Storage piles						3.98	3.98	0.00	0.00	0.36	0.36
			50.09	0.00	8.52	10.81	69.42	6.69	0.00	1.11	8.85

**Calico Solar
Combustion Exhaust Emissions Off-site (short-term)**

To be consistent with on-site emissions, months 6 was used to represent the daily/monthly construction off-site (on-road) emissions.
 construction schedule = 12 hours per day 7 am to 7 pm
 pedestal installation = 16 hours per day
 delivery trucks can arrive at the site anytime during the day or night

EMISSION FACTORS	Emission factors (g/mile)												Emission rate per piece of equipment (lb/hr)										
	Off-site Miles per Day Traveled with MDAQMD jurisdictional area per Vehicle	Hours/Day	Vehicle Weight (lbs)	PM ₁₀	PM _{2.5}	CO	ROG	NO _x	SO ₂	CO ₂	CH ₄	N ₂ O	CO _{2e}	PM ₁₀	PM _{2.5}	CO	ROG	NO _x	SO ₂	CO ₂	CH ₄	N ₂ O	CO _{2e}
Concrete Delivery Truck for general construction	74	12	40,000	5.52E-01	4.70E-01	3.02E+00	6.62E-01	1.50E+01	1.60E-02	1.67E+03	5.10E-03	4.80E-03	1.67E+03	7.50E-03	6.38E-03	4.11E-02	8.99E-03	2.04E-01	2.17E-04	2.27E+01	6.93E-05	6.52E-05	2.27E+01
Concrete Delivery Truck for bridge	74	12	40,000	5.52E-01	4.70E-01	3.02E+00	6.62E-01	1.50E+01	1.60E-02	1.67E+03	5.10E-03	4.80E-03	1.67E+03	7.50E-03	6.38E-03	4.11E-02	8.99E-03	2.04E-01	2.17E-04	2.27E+01	6.93E-05	6.52E-05	2.27E+01
Concrete Pump Truck for bridge	0	12	40,000	5.52E-01	4.70E-01	3.02E+00	6.62E-01	1.50E+01	1.60E-02	1.67E+03	5.10E-03	4.80E-03	1.67E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Dump Truck	0	12	40,000	5.52E-01	4.70E-01	3.02E+00	6.62E-01	1.50E+01	1.60E-02	1.67E+03	5.10E-03	4.80E-03	1.67E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Flatbed Truck	0	12	20,000	2.02E-01	1.71E-01	1.37E+00	1.44E-01	7.50E+00	1.40E-02	1.51E+03	1.10E-03	1.70E-03	1.51E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Staff & Security Truck	0	24	4,500	1.00E-02	1.00E-02	2.10E+00	5.50E-02	3.00E-02	9.00E-03	3.26E+02	1.04E-01	8.13E-02	3.54E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Pickup Truck	0	12	8,000	3.20E-02	1.77E-02	2.58E+00	7.70E-02	3.09E-01	3.00E-03	2.93E+02	7.04E-02	6.47E-02	3.15E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Water/Soiltec Truck	0	12	40,000	5.52E-01	4.70E-01	3.02E+00	6.62E-01	1.50E+01	1.60E-02	1.67E+03	5.10E-03	4.80E-03	1.67E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
General Materials Delivery Truck for general cons	74	24	40,000	5.52E-01	4.70E-01	3.02E+00	6.62E-01	1.50E+01	1.60E-02	1.67E+03	5.10E-03	4.80E-03	1.67E+03	3.75E-03	3.19E-03	2.05E-02	4.50E-03	1.02E-01	1.09E-04	1.13E+01	3.46E-05	3.26E-05	1.14E+01
General Materials Delivery Truck for bridge	74	24	40,000	5.52E-01	4.70E-01	3.02E+00	6.62E-01	1.50E+01	1.60E-02	1.67E+03	5.10E-03	4.80E-03	1.67E+03	3.75E-03	3.19E-03	2.05E-02	4.50E-03	1.02E-01	1.09E-04	1.13E+01	3.46E-05	3.26E-05	1.14E+01
Suncatcher Pedestals Delivery Truck	200	24	40,000	5.52E-01	4.70E-01	3.02E+00	6.62E-01	1.50E+01	1.60E-02	1.67E+03	5.10E-03	4.80E-03	1.67E+03	1.01E-02	8.60E-03	5.55E-02	1.22E-02	2.70E-01	2.94E-04	3.07E+01	9.36E-05	8.81E-05	3.07E+01
Stirling Engines Delivery Truck	160	24	40,000	5.52E-01	4.70E-01	3.02E+00	6.62E-01	1.50E+01	1.60E-02	1.67E+03	5.10E-03	4.80E-03	1.67E+03	8.11E-03	6.90E-03	4.44E-02	9.72E-03	2.21E-01	2.35E-04	2.45E+01	7.49E-05	7.05E-05	2.46E+01
Suncatcher Metal Supports Delivery Truck	180	24	40,000	5.52E-01	4.70E-01	3.02E+00	6.62E-01	1.50E+01	1.60E-02	1.67E+03	5.10E-03	4.80E-03	1.67E+03	9.12E-03	7.76E-03	5.00E-02	1.09E-02	2.48E-01	2.64E-04	2.78E+01	8.43E-05	7.93E-05	2.76E+01
Suncatcher Mirrors Delivery Truck	160	24	40,000	5.52E-01	4.70E-01	3.02E+00	6.62E-01	1.50E+01	1.60E-02	1.67E+03	5.10E-03	4.80E-03	1.67E+03	8.11E-03	6.90E-03	4.44E-02	9.72E-03	2.21E-01	2.35E-04	2.45E+01	7.49E-05	7.05E-05	2.46E+01
Electrical and Control Systems Delivery Truck	200	24	40,000	5.52E-01	4.70E-01	3.02E+00	6.62E-01	1.50E+01	1.60E-02	1.67E+03	5.10E-03	4.80E-03	1.67E+03	1.01E-02	8.60E-03	5.55E-02	1.22E-02	2.70E-01	2.94E-04	3.07E+01	9.36E-05	8.81E-05	3.07E+01
Azimuth and Elevation Drive Delivery Truck	160	24	40,000	5.52E-01	4.70E-01	3.02E+00	6.62E-01	1.50E+01	1.60E-02	1.67E+03	5.10E-03	4.80E-03	1.67E+03	8.11E-03	6.90E-03	4.44E-02	9.72E-03	2.21E-01	2.35E-04	2.45E+01	7.49E-05	7.05E-05	2.46E+01
Water Delivery Trucks	0	24	-	2.02E-01	1.71E-01	1.37E+00	1.44E-01	7.50E+00	1.40E-02	1.51E+03	1.10E-03	1.70E-03	1.51E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Worker Passenger Vehicles	74	24	4,000	3.20E-02	1.77E-02	2.58E+00	7.70E-02	3.09E-01	3.00E-03	2.93E+02	7.04E-02	6.47E-02	3.15E+02	2.17E-04	1.20E-04	1.75E-02	5.23E-04	2.10E-03	2.04E-05	1.99E+00	4.78E-04	4.39E-04	2.14E+00

- Notes:**
- Onroad vehicle emissions from EMFAC2007 model. The vehicle description in EMFAC2007 model are as follows:
 - Flatbed Truck and Water Delivery Truck are Medium-Heavy-Duty (MHD-DSL).
 - Staff & Security Truck (gasoline) is Light-Heavy-Duty (LDT-CAT)
 - Worker Passenger Vehicle and Pickup Truck are Passenger Car (LDA-ALL)
 - Concrete Delivery Truck, Concrete Pump Truck, Dump Truck, Water/Soiltec Truck, General Materials Delivery Trucks, Suncatcher Pedestals Delivery Truck, Stirling Engines Delivery Truck, Suncatcher Metal Supports Delivery Truck, Suncatcher Mirrors Delivery Truck, Electrical and Control Systems Delivery Truck, and Azimuth & Elevation Drive Delivery Truck are all Heavy-Heavy-Duty (HHD-DSL)
 - The emissions of "Toyota Highlander Hybrid" (Staff & Security Truck) meet the Tier 2/Bin 3 Federal emissions standard (reference source 3) and its performance is 27 mile/gallon in city (from Toyota website)
 - SO₂ emission factors for the Toyota Highlander Hybrid are from EMFAC2007- Light-Duty Trucks (LDT2-CAT).
 - CH₄ and N₂O emission factors for the running vehicles are from Reference source 1: Table C.4, California Climate Action Registry General Reporting Protocol Version 3.1, January 2009. Hybrid Truck is assumed to be gasoline light truck here.
 - Greenhouse Gas Global Warming Potential (GWP) - Intergovernmental Panel on Climate Change, Second Assessment Report (1996)
 - CO₂ GWP (SAR, 1996) = 1
 - CH₄ GWP (SAR, 1996) = 21
 - N₂O GWP (SAR, 1996) = 310

MONTHLY EMISSIONS (month 1-20)

	Month 1 Daily Emissions (lb/day)											Month 2 Daily Emissions (lb/day)											Month 3 Daily Emissions (lb/day)											Month 4 Daily Emissions (lb/day)													
	Quantity Mo 1	PM ₁₀	PM _{2.5}	CO	ROG	NO _x	SO ₂	CO ₂	CH ₄	N ₂ O	CO _{2e}	Quantity Mo 2	PM ₁₀	PM _{2.5}	CO	ROG	NO _x	SO ₂	CO ₂	CH ₄	N ₂ O	CO _{2e}	Quantity Mo 3	PM ₁₀	PM _{2.5}	CO	ROG	NO _x	SO ₂	CO ₂	CH ₄	N ₂ O	CO _{2e}	Quantity Mo 4	PM ₁₀	PM _{2.5}	CO	ROG	NO _x	SO ₂	CO ₂	CH ₄	N ₂ O	CO _{2e}			
Vehicles with Onroad Engines for Emissions Estimates																																															
Concrete Delivery Truck for general construction	2.00	0.18	0.15	0.99	0.22	4.90	0.01	544.63	0.00	0.00	545.15	6.00	0.54	0.46	2.96	0.65	14.69	0.02	1,633.88	0.00	0.00	1,635.44	6.00	0.54	0.46	2.96	0.65	14.69	0.02	1,633.88	0.00	0.00	1,635.44	-	-	-	-	-	-	-	-	-	-	-			
Concrete Delivery Truck for bridge	1.00	0.09	0.08	0.49	0.11	2.45	0.00	272.31	0.00	0.00	272.57	1.00	0.09	0.08	0.49	0.11	2.45	0.00	272.31	0.00	0.00	272.57	1.00	0.09	0.08	0.49	0.11	2.45	0.00	272.31	0.00	0.00	272.57	1.00	0.09	0.08	0.49	0.11	2.45	0.00	272.31	0.00	0.00	272.57			
Concrete Pump Truck for bridge	3.00	-	-	-	-	-	-	-	-	-	-	3.00	-	-	-	-	-	-	-	-	-	-	-	3.00	-	-	-	-	-	-	-	-	-	-	-	3.00	-	-	-	-	-	-	-	-	-	-	-
Dump Truck	2.00	-	-	-	-	-	-	-	-	-	-	2.00	-	-	-	-	-	-	-	-	-	-	-	2.00	-	-	-	-	-	-	-	-	-	-	-	2.00	-	-	-	-	-	-	-	-	-	-	-
Flatbed Truck	6.00	-	-	-	-	-	-	-	-	-	-	6.00	-	-	-	-	-	-	-	-	-	-	-	6.00	-	-	-	-	-	-	-	-	-	-	-	6.00	-	-	-	-	-	-	-	-	-	-	-
Staff & Security Truck	11.00	-	-	-	-	-	-	-	-	-	-	11.00	-	-	-	-	-	-	-	-	-	-	-	11.00	-	-	-	-	-	-	-	-	-	-	-	11.00	-	-	-	-	-	-	-	-	-	-	-
Pickup Truck	5.00	-	-	-	-	-	-	-	-	-	-	5.00	-	-	-	-	-	-	-	-	-	-	-	5.00	-	-	-	-	-	-	-	-	-	-	-	5.00	-	-	-	-	-	-	-	-	-	-	-
Water/Sollicac Truck	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
General Materials Delivery Truck for general const	2.00	0.18	0.15	0.99	0.22	4.90	0.01	544.63	0.00	0.00	545.15	2.00	0.18	0.15	0.99	0.22	4.90	0.01	544.63	0.00	0.00	545.15	2.00	0.18	0.15	0.99	0.22	4.90	0.01	544.63	0.00	0.00	545.15	2.00	0.18	0.15	0.99	0.22	4.90	0.01	544.63	0.00	0.00	545.15			
General Materials Delivery Truck for bridge	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Suncatcher Pedestals Delivery Truck	6.00	1.17	0.99	6.39	1.40	31.76	0.03	3,532.71	0.01	0.01	3,536.09	6.00	1.17	0.99	6.39	1.40	31.76	0.03	3,532.71	0.01	0.01	3,536.09	6.00	1.17	0.99	6.39	1.40	31.76	0.03	3,532.71	0.01	0.01	3,536.09	6.00	1.17	0.99	6.39	1.40	31.76	0.03	3,532.71	0.01	0.01	3,536.09			
Suncatcher Metal Supports Delivery Truck	11.00	2.41	2.05	13.19	2.89	65.51	0.07	7,286.22	0.02	0.02	7,293.18	11.00	2.41	2.05	13.19	2.89	65.51	0.07	7,286.22	0.02	0.02	7,293.18	11.00	2.41	2.05	13.19	2.89	65.51	0.07	7,286.22	0.02	0.02	7,293.18	11.00	2.41	2.05	13.19	2.89	65.51	0.07	7,286.22	0.02	0.02	7,293.18			
Suncatcher Mirrors Delivery Truck	7.00	1.36	1.16	7.46	1.63	37.05	0.04	4,121.50	0.01	0.01	4,125.43	7.00	1.36	1.16	7.46	1.63	37.05	0.04	4,121.50	0.01	0.01	4,125.43	7.00	1.36	1.16	7.46	1.63	37.05	0.04	4,121.50	0.01	0.01	4,125.43	7.00	1.36	1.16	7.46	1.63	37.05	0.04	4,121.50	0.01	0.01	4,125.43			
Electrical and Control Systems Delivery Truck	2.00	0.49	0.41	2.66	0.58	13.23	0.01	1,471.96	0.00	0.00	1,473.37	2.00	0.49	0.41	2.66	0.58	13.23	0.01	1,471.96	0.00	0.00	1,473.37	2.00	0.49	0.41	2.66	0.58	13.23	0.01	1,471.96	0.00	0.00	1,473.37	2.00	0.49	0.41	2.66	0.58	13.23	0.01	1,471.96	0.00	0.00	1,473.37			
Azimuth and Elevation Drive Delivery Truck	2.00	0.39	0.33	2.13	0.47	10.59	0.01	1,177.57	0.00	0.00	1,178.70	2.00	0.39	0.33	2.13	0.47	10.59	0.01	1,177.57	0.00	0.00	1,178.70	2.00	0.39	0.33	2.13	0.47	10.59	0.01	1,177.57	0.00	0.00	1,178.70	2.00	0.39	0.33	2.13	0.47	10.59	0.01	1,177.57	0.00	0.00	1,178.70			
Water Delivery Trucks	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Worker Passenger Vehicles	67.00	0.35	0.19	28.22	0.84	3.37	0.03	3,203.62	0.77	0.71	3,438.80	180.00	0.94	0.52	75.81	2.26	9.07	0.09	8,606.74	2.07	1.90	9,238.58	249.00	1.30	0.72	104.87	3.13	12.54	0.12	11,906.00	2.86	2.63	12,780.03	219.00	1.14	0.63	92.24	2.75	11.03	0.11	10,471.54	2.51	2.31	11,240.27			
Total	128.00	6.61	5.52	62.52	8.35	173.76	0.21	22,155.16	0.83	0.76	22,408.43	270.00	7.83	6.39	113.57	10.52	196.58	0.29	29,464.47	2.13	1.96	30,116.22	333.00	8.19	6.59	142.63	11.39	200.06	0.32	32,763.72	2.92	2.69	33,657.67	299.00	8.22	6.66	131.03	11.24	203.71	0.31	31,903.33	2.58	2.37	32,692.52			

