

***Appendix B***  
***Air Quality and Greenhouse Gas***  
***Emissions Calculations***

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Appendix F1-A:

Table A1: Construction Schedule

	TASK	Days	Week																																																					
			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																
Substation	TS-1: Civil Construction	100	█																																																					
Sub Electrical	TS-2: MEER	120																																																						
	TS-3: Transformer Testing and Preparation																																																							
	TS-4: Electrical Construction																																																							
	TS-5: Transformer Installation																																																							
	TS-7: Test Crew																																																							
Sub Paving	TS-6: Paving	10																																						█																
115 kV	ST-1: Installing Steel Pole Footings	14																																																						
	ST-2: Setting New Steel Poles	7																																																						
	ST-3: Installing Overhead Conductor	5																																																						
12 kV	12 Kv Distribution Line Getaway	2																																																						
Telecommunications	TL-1: Substation Communications Installation	40																																																						
	TL-2: Overhead Communications Installation	25																																																						
	TL-3: Underground Trenching	6																																																						
	TL-4: Underground Cable Installation	6																																																						

**Appendix F1-A**

Table A2: Maximum Daily Emissions

**Maximum Daily Construction Emissions**

	<b>CO (lb/day)</b>	<b>NOx (lb/day)</b>	<b>ROG (lb/day)</b>	<b>SOx (lb/day)</b>	<b>PM<sub>10</sub> (lb/day)</b>	<b>PM<sub>2.5</sub> (lb/day)</b>
Maximum Construction Equipment Exhaust	47	82	10	0.1	3.7	3.4
Maximum Workers Commute	28	2.9	2.8	0.03	0.24	0.15
Maximum Fugitive Dust	NA	NA	NA	NA	40.2	6.9
<b>Maximum Combined Daily Emissions</b>	<b>70</b>	<b>85</b>	<b>12</b>	<b>0.12</b>	<b>44</b>	<b>10</b>
<b>SCAQMD Thresholds</b>	550	100	75	150	150	55
<b>Exceeding Thresholds?</b>	NO	NO	NO	NO	NO	NO

**Maximum Daily Operation Emissions**

	<b>CO (lb/day)</b>	<b>NOx (lb/day)</b>	<b>ROG (lb/day)</b>	<b>SOx (lb/day)</b>	<b>PM<sub>10</sub> (lb/day)</b>	<b>PM<sub>2.5</sub> (lb/day)</b>
Maximum Vehicle Exhaust	0.775	0.080	0.079	0.00085	0.0069	0.0043
Maximum Fugitive Dust	NA	NA	NA	NA	0.95	0.16
<b>Maximum Combined Daily Emissions</b>	<b>0.77</b>	<b>0.080</b>	<b>0.079</b>	<b>0.00085</b>	<b>0.96</b>	<b>0.17</b>
<b>SCAQMD Thresholds</b>	550	55	55	150	150	55
<b>Exceeding Thresholds?</b>	NO	NO	NO	NO	NO	NO

Appendix F1-A:  
 Table A3: Summary of Daily Emissions by Construction Phase - Proposed Project  
 1. Total Emissions without Watering

Construction Phases		Total Emissions without Watering (lb/day)									
		CO	NOx	ROG	SOx	PM <sub>10</sub> Exhaust	PM <sub>10</sub> Fugitive	PM <sub>10</sub> Total	PM <sub>2.5</sub> Exhaust	PM <sub>2.5</sub> Fugitive	PM <sub>2.5</sub> Total
a	TS-1: Civil Construction - Below Grade/Perimeter Wall Construction and Localized Fine Grading	14.94	23.76	3.10	0.03	1.13	4.30	5.42	1.02	0.73	1.74
b1	TS-2: MEER	7.24	2.58	0.81	0.01	0.12	6.68	6.80	0.09	1.13	1.22
b2	TS-3: Transformer Testing and Preparation	11.19	11.82	2.03	0.02	0.67	8.12	8.78	0.59	1.37	1.96
b3	TS-4: Electrical Construction	9.35	11.31	1.58	0.02	0.50	5.25	5.75	0.44	0.89	1.33
b4	TS-5: Transformer Installation	10.15	17.41	2.33	0.02	0.86	2.86	3.72	0.78	0.48	1.27
c	TS-6: Paving	22.97	42.36	7.86	0.05	2.00	3.82	5.82	1.83	0.65	2.47
b5	TS-7: Test Crew	2.59	2.09	0.33	0.00	0.08	0.95	1.03	0.07	0.16	0.23
d	ST-1: Installing Steel Pole Footings	14.58	20.36	2.38	0.03	0.84	5.25	6.09	0.75	0.89	1.64
e	ST-2: Setting New Steel Poles	26.80	39.37	4.83	0.05	1.67	9.55	11.22	1.50	1.61	3.11
f	ST-3: Installing Overhead Conductor	19.34	31.86	3.77	0.04	1.41	7.16	8.57	1.27	1.21	2.48
g	12 Kv Distribution Line Getaway	8.22	7.68	1.36	0.01	0.47	5.25	5.72	0.42	0.89	1.31
h	TL-1: Substation Communications Installation	2.32	0.24	0.24	0.00	0.02	2.86	2.88	0.01	0.48	0.50
i	TL-2: Overhead Communications Installation	4.63	10.20	0.95	0.01	0.49	1.91	2.40	0.43	0.32	0.75
j	TL-3: Underground Trenching	6.37	8.14	1.28	0.01	0.54	1.91	2.45	0.49	0.32	0.81
k	TL-4: Underground Cable Installation	8.89	10.65	1.39	0.02	0.53	7.16	7.69	0.45	1.21	1.66
l	Grading and Stock Piles (entire project)	0.00	0.00	0.00	0.00	0.00	5.00	5.00	0.00	1.04	1.04
Overlapping Phases											
a		15	24	3.1	0.03	1.1	9	10	1.0	1.8	2.8
ab		55	69	10.2	0.09	3.4	33	37	3.0	5.8	8.8
bd		55	66	9.5	0.09	3.1	34	37	2.7	6.0	8.7
beh		70	85	12.2	0.12	3.9	41	45	3.5	7.2	10.7
bfn		62	77	11.1	0.11	3.7	39	43	3.2	6.8	10.0
bghi		56	63	9.6	0.09	3.2	39	42	2.8	6.8	9.6
bhi		47	56	8.3	0.08	2.7	34	36	2.4	5.9	8.3
bhijk		63	74	10.9	0.10	3.8	43	47	3.4	7.4	10.8
<b>Maximum Daily Emissions</b>		<b>70</b>	<b>85</b>	<b>12</b>	<b>0.12</b>	<b>3.9</b>	<b>43</b>	<b>47</b>	<b>3.5</b>	<b>7.4</b>	<b>11</b>

Note:

- Based on the construction schedule, emissions from overlapping construction phases were added together to evaluate the worst case scenarios. The maximum daily emissions represent the scenario of overlapping phases with the highest emissions.
- Fugitive dust emissions from site grading/disturbance were not calculated for each construction phase. The emissions were calculated separately based on a maximum area of disturbance.
- The fugitive dusts from site disturbance were assumed to be controlled by 50% by watering the site twice per day, according to the control efficiencies in SCAQMD CEQA Air Quality Handbook Table 11-4.

Appendix F1-A:  
 Table A3: Summary of Daily Emissions by Construction  
 1. Total Emissions without Watering      2. Total Emissions with Watering

Construction Phases		Total Emissions with Watering (lb/day)									
		CO	NOx	ROG	SOx	PM <sub>10</sub> Exhaust	PM <sub>10</sub> Fugitive	PM <sub>10</sub> Total	PM <sub>2.5</sub> Exhaust	PM <sub>2.5</sub> Fugitive	PM <sub>2.5</sub> Total
a	TS-1: Civil Construction - Below Grade/Perimeter Wall Construction and Localized Fine Grading	16.10	27.52	3.39	0.03	1.31	4.30	5.60	1.18	0.73	1.90
b1	TS-2: MEER	7.24	2.58	0.81	0.01	0.12	6.68	6.80	0.09	1.13	1.22
b2	TS-3: Transformer Testing and Preparation	11.19	11.82	2.03	0.02	0.67	8.12	8.78	0.59	1.37	1.96
b3	TS-4: Electrical Construction	9.35	11.31	1.58	0.02	0.50	5.25	5.75	0.44	0.89	1.33
b4	TS-5: Transformer Installation	10.15	17.41	2.33	0.02	0.86	2.86	3.72	0.78	0.48	1.27
c	TS-6: Paving	22.97	42.36	7.86	0.05	2.00	3.82	5.82	1.83	0.65	2.47
b5	TS-7: Test Crew	2.59	2.09	0.33	0.00	0.08	0.95	1.03	0.07	0.16	0.23
d	ST-1: Installing Steel Pole Footings	14.58	20.36	2.38	0.03	0.84	5.25	6.09	0.75	0.89	1.64
e	ST-2: Setting New Steel Poles	26.80	39.37	4.83	0.05	1.67	9.55	11.22	1.50	1.61	3.11
f	ST-3: Installing Overhead Conductor	19.34	31.86	3.77	0.04	1.41	7.16	8.57	1.27	1.21	2.48
g	12 Kv Distribution Line Getaway	8.22	7.68	1.36	0.01	0.47	5.25	5.72	0.42	0.89	1.31
h	TL-1: Substation Communications Installation	2.32	0.24	0.24	0.00	0.02	2.86	2.88	0.01	0.48	0.50
i	TL-2: Overhead Communications Installation	4.63	10.20	0.95	0.01	0.49	1.91	2.40	0.43	0.32	0.75
j	TL-3: Underground Trenching	6.37	8.14	1.28	0.01	0.54	1.91	2.45	0.49	0.32	0.81
k	TL-4: Underground Cable Installation	8.89	10.65	1.39	0.02	0.53	7.16	7.69	0.45	1.21	1.66
l	Grading and Stock Piles (entire project)	0.00	0.00	0.00	0.00	0.00	2.50	2.50	0.00	0.52	0.52
Overlapping Phases											
a		16	28	3.4	0.03	1.3	6.8	8	1.2	1.2	2.4
ab		57	73	10.5	0.10	3.5	31	34	3.1	5.3	8.4
bd		55	66	9.5	0.09	3.1	32	35	2.7	5.4	8.2
beh		70	85	12.2	0.12	3.9	39	43	3.5	6.7	10.1
bfn		62	77	11.1	0.11	3.7	36	40	3.2	6.2	9.5
bghi		56	63	9.6	0.09	3.2	36	40	2.8	6.2	9.1
bhi		47	56	8.3	0.08	2.7	31	34	2.4	5.4	7.8
bhijk		63	74	10.9	0.10	3.8	40	44	3.4	6.9	10.2
<b>Maximum Daily Emissions</b>		<b>70</b>	<b>85</b>	<b>12</b>	<b>0.12</b>	<b>3.9</b>	<b>40</b>	<b>44</b>	<b>3.5</b>	<b>6.9</b>	<b>10</b>

Appendix F1-A:  
Table A3: Summary of Daily Emissions by Construction  
1. Total Emissions without Watering

3. Construction Equipment and Vehicle Exhaust

4. Workers Commute

Construction Phases	Construction Equipment and Vehicle Exhaust (lb/day)						Workers Commute (lb/day)						
	CO	NOx	ROG	SOx	PM <sub>10</sub> Exhaust	PM <sub>2.5</sub> Exhaust	CO	NOx	ROG	SOx	PM <sub>10</sub> Exhaust	PM <sub>2.5</sub> Exhaust	
a	TS-1: Civil Construction - Below Grade/Perimeter Wall Construction and Localized Fine Grading	13.39	23.60	2.94	0.03	1.11	1.01	1.550	0.161	0.159	0.002	0.014	0.009
b1	TS-2: MEER	1.81	2.01	0.25	0.00	0.07	0.06	5.424	0.563	0.556	0.006	0.048	0.030
b2	TS-3: Transformer Testing and Preparation	5.38	11.21	1.43	0.01	0.62	0.56	5.811	0.603	0.595	0.006	0.052	0.032
b3	TS-4: Electrical Construction	5.48	10.91	1.18	0.01	0.47	0.42	3.874	0.402	0.397	0.004	0.034	0.022
b4	TS-5: Transformer Installation	7.83	17.17	2.09	0.02	0.84	0.77	2.325	0.241	0.238	0.003	0.021	0.013
c	TS-6: Paving	20.65	42.12	7.62	0.04	1.98	1.81	2.325	0.241	0.238	0.003	0.021	0.013
b5	TS-7: Test Crew	1.81	2.01	0.25	0.00	0.07	0.06	0.775	0.080	0.079	0.001	0.007	0.004
d	ST-1: Installing Steel Pole Footings	12.26	20.12	2.14	0.03	0.82	0.74	2.325	0.241	0.238	0.003	0.021	0.013
e	ST-2: Setting New Steel Poles	22.92	38.96	4.44	0.05	1.64	1.48	3.874	0.402	0.397	0.004	0.034	0.022
f	ST-3: Installing Overhead Conductor	15.47	31.46	3.37	0.04	1.38	1.24	3.874	0.402	0.397	0.004	0.034	0.022
g	12 Kv Distribution Line Getaway	5.12	7.36	1.04	0.01	0.44	0.40	3.099	0.322	0.318	0.003	0.028	0.017
h	TL-1: Substation Communications Installation	1.55	0.16	0.16	0.00	0.01	0.01	0.775	0.080	0.079	0.001	0.007	0.004
i	TL-2: Overhead Communications Installation	3.08	10.04	0.79	0.01	0.48	0.42	1.550	0.161	0.159	0.002	0.014	0.009
j	TL-3: Underground Trenching	5.21	8.02	1.17	0.01	0.53	0.48	1.162	0.121	0.119	0.001	0.010	0.006
k	TL-4: Underground Cable Installation	3.08	10.04	0.79	0.01	0.48	0.42	5.811	0.603	0.595	0.006	0.052	0.032
l	Grading and Stock Piles (entire project)	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000	0.000	0.000	0.000	0.000
Overlapping Phases													
a		13	24	2.9	0.03	1.1	1.0	2	0.16	0.16	0.002	0.01	0.01
ab		36	67	8.2	0.07	3.2	2.9	20	2.05	2.02	0.022	0.18	0.11
bd		35	63	7.4	0.07	2.9	2.6	21	2.13	2.10	0.023	0.18	0.11
beh		47	82	9.8	0.09	3.7	3.4	23	2.37	2.34	0.025	0.20	0.13
bfn		39	75	8.7	0.08	3.5	3.1	23	2.37	2.34	0.025	0.20	0.13
bghi		32	61	7.2	0.06	3.0	2.7	24	2.45	2.42	0.026	0.21	0.13
bhi		27	54	6.2	0.05	2.6	2.3	21	2.13	2.10	0.023	0.18	0.11
bhijk		35	72	8.1	0.07	3.6	3.2	28	2.85	2.82	0.030	0.24	0.15
<b>Maximum Daily Emissions</b>													
		<b>47</b>	<b>82</b>	<b>10</b>	<b>0.09</b>	<b>3.7</b>	<b>3.4</b>	<b>28</b>	<b>2.9</b>	<b>2.8</b>	<b>0.030</b>	<b>0.24</b>	<b>0.15</b>