MONTHLY EMISSIONS (month 21-41)

	Month 21 Daily Emissions (lb/day)											Month 22 Daily Emissions (lb/day)											Month 23 Daily Emissions (lb/day)											Month 24 Daily Emissions (lb/day)														
	Quantity Mo 21	PM ₁₀	PM _{2.5}	CO	ROG	NO _x	SO ₂	CO ₂	CH ₄	N ₂ O	CO _{2e}	Quantity Mo 22	PM ₁₀	PM _{2.5}	CO	ROG	NO _x	SO ₂	CO ₂	CH ₄	N ₂ O	CO _{2e}	Quantity Mo 23	PM ₁₀	PM _{2.5}	CO	ROG	NO _x	SO ₂	CO ₂	CH ₄	N ₂ O	CO _{2e}	Quantity Mo 24	PM ₁₀	PM _{2.5}	CO	ROG	NO _x	SO ₂	CO ₂	CH ₄	N ₂ O	CO _{2e}				
Vehicles with Onroad Engines for Emissions Estimates																																																
Concrete Delivery Truck for general construction	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Concrete Delivery Truck for bridge	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Concrete Pump Truck for bridge	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dump Truck	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Flatbed Truck	7.00	-	-	-	-	-	-	-	-	-	-	7.00	-	-	-	-	-	-	-	-	-	-	-	7.00	-	-	-	-	-	-	-	-	-	-	-	7.00	-	-	-	-	-	-	-	-	-	-	-	
Staff & Security Truck	6.00	-	-	-	-	-	-	-	-	-	-	6.00	-	-	-	-	-	-	-	-	-	-	-	6.00	-	-	-	-	-	-	-	-	-	-	-	6.00	-	-	-	-	-	-	-	-	-	-	-	
Pickup Truck	11.00	-	-	-	-	-	-	-	-	-	-	11.00	-	-	-	-	-	-	-	-	-	-	-	11.00	-	-	-	-	-	-	-	-	-	-	-	11.00	-	-	-	-	-	-	-	-	-	-	-	
Water/Sollicac Truck	5.00	-	-	-	-	-	-	-	-	-	-	5.00	-	-	-	-	-	-	-	-	-	-	-	5.00	-	-	-	-	-	-	-	-	-	-	-	5.00	-	-	-	-	-	-	-	-	-	-	-	
General Materials Delivery Truck for general const	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
General Materials Delivery Truck for bridge	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Suncatcher Pedestals Delivery Truck	3.00	0.73	0.62	4.00	0.87	19.85	0.02	2,207.95	0.01	0.01	2,210.05	3.00	0.73	0.62	4.00	0.87	19.85	0.02	2,207.95	0.01	0.01	2,210.05	3.00	0.73	0.62	4.00	0.87	19.85	0.02	2,207.95	0.01	0.01	2,210.05	3.00	0.73	0.62	4.00	0.87	19.85	0.02	2,207.95	0.01	0.01	2,210.05				
Suncatcher Metal Supports Delivery Truck	6.00	1.17	0.99	6.39	1.40	31.76	0.03	3,532.71	0.01	0.01	3,536.09	6.00	1.17	0.99	6.39	1.40	31.76	0.03	3,532.71	0.01	0.01	3,536.09	6.00	1.17	0.99	6.39	1.40	31.76	0.03	3,532.71	0.01	0.01	3,536.09	6.00	1.17	0.99	6.39	1.40	31.76	0.03	3,532.71	0.01	0.01	3,536.09				
Suncatcher Mirrors Delivery Truck	7.00	1.36	1.16	7.46	1.63	37.05	0.04	4,121.50	0.01	0.01	4,125.43	7.00	1.36	1.16	7.46	1.63	37.05	0.04	4,121.50	0.01	0.01	4,125.43	7.00	1.36	1.16	7.46	1.63	37.05	0.04	4,121.50	0.01	0.01	4,125.43	7.00	1.36	1.16	7.46	1.63	37.05	0.04	4,121.50	0.01	0.01	4,125.43				
Electrical and Control Systems Delivery Truck	2.00	0.49	0.																																													

Month 13 Daily Emissions (lb/day)											Month 14 Daily Emissions (lb/day)											Month 15 Daily Emissions (lb/day)											Month 16 Daily Emissions (lb/day)											Month 17 Daily Emissions (lb/day)															
Quantity	Mo 13	PM ₁₀	PM _{2.5}	CO	ROG	NO _x	SO ₂	CO ₂	CH ₄	N ₂ O	CO ₂ e	Quantity	Mo 14	PM ₁₀	PM _{2.5}	CO	ROG	NO _x	SO ₂	CO ₂	CH ₄	N ₂ O	CO ₂ e	Quantity	Mo 15	PM ₁₀	PM _{2.5}	CO	ROG	NO _x	SO ₂	CO ₂	CH ₄	N ₂ O	CO ₂ e	Quantity	Mo 16	PM ₁₀	PM _{2.5}	CO	ROG	NO _x	SO ₂	CO ₂	CH ₄	N ₂ O	CO ₂ e	Quantity	Mo 17	PM ₁₀	PM _{2.5}	CO	ROG	NO _x	SO ₂	CO ₂	CH ₄	N ₂ O	CO ₂ e
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10.00	-	-	-	-	-	-	-	-	-	-	-	3.00	-	-	-	-	-	-	-	-	-	-	-	2.00	-	-	-	-	-	-	-	-	-	-	-	2.00	-	-	-	-	-	-	-	-	-	-	-	10.00	-	-	-	-	-	-	-	-	-	-	-
6.00	-	-	-	-	-	-	-	-	-	-	-	10.00	-	-	-	-	-	-	-	-	-	-	-	10.00	-	-	-	-	-	-	-	-	-	-	-	10.00	-	-	-	-	-	-	-	-	-	-	-	6.00	-	-	-	-	-	-	-	-	-	-	-
11.00	-	-	-	-	-	-	-	-	-	-	-	6.00	-	-	-	-	-	-	-	-	-	-	-	6.00	-	-	-	-	-	-	-	-	-	-	-	6.00	-	-	-	-	-	-	-	-	-	-	-	11.00	-	-	-	-	-	-	-	-	-	-	-
5.00	-	-	-	-	-	-	-	-	-	-	-	11.00	-	-	-	-	-	-	-	-	-	-	-	11.00	-	-	-	-	-	-	-	-	-	-	-	11.00	-	-	-	-	-	-	-	-	-	-	-	5.00	-	-	-	-	-	-	-	-	-	-	-
6.00	1.17	0.99	6.39	1.40	31.76	0.03	3,532.71	0.01	0.01	3,536.09	6.00	1.17	0.99	6.39	1.40	31.76	0.03	3,532.71	0.01	0.01	3,536.09	6.00	1.17	0.99	6.39	1.40	31.76	0.03	3,532.71	0.01	0.01	3,536.09	6.00	1.17	0.99	6.39	1.40	31.76	0.03	3,532.71	0.01	0.01	3,536.09	6.00	1.17	0.99	6.39	1.40	31.76	0.03	3,532.71	0.01	0.01	3,536.09					
11.00	2.41	2.05	13.19	2.89	65.51	0.07	7,286.22	0.02	0.02	7,293.18	11.00	2.41	2.05	13.19	2.89	65.51	0.07	7,286.22	0.02	0.02	7,293.18	11.00	2.41	2.05	13.19	2.89	65.51	0.07	7,286.22	0.02	0.02	7,293.18	11.00	2.41	2.05	13.19	2.89	65.51	0.07	7,286.22	0.02	0.02	7,293.18	11.00	2.41	2.05	13.19	2.89	65.51	0.07	7,286.22	0.02	0.02	7,293.18					
7.00	1.36	1.16	7.46	1.63	37.05	0.04	4,121.50	0.01	0.01	4,125.43	7.00	1.36	1.16	7.46	1.63	37.05	0.04	4,121.50	0.01	0.01	4,125.43	7.00	1.36	1.16	7.46	1.63	37.05	0.04	4,121.50	0.01	0.01	4,125.43	7.00	1.36	1.16	7.46	1.63	37.05	0.04	4,121.50	0.01	0.01	4,125.43	7.00	1.36	1.16	7.46	1.63	37.05	0.04	4,121.50	0.01	0.01	4,125.43					
2.00	0.49	0.41	2.66	0.58	13.23	0.01	1,471.96	0.00	0.00	1,473.37	2.00	0.49	0.41	2.66	0.58	13.23	0.01	1,471.96	0.00	0.00	1,473.37	2.00	0.49	0.41	2.66	0.58	13.23	0.01	1,471.96	0.00	0.00	1,473.37	2.00	0.49	0.41	2.66	0.58	13.23	0.01	1,471.96	0.00	0.00	1,473.37	2.00	0.49	0.41	2.66	0.58	13.23	0.01	1,471.96	0.00	0.00	1,473.37					
2.00	0.39	0.33	2.13	0.47	10.59	0.01	1,177.57	0.00	0.00	1,178.70	2.00	0.39	0.33	2.13	0.47	10.59	0.01	1,177.57	0.00	0.00	1,178.70	2.00	0.39	0.33	2.13	0.47	10.59	0.01	1,177.57	0.00	0.00	1,178.70	2.00	0.39	0.33	2.13	0.47	10.59	0.01	1,177.57	0.00	0.00	1,178.70	2.00	0.39	0.33	2.13	0.47	10.59	0.01	1,177.57	0.00	0.00	1,178.70					
357.00	1.86	1.03	150.36	4.48	17.98	0.17	17,070.04	4.10	3.76	18,323.18	341.00	1.78	0.99	143.62	4.28	17.17	0.17	16,305.00	3.91	3.60	17,501.97	347.00	1.81	1.00	146.15	4.36	17.48	0.17	16,591.89	3.98	3.66	17,809.92	332.00	1.73	0.96	139.83	4.17	16.72	0.16	15,874.66	3.81	3.50	17,040.04	325.00	1.70	0.94	136.88	4.08	16.37	0.16	15,539.96	3.73	3.43	16,680.76					
417.00	7.67	5.98	182.20	11.45	176.12	0.34	34,660.01	4.15	3.82	35,929.94	404.00	7.59	5.93	175.46	11.25	175.31	0.34	33,894.97	3.97	3.65	35,108.73	409.00	7.62	5.95	177.99	11.33	175.62	0.34	34,181.86	4.04	3.71	35,416.68	394.00	7.54	5.91	171.67	11.14	174.86	0.33	33,464.63	3.86	3.55	34,646.80	385.00	7.51	5.89	168.72	11.05	174.51	0.33	33,129.92	3.78	3.48	34,287.52					

Month 33 Daily Emissions (lb/day)											Month 34 Daily Emissions (lb/day)											Month 35 Daily Emissions (lb/day)											Month 36 Daily Emissions (lb/day)											Month 37 Daily Emissions (lb/day)															
Quantity	Mo 33	PM ₁₀	PM _{2.5}	CO	ROG	NO _x	SO ₂	CO ₂	CH ₄	N ₂ O	CO ₂ e	Quantity	Mo 34	PM ₁₀	PM _{2.5}	CO	ROG	NO _x	SO ₂	CO ₂	CH ₄	N ₂ O	CO ₂ e	Quantity	Mo 35	PM ₁₀	PM _{2.5}	CO	ROG	NO _x	SO ₂	CO ₂	CH ₄	N ₂ O	CO ₂ e	Quantity	Mo 36	PM ₁₀	PM _{2.5}	CO	ROG	NO _x	SO ₂	CO ₂	CH ₄	N ₂ O	CO ₂ e	Quantity	Mo 37	PM ₁₀	PM _{2.5}	CO	ROG	NO _x	SO ₂	CO ₂	CH ₄	N ₂ O	CO ₂ e
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7.00	-	-	-	-	-	-	-	-	-	-	-	7.00	-	-	-	-	-	-	-	-	-	-	-	7.00	-	-	-	-	-	-	-	-	-	-	-	7.00	-	-	-	-	-	-	-	-	-	-	-	2.00	-	-	-	-	-	-	-	-	-	-	-
6.00	-	-	-	-	-	-	-	-	-	-	-	6.00	-	-	-	-	-	-	-	-	-	-	-	6.00	-	-	-	-	-	-	-	-	-	-	-	6.00	-	-	-	-	-	-	-	-	-	-	-	6.00	-	-	-	-	-	-	-	-	-	-	-
11.00	-	-	-	-	-	-	-	-	-	-	-	11.00	-	-	-	-	-	-	-	-	-	-	-	11.00	-	-	-	-	-	-	-	-	-	-	-	11.00	-	-	-	-	-	-	-	-	-	-	-	11.00	-	-	-	-	-	-	-	-	-	-	-
1.00	-	-	-	-	-	-	-	-	-	-	-	1.00	-	-	-	-	-	-	-	-	-	-	-	1.00	-	-	-	-	-	-	-	-	-	-	-	1.00	-	-	-	-	-	-	-	-	-	-	-	1.00	-	-	-	-	-	-	-	-	-	-	-
6.00	1.17	0.99	6.39	1.40	31.76	0.03	3,532.71	0.01	0.01	3,536.09	6.00	1.17	0.99	6.39	1.40	31.76	0.03	3,532.71	0.01	0.01	3,536.09	6.00	1.17	0.99	6.39	1.40	31.76	0.03	3,532.71	0.01	0.01	3,536.09	6.00	1.17	0.99	6.39	1.40	31.76	0.03	3,532.71	0.01	0.01	3,536.09	6.00	1.17	0.99	6.39	1.40	31.76	0.03	3,532.71	0.01	0.01	3,536.09					
11.00	2.41	2.05	13.19	2.89	65.51	0.07	7,286.22	0.02	0.02	7,293.18	11.00	2.41	2.05	13.19	2.89	65.51	0.07	7,286.22	0.02	0.02	7,293.18	11.00	2.41	2.05	13.19	2.89	65.51	0.07	7,286.22	0.02	0.02	7,293.18	11.00	2.41	2.05	13.19	2.89	65.51	0.07	7,286.22	0.02	0.02	7,293.18	11.00	2.41	2.05	13.19	2.89	65.51	0.07	7,286.22	0.02	0.02	7,293.18					
7.00	1.36	1.16	7.46	1.63	37.05	0.04	4,121.50	0.01	0.01	4,125.43	7.00	1.36	1.16	7.46	1.63	37.05	0.04	4,121.50	0.01	0.01	4,125.43	7.00	1.36	1.16	7.46	1.63	37.05	0.04	4,121.50	0.01	0.01	4,125.43	7.00	1.36	1.16	7.46	1.63	37.05	0.04	4,121.50	0.01	0.01	4,125.43	7.00	1.36	1.16	7.46	1.63	37.05	0.04	4,121.50	0.01	0.01	4,125.43					
2.00	0.49	0.41	2.66	0.58	13.23	0.01	1,471.96	0.00	0.00	1,473.37	2.00	0.49	0.41	2.66	0.58	13.23	0.01	1,471.96	0.00	0.00	1,473.37	2.00	0.49	0.41	2.66	0.58	13.23	0.01	1,471.96	0.00	0.00	1,473.37	2.00	0.49	0.41	2.66	0.58	13.23	0.01	1,471.96	0.00	0.00	1,473.37	2.00	0.49	0.41	2.66	0.58	13.23	0.01	1,471.96	0.00	0.00	1,473.37					
2.00	0.39	0.33	2.13	0.47	10.59	0.01	1,177.57	0.00	0.00	1,178.70	2.00	0.39	0.33	2.13	0.47	10.59	0.01	1,177.57	0.00	0.00	1,178.70	2.00	0.39	0.33	2.13	0.47	10.59	0.01	1,177.57	0.00	0.00	1,178.70	2.00	0.39	0.33	2.13	0.47	10.59	0.01	1,177.57	0.00	0.00	1,178.70	2.00	0.39	0.33	2.13	0.47	10.59	0.01	1,177.57	0.00	0.00	1,178.70					
190.00	0.99	0.55	80.02	2.38	9.57	0.09	9,084.90	2.18	2.00	9,751.83	190.00	0.99	0.55	80.02	2.38	9.57	0.09	9,084.90	2.18	2.00	9,751.83	190.00	0.99	0.55	80.02	2.38	9.57	0.09	9,084.90	2.18	2.00	9,751.83	153.00	0.80	0.44	64.44	1.92	7.71	0.07	7,315.73	1.76	1.61	7,852.79	153.00	0.80														

Month 18 Daily Emissions (lb/day)											Month 19 Daily Emissions (lb/day)											Month 20 Daily Emissions (lb/day)													
Quantity Mo 18	PM ₁₀	PM _{2.5}	CO	ROG	NO _x	SO ₂	CO ₂	CH ₄	N ₂ O	CO ₂ e	Quantity Mo 19	PM ₁₀	PM _{2.5}	CO	ROG	NO _x	SO ₂	CO ₂	CH ₄	N ₂ O	CO ₂ e	Quantity Mo 20	PM ₁₀	PM _{2.5}	CO	ROG	NO _x	SO ₂	CO ₂	CH ₄	N ₂ O	CO ₂ e			
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
10.00	-	-	-	-	-	-	-	-	-	-	8.00	-	-	-	-	-	-	-	-	-	-	-	8.00	-	-	-	-	-	-	-	-	-	-	-	-
6.00	-	-	-	-	-	-	-	-	-	-	6.00	-	-	-	-	-	-	-	-	-	-	-	6.00	-	-	-	-	-	-	-	-	-	-	-	-
11.00	-	-	-	-	-	-	-	-	-	-	11.00	-	-	-	-	-	-	-	-	-	-	-	11.00	-	-	-	-	-	-	-	-	-	-	-	-
5.00	-	-	-	-	-	-	-	-	-	-	5.00	-	-	-	-	-	-	-	-	-	-	-	5.00	-	-	-	-	-	-	-	-	-	-	-	-
6.00	1.17	0.99	6.39	1.40	31.76	0.03	3,532.71	0.01	0.01	3,536.09	6.00	1.17	0.99	6.39	1.40	31.76	0.03	3,532.71	0.01	0.01	3,536.09	6.00	1.17	0.99	6.39	1.40	31.76	0.03	3,532.71	0.01	0.01	3,536.09			
11.00	2.41	2.05	13.19	2.89	65.51	0.07	7,286.22	0.02	0.02	7,293.18	11.00	2.41	2.05	13.19	2.89	65.51	0.07	7,286.22	0.02	0.02	7,293.18	11.00	2.41	2.05	13.19	2.89	65.51	0.07	7,286.22	0.02	0.02	7,293.18			
7.00	1.36	1.16	7.46	1.63	37.05	0.04	4,121.50	0.01	0.01	4,125.43	7.00	1.36	1.16	7.46	1.63	37.05	0.04	4,121.50	0.01	0.01	4,125.43	7.00	1.36	1.16	7.46	1.63	37.05	0.04	4,121.50	0.01	0.01	4,125.43			
2.00	0.49	0.41	2.66	0.58	13.23	0.01	1,471.96	0.00	0.00	1,473.37	2.00	0.49	0.41	2.66	0.58	13.23	0.01	1,471.96	0.00	0.00	1,473.37	2.00	0.49	0.41	2.66	0.58	13.23	0.01	1,471.96	0.00	0.00	1,473.37			
2.00	0.39	0.33	2.13	0.47	10.59	0.01	1,177.57	0.00	0.00	1,178.70	2.00	0.39	0.33	2.13	0.47	10.59	0.01	1,177.57	0.00	0.00	1,178.70	2.00	0.39	0.33	2.13	0.47	10.59	0.01	1,177.57	0.00	0.00	1,178.70			
280.00	1.46	0.81	117.93	3.51	14.10	0.14	13,388.27	3.21	2.95	14,371.12	247.00	1.29	0.71	104.03	3.10	12.44	0.12	11,810.37	2.83	2.60	12,677.38	226.00	1.18	0.65	95.19	2.84	11.38	0.11	10,806.25	2.59	2.38	11,599.55			
340.00	7.27	5.76	149.77	10.48	172.24	0.31	30,978.24	3.27	3.00	31,977.88	305.00	7.10	5.66	135.87	10.07	170.58	0.29	29,400.33	2.89	2.66	30,284.14	284.00	6.99	5.60	127.03	9.81	169.52	0.28	28,396.21	2.65	2.43	29,206.31			