**Appendix F1-A:**

Table A4: Construction Equipment Usage and Emission Factors

Triton Substation (TS)

TS-1: Civil Construction - Below Grade/Perimeter Wall Construction and Localized Fine Grading

Equipment Description	All Equipment		Per Truck			Equipment type	Emission Factors								
	Units	Maximum daily hours	Miles per round trip	Daily roundtrips	Miles on paved road		Emission factor unit	CO	NOx	ROG	SOx	PM <sub>10</sub> Exhaust	PM <sub>10</sub> Fugitive Dust	PM <sub>2.5</sub> Exhaust	PM <sub>2.5</sub> Fugitive Dust
	(Ea.)	(hrs/day)	Miles/RT	RT/day	miles/day										
Crew Truck	2	2	30	1	30	On-road Delivery (construction site)	lb/VMT	0.020	0.022	0.003	0.000	0.00081	0.000	0.00069	0.000
Dump Truck	1	6	40	3	120	On-road Delivery	lb/VMT	0.020	0.022	0.003	0.000	0.00081	0.012	0.00069	0.002
Concrete Truck	1	3	40	2	80	On-road Delivery	lb/VMT	0.020	0.022	0.003	0.00003	0.00081	0.012	0.00069	0.002
Bobcat	1	3	NA	NA	NA	Other Construction Equipment	lb/hr	0.429	1.081	0.113	0.001	0.04709	0.000	0.04332	0.000
Skip Loader	1	4	NA	NA	NA	Skid Steer Loaders	lb/hr	0.257	0.306	0.078	0.000	0.02758	0.000	0.02537	0.000
Forklift	1	4	NA	NA	NA	Forklifts	lb/hr	0.237	0.556	0.074	0.001	0.03024	0.000	0.02782	0.000
Stake Truck	1	2	30	1	30	On-road Delivery (construction site)	lb/VMT	0.020	0.022	0.003	0.000	0.00081	0.000	0.00069	0.000
Carry-all	1	4	NA	NA	NA	Other Construction Equipment	lb/hr	0.429	1.081	0.113	0.001	0.04709	0.000	0.04332	0.000
Grader	1	4	NA	NA	NA	Graders	lb/hr	0.643	1.524	0.183	0.001	0.07958	0.000	0.07321	0.000
Water Truck	1	6	90	1	90	On-road HHDT (construction site)	lb/VMT	0.013	0.042	0.003	0.000	0.00200	0.000	0.00175	0.000
Worker Commute	4	NA	40	1	40	On-road passenger	lb/VMT	0.010	0.001	0.001	0.000	0.0000860	0.012	0.00005	0.002

TS-2: MEER

Equipment Description	All Equipment		Per Truck			Equipment type	Emission Factors								
	Units	Maximum daily hours	Miles per round trip	Daily roundtrips	Miles on paved road		Emission factor unit	CO	NOx	ROG	SOx	PM <sub>10</sub> Exhaust	PM <sub>10</sub> Fugitive Dust	PM <sub>2.5</sub> Exhaust	PM <sub>2.5</sub> Fugitive Dust
	(Ea.)	(hrs/day)	Miles/RT	RT/day	miles/day										
Stake Truck	1	2	30	1	30	On-road Delivery (construction site)	lb/VMT	0.020	0.022	0.003	0.000	0.00081	0.000	0.00069	0.000
Crew Truck	2	2	30	1	30	On-road Delivery (construction site)	lb/VMT	0.020	0.022	0.003	0.000	0.00081	0.000	0.00069	0.000
Worker Commute	14	NA	40	1	40	On-road passenger	lb/VMT	0.010	0.001	0.001	0.000	0.00009	0.012	0.00005	0.002

TS-3: Transformer Testing and Preparation

Equipment Description	All Equipment		Per Truck			Equipment type	Emission Factors								
	Units	Maximum daily hours	Miles per round trip	Daily roundtrips	Miles on paved road		Emission factor unit	CO	NOx	ROG	SOx	PM <sub>10</sub> Exhaust	PM <sub>10</sub> Fugitive Dust	PM <sub>2.5</sub> Exhaust	PM <sub>2.5</sub> Fugitive Dust
	(Ea.)	(hrs/day)	Miles/RT	RT/day	miles/day										
Diesel Generator	1	6	NA	NA	NA	Generator Sets	lb/hr	0.338	0.672	0.102	0.001	0.04139	0.000	0.03808	0.000
Lift Truck	1	3	45	1	45	On-road HHDT (construction site)	lb/VMT	0.013	0.042	0.003	0.000	0.00200	0.000	0.00175	0.000
Pick Up	2	2	40	1	40	On-road passenger	lb/VMT	0.010	0.001	0.001	0.000	0.00009	0.012	0.0000538	0.002
Boom truck	1	3	45	1	45	On-road HHDT (construction site)	lb/VMT	0.013	0.042	0.003	0.000	0.00200	0.000	0.00175	0.000
Forklift	1	6	NA	NA	NA	Forklifts	lb/hr	0.237	0.556	0.074	0.001	0.03024	0.000	0.02782	0.000
Worker Commute	15	NA	40	1	40	On-road passenger	lb/VMT	0.010	0.001	0.001	0.000	0.00009	0.012	0.00005	0.002



**TS-4: Electrical Construction**

Equipment Description	All Equipment		Per Truck			Equipment type	Emission Factors								
	Units	Maximum daily hours	Miles per round trip	Daily roundtrips	Miles on paved road		Emission factor unit	CO	NOx	ROG	SOx	PM <sub>10</sub> Exhaust	PM <sub>10</sub> Fugitive Dust	PM <sub>2.5</sub> Exhaust	PM <sub>2.5</sub> Fugitive Dust
	(Ea.)	(hrs/day)	Miles/RT	RT/day	miles/day										
Boom Truck	1	3	45	1	45	On-road HHDT (construction site)	lb/VMT	0.013	0.042	0.003	0.00004	0.00200	0.000	0.00175	0.000
Crew Truck	3	2	30	1	30	On-road Delivery (construction site)	lb/VMT	0.020	0.022	0.003	0.000	0.00081	0.000	0.00069	0.000
Flatbed	1	2	40	1	40	On-road Delivery	lb/VMT	0.020	0.022	0.003	0.000	0.00081	0.012	0.00069	0.002
Crane	1	4	NA	NA	NA	Cranes	lb/hr	0.571	1.529	0.168	0.001	0.06780	0.000	0.06237	0.000
Worker Commute	10	NA	40	1	40	On-road passenger	lb/VMT	0.010	0.001	0.001	0.000	0.00009	0.012	0.00005	0.002

**TS-5: Transformer Installation**

Equipment Description	All Equipment		Per Truck			Equipment type	Emission Factors								
	Units	Maximum daily hours	Miles per round trip	Daily roundtrips	Miles on paved road		Emission factor unit	CO	NOx	ROG	SOx	PM <sub>10</sub> Exhaust	PM <sub>10</sub> Fugitive Dust	PM <sub>2.5</sub> Exhaust	PM <sub>2.5</sub> Fugitive Dust
	(Ea.)	(hrs/day)	Miles/RT	RT/day	miles/day										
Forklift	1	6	NA	NA	NA	Forklifts	lb/hr	0.237	0.556	0.074	0.001	0.03024	0.000	0.02782	0.000
Crew Truck	2	2	30	1	30	On-road Delivery (construction site)	lb/VMT	0.020	0.022	0.003	0.000	0.00081	0.000	0.00069	0.000
Tractor Truck	1	6	NA	NA	NA	Off-Highway Tractors	lb/hr	0.866	2.082	0.247	0.00167	0.10171	0.000	0.09358	0.000
Worker Commute	6	NA	40	1	40	On-road passenger	lb/VMT	0.010	0.001	0.001	0.000	0.00009	0.012	0.00005	0.002

**TS-6: Paving**

Equipment Description	All Equipment		Per Truck			Equipment type	Emission Factors								
	Units	Maximum daily hours	Miles per round trip	Daily roundtrips	Miles on paved road		Emission factor unit	CO	NOx	ROG	SOx	PM <sub>10</sub> Exhaust	PM <sub>10</sub> Fugitive Dust	PM <sub>2.5</sub> Exhaust	PM <sub>2.5</sub> Fugitive Dust
	(Ea.)	(hrs/day)	Miles/RT	RT/day	miles/day										
Stake Truck	1	4	60	1	60	On-road Delivery (construction site)	lb/VMT	0.020	0.022	0.003	0.000	0.00081	0.000	0.00069	0.000
Crew Truck	2	2	30	1	30	On-road Delivery (construction site)	lb/VMT	0.020	0.022	0.003	0.000	0.00081	0.000	0.00069	0.000
Tractor	1	3	NA	NA	NA	Tractors/Loaders/Backhoes	lb/hr	0.399	0.723	0.111	0.001	0.05590	0.000	0.05143	0.000
Dump Truck	1	3	40	2	80	On-road Delivery	lb/VMT	0.020	0.022	0.003	0.000	0.00081	0.012	0.00069	0.002
Barbergreen	1	8	NA	NA	NA	Other Construction Equipment	lb/hr	0.429	1.081	0.113	0.001	0.04709	0.000	0.04332	0.000
Paddle Scraper	1	6	NA	NA	NA	Scrapers	lb/hr	1.328	3.063	0.335	0.003	0.13214	0.000	0.12157	0.000
Asphalt Paver	1	4	NA	NA	NA	Pavers	lb/hr	0.576	1.032	0.187	0.001	0.07388	0.000	0.06797	0.000
Bobcat	1	4	NA	NA	NA	Other Construction Equipment	lb/hr	0.429	1.081	0.113	0.001	0.04709	0.000	0.04332	0.000
Worker Commute	6	NA	40	1	40	On-road passenger	lb/VMT	0.010	0.001	0.001	0.000	0.00009	0.012	0.00005	0.002
	<b>Daily Amount</b>	<b>Unit</b>				Paving	lb ROG/acre	0.000	0.000	2.620	0.000	0.000	0.000	0.000	0.000
Paving	1	acre													

**TS-7: Test Crew**

Equipment Description	All Equipment		Per Truck			Equipment type	Emission Factors								
	Units	Maximum daily hours	Miles per round trip	Daily roundtrips	Miles on paved road		Emission factor unit	CO	NOx	ROG	SOx	PM <sub>10</sub> Exhaust	PM <sub>10</sub> Fugitive Dust	PM <sub>2.5</sub> Exhaust	PM <sub>2.5</sub> Fugitive Dust
	(Ea.)	(hrs/day)	Miles/RT	RT/day	miles/day										
Test Truck	2	3	45	1	45	On-road Delivery (construction site)	lb/VMT	0.020	0.022	0.003	0.000	0.00081	0.000	0.00069	0.000
Worker Commute	2	NA	40	1	40	On-road passenger	lb/VMT	0.010	0.001	0.001	0.000	0.00009	0.012	0.00005	0.002

15 kV Subtransmission Line Installation

ST-1: Installing Steel Pole Footings

Equipment Description	All Equipment		Per Truck			Equipment type	Emission Factors								
	Units	Maximum daily hours	Miles per round trip	Daily roundtrips	Miles on paved road		Emission factor unit	CO	NOx	ROG	SOx	PM <sub>10</sub> Exhaust	PM <sub>10</sub> Fugitive Dust	PM <sub>2.5</sub> Exhaust	PM <sub>2.5</sub> Fugitive Dust
	(Ea.)	(hrs/day)	Miles/RT	RT/day	miles/day										
Utility Truck	1	10	150	1	150	On-road Delivery (construction site)	lb/VMT	0.020	0.022	0.003	0.000	0.00081	0.000	0.00069	0.000
Drill Rig	1	10	NA	NA	NA	Bore/Drill Rigs	lb/hr	0.520	1.229	0.116	0.002	0.05406	0.000	0.04974	0.000
Concrete Truck	1	10	40	5	200	On-road Delivery	lb/VMT	0.020	0.022	0.003	0.000	0.00081	0.012	0.00069	0.002
Worker Commute	6	NA	40	1	40	On-road passenger	lb/VMT	0.010	0.001	0.001	0.000	0.00009	0.012	0.00005	0.002

ST-2: Setting New Steel Poles

Equipment Description	All Equipment		Per Truck			Equipment type	Emission Factors								
	Units	Maximum daily hours	Miles per round trip	Daily roundtrips	Miles on paved road		Emission factor unit	CO	NOx	ROG	SOx	PM <sub>10</sub> Exhaust	PM <sub>10</sub> Fugitive Dust	PM <sub>2.5</sub> Exhaust	PM <sub>2.5</sub> Fugitive Dust
	(Ea.)	(hrs/day)	Miles/RT	RT/day	miles/day										
Concrete Truck	1	10	40	5	200	On-road Delivery	lb/VMT	0.020	0.022	0.003	0.000	0.00081	0.012	0.00069	0.002
Drill Rig	1	10	NA	NA	NA	Bore/Drill Rigs	lb/hr	0.520	1.229	0.116	0.002	0.05406	0.000	0.04974	0.000
Crane	1	10	NA	NA	NA	Cranes	lb/hr	0.571	1.529	0.168	0.001	0.06780	0.000	0.06237	0.000
Crew Truck	1	10	150	1	150	On-road Delivery (construction site)	lb/VMT	0.020	0.022	0.003	0.000	0.00081	0.000	0.00069	0.000
Utility Truck	1	10	150	1	150	On-road Delivery (construction site)	lb/VMT	0.020	0.022	0.003	0.000	0.00081	0.000	0.00069	0.000
SUV	1	10	40	5	200	On-road passenger	lb/VMT	0.010	0.001	0.001	0.000	0.00009	0.012	0.00005	0.002
Worker Commute	10	NA	40	1	40	On-road passenger	lb/VMT	0.010	0.001	0.001	0.000	0.00009	0.012	0.00005	0.002