Month 38 Daily Emissions (lb/day)											Month 39 Daily Emissions (lb/day)											Month 40 Daily Emissions (lb/day)											Month 41 Daily Emissions (lb/day)																														
Quantity Mo 38	PM ₁₀	PM _{2.5}	CO	ROG	NO _x	SO ₂	CO ₂	CH ₄	N ₂ O	CO ₂ e	Quantity Mo 39	PM ₁₀	PM _{2.5}	CO	ROG	NO _x	SO ₂	CO ₂	CH ₄	N ₂ O	CO ₂ e	Quantity Mo 40	PM ₁₀	PM _{2.5}	CO	ROG	NO _x	SO ₂	CO ₂	CH ₄	N ₂ O	CO ₂ e	Quantity Mo 41	PM ₁₀	PM _{2.5}	CO	ROG	NO _x	SO ₂	CO ₂	CH ₄	N ₂ O	CO ₂ e																				
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-																	
2.00	-	-	-	-	-	-	-	-	-	-	2.00	-	-	-	-	-	-	-	-	-	-	-	2.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-								
6.00	-	-	-	-	-	-	-	-	-	-	6.00	-	-	-	-	-	-	-	-	-	-	-	6.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
11.00	-	-	-	-	-	-	-	-	-	-	11.00	-	-	-	-	-	-	-	-	-	-	-	11.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1.00	-	-	-	-	-	-	-	-	-	-	1.00	-	-	-	-	-	-	-	-	-	-	-	1.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6.00	1.17	0.99	6.39	1.40	31.76	0.03	3,532.71	0.01	0.01	3,536.09	6.00	1.17	0.99	6.39	1.40	31.76	0.03	3,532.71	0.01	0.01	3,536.09	6.00	1.17	0.99	6.39	1.40	31.76	0.03	3,532.71	0.01	0.01	3,536.09	6.00	1.17	0.99	6.39	1.40	31.76	0.03	3,532.71	0.01	0.01	3,536.09																				
11.00	2.41	2.05	13.19	2.89	65.51	0.07	7,286.22	0.02	0.02	7,293.18	11.00	2.41	2.05	13.19	2.89	65.51	0.07	7,286.22	0.02	0.02	7,293.18	11.00	2.41	2.05	13.19	2.89	65.51	0.07	7,286.22	0.02	0.02	7,293.18	11.00	2.41	2.05	13.19	2.89	65.51	0.07	7,286.22	0.02	0.02	7,293.18																				
7.00	1.36	1.16	7.46	1.63	37.05	0.04	4,121.50	0.01	0.01	4,125.43	7.00	1.36	1.16	7.46	1.63	37.05	0.04	4,121.50	0.01	0.01	4,125.43	7.00	1.36	1.16	7.46	1.63	37.05	0.04	4,121.50	0.01	0.01	4,125.43	7.00	1.36	1.16	7.46	1.63	37.05	0.04	4,121.50	0.01	0.01	4,125.43																				
2.00	0.49	0.41	2.66	0.58	13.23	0.01	1,471.96	0.00	0.00	1,473.37	2.00	0.49	0.41	2.66	0.58	13.23	0.01	1,471.96	0.00	0.00	1,473.37	2.00	0.49	0.41	2.66	0.58	13.23	0.01	1,471.96	0.00	0.00	1,473.37	2.00	0.49	0.41	2.66	0.58	13.23	0.01	1,471.96	0.00	0.00	1,473.37																				
2.00	0.39	0.33	2.13	0.47	10.59	0.01	1,177.57	0.00	0.00	1,178.70	2.00	0.39	0.33	2.13	0.47	10.59	0.01	1,177.57	0.00	0.00	1,178.70	2.00	0.39	0.33	2.13	0.47	10.59	0.01	1,177.57	0.00	0.00	1,178.70	2.00	0.39	0.33	2.13	0.47	10.59	0.01	1,177.57	0.00	0.00	1,178.70																				
153.00	0.80	0.44	64.44	1.92	7.71	0.07	7,315.73	1.76	1.61	7,852.79	153.00	0.80	0.44	64.44	1.92	7.71	0.07	7,315.73	1.76	1.61	7,852.79	152.00	0.79	0.44	64.02	1.91	7.66	0.07	7,267.92	1.74	1.60	7,801.46	152.00	0.79	0.44	64.02	1.91	7.66	0.07	7,267.92	1.74	1.60	7,801.46																				
201.00	6.61	5.39	96.28	8.89	165.85	0.24	24,905.70	1.81	1.66	25,459.55	201.00	6.61	5.39	96.28	8.89	165.85	0.24	24,905.70	1.81	1.66	25,459.55	200.00	6.60	5.39	95.86	8.88	165.80	0.24	24,857.89	1.80	1.65	25,408.23	200.00	6.60	5.39	95.86	8.88	165.80	0.24	24,857.89	1.80	1.65	25,408.23																				

Monthly Comparison of Construction Equipment Emissions:

Month of Construction	Total Equipment Quantity	Daily Emissions (lb/day)									
		PM ₁₀	PM _{2.5}	CO	ROG	NO _x	SO _x	CO ₂	CH ₄	N ₂ O	CO _{2e}
1	128	6.61	5.52	62.52	8.35	173.76	0.21	22155.16	0.83	0.761	22408.43
2	270	7.83	6.39	113.57	10.52	196.58	0.29	29484.47	2.13	1.958	30116.29
3	333	8.19	6.59	142.83	11.39	200.06	0.32	32763.72	2.92	2.686	33657.67
4	299	8.22	6.66	131.03	11.24	203.71	0.31	31903.33	2.58	2.371	32692.52
5	296	8.22	6.66	131.03	11.24	203.71	0.31	31903.33	2.58	2.371	32692.52
6	570	10.84	8.49	247.44	16.01	251.08	0.48	48147.88	5.57	5.124	49853.16
7	562	9.62	7.44	243.91	14.60	217.21	0.44	44717.82	5.65	5.197	46447.74
8	454	8.33	6.50	196.80	12.42	191.49	0.37	37551.76	4.48	4.115	38921.45
9	400	7.82	6.14	173.99	11.49	182.31	0.34	34377.20	3.89	3.575	35567.17
10	365	7.40	5.83	160.30	10.80	173.50	0.32	32173.62	3.55	3.267	33261.02
11	365	7.40	5.83	160.30	10.80	173.50	0.32	32173.62	3.55	3.267	33261.02
12	365	7.40	5.83	160.30	10.80	173.50	0.32	32173.62	3.55	3.267	33261.02
13	417	7.67	5.98	182.20	11.45	176.12	0.34	34660.01	4.15	3.815	39929.94
14	404	7.59	5.93	175.46	11.25	175.31	0.34	33894.97	3.97	3.647	35108.73
15	409	7.62	5.95	177.99	11.33	175.62	0.34	34181.86	4.04	3.710	35416.66
16	394	7.54	5.91	171.67	11.14	174.86	0.33	33464.63	3.86	3.552	34646.80
17	385	7.51	5.89	168.72	11.05	174.51	0.33	33129.92	3.78	3.478	34287.52
18	340	7.27	5.76	149.77	10.48	172.24	0.31	30978.24	3.27	3.003	31977.88
19	325	7.10	5.66	136.87	10.07	170.58	0.29	29400.33	2.99	2.655	30284.14
20	294	6.99	5.60	127.03	9.81	169.52	0.28	28396.21	2.85	2.434	29208.31
21	269	7.63	6.17	123.86	10.47	188.52	0.29	29791.30	2.46	2.261	30543.83
22	268	7.63	6.17	123.44	10.46	188.47	0.29	29743.49	2.45	2.250	30492.50
23	266	7.63	6.17	123.44	10.46	188.47	0.29	29743.49	2.45	2.250	30492.50
24	266	7.63	6.17	123.44	10.46	188.47	0.29	29743.49	2.45	2.250	30492.50
25	266	7.63	6.17	123.44	10.46	188.47	0.29	29743.49	2.45	2.250	30492.50
26	283	6.90	5.55	119.44	9.58	168.62	0.27	27535.54	2.44	2.244	28282.45
27	283	6.90	5.55	119.44	9.58	168.62	0.27	27535.54	2.44	2.244	28282.45
28	221	6.68	5.43	101.75	9.05	166.50	0.25	25527.30	1.96	1.801	26126.78
29	219	6.68	5.43	101.75	9.05	166.50	0.25	25527.30	1.96	1.801	26126.78
30	219	6.68	5.43	101.75	9.05	166.50	0.25	25527.30	1.96	1.801	26126.78
31	219	6.68	5.43	101.75	9.05	166.50	0.25	25527.30	1.96	1.801	26126.78
32	219	6.68	5.43	101.75	9.05	166.50	0.25	25527.30	1.96	1.801	26126.78
33	243	6.80	5.50	111.86	9.35	167.71	0.26	26674.87	2.23	2.054	27358.59
34	243	6.80	5.50	111.86	9.35	167.71	0.26	26674.87	2.23	2.054	27358.59
35	243	6.80	5.50	111.86	9.35	167.71	0.26	26674.87	2.23	2.054	27358.59
36	206	6.61	5.39	96.28	8.89	165.85	0.24	24905.70	1.81	1.664	25459.55
37	201	6.61	5.39	96.28	8.89	165.85	0.24	24905.70	1.81	1.664	25459.55
38	201	6.61	5.39	96.28	8.89	165.85	0.24	24905.70	1.81	1.664	25459.55
39	201	6.61	5.39	96.28	8.89	165.85	0.24	24905.70	1.81	1.664	25459.55
40	200	6.60	5.39	95.86	8.88	165.80	0.24	24857.89	1.80	1.654	25408.23
41	200	6.60	5.39	95.86	8.88	165.80	0.24	24857.89	1.80	1.654	25408.23
MAX VALUE (lb/day)	570	10.84	8.49	247.44	16.01	251.08	0.48	48147.7	5.65	5.197	49853.2

Months for Annual Construction		Annual Emissions (ton/year)									
		PM ₁₀	PM _{2.5}	CO	ROG	NO _x	SO _x	CO ₂	CH ₄	N ₂ O	CO _{2e}
1	12	1.27	1.01	25.01	1.82	30.43	0.052	5323.57	0.54	0.4935	5487.82
2	13	1.29	1.02	26.57	1.86	30.46	0.054	5486.13	0.58	0.5332	5663.60
3	14	1.28	1.01	27.37	1.87	30.18	0.055	5543.73	0.60	0.5551	5728.50
4	15	1.28	1.00	27.83	1.86	29.86	0.055	5562.16	0.62	0.5685	5761.37
5	16	1.27	0.99	28.36	1.86	29.49	0.055	5582.46	0.64	0.5838	5776.77
6	17	1.26	0.98	28.85	1.86	29.11	0.055	5598.41	0.65	0.5982	5797.51
7	18	1.21	0.95	27.58	1.79	28.08	0.053	5375.20	0.62	0.5706	5685.19
8	19	1.18	0.93	26.17	1.73	27.48	0.051	5176.08	0.58	0.5376	5355.00
9	20	1.16	0.91	25.27	1.70	27.19	0.050	5057.06	0.56	0.5157	5228.71
10	21	1.16	0.91	24.62	1.68	27.27	0.049	4997.44	0.54	0.4986	5163.40
11	22	1.16	0.92	24.14	1.68	27.47	0.049	4965.85	0.53	0.4854	5127.41
12	23	1.16	0.92	23.66	1.67	27.66	0.049	4934.25	0.51	0.4722	5091.42
13	24	1.17	0.93	23.18	1.67	27.85	0.048	4902.66	0.50	0.4580	5055.43
14	25	1.17	0.93	22.41	1.66	28.02	0.048	4838.75	0.48	0.4386	4984.74
15	26	1.16	0.93	21.69	1.63	27.93	0.047	4756.08	0.46	0.4204	4896.00
16	27	1.15	0.92	20.92	1.61	27.84	0.046	4689.67	0.44	0.4013	4803.26
17	28	1.14	0.91	20.02	1.58	27.73	0.045	4566.49	0.41	0.3786	4692.50
18	29	1.13	0.91	19.14	1.56	27.62	0.044	4467.65	0.39	0.3568	4586.41
19	30	1.12	0.90	18.52	1.54	27.55	0.043	4396.79	0.37	0.3412	4510.34
20	31	1.11	0.90	18.08	1.53	27.50	0.043	4346.44	0.36	0.3301	4463.30
21	32	1.11	0.90	17.75	1.52	27.46	0.042	4309.15	0.35	0.3218	4416.26
22	33	1.10	0.89	17.59	1.50	27.19	0.042	4268.63	0.35	0.3191	4374.86
23	34	1.09	0.88	17.44	1.49	26.92	0.041	4228.74	0.34	0.3166	4334.12
24	35	1.08	0.87	17.29	1.47	26.65	0.041	4188.85	0.34	0.3140	4293.37
25	36	1.06	0.86	16.94	1.45	26.38	0.040	4125.96	0.33	0.3064	4227.96
26	37	1.05	0.85	16.59	1.43	26.06	0.040	4063.07	0.32	0.2988	4162.52
27	38	1.05	0.85	16.28	1.42	26.02	0.039	4028.88	0.32	0.2913	4125.82
28	39	1.04	0.85	15.98	1.42	25.99	0.039	3994.69	0.31	0.2837	4089.12
29	40	1.04	0.85	15.91	1.41	25.98	0.039	3985.99	0.31	0.2818	4078.76
30	41	1.04	0.85	15.83	1.41	25.97	0.039	3977.29	0.30	0.2799	4070.44
MAX VALUE (ton/year)		1.29	1.02	28.85	1.87	30.46	0.06	5598.41	0.65	0.5982	5797.51

Combustion Exhaust Emissions Off-site (annual)

To be consistency to on-site emissions, months 2-13 was used to represent the annual construction off-site (on-road) emissions.
Construction Assumptions - 26 days per month