ST-3: Installing Overhead Conductor

Equipment Description	All Equipment		Per Truck			Equipment type	Emission Factors								
	Units	Maximum daily hours	Miles per round trip	Daily roundtrips	Miles on paved road		Emission factor unit	CO	NOx	ROG	SOx	PM <sub>10</sub> Exhaust	PM <sub>10</sub> Fugitive Dust	PM <sub>2.5</sub> Exhaust	PM <sub>2.5</sub> Fugitive Dust
	(Ea.)	(hrs/day)	Miles/RT	RT/day	miles/day										
Conductor Pulling Machine	1	10	NA	NA	NA	Other Construction Equipment	lb/hr	0.429	1.081	0.113	0.00127	0.04709	0.000	0.04332	0.000
Cable Dolly	1	10	NA	NA	NA	Other Construction Equipment	lb/hr	0.429	1.081	0.113	0.001	0.04709	0.000	0.04332	0.000
Utility Truck	1	10	150	1	150	On-road Delivery (construction site)	lb/VMT	0.020	0.022	0.003	0.000	0.00081	0.000	0.00069	0.000
Line Truck	1	10	150	1	150	On-road HHDT (construction site)	lb/VMT	0.013	0.042	0.003	0.000	0.00200	0.000	0.00175	0.000
SUV	1	10	40	5	200	On-road passenger	lb/VMT	0.010	0.001	0.001	0.000	0.00009	0.012	0.00005	0.002
Worker Commute	10	NA	40	1	40	On-road passenger	lb/VMT	0.010	0.001	0.001	0.000	0.00009	0.012	0.00005	0.002

12 Kv Distribution Line Getaway

Equipment Description	All Equipment		Per Truck			Equipment type	Emission Factors								
	Units	Maximum daily hours	Miles per round trip	Daily roundtrips	Miles on paved road		Emission factor unit	CO	NOx	ROG	SOx	PM <sub>10</sub> Exhaust	PM <sub>10</sub> Fugitive Dust	PM <sub>2.5</sub> Exhaust	PM <sub>2.5</sub> Fugitive Dust
	(Ea.)	(hrs/day)	Miles/RT	RT/day	miles/day										
Crew Truck	1	1	15	1	15	On-road Delivery (construction site)	lb/VMT	0.020	0.022	0.003	0.00003	0.00081	0.000	0.00069	0.000
Dump Truck	1	6	40	3	120	On-road Delivery	lb/VMT	0.020	0.022	0.003	0.00003	0.00081	0.012	0.00069	0.002
Backhoe	1	6	NA	NA	NA	Tractors/Loaders/Backhoes	lb/hr	0.399	0.723	0.111	0.00078	0.05590	0.000	0.05143	0.000
Worker Commute	8	NA	40	1	40	On-road passenger	lb/VMT	0.010	0.001	0.001	0.00001	0.00009	0.012	0.00005	0.002

Telecommunications

TL-1: Substation Communications Installation

Equipment Description	All Equipment		Per Truck			Equipment type	Emission Factors								
	Units	Maximum daily hours	Miles per round trip	Daily roundtrips	Miles on paved road		Emission factor unit	CO	NOx	ROG	SOx	PM <sub>10</sub> Exhaust	PM <sub>10</sub> Fugitive Dust	PM <sub>2.5</sub> Exhaust	PM <sub>2.5</sub> Fugitive Dust
	(Ea.)	(hrs/day)	Miles/RT	RT/day	miles/day										
Vans	2	4	40	2	80	On-road passenger	lb/VMT	0.010	0.001	0.001	0.00001	0.00009	0.012	0.00005	0.002
Worker Commute	2	NA	40	1	40	On-road passenger	lb/VMT	0.010	0.001	0.001	0.00001	0.00009	0.012	0.00005	0.002

TL-2: Overhead Communications Installation

Equipment Description	All Equipment		Per Truck			Equipment type	Emission Factors								
	Units	Maximum daily hours	Miles per round trip	Daily roundtrips	Miles on paved road		Emission factor unit	CO	NOx	ROG	SOx	PM <sub>10</sub> Exhaust	PM <sub>10</sub> Fugitive Dust	PM <sub>2.5</sub> Exhaust	PM <sub>2.5</sub> Fugitive Dust
	(Ea.)	(hrs/day)	Miles/RT	RT/day	miles/day										
Bucket Truck	1	8	120	1	120	On-road HHDT (construction site)	lb/VMT	0.013	0.042	0.003	0.00004	0.00200	0.000	0.00175	0.000
Reel Truck	1	8	120	1	120	On-road HHDT (construction site)	lb/VMT	0.013	0.042	0.003	0.00004	0.00200	0.000	0.00175	0.000
Worker Commute	4	NA	40	1	40	On-road passenger	lb/VMT	0.010	0.001	0.001	0.00001	0.00009	0.012	0.00005	0.002

TL-3: Underground Trenching

Equipment Description	All Equipment		Per Truck			Equipment type	Emission Factors								
	Units	Maximum daily hours	Miles per round trip	Daily roundtrips	Miles on paved road		Emission factor unit	CO	NOx	ROG	SOx	PM <sub>10</sub> Exhaust	PM <sub>10</sub> Fugitive Dust	PM <sub>2.5</sub> Exhaust	PM <sub>2.5</sub> Fugitive Dust
	(Ea.)	(hrs/day)	Miles/RT	RT/day	miles/day										
Flatbed	1	1	40	1	40	On-road Delivery	lb/VMT	0.020	0.022	0.003	0.00003	0.00081	0.012	0.00069	0.002
Backhoe	1	8	NA	NA	NA	Tractors/Loaders/Backhoes	lb/hr	0.399	0.723	0.111	0.00078	0.05590	0.000	0.05143	0.000
Stake Truck	1	2	30	1	30	On-road Delivery (construction site)	lb/VMT	0.020	0.022	0.003	0.00003	0.00081	0.000	0.00069	0.000
Crew Truck	1	2	30	1	30	On-road Delivery (construction site)	lb/VMT	0.020	0.022	0.003	0.00003	0.00081	0.000	0.00069	0.000
Worker Commute	3	NA	40	1	40	On-road passenger	lb/VMT	0.010	0.001	0.001	0.00001	0.00009	0.012	0.00005	0.002

**TL-4: Underground Cable Installation**

Equipment Description	All Equipment		Per Truck			Equipment type	Emission Factors								
	Units	Maximum daily hours	Miles per round trip	Daily roundtrips	Miles on paved road		Emission factor unit	CO	NOx	ROG	SOx	PM <sub>10</sub> Exhaust	PM <sub>10</sub> Fugitive Dust	PM <sub>2.5</sub> Exhaust	PM <sub>2.5</sub> Fugitive Dust
	(Ea.)	(hrs/day)	Miles/RT	RT/day	miles/day										
Bucket Truck	1	8	120	1	120	On-road HHDT (construction site)	lb/VMT	0.013	0.042	0.003	0.00004	0.00200	0.000	0.00175	0.000
Reel Truck	1	8	120	1	120	On-road HHDT (construction site)	lb/VMT	0.013	0.042	0.003	0.00004	0.00200	0.000	0.00175	0.000
Worker Commute	15	NA	40	1	40	On-road passenger	lb/VMT	0.010	0.001	0.001	0.00001	0.00009	0.012	0.00005	0.002

**Other Fugitive Dusts**

Equipment Description	Maximum Area	Unit	Equipment type	Emission Factors									
				Emission factor unit	CO	NOx	ROG	SOx	PM <sub>10</sub> Exhaust	PM <sub>10</sub> Fugitive Dust	PM <sub>2.5</sub> Exhaust	PM <sub>2.5</sub> Fugitive Dust	
Site Disturbance	0.5	acres/day	Site Disturbance	lb/acre/day	0.000	0.000	0.000	0.000	0.000	0.000	10.00000	0.000	2.080

Note: Detailed references for the emission factors can be found in Appendix B.