Equipment	Number of Vehicles per year	Hours/Day	Emission rate per piece of equipment (lb/hr)									Annual Emissions (ton/year)									Number of Vehicles (entire construction period)	entire construction period emissions (ton)											
			PM ₁₀	PM _{2.5}	CO	ROG	NO _x	SO ₂	CO ₂	CH ₄	N ₂ O	CO _{2e}	PM ₁₀	PM _{2.5}	CO	ROG	NO _x	SO ₂	CO ₂	CH ₄		N ₂ O	CO _{2e}	PM ₁₀	PM _{2.5}	CO	ROG	NO _x	SO ₂	CO ₂	CH ₄	N ₂ O	CO _{2e}
Vehicles with Onroad Engines for Emissions Estimates																																	
Concrete Delivery Truck for general construction	12	12	0.007	0.006	0.041	0.009	0.204	0.000	22.693	0.000	0.000	22.714	0.01	0.01	0.08	0.02	0.38	0.00	42.48	0.00	0.00	42.52	14	0.02	0.01	0.09	0.02	0.45	0.00	49.56	0.00	0.00	49.61
Concrete Delivery Truck for bridge	10	12	0.007	0.006	0.041	0.009	0.204	0.000	22.693	0.000	0.000	22.714	0.01	0.01	0.06	0.01	0.32	0.00	35.40	0.00	0.00	35.43	11	0.01	0.01	0.07	0.02	0.35	0.00	38.94	0.00	0.00	38.98
Concrete Pump Truck for bridge	6	12	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dump Truck	46	12	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Flatbed Truck	120	12	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	310	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Staff & Security Truck	72	24	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	246	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pickup Truck	132	12	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	451	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Water/Solatic Truck	79	12	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	160	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
General Materials Delivery Truck for general cons	24	24	0.004	0.003	0.021	0.004	0.102	0.000	11.346	0.000	0.000	11.357	0.03	0.02	0.15	0.03	0.76	0.00	84.96	0.00	0.00	85.04	24	0.03	0.02	0.15	0.03	0.76	0.00	84.96	0.00	0.00	85.04
General Materials Delivery Truck for bridge	22	24	0.004	0.003	0.021	0.004	0.102	0.000	11.346	0.000	0.000	11.357	0.03	0.02	0.14	0.03	0.70	0.00	77.88	0.00	0.00	77.96	24	0.03	0.02	0.15	0.03	0.76	0.00	84.96	0.00	0.00	85.04
Suncatcher Podestals Delivery Truck	13	24	0.010	0.009	0.056	0.012	0.276	0.000	30.666	0.000	0.000	30.695	0.04	0.03	0.23	0.05	1.12	0.00	124.38	0.00	0.00	124.50	28	0.09	0.08	0.48	0.11	2.41	0.00	267.90	0.00	0.00	268.15
Suncatcher Podestals Delivery Truck	72	24	0.008	0.007	0.044	0.010	0.221	0.000	24.533	0.000	0.000	24.556	0.18	0.16	1.00	0.22	4.95	0.01	551.10	0.00	0.00	551.63	246	0.62	0.53	3.41	0.75	16.93	0.02	182.94	0.01	0.01	184.73
Suncatcher Metal Supports Delivery Truck	132	24	0.009	0.008	0.050	0.011	0.248	0.000	27.599	0.000	0.000	27.626	0.38	0.32	2.06	0.45	10.22	0.01	1136.65	0.00	0.00	1137.74	451	1.28	1.09	7.03	1.54	34.91	0.04	3893.56	0.01	0.01	3897.26
Suncatcher Mirrors Delivery Truck	84	24	0.008	0.007	0.044	0.010	0.221	0.000	24.533	0.000	0.000	24.556	0.21	0.18	1.16	0.25	5.78	0.01	642.95	0.00	0.00	643.57	287	0.73	0.62	3.98	0.87	19.75	0.02	2196.76	0.01	0.01	2198.86
Electrical and Control Systems Delivery Truck	24	24	0.010	0.009	0.056	0.012	0.276	0.000	30.666	0.000	0.000	30.695	0.08	0.06	0.42	0.09	2.06	0.00	229.63	0.00	0.00	229.85	82	0.26	0.22	1.42	0.31	7.05	0.01	784.56	0.00	0.00	785.31
Azimuth and Elevation Drive Delivery Truck	24	24	0.008	0.007	0.044	0.010	0.221	0.000	24.533	0.000	0.000	24.556	0.06	0.05	0.33	0.07	1.65	0.00	183.70	0.00	0.00	183.88	82	0.21	0.18	1.14	0.25	5.64	0.01	627.65	0.00	0.00	628.24
Water Delivery Trucks	0	24	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Worker Passenger Vehicles	3824	24	0.000	0.000	0.018	0.001	0.002	0.000	1.992	0.000	0.000	2.139	0.26	0.14	20.94	0.62	2.50	0.02	2376.99	0.57	0.52	2551.49	9762	0.66	0.37	53.45	1.59	6.39	0.06	6068.04	1.46	1.34	6513.50
Total			1.29	1.02	26.57	1.86	30.46	0.05	5486.13	0.58	0.53	5663.60	3.93	3.15	71.37	5.52	95.41	0.16	15969.82	1.49	1.37	16424.73											

Number of Vehicles per year = sum of monthly daily maximum vehicle usage for the peak 12 months
delivery trucks can arrive at the site anytime during the day or night

Calico Solar

Fugitive Dust Emissions (offsite)

To be consistent to on-site emissions, months 6 was used to represent the daily/month construction off-site (on-road) emissions.
To be consistent to on-site emissions, months 2-13 was used to represent the annual construction off-site (on-road) emissions.

Travel on paved road

$$E = [k * (sL/2)^{0.65} * (W/3)^{1.5} - C] * (1 - P/4N)$$

EPA AP-42 Section 13.2.1 Paved Roads Equation 2

E = particulate emission factor (lb/VMT),

k = particle size multiplier for particle size range and units of interest

0.02 sL = road surface silt loading (grams per square meter) (g/m²),

W = average weight (tons) of the vehicles traveling the road, and

C = emission factor for 1980's vehicle fleet exhaust, brake wear and tire wear.

Freeway

Local Streets & Freeways (emission inventory code: 640-641-5400-0000), July 1997

constants

	PM _{2.5}	PM ₁₀
k	0.0024	0.016
C	0.00036	0.00047

23 P = Mean number of days per year with at least 0.01 inches of precipitation (from Daggett FAA Airport Station)

365 N = number of days in the year (averaging period)

Vehicle Type	Number of Vehicles (month 6)	Number of Vehicles per month (months 2-13)	Max Daily Offsite Round-trip Distance per Vehicle within MDAQMD Area (mile/day)	Max Daily VMT (all vehicles)	Max Annual VMT (all vehicles)	Mean Vehicle Weight (tons)	Max. Operating Hours / Day	Max. Operating Days / Month	PM _{2.5} EF (lbs/VMT)	PM ₁₀ EF (lbs/VMT)
Vehicles with Onroad Engines for Emissions Estimates										
Concrete Delivery Truck for general construction	0	12	74	0	23088	20	12	26	0.002	0.013
Concrete Delivery Truck for bridge	5	10	74	370	19240	20	12	26	0.002	0.013
Concrete Pump Truck for bridge	1	6	0	0	0	20	12	26	0.002	0.013
Dump Truck	5	46	0	0	0	20	12	26	0.002	0.013
Flatbed Truck	10	120	0	0	0	10	12	26	0.000	0.004
Staff & Security Truck	6	72	0	0	0	2.25	24	26	0.000	0.000
Pickup Truck	11	132	0	0	0	4	12	26	0.000	0.001
Water/Soiltac Truck	7	79	0	0	0	20	12	26	0.002	0.013
General Materials Delivery Truck for general construction	3	24	74	222	46176	20	24	26	0.002	0.013
General Materials Delivery Truck for bridge	12	22	74	888	42328	20	24	26	0.002	0.013
Suncatcher Pedestals Delivery Truck	3	13	200	600	67600	20	24	26	0.002	0.013
Stirling Engines Delivery Truck	6	72	160	960	299520	20	24	26	0.002	0.013
Suncatcher Metal Supports Delivery Truck	11	132	180	1980	617760	20	24	26	0.002	0.013
Suncatcher Mirrors Delivery Truck	7	84	160	1120	349440	20	24	26	0.002	0.013
Electrical and Control Systems Delivery Truck	2	24	200	400	124800	20	24	26	0.002	0.013
Azimuth and Elevation Drive Delivery Truck	2	24	160	320	99840	20	24	26	0.002	0.013
Water Delivery Trucks	0	0	0	0	0	0	24	26	0.000	0.000
Worker Passenger Vehicles	479	3824	74	35446	7357376	2	24	26	6.44E-05	4.30E-04

Vehicle Type	Watering Control Efficiency		PM ₁₀ Emissions (lb/hr)		PM ₁₀ Emissions (lb/day)		% of daily emissions	PM ₁₀ Emissions (tons/year)		PM _{2.5} Emissions (lb/hr)		PM _{2.5} Emissions (lb/day)		PM _{2.5} Emissions (tons/year)	
	Unmitigated	Mitigated	Unmitigated	Mitigated	Unmitigated	Mitigated		Unmitigated	Mitigated	Unmitigated	Mitigated	Unmitigated	Mitigated	Unmitigated	Mitigated
Vehicles with Onroad Engines for Emissions Estimates															
Concrete Delivery Truck for general construction	0%	0%	0.00	0.00	0.00	0.00	0.00%	0.15	0.15	0.00	0.00	0.00	0.00	0.02	0.02
Concrete Delivery Truck for bridge	0%	0%	0.40	0.40	4.86	4.86	4.61%	0.13	0.13	0.05	0.05	0.62	0.62	0.02	0.02
Concrete Pump Truck for bridge	0%	0%	0.00	0.00	0.00	0.00	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dump Truck	0%	0%	0.00	0.00	0.00	0.00	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Flatbed Truck	0%	0%	0.00	0.00	0.00	0.00	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Staff & Security Truck	0%	0%	0.00	0.00	0.00	0.00	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pickup Truck	0%	0%	0.00	0.00	0.00	0.00	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Water/Soiltac Truck	0%	0%	0.00	0.00	0.00	0.00	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
General Materials Delivery Truck for general construction	0%	0%	0.12	0.12	2.91	2.91	2.77%	0.30	0.30	0.02	0.02	0.37	0.37	0.04	0.04
General Materials Delivery Truck for bridge	0%	0%	0.49	0.49	11.65	11.65	11.07%	0.28	0.28	0.06	0.06	1.49	1.49	0.04	0.04
Suncatcher Pedestals Delivery Truck	0%	0%	0.33	0.33	7.87	7.87	7.48%	0.44	0.44	0.04	0.04	1.01	1.01	0.06	0.06
Stirling Engines Delivery Truck	0%	0%	0.52	0.52	12.60	12.60	11.97%	1.97	1.97	0.07	0.07	1.62	1.62	0.25	0.25
Suncatcher Metal Supports Delivery Truck	0%	0%	1.08	1.08	25.98	25.98	24.69%	4.05	4.05	0.14	0.14	3.33	3.33	0.52	0.52
Suncatcher Mirrors Delivery Truck	0%	0%	0.61	0.61	14.70	14.70	13.96%	2.29	2.29	0.08	0.08	1.89	1.89	0.29	0.29
Electrical and Control Systems Delivery Truck	0%	0%	0.22	0.22	5.25	5.25	4.99%	0.82	0.82	0.03	0.03	0.67	0.67	0.11	0.11
Azimuth and Elevation Drive Delivery Truck	0%	0%	0.17	0.17	4.20	4.20	3.99%	0.66	0.66	0.02	0.02	0.54	0.54	0.08	0.08
Water Delivery Trucks	0%	0%	0.00	0.00	0.00	0.00	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Passenger Vehicles	0%	0%	0.63	0.63	15.23	15.23	14.47%	1.58	1.58	0.10	0.10	2.28	2.28	0.24	0.24
TOTAL Fugitive emissions for vehicle travel offsite paved roads			4.59	4.59	105.25	105.25		12.67	12.67	0.60	0.60	13.83	13.83	1.66	1.66

Number of Vehicles per year = sum of monthly daily maximum vehicle usage for the peak 12 months
delivery trucks can arrive at the site anytime during the day or night

OFFROAD

2010 Annual	Mon-Sun	Trenchers	D	250	Construction and Mining Equipment	San Bernardino	MD	MOJ	4.79E-01	8.32E-01	8.43E+00	4.58E-05	3.39E-04	1.15E-04	1.11E-03	1.04E-06	9.26E-02	1.04E-05	0.00E+00	5.51E-05	4.08E-04	1.38E-04	1.34E-03	1.25E-06	1.11E-01	1.25E-05	0.00E+00
2010 Annual	Mon-Sun	Trenchers	D	500	Construction and Mining Equipment	San Bernardino	MD	MOJ	6.11E-01	1.06E+00	1.50E+01	7.28E-05	8.67E-04	1.84E-04	1.80E-03	1.62E-06	1.65E-01	1.66E-05	0.00E+00	6.86E-05	8.17E-04	1.73E-04	1.70E-03	1.53E-06	1.56E-01	1.56E-05	0.00E+00
2010 Annual	Mon-Sun	Trenchers	D	750	Construction and Mining Equipment	San Bernardino	MD	MOJ	2.19E-01	3.80E-01	1.02E+01	4.95E-05	5.86E-04	1.25E-04	1.24E-03	1.12E-06	1.11E-01	1.13E-05	0.00E+00	1.30E-04	1.54E-03	3.30E-04	3.26E-03	2.95E-06	2.93E-01	2.98E-05	0.00E+00
2010 Annual	Mon-Sun	Bore/Drill Rigs	D	50	Construction and Mining Equipment	San Bernardino	MD	MOJ	1.57E+00	3.62E+00	5.15E+00	3.51E-05	4.53E-04	9.85E-05	5.10E-04	7.22E-07	5.61E-02	8.88E-06	0.00E+00	9.68E-06	1.25E-04	2.72E-05	1.41E-04	2.00E-07	1.55E-02	2.45E-06	0.00E+00
2010 Annual	Mon-Sun	Bore/Drill Rigs	D	120	Construction and Mining Equipment	San Bernardino	MD	MOJ	4.81E+00	1.11E+01	3.91E+01	2.53E-04	2.67E-03	4.01E-04	3.42E-03	5.02E-06	4.28E-01	3.62E-05	0.00E+00	2.27E-05	2.40E-04	3.61E-05	3.07E-04	4.52E-07	3.85E-02	3.25E-06	0.00E+00
2010 Annual	Mon-Sun	Bore/Drill Rigs	D	175	Construction and Mining Equipment	San Bernardino	MD	MOJ	1.11E+00	2.57E+00	1.65E+01	6.18E-05	9.68E-04	1.19E-04	1.17E-03	2.04E-06	1.81E-01	1.08E-05	0.00E+00	2.40E-05	3.77E-04	4.64E-05	4.57E-04	7.93E-07	7.05E-02	4.19E-06	0.00E+00
2010 Annual	Mon-Sun	Bore/Drill Rigs	D	250	Construction and Mining Equipment	San Bernardino	MD	MOJ	9.58E-01	2.21E+00	1.88E+01	4.24E-05	3.82E-04	1.06E-04	1.31E-03	2.34E-06	2.08E-01	9.53E-06	0.00E+00	1.92E-05	1.73E-04	4.78E-05	5.92E-04	1.06E-06	9.40E-02	4.31E-06	0.00E+00
2010 Annual	Mon-Sun	Bore/Drill Rigs	D	500	Construction and Mining Equipment	San Bernardino	MD	MOJ	2.13E+00	4.92E+00	6.92E+01	1.51E-04	1.37E-03	3.66E-04	4.19E-03	7.51E-06	7.65E-01	3.30E-05	0.00E+00	3.07E-05	2.78E-04	7.43E-05	8.52E-04	1.53E-06	1.56E-01	6.71E-06	0.00E+00
2010 Annual	Mon-Sun	Bore/Drill Rigs	D	750	Construction and Mining Equipment	San Bernardino	MD	MOJ	3.39E+00	7.83E+00	2.18E+02	4.81E-04	4.30E-03	1.17E-03	1.36E-02	2.42E-05	2.41E+00	1.06E-04	0.00E+00	6.14E-05	5.49E-04	1.49E-04	1.74E-03	3.09E-06	3.07E-01	1.35E-05	0.00E+00
2010 Annual	Mon-Sun	Excavators	D	50	Construction and Mining Equipment	San Bernardino	MD	MOJ	1.67E+01	6.52E+01	7.62E+01	8.98E-04	1.02E-02	3.68E-03	8.59E-03	1.05E-05	8.15E-01	3.32E-04	0.00E+00	1.38E-05	1.57E-04	5.65E-05	1.32E-04	1.62E-07	1.25E-02	5.10E-06	0.00E+00
2010 Annual	Mon-Sun	Excavators	D	120	Construction and Mining Equipment	San Bernardino	MD	MOJ	4.53E+01	1.77E+02	5.98E+02	6.90E-03	4.70E-02	1.24E-02	7.43E-02	7.64E-05	6.51E+00	1.12E-03	0.00E+00	3.90E-05	2.66E-04	6.98E-05	4.20E-04	4.31E-07	3.68E-02	6.30E-06	0.00E+00
2010 Annual	Mon-Sun	Excavators	D	175	Construction and Mining Equipment	San Bernardino	MD	MOJ	8.74E+01	3.42E+02	1.75E+03	1.13E-02	1.14E-01	2.50E-02	1.90E-01	2.15E-04	1.92E+01	2.25E-03	0.00E+00	3.31E-05	3.35E-04	7.32E-05	5.56E-04	6.31E-07	5.61E-02	6.60E-06	0.00E+00
2010 Annual	Mon-Sun	Excavators	D	250	Construction and Mining Equipment	San Bernardino	MD	MOJ	3.55E+01	1.39E+02	9.99E+02	3.60E-03	2.73E-02	1.01E-02	1.04E-01	1.24E-04	1.10E+01	9.09E-04	0.00E+00	2.59E-05	1.97E-04	7.25E-05	7.46E-04	8.92E-07	7.93E-02	6.54E-06	0.00E+00
2010 Annual	Mon-Sun	Excavators	D	500	Construction and Mining Equipment	San Bernardino	MD	MOJ	2.56E+01	1.00E+02	1.06E+03	3.56E-03	3.09E-02	9.93E-03	9.65E-02	1.15E-04	1.17E+01	8.96E-04	0.00E+00	3.55E-05	3.08E-04	9.91E-05	9.63E-04	1.15E-06	1.17E-01	8.94E-06	0.00E+00
2010 Annual	Mon-Sun	Excavators	D	750	Construction and Mining Equipment	San Bernardino	MD	MOJ	1.71E+00	6.70E+00	1.18E+02	4.01E-04	3.42E-03	1.11E-03	1.10E-02	1.30E-05	1.30E+00	1.00E-04	0.00E+00	5.98E-05	5.10E-04	1.65E-04	1.65E-03	1.95E-06	1.94E-01	1.49E-05	0.00E+00
2010 Annual	Mon-Sun	Concrete/Industrial Saws	D	50	Construction and Mining Equipment	San Bernardino	MD	MOJ	4.19E-01	6.67E-01	9.37E-01	1.00E-05	1.07E-04	4.10E-05	1.02E-04	1.30E-07	1.01E-02	3.70E-06	0.00E+00	1.50E-05	1.60E-04	6.15E-05	1.53E-04	1.95E-07	1.51E-02	5.55E-06	0.00E+00
2010 Annual	Mon-Sun	Concrete/Industrial Saws	D	120	Construction and Mining Equipment	San Bernardino	MD	MOJ	7.31E-01	1.16E+00	3.95E+00	4.17E-05	2.89E-04	7.79E-05	4.99E-04	5.05E-07	4.30E-02	7.03E-06	0.00E+00	3.59E-05	2.49E-04	6.70E-05	4.30E-04	4.35E-07	3.70E-02	6.05E-06	0.00E+00
2010 Annual	Mon-Sun	Concrete/Industrial Saws	D	175	Construction and Mining Equipment	San Bernardino	MD	MOJ	2.40E-02	3.81E-02	2.78E-01	1.64E-06	1.67E-05	3.67E-06	3.13E-05	3.43E-08	3.05E-03	3.31E-07	0.00E+00	4.31E-05	4.39E-04	9.62E-05	8.22E-04	9.00E-07	8.00E-02	8.68E-06	0.00E+00
2010 Annual	Mon-Sun	Cranes	D	50	Construction and Mining Equipment	San Bernardino	MD	MOJ	4.07E-01	1.43E+00	1.56E+00	2.06E-05	2.26E-04	9.17E-05	1.82E-04	2.14E-07	1.66E-02	8.27E-06	0.00E+00	1.44E-05	1.58E-04	6.41E-05	1.27E-04	1.50E-07	1.16E-02	5.78E-06	0.00E+00
2010 Annual	Mon-Sun	Cranes	D	120	Construction and Mining Equipment	San Bernardino	MD	MOJ	4.47E+00	1.57E+01	3.61E+01	4.72E-04	2.92E-03	8.75E-04	5.13E-03	4.61E-06	3.93E-01	7.90E-05	0.00E+00	3.01E-05	1.86E-04	5.58E-05	3.27E-04	2.94E-07	2.51E-02	5.03E-06	0.00E+00
2010 Annual	Mon-Sun	Cranes	D	175	Construction and Mining Equipment	San Bernardino	MD	MOJ	4.47E+00	1.57E+01	3.61E+01	4.22E-04	3.83E-03	9.49E-04	7.29E-03	7.09E-06	6.30E-01	8.56E-05	0.00E+00	2.69E-05	2.44E-04	6.05E-05	4.65E-04	4.52E-07	4.01E-02	5.46E-06	0.00E+00
2010 Annual	Mon-Sun	Cranes	D	250	Construction and Mining Equipment	San Bernardino	MD	MOJ	8.66E+00	3.04E+01	1.55E+02	7.14E-04	5.27E-03	1.89E-03	1.88E-02	1.92E-05	1.70E+00	1.70E-04	0.00E+00	2.35E-05	1.73E-04	6.21E-05	6.18E-04	6.20E-07	5.60E-02	5.60E-06	0.00E+00
2010 Annual	Mon-Sun	Cranes	D	500	Construction and Mining Equipment	San Bernardino	MD	MOJ	3.17E+00	1.11E+01	9.12E+01	3.82E-04	3.69E-03	1.01E-03	9.87E-03	9.85E-06	1.00E+00	9.15E-05	0.00E+00	3.42E-05	3.31E-04	9.10E-05	8.85E-04	8.83E-07	9.00E-02	8.21E-06	0.00E+00
2010 Annual	Mon-Sun	Cranes	D	750	Construction and Mining Equipment	San Bernardino	MD	MOJ	7.11E+00	2.50E+01	3.44E+02	1.46E-03	1.39E-02	3.85E-03	3.80E-05	3.78E+00	3.47E-04	0.00E+00	5.83E-05	5.57E-04	1.54E-04	1.52E-03	1.52E-06	1.51E-01	1.39E-05	0.00E+00	
2010 Annual	Mon-Sun	Graders	D	50	Construction and Mining Equipment	San Bernardino	MD	MOJ	1.68E-01	4.38E-01	5.66E-01	7.08E-06	7.85E-05	3.06E-05	6.48E-05	7.79E-08	6.03E-03	2.76E-06	0.00E+00	1.61E-05	1.79E-04	6.99E-05	1.48E-04	1.78E-07	1.38E-02	6.31E-06	0.00E+00
2010 Annual	Mon-Sun	Graders	D	120	Construction and Mining Equipment	San Bernardino	MD	MOJ	1.12E+01	2.92E+01	1.01E+02	1.24E-02	7.97E-03	2.27E-02	1.35E-02	1.28E-05	1.09E+00	2.05E-04	0.00E+00	4.24E-05	2.73E-04	7.75E-05	4.63E-04	4.39E-07	3.74E-02	7.00E-06	0.00E+00
2010 Annual	Mon-Sun	Graders	D	175	Construction and Mining Equipment	San Bernardino	MD	MOJ	3.82E+01	9.99E+01	5.65E+02	3.90E-03	3.70E-02	8.69E-03	6.75E-02	6.96E-05	6.18E+00	7.84E-04	0.00E+00	3.91E-05	3.70E-04	8.70E-05	6.76E-04	6.97E-07	6.19E-02	7.85E-06	0.00E+00
2010 Annual	Mon-Sun	Graders	D	250	Construction and Mining Equipment	San Bernardino	MD	MOJ	2.37E+01	6.20E+01	4.84E+02	2.05E-03	1.53E-02	5.45E-03	5.54E-02	6.00E-05	5.53E+00	4.92E-04	0.00E+00	3.31E-05	2.47E-04	8.80E-05	8.94E-04	9.67E-07	8.00E-02	7.94E-06	0.00E+00
2010 Annual	Mon-Sun	Graders	D	500	Construction and Mining Equipment	San Bernardino	MD	MOJ	6.71E-01	1.75E+00	1.83E+01	7.07E-05	6.59E-04	1.88E-04	1.86E-03	1.97E-06	2.01E-01	1.70E-05	0.00E+00	4.03E-05	3.76E-04	1.07E-04	1.06E-03	1.13E-06	1.15E-01	9.69E-06	0.00E+00
2010 Annual	Mon-Sun	Graders	D	750	Construction and Mining Equipment	San Bernardino	MD	MOJ	1.09E-01	2.86E-01	6.31E+00	2.47E-05	2.28E-04	6.55E-05	6.57E-04	6.98E-07	6.94E-02	5.91E-06	0.00E+00	8.64E-05	7.96E-04	2.29E-04	2.30E-03	2.44E-06	2.43E-01	2.07E-05	0.00E+00
2010 Annual	Mon-Sun	Off-Highway Trucks	D	175	Construction and Mining Equipment	San Bernardino	MD	MOJ	7.79E-01	4.25E+00	2.43E+01	1.64E-04	1.62E-03	3.68E-04	2.72E-03	2.99E-06	2.66E-01	3.32E-05	0.00E+00	3.85E-05	3.81E-04	8.65E-05	6.39E-04	7.03E-07	6.25E-02	7.80E-06	0.00E+00
2010 Annual	Mon-Sun	Off-Highway Trucks	D	250	Construction and Mining Equipment	San Bernardino	MD	MOJ	5.75E+00	3.14E+01	2.37E+02	9.01E-04	6.75E-03	2.57E-02	2.53E-02	2.94E-05	2.61E+00	2.32E-04	0.00E+00	2.87E-05	2.15E-04	8.19E-05	8.07E-04	9.36E-07	8.20E-02	7.39E-06	0.00E+00
2010 Annual	Mon-Sun	Off-Highway Trucks	D	500	Construction and Mining Equipment	San Bernardino	MD	MOJ	8.10E+00	4.42E+01	5.46E+02	1.93E-03	1.67E-02	5.51E-03	5.12E-02	5.91E-05	6.02E+00	4.97E-04	0.00E+00	4.36E-05	3.77E-04	1.25E-04	1.16E-03	1.34E-06	1.36E-01	1.12E-05	0.00E+00
2010 Annual	Mon-Sun	Off-Highway Trucks	D	750	Construction and Mining Equipment	San Bernardino	MD	MOJ	2.29E+01	1.25E+02	2.51E+03	8.99E-03	7.66E-02	2.55E-02	2.43E-01	2.78E-04	2.77E+01	2.30E-03	0.00E+00	7.17E-05	6.11E-04	2.03E-04	1.93E-03	2.22E-06	2.21E-01	1.83E-05	0.00E+00
2010 Annual	Mon-Sun	Crushing/Proc. Equipment	D	50	Construction and Mining Equipment	San Bernardino	MD	MOJ	1.92E+00	5.02E+00	1.03E+01	1.30E-04	1.40E-03	5.69E-04	1.18E-03	1.43E-06	1.10E-01	5.14E-05	0.00E+00	2.60E-05	2.79E-04	1.13E-04	2.35E-04	2.84E-07	2.20E-02	1.02E-05	0.00E+00
2010 Annual	Mon-Sun	Crushing/Proc. Equipment	D	120	Construction and Mining Equipment	San Bernardino	MD	MOJ	5.40E+00	1.41E+01	5.40E+01	6.78E-04	4.21E-03	1.24E-03	7.34E-03	6.89E-06	5.88E-01	1.12E-04	0.00E+00	4.79E-05	2.98E-04	8.79E-05	5.19E-04	4.87E-07	4.15E-02	7.93E-06	0.00E+00
2010 Annual	Mon-Sun	Crushing/Proc. Equipment	D	175	Construction and Mining Equipment	San Bernardino	MD	MOJ	2.29E+00	5.99E+00	4.58E+01	3.20E-04	2.91E-03	7.08E-04	5.57E-03	6.83E-06	5.01E-01	6.39E-05	0.00E+00	5.33E-05	4.86E-04	1.18E-04	9.29E-04	9.40E-07	8.36E-02	1.07E-05	0.00E+00
2010 Annual	Mon-Sun	Crushing/Proc. Equipment	D	250	Construction and Mining Equipment	San Bernardino	MD	MOJ	2.28E-01	5.96E-01	6.61E+00	2.50E-05	1.85E-04	6.68E-05	7.58E-04	8.19E-07	7.28E-02	6.02E-06	0.00E+00	4.20E-05	3.11E-04	1.12E-04	1.27E-03	1.37E-06	1.22E-01	1.01E-05	0.00E+00
2010 Annual	Mon-Sun	Crushing/Proc. Equipment	D	500	Construction and Mining Equipment	San Bernardino	MD	MOJ	1.28E+00	3.36E+00	5.69																