Appendix F1-A:

Table A5: Daily Emissions - Proposed Project

Triton Substation (TS)

TS-1: Civil Construction - Below Grade/Perimeter Wall Construction and Localized Fine Grading

	Emissions Without Watering								Emissions With Watering							
	CO	NOx	ROG	SOx	PM <sub>10</sub> Exhaust	PM <sub>10</sub> Fugitive Dust	PM <sub>2.5</sub> Exhaust	PM <sub>2.5</sub> Fugitive Dust	CO	NOx	ROG	SOx	PM <sub>10</sub> Exhaust	PM <sub>10</sub> Fugitive Dust	PM <sub>2.5</sub> Exhaust	PM <sub>2.5</sub> Fugitive Dust
	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day
Crew Truck	1.210	1.342	0.167	0.002	0.048	0.000	0.042	0.000	1.2096	1.3420	0.1673	0.0016	0.0483	0.0000	0.0415	0.0000
Dump Truck	2.419	2.684	0.335	0.003	0.097	1.432	0.083	0.242	2.4193	2.6840	0.3347	0.0032	0.0967	1.4322	0.0831	0.2420
Concrete Truck	1.613	1.789	0.223	0.002	0.064	0.955	0.055	0.161	1.6129	1.7893	0.2231	0.0021	0.0644	0.9548	0.0554	0.1614
Bobcat	1.287	3.244	0.339	0.004	0.141	0.000	0.130	0.000	1.2874	3.2436	0.3391	0.0038	0.1413	0.0000	0.1300	0.0000
Skip Loader	1.026	1.223	0.313	0.001	0.110	0.000	0.101	0.000	1.0261	1.2226	0.3132	0.0015	0.1103	0.0000	0.1015	0.0000
Forklift	0.946	2.224	0.296	0.002	0.121	0.000	0.111	0.000	0.9464	2.2241	0.2964	0.0024	0.1210	0.0000	0.1113	0.0000
Stake Truck	0.605	0.671	0.084	0.001	0.024	0.000	0.021	0.000	0.6048	0.6710	0.0837	0.0008	0.0242	0.0000	0.0208	0.0000
Carry-all	1.717	4.325	0.452	0.005	0.188	0.000	0.173	0.000	1.7165	4.3248	0.4521	0.0051	0.1884	0.0000	0.1733	0.0000
Grader	2.571	6.095	0.730	0.006	0.318	0.000	0.293	0.000	2.5714	6.0949	0.7300	0.0060	0.3183	0.0000	0.2928	0.0000
Water Truck	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.154	3.766	0.296	0.004	0.180	0.000	0.158	0.000
Worker Commute	1.550	0.161	0.159	0.002	0.014	1.910	0.009	0.323	1.5497	0.1608	0.1588	0.0017	0.0138	1.9095	0.0086	0.3227
Total	14.944	23.757	3.098	0.028	1.127	4.296	1.018	0.726	16.098	27.523	3.395	0.032	1.306	4.296	1.176	0.726

TS-2: MEER

	Emissions Without Watering								Emissions With Watering							
	CO	NOx	ROG	SOx	PM <sub>10</sub> Exhaust	PM <sub>10</sub> Fugitive Dust	PM <sub>2.5</sub> Exhaust	PM <sub>2.5</sub> Fugitive Dust	CO	NOx	ROG	SOx	PM <sub>10</sub> Exhaust	PM <sub>10</sub> Fugitive Dust	PM <sub>2.5</sub> Exhaust	PM <sub>2.5</sub> Fugitive Dust
	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day
Stake Truck	0.605	0.671	0.084	0.001	0.024	0.000	0.021	0.000	0.605	0.671	0.084	0.001	0.024	0.0000	0.0208	0.0000
Crew Truck	1.210	1.342	0.167	0.002	0.048	0.000	0.0415	0.000	1.210	1.342	0.167	0.002	0.048	0.0000	0.0415	0.0000
Worker Commute	5.424	0.563	0.556	0.006	0.048	6.683	0.030	1.129	5.424	0.563	0.556	0.006	0.048	6.6834	0.0302	1.1295
Total	7.238	2.576	0.807	0.008	0.121	6.683	0.092	1.129	7.238	2.576	0.807	0.008	0.121	6.683	0.092	1.129

TS-3: Transformer Testing and Preparation

	Emissions Without Watering								Emissions With Watering							
	CO	NOx	ROG	SOx	PM <sub>10</sub> Exhaust	PM <sub>10</sub> Fugitive Dust	PM <sub>2.5</sub> Exhaust	PM <sub>2.5</sub> Fugitive Dust	CO	NOx	ROG	SOx	PM <sub>10</sub> Exhaust	PM <sub>10</sub> Fugitive Dust	PM <sub>2.5</sub> Exhaust	PM <sub>2.5</sub> Fugitive Dust
	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day
Diesel Generator	2.027	4.031	0.612	0.004	0.248	0.000	0.228	0.000	2.027	4.031	0.612	0.004	0.248	0.0000	0.2285	0.0000
Lift Truck	0.577	1.883	0.148	0.002	0.090	0.000	0.079	0.000	0.577	1.883	0.148	0.002	0.090	0.0000	0.0789	0.0000
Pick Up	0.775	0.080	0.079	0.001	0.007	0.955	0.004	0.161	0.775	0.080	0.079	0.001	0.007	0.9548	0.0043	0.1614
Boom truck	0.577	1.883	0.148	0.002	0.090	0.000	0.079	0.000	0.577	1.883	0.148	0.002	0.090	0.0000	0.0789	0.0000
Forklift	1.420	3.336	0.445	0.004	0.181	0.000	0.167	0.000	1.420	3.336	0.445	0.004	0.181	0.0000	0.1669	0.0000
Worker Commute	5.811	0.603	0.595	0.006	0.052	7.161	0.032	1.210	5.811	0.603	0.595	0.006	0.052	7.1608	0.0323	1.2102
Total	11.187	11.817	2.028	0.019	0.668	8.116	0.590	1.372	11.187	11.817	2.028	0.019	0.668	8.116	0.590	1.372

**TS-4: Electrical Construction**

	Emissions Without Watering								Emissions With Watering							
	CO	NOx	ROG	SOx	PM <sub>10</sub> Exhaust	PM <sub>10</sub> Fugitive Dust	PM <sub>2.5</sub> Exhaust	PM <sub>2.5</sub> Fugitive Dust	CO	NOx	ROG	SOx	PM <sub>10</sub> Exhaust	PM <sub>10</sub> Fugitive Dust	PM <sub>2.5</sub> Exhaust	PM <sub>2.5</sub> Fugitive Dust
	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day
Boom Truck	0.577	1.883	0.148	0.002	0.090	0.000	0.079	0.000	0.577	1.883	0.148	0.002	0.090	0.000	0.0789	0.0000
Crew Truck	1.814	2.013	0.251	0.002	0.072	0.000	0.062	0.000	1.814	2.013	0.251	0.002	0.072	0.0000	0.0623	0.0000
Flatbed	0.806	0.895	0.112	0.001	0.032	0.477	0.028	0.081	0.806	0.895	0.112	0.001	0.032	0.4774	0.0277	0.0807
Crane	2.282	6.117	0.673	0.006	0.271	0.000	0.249	0.000	2.282	6.117	0.673	0.006	0.271	0.0000	0.2495	0.0000
Worker Commute	3.874	0.402	0.397	0.004	0.034	4.774	0.022	0.807	3.874	0.402	0.397	0.004	0.034	4.7739	0.0215	0.8068
Total	9.354	11.310	1.581	0.015	0.500	5.251	0.440	0.887	9.354	11.310	1.581	0.015	0.500	5.251	0.440	0.887