2010 Annual	Mon-Sun	Other Material Handling Equipment	D	250 Industrial Equipment	San Bernardino	MD	MOJ	1.67E-01	6.04E-01	3.98E+00	1.64E-05	1.18E-04	4.49E-05	4.87E-04	4.93E-07	4.38E-02	4.05E-06	0.00E+00	2.71E-05	1.96E-04	7.43E-05	8.05E-04	8.15E-07	7.24E-02	6.71E-06	0.00E+00
2010 Annual	Mon-Sun	Other Material Handling Equipment	D	500 Industrial Equipment	San Bernardino	MD	MOJ	3.13E-02	1.13E-01	9.82E+01	3.73E-06	3.27E-05	1.01E-05	1.06E-04	1.06E-07	1.08E-02	9.11E-07	0.00E+00	3.30E-05	2.89E-04	8.94E-05	9.41E-04	9.40E-07	9.57E-02	8.07E-06	0.00E+00
2010 Annual	Mon-Sun	Generator Sets	D	50 Light Commercial Equipment	San Bernardino	MD	MOJ	3.34E+01	3.09E+01	4.38E+01	4.42E-04	4.51E-03	1.74E-03	4.75E-03	6.11E-06	4.72E-01	1.57E-04	0.00E+00	1.43E-05	1.46E-04	5.65E-05	1.54E-04	1.98E-07	1.53E-02	5.10E-06	0.00E+00
2010 Annual	Mon-Sun	Generator Sets	D	120 Light Commercial Equipment	San Bernardino	MD	MOJ	5.07E+01	4.69E+01	1.67E+02	1.69E-03	1.19E-02	3.31E-03	2.14E-02	2.14E-05	1.83E+00	2.99E-04	0.00E+00	3.60E-05	2.53E-04	7.05E-05	4.66E-04	4.57E-07	3.89E-02	6.36E-06	0.00E+00
2010 Annual	Mon-Sun	Generator Sets	D	175 Light Commercial Equipment	San Bernardino	MD	MOJ	3.00E+00	2.77E+00	1.79E+01	1.01E-04	1.04E-03	2.34E-04	2.06E-03	2.21E-06	1.97E-01	2.11E-05	0.00E+00	3.63E-05	3.74E-04	8.44E-05	7.44E-04	7.98E-07	7.09E-02	7.62E-06	0.00E+00
2010 Annual	Mon-Sun	Generator Sets	D	250 Light Commercial Equipment	San Bernardino	MD	MOJ	1.68E+00	1.55E+00	1.49E+01	4.81E-05	3.89E-04	1.26E-04	1.62E-03	1.85E-06	1.64E-01	1.14E-05	0.00E+00	3.10E-05	2.51E-04	8.15E-05	1.04E-03	1.19E-06	1.06E-01	7.35E-06	0.00E+00
2010 Annual	Mon-Sun	Generator Sets	D	500 Light Commercial Equipment	San Bernardino	MD	MOJ	3.73E+00	3.45E+00	5.26E+01	1.59E-04	1.53E-03	3.99E-04	5.20E-03	5.69E-06	5.80E-01	3.60E-05	0.00E+00	4.60E-05	4.44E-04	1.16E-04	1.51E-03	1.65E-06	1.68E-01	1.05E-05	0.00E+00
2010 Annual	Mon-Sun	Generator Sets	D	750 Light Commercial Equipment	San Bernardino	MD	MOJ	2.31E+00	2.14E+00	5.27E+01	1.61E-04	1.53E-03	4.13E-04	5.35E-03	5.85E-06	5.81E-01	3.73E-05	0.00E+00	7.53E-05	7.17E-04	1.93E-04	2.50E-03	2.73E-06	2.72E-01	1.74E-05	0.00E+00
2010 Annual	Mon-Sun	Pumps	D	50 Light Commercial Equipment	San Bernardino	MD	MOJ	1.46E+01	1.61E+01	2.57E+01	2.70E-04	2.78E-03	1.09E-03	2.81E-03	3.57E-06	2.76E-01	9.85E-05	0.00E+00	1.68E-05	1.72E-04	6.77E-05	1.74E-04	2.22E-07	1.72E-02	6.11E-06	0.00E+00
2010 Annual	Mon-Sun	Pumps	D	120 Light Commercial Equipment	San Bernardino	MD	MOJ	2.87E+01	3.16E+01	1.13E+02	1.19E-03	8.12E-03	2.30E-03	1.46E-02	1.44E-05	1.23E+00	2.08E-04	0.00E+00	3.76E-05	2.57E-04	7.29E-05	4.64E-04	4.57E-07	3.89E-02	6.58E-06	0.00E+00
2010 Annual	Mon-Sun	Pumps	D	175 Light Commercial Equipment	San Bernardino	MD	MOJ	3.10E+00	3.42E+00	2.18E+01	1.28E-04	1.28E-03	2.95E-04	2.55E-03	2.69E-06	2.39E-01	2.66E-05	0.00E+00	3.74E-05	3.75E-04	8.63E-05	7.46E-04	7.88E-07	7.00E-02	7.79E-06	0.00E+00
2010 Annual	Mon-Sun	Pumps	D	250 Light Commercial Equipment	San Bernardino	MD	MOJ	2.23E+00	2.46E+00	2.25E+01	7.53E-05	5.98E-04	1.98E-04	2.47E-03	2.79E-06	2.48E-01	1.78E-05	0.00E+00	3.06E-05	2.43E-04	8.02E-05	1.00E-03	1.13E-06	1.01E-01	7.24E-06	0.00E+00
2010 Annual	Mon-Sun	Pumps	D	500 Light Commercial Equipment	San Bernardino	MD	MOJ	4.41E-02	4.86E-02	7.60E-01	2.37E-06	2.29E-05	5.99E-06	7.60E-05	8.23E-08	8.38E-03	5.40E-07	0.00E+00	4.88E-05	4.72E-04	1.23E-04	1.56E-03	1.69E-06	1.72E-01	1.11E-05	0.00E+00
2010 Annual	Mon-Sun	Pumps	D	750 Light Commercial Equipment	San Bernardino	MD	MOJ	7.35E-03	8.10E-03	2.10E-01	6.63E-07	6.32E-06	1.70E-06	2.15E-05	2.32E-08	2.31E-03	1.53E-07	0.00E+00	8.18E-05	7.80E-04	2.10E-04	2.65E-03	2.87E-06	2.85E-01	1.89E-05	0.00E+00
2010 Annual	Mon-Sun	Air Compressors	D	50 Light Commercial Equipment	San Bernardino	MD	MOJ	6.88E+00	1.53E+01	1.60E+01	2.05E-04	2.17E-03	9.02E-04	1.83E-03	2.21E-06	1.71E-01	8.14E-05	0.00E+00	1.33E-05	1.42E-04	5.88E-05	1.20E-04	1.44E-07	1.11E-02	5.31E-06	0.00E+00
2010 Annual	Mon-Sun	Air Compressors	D	120 Light Commercial Equipment	San Bernardino	MD	MOJ	4.58E+01	1.02E+02	2.20E+02	2.81E-03	1.71E-02	5.24E-03	3.07E-02	2.81E-05	2.40E+00	4.72E-04	0.00E+00	2.75E-05	1.68E-04	5.13E-05	3.01E-04	2.75E-07	2.35E-02	4.63E-06	0.00E+00
2010 Annual	Mon-Sun	Air Compressors	D	175 Light Commercial Equipment	San Bernardino	MD	MOJ	1.73E+00	3.87E+00	1.56E+01	1.11E-04	9.89E-04	2.49E-04	1.96E-03	1.92E-06	1.71E-01	2.24E-05	0.00E+00	2.86E-05	2.56E-04	6.43E-05	5.08E-04	4.97E-07	4.42E-02	5.80E-06	0.00E+00
2010 Annual	Mon-Sun	Air Compressors	D	250 Light Commercial Equipment	San Bernardino	MD	MOJ	2.44E+00	5.44E+00	3.24E+01	1.26E-04	9.31E-04	3.36E-04	3.83E-03	4.01E-06	3.57E-01	3.03E-05	0.00E+00	2.32E-05	1.71E-04	6.17E-05	7.04E-04	7.38E-07	6.56E-02	5.57E-06	0.00E+00
2010 Annual	Mon-Sun	Air Compressors	D	500 Light Commercial Equipment	San Bernardino	MD	MOJ	3.18E+00	7.10E+00	7.46E+01	2.68E-04	2.41E-03	6.94E-04	7.88E-03	8.06E-06	8.21E-01	6.26E-05	0.00E+00	3.78E-05	3.40E-04	9.78E-05	1.11E-03	1.14E-06	1.16E-01	8.82E-06	0.00E+00
2010 Annual	Mon-Sun	Air Compressors	D	750 Light Commercial Equipment	San Bernardino	MD	MOJ	1.19E+00	2.65E+00	4.31E+01	1.57E-04	1.39E-03	4.08E-04	4.68E-03	4.78E-06	4.75E-01	3.68E-05	0.00E+00	5.92E-05	5.25E-04	1.54E-04	1.76E-03	1.80E-06	1.79E-01	1.39E-05	0.00E+00
2010 Annual	Mon-Sun	Welders	D	50 Light Commercial Equipment	San Bernardino	MD	MOJ	3.44E+01	6.05E+01	7.33E+01	8.76E-04	9.20E-03	3.76E-03	8.25E-03	1.01E-05	7.84E-01	3.40E-04	0.00E+00	1.45E-05	1.52E-04	6.22E-05	1.36E-04	1.68E-07	1.30E-02	5.62E-06	0.00E+00
2010 Annual	Mon-Sun	Welders	D	120 Light Commercial Equipment	San Bernardino	MD	MOJ	2.67E+01	4.70E+01	8.51E+01	1.02E-03	6.44E-03	1.92E-03	1.16E-02	1.09E-05	9.27E-01	1.73E-04	0.00E+00	2.16E-05	1.37E-04	4.08E-05	2.46E-04	2.31E-07	1.97E-02	3.68E-06	0.00E+00
2010 Annual	Mon-Sun	Welders	D	175 Light Commercial Equipment	San Bernardino	MD	MOJ	1.32E-01	2.33E-01	1.04E+00	6.91E-06	6.42E-05	1.57E-05	1.28E-04	1.28E-07	1.14E-02	1.41E-06	0.00E+00	2.97E-05	2.76E-04	6.73E-05	5.49E-04	5.52E-07	4.91E-02	6.07E-06	0.00E+00
2010 Annual	Mon-Sun	Welders	D	250 Light Commercial Equipment	San Bernardino	MD	MOJ	2.94E-02	5.17E-02	2.79E-01	1.04E-06	7.83E-06	2.74E-06	3.22E-05	3.46E-08	3.08E-03	2.47E-07	0.00E+00	2.01E-05	1.51E-04	5.30E-05	6.23E-04	6.69E-07	5.95E-02	4.78E-06	0.00E+00
2010 Annual	Mon-Sun	Welders	D	500 Light Commercial Equipment	San Bernardino	MD	MOJ	7.35E-02	1.29E-01	9.82E-01	3.38E-06	3.13E-05	8.63E-06	1.02E-04	1.06E-07	1.08E-02	7.79E-07	0.00E+00	2.61E-05	2.42E-04	6.68E-05	7.88E-04	8.22E-07	8.37E-02	6.02E-06	0.00E+00
2010 Annual	Mon-Sun	Pressure Washers	D	50 Light Commercial Equipment	San Bernardino	MD	MOJ	8.01E-01	3.18E-01	2.09E-01	1.84E-06	1.82E-05	6.64E-06	2.21E-05	2.93E-08	2.27E-03	5.99E-07	0.00E+00	5.79E-06	5.74E-05	2.09E-05	6.95E-05	9.23E-08	7.14E-03	1.89E-06	0.00E+00
2010 Annual	Mon-Sun	Pressure Washers	D	120 Light Commercial Equipment	San Bernardino	MD	MOJ	3.31E-01	1.31E-01	1.44E-01	1.28E-06	9.76E-06	2.57E-06	1.76E-05	1.85E-08	1.58E-03	2.32E-07	0.00E+00	9.72E-06	7.44E-05	1.96E-05	1.34E-04	1.41E-07	1.20E-02	1.77E-06	0.00E+00

Table C.4 Methane and Nitrous Oxide Emission Factors for Highway Vehicles by Model Year

Vehicle Types/Model Years	N ₂ O (g/mile)	CH ₄ (g/mile)
Gasoline Passenger Cars		
Model Years 1984-1993	0.0647	0.0704
Model Year 1994	0.0560	0.0531
Model Year 1995	0.0473	0.0358
Model Year 1996	0.0426	0.0272
Model Year 1997	0.0422	0.0268
Model Year 1998	0.0393	0.0249
Model Year 1999	0.0337	0.0216
Model Year 2000	0.0273	0.0178
Model Year 2001	0.0158	0.0110
Model Year 2002	0.0153	0.0107
Model Year 2003	0.0135	0.0114
Model Year 2004	0.0083	0.0145
Model Year 2005 - Present	0.0079	0.0147
Gasoline Light Trucks (Vans, Pickup Trucks, SUVs)		
Model Years 1987-1993	0.1035	0.0813
Model Year 1994	0.0982	0.0646
Model Year 1995	0.0908	0.0517
Model Year 1996	0.0871	0.0452
Model Year 1997	0.0871	0.0452
Model Year 1998	0.0728	0.0391
Model Year 1999	0.0564	0.0321
Model Year 2000	0.0621	0.0346
Model Year 2001	0.0164	0.0151
Model Year 2002	0.0228	0.0178
Model Year 2003	0.0114	0.0155
Model Year 2004	0.0132	0.0152
Model Year 2005 - Present	0.0101	0.0157

Table C.4 Methane and Nitrous Oxide Emission Factors for Highway Vehicles by Model Year (continued)

Vehicle Types/Model Years	N ₂ O (g/mile)	CH ₄ (g/mile)
Gasoline Heavy-Duty Vehicles		
Model Years 1985-1986	0.0515	0.4090
Model Year 1987	0.0849	0.3675
Model Years 1988-1989	0.0933	0.3492
Model Years 1990-1995	0.1142	0.3246
Model Year 1996	0.1680	0.1278
Model Year 1997	0.1726	0.0924
Model Year 1998	0.1693	0.0641
Model Year 1999	0.1435	0.0578
Model Year 2000	0.1092	0.0493
Model Year 2001	0.1235	0.0528
Model Year 2002	0.1307	0.0546
Model Year 2003	0.1240	0.0533
Model Year 2004	0.0285	0.0341
Model Year 2005 - Present	0.0177	0.0326
Diesel Passenger Cars		
Model Years 1960-1982	0.0012	0.0006
Model Years 1983 - Present	0.0010	0.0005
Diesel Light Trucks		
Model Years 1960-1982	0.0017	0.0011
Model Years 1983-1995	0.0014	0.0009
Model Years 1996 - Present	0.0015	0.0010
Diesel Heavy-Duty Vehicles		
All Model Years	0.0048	0.0051

Source: Gasoline vehicle factors from EPA Climate Leaders, Mobile Combustion Guidance, (2008) based on U.S. EPA, Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2005 (2007). Diesel vehicle factors based on U.S. EPA, Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2005 (2007), Annex 3.2, Table A-98.

Reference source 2: Table C.6, California Climate Action Registry General Reporting Protocol Version 3.1, January 2009

Table C.6 Methane and Nitrous Oxide Emission Factors for Non-Highway Vehicles

Vehicle Type/Fuel Type	N ₂ O (g/gallon)	CH ₄ (g/gallon)
Ships & Boats		
Residual Fuel Oil	0.30	0.86
Diesel Fuel	0.26	0.74
Gasoline	0.22	0.64
Locomotives		
Diesel Fuel	0.26	0.80
Agricultural Equipment		
Gasoline	0.22	1.26
Diesel Fuel	0.26	1.44
Construction		
Gasoline	0.22	0.50
Diesel Fuel	0.26	0.58
Other Non-Highway		
Snowmobiles (Gasoline)	0.22	0.50
Other Recreational (Gasoline)	0.22	0.50
Other Small Utility (Gasoline)	0.22	0.50
Other Large Utility (Gasoline)	0.22	0.50
Other Large Utility (Diesel)	0.26	0.58
Aircraft		
Jet Fuel	0.31	0.27
Aviation Gasoline	0.11	7.04
All Non-Highway/Construction Vehicles		
Butane*	0.41	0.09
Propane*	0.41	0.09

Source: U.S. EPA, Climate Leaders, Mobile Combustion Guidance (2008) based on U.S. EPA Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2005 (2007), Annex 3.2, Table A-101, except butane and propane.
 * Butane and propane emission factors based on stationary combustion emission factors for these fuels from U.S. EPA, Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2000 (2002).

Reference source 3: Tier 2/Bin 3 Federal emissions standard.

Summary of Current and Historical Light-Duty Vehicle Emission Standards

US EPA Federal Light-Duty Vehicle Emission Standards for Air Pollutants									
Tier 2 Program									
Standard	Model Year	Vehicles	Emission Limits at Full Useful Life (100,000-120,000 miles)					Air Pollution Score	
			Maximum Allowed Grams per Mile						
			NOx	NMOG	CO	PM	HCHO		
Bin 1	2004+	LDV, LLDT, HLDT, MDPV	0.00	0.000	0.0	0.0	0.0	10	
Bin 2	2004+	LDV, LLDT, HLDT, MDPV	0.02	0.010	2.1	0.01	0.004	9	
Bin 3	2004+	LDV, LLDT, HLDT, MDPV	0.03	0.055	2.1	0.01	0.011	8	
Bin 4	2004+	LDV, LLDT, HLDT, MDPV	0.04	0.070	2.1	0.01	0.011	7	
Bin 5	2004+	LDV, LLDT, HLDT, MDPV	0.07	0.090	4.2	0.01	0.018	6	
Bin 6	2004+	LDV, LLDT, HLDT, MDPV	0.10	0.090	4.2	0.01	0.018	5	
Bin 7	2004+	LDV, LLDT, HLDT, MDPV	0.15	0.090	4.2	0.02	0.018	4	
Bin 8a	2004+	LDV, LLDT, HLDT, MDPV	0.20	0.125	4.2	0.02	0.018	3	
Bin 8b	2004-2008	HLDT, MDPV	0.20	0.156	4.2	0.02	0.018	3	
Bin 9a	2004-2006	LDV, LLDT	0.30	0.090	4.2	0.06	0.018	2	
Bin 9b	2004-2006	LDT2	0.30	0.130	4.2	0.06	0.018	2	
Bin 9c	2004-2008	HLDT, MDPV	0.30	0.180	4.2	0.06	0.018	2	
Bin 10a	2004-2006	LDV, LLDT	0.60	0.156	4.2	0.08	0.018	1	
Bin 10b	2004-2008	HLDT, MDPV	0.60	0.230	6.4	0.08	0.027	1	
Bin 10c	2004-2008	LDT4, MDPV	0.60	0.280	6.4	0.08	0.027	1	
Bin 11	2004-2008	MDPV	0.90	0.280	7.3	0.12	0.032	0	



**BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT
COMMISSION OF THE STATE OF CALIFORNIA
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**APPLICATION FOR CERTIFICATION
For the CALICO SOLAR (Formerly SES Solar One)**

Docket No. 08-AFC-13

PROOF OF SERVICE

(Revised 6/14/10)

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DECLARATION OF SERVICE

I, Darin Neufeld, declare that on August 4, 2010, I served and filed copies of the attached Applicant's Submittal of Additional Air Quality Analysis Discussed at the August 4, 2010 Hearing. The original document, filed with the Docket Unit, is accompanied by a copy of the most recent Proof of Service list, located on the web page for this project at:
[www.energy.ca.gov/sitingcases/solarone].

The documents have been sent to both the other parties in this proceeding (as shown on the Proof of Service list) and to the Commission's Docket Unit, in the following manner:

(Check all that Apply)

FOR SERVICE TO ALL OTHER PARTIES:

- sent electronically to all email addresses on the Proof of Service list;
 by personal delivery;
 by delivering on this date, for mailing with the United States Postal Service with first-class postage thereon fully prepaid, to the name and address of the person served, for mailing that same day in the ordinary course of business; that the envelope was sealed and placed for collection and mailing on that date to those addresses **NOT** marked "email preferred."

AND

FOR FILING WITH THE ENERGY COMMISSION:

- sending an original paper copy and one electronic copy, mailed and emailed respectively, to the address below (*preferred method*);

OR

- depositing in the mail an original and 12 paper copies, as follows:

CALIFORNIA ENERGY COMMISSION

Attn: Docket No. 08-AFC-13
1516 Ninth Street, MS-4
Sacramento, CA 95814-5512
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I declare under penalty of perjury that the foregoing is true and correct, that I am employed in the county where this mailing occurred, and that I am over the age of 18 years and not a party to the proceeding.

Original Signed By _____

Darin Neufeld