**TS-5: Transformer Installation**

	Emissions Without Watering								Emissions With Watering							
	CO	NOx	ROG	SOx	PM <sub>10</sub> Exhaust	PM <sub>10</sub> Fugitive Dust	PM <sub>2.5</sub> Exhaust	PM <sub>2.5</sub> Fugitive Dust	CO	NOx	ROG	SOx	PM <sub>10</sub> Exhaust	PM <sub>10</sub> Fugitive Dust	PM <sub>2.5</sub> Exhaust	PM <sub>2.5</sub> Fugitive Dust
	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day
Forklift	1.420	3.336	0.445	0.004	0.181	0.000	0.167	0.000	1.420	3.336	0.445	0.004	0.181	0.0000	0.1669	0.0000
Crew Truck	1.210	1.342	0.167	0.002	0.048	0.000	0.042	0.000	1.210	1.342	0.167	0.002	0.048	0.0000	0.0415	0.0000
Tractor Truck	5.198	12.491	1.482	0.010	0.610	0.000	0.561	0.000	5.198	12.491	1.482	0.010	0.610	0.0000	0.5615	0.0000
Worker Commute	2.325	0.241	0.238	0.003	0.021	2.864	0.013	0.484	2.325	0.241	0.238	0.003	0.021	2.8643	0.0129	0.4841
Total	10.152	17.410	2.332	0.018	0.861	2.864	0.783	0.484	10.152	17.410	2.332	0.018	0.861	2.864	0.783	0.484

**TS-6: Paving**

	Emissions Without Watering								Emissions With Watering							
	CO	NOx	ROG	SOx	PM <sub>10</sub> Exhaust	PM <sub>10</sub> Fugitive Dust	PM <sub>2.5</sub> Exhaust	PM <sub>2.5</sub> Fugitive Dust	CO	NOx	ROG	SOx	PM <sub>10</sub> Exhaust	PM <sub>10</sub> Fugitive Dust	PM <sub>2.5</sub> Exhaust	PM <sub>2.5</sub> Fugitive Dust
	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day
Stake Truck	1.210	1.342	0.167	0.002	0.048	0.000	0.042	0.000	1.210	1.342	0.167	0.002	0.048	0.0000	0.0415	0.0000
Crew Truck	1.210	1.342	0.167	0.002	0.048	0.000	0.042	0.000	1.210	1.342	0.167	0.002	0.048	0.0000	0.0415	0.0000
Tractor	1.198	2.168	0.333	0.002	0.168	0.000	0.154	0.000	1.198	2.168	0.333	0.002	0.168	0.0000	0.1543	0.0000
Dump Truck	1.613	1.789	0.223	0.002	0.064	0.955	0.055	0.161	1.613	1.789	0.223	0.002	0.064	0.9548	0.0554	0.1614
Barbergreen	3.433	8.650	0.904	0.010	0.377	0.000	0.347	0.000	3.433	8.650	0.904	0.010	0.377	0.0000	0.3466	0.0000
Paddle Scraper	7.966	18.378	2.008	0.016	0.793	0.000	0.729	0.000	7.966	18.378	2.008	0.016	0.793	0.0000	0.7294	0.0000
Asphalt Paver	2.302	4.128	0.747	0.004	0.296	0.000	0.272	0.000	2.302	4.128	0.747	0.004	0.296	0.0000	0.2719	0.0000
Bobcat	1.717	4.325	0.452	0.005	0.188	0.000	0.173	0.000	1.717	4.325	0.452	0.005	0.188	0.0000	0.1733	0.0000
Worker Commute	2.325	0.241	0.238	0.003	0.021	2.864	0.013	0.484	2.325	0.241	0.238	0.003	0.021	2.8643	0.0129	0.4841
Paving	0.000	0.000	2.620	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.620	0.000	0.000	0.0000	0.0000	0.0000
Total	22.973	42.363	7.860	0.045	2.003	3.819	1.827	0.645	22.973	42.363	7.860	0.045	2.003	3.819	1.827	0.645

**TS-7: Test Crew**

	Emissions Without Watering								Emissions With Watering							
	CO	NOx	ROG	SOx	PM <sub>10</sub> Exhaust	PM <sub>10</sub> Fugitive Dust	PM <sub>2.5</sub> Exhaust	PM <sub>2.5</sub> Fugitive Dust	CO	NOx	ROG	SOx	PM <sub>10</sub> Exhaust	PM <sub>10</sub> Fugitive Dust	PM <sub>2.5</sub> Exhaust	PM <sub>2.5</sub> Fugitive Dust
	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day
Test Truck	1.814	2.013	0.251	0.002	0.072	0.000	0.062	0.000	1.814	2.013	0.251	0.002	0.072	0.0000	0.0623	0.0000
Worker Commute	0.775	0.080	0.079	0.001	0.007	0.955	0.004	0.161	0.775	0.080	0.079	0.001	0.007	0.9548	0.0043	0.1614
Total	2.589	2.093	0.330	0.003	0.079	0.955	0.067	0.161	2.589	2.093	0.330	0.003	0.079	0.955	0.067	0.161

15 kV Subtransmission Line Installation

	Emissions Without Watering								Emissions With Watering							
	CO	NOx	ROG	SOx	PM <sub>10</sub> Exhaust	PM <sub>10</sub> Fugitive Dust	PM <sub>2.5</sub> Exhaust	PM <sub>2.5</sub> Fugitive Dust	CO	NOx	ROG	SOx	PM <sub>10</sub> Exhaust	PM <sub>10</sub> Fugitive Dust	PM <sub>2.5</sub> Exhaust	PM <sub>2.5</sub> Fugitive Dust
	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day
Utility Truck	3.024	3.355	0.418	0.004	0.121	0.000	0.104	0.000	3.024	3.355	0.418	0.004	0.121	0.000	0.1038	0.0000
Drill Rig	5.200	12.287	1.162	0.017	0.541	0.000	0.497	0.000	5.200	12.287	1.162	0.017	0.541	0.0000	0.4974	0.0000
Concrete Truck	4.032	4.473	0.558	0.005	0.161	2.387	0.138	0.403	4.032	4.473	0.558	0.005	0.161	2.3869	0.1385	0.4034
Worker Commute	2.325	0.241	0.238	0.003	0.021	2.864	0.013	0.484	2.325	0.241	0.238	0.003	0.021	2.8643	0.0129	0.4841
Total	14.581	20.357	2.376	0.029	0.843	5.251	0.753	0.887	14.581	20.357	2.376	0.029	0.843	5.251	0.753	0.887

ST-2: Setting New Steel Poles

	Emissions Without Watering								Emissions With Watering							
	CO	NOx	ROG	SOx	PM <sub>10</sub> Exhaust	PM <sub>10</sub> Fugitive Dust	PM <sub>2.5</sub> Exhaust	PM <sub>2.5</sub> Fugitive Dust	CO	NOx	ROG	SOx	PM <sub>10</sub> Exhaust	PM <sub>10</sub> Fugitive Dust	PM <sub>2.5</sub> Exhaust	PM <sub>2.5</sub> Fugitive Dust
	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day
Concrete Truck	4.032	4.473	0.558	0.005	0.161	2.387	0.138	0.403	4.032	4.473	0.558	0.005	0.161	2.3869	0.1385	0.4034
Drill Rig	5.200	12.287	1.162	0.017	0.541	0.000	0.497	0.000	5.200	12.287	1.162	0.017	0.541	0.0000	0.4974	0.0000
Crane	5.705	15.293	1.683	0.014	0.678	0.000	0.624	0.000	5.705	15.293	1.683	0.014	0.678	0.0000	0.6237	0.0000
Crew Truck	3.024	3.355	0.418	0.004	0.121	0.000	0.104	0.000	3.024	3.355	0.418	0.004	0.121	0.0000	0.1038	0.0000
Utility Truck	3.024	3.355	0.418	0.004	0.121	0.000	0.104	0.000	3.024	3.355	0.418	0.004	0.121	0.0000	0.1038	0.0000
SUV	1.937	0.201	0.198	0.002	0.017	2.387	0.011	0.403	1.937	0.201	0.198	0.002	0.017	2.3869	0.0108	0.4034
Worker Commute	3.874	0.402	0.397	0.004	0.034	4.774	0.022	0.807	3.874	0.402	0.397	0.004	0.034	4.7739	0.0215	0.8068
Total	26.797	39.367	4.835	0.051	1.673	9.548	1.500	1.614	26.797	39.367	4.835	0.051	1.673	9.548	1.500	1.614

ST-3: Installing Overhead Conductor

	Emissions Without Watering								Emissions With Watering							
	CO	NOx	ROG	SOx	PM <sub>10</sub> Exhaust	PM <sub>10</sub> Fugitive Dust	PM <sub>2.5</sub> Exhaust	PM <sub>2.5</sub> Fugitive Dust	CO	NOx	ROG	SOx	PM <sub>10</sub> Exhaust	PM <sub>10</sub> Fugitive Dust	PM <sub>2.5</sub> Exhaust	PM <sub>2.5</sub> Fugitive Dust
	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day
Conductor Pulling Mac	4.291	10.812	1.130	0.013	0.471	0.000	0.433	0.000	4.291	10.812	1.130	0.013	0.471	0.0000	0.4332	0.0000
Cable Dolly	4.291	10.812	1.130	0.013	0.471	0.000	0.433	0.000	4.291	10.812	1.130	0.013	0.471	0.0000	0.4332	0.0000
Utility Truck	3.024	3.355	0.418	0.004	0.121	0.000	0.104	0.000	3.024	3.355	0.418	0.004	0.121	0.0000	0.1038	0.0000
Line Truck	1.923	6.277	0.494	0.006	0.299	0.000	0.263	0.000	1.923	6.277	0.494	0.006	0.299	0.0000	0.2628	0.0000
SUV	1.937	0.201	0.198	0.002	0.017	2.387	0.011	0.403	1.937	0.201	0.198	0.002	0.017	2.3869	0.0108	0.4034
Worker Commute	3.874	0.402	0.397	0.004	0.034	4.774	0.022	0.807	3.874	0.402	0.397	0.004	0.034	4.7739	0.0215	0.8068
Total	19.342	31.859	3.768	0.042	1.414	7.161	1.265	1.210	19.342	31.859	3.768	0.042	1.414	7.161	1.265	1.210

12 Kv Distribution Line Getaway

	Emissions Without Watering								Emissions With Watering							
	CO	NOx	ROG	SOx	PM <sub>10</sub> Exhaust	PM <sub>10</sub> Fugitive Dust	PM <sub>2.5</sub> Exhaust	PM <sub>2.5</sub> Fugitive Dust	CO	NOx	ROG	SOx	PM <sub>10</sub> Exhaust	PM <sub>10</sub> Fugitive Dust	PM <sub>2.5</sub> Exhaust	PM <sub>2.5</sub> Fugitive Dust
	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day
Crew Truck	0.302	0.335	0.042	0.000	0.012	0.000	0.010	0.000	0.302	0.335	0.042	0.000	0.012	0.0000	0.0104	0.0000
Dump Truck	2.419	2.684	0.335	0.003	0.097	1.432	0.083	0.242	2.419	2.684	0.335	0.003	0.097	1.4322	0.0831	0.2420
Backhoe	2.396	4.336	0.665	0.005	0.335	0.000	0.309	0.000	2.396	4.336	0.665	0.005	0.335	0.0000	0.3086	0.0000
Worker commute	3.099	0.322	0.318	0.003	0.028	3.819	0.017	0.645	3.099	0.322	0.318	0.003	0.028	3.8191	0.0172	0.6454
Total	8.217	7.677	1.359	0.012	0.472	5.251	0.419	0.887	8.217	7.677	1.359	0.012	0.472	5.251	0.419	0.887

Telecommunications

TL-1: Substation Communications Installation

	Emissions Without Watering								Emissions With Watering							
	CO	NOx	ROG	SOx	PM <sub>10</sub> Exhaust	PM <sub>10</sub> Fugitive Dust	PM <sub>2.5</sub> Exhaust	PM <sub>2.5</sub> Fugitive Dust	CO	NOx	ROG	SOx	PM <sub>10</sub> Exhaust	PM <sub>10</sub> Fugitive Dust	PM <sub>2.5</sub> Exhaust	PM <sub>2.5</sub> Fugitive Dust
	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day
Vans	1.550	0.161	0.159	0.002	0.014	1.910	0.009	0.323	1.550	0.161	0.159	0.002	0.014	1.9095	0.0086	0.3227
Worker Commute	0.775	0.080	0.079	0.001	0.007	0.955	0.004	0.161	0.775	0.080	0.079	0.001	0.007	0.9548	0.0043	0.1614
Total	2.325	0.241	0.238	0.003	0.021	2.864	0.013	0.484	2.325	0.241	0.238	0.003	0.021	2.864	0.013	0.484

TL-2: Overhead Communications Installation

	Emissions Without Watering								Emissions With Watering							
	CO	NOx	ROG	SOx	PM <sub>10</sub> Exhaust	PM <sub>10</sub> Fugitive Dust	PM <sub>2.5</sub> Exhaust	PM <sub>2.5</sub> Fugitive Dust	CO	NOx	ROG	SOx	PM <sub>10</sub> Exhaust	PM <sub>10</sub> Fugitive Dust	PM <sub>2.5</sub> Exhaust	PM <sub>2.5</sub> Fugitive Dust
	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day
Bucket Truck	1.539	5.022	0.395	0.005	0.239	0.000	0.210	0.000	1.539	5.022	0.395	0.005	0.239	0.0000	0.2103	0.0000
Reel Truck	1.539	5.022	0.395	0.005	0.239	0.000	0.210	0.000	1.539	5.022	0.395	0.005	0.239	0.0000	0.2103	0.0000
Worker Commute	1.550	0.161	0.159	0.002	0.014	1.910	0.009	0.323	1.550	0.161	0.159	0.002	0.014	1.9095	0.0086	0.3227
Total	4.627	10.204	0.949	0.011	0.493	1.910	0.429	0.323	4.627	10.204	0.949	0.011	0.493	1.910	0.429	0.323

TL-3: Underground Trenching

	Emissions Without Watering								Emissions With Watering							
	CO	NOx	ROG	SOx	PM <sub>10</sub> Exhaust	PM <sub>10</sub> Fugitive Dust	PM <sub>2.5</sub> Exhaust	PM <sub>2.5</sub> Fugitive Dust	CO	NOx	ROG	SOx	PM <sub>10</sub> Exhaust	PM <sub>10</sub> Fugitive Dust	PM <sub>2.5</sub> Exhaust	PM <sub>2.5</sub> Fugitive Dust
	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day
Flatbed	0.806	0.895	0.112	0.001	0.032	0.477	0.028	0.081	0.806	0.895	0.112	0.001	0.032	0.4774	0.0277	0.0807
Backhoe	3.194	5.781	0.887	0.006	0.447	0.000	0.411	0.000	3.194	5.781	0.887	0.006	0.447	0.0000	0.4114	0.0000
Stake Truck	0.605	0.671	0.084	0.001	0.024	0.000	0.021	0.000	0.605	0.671	0.084	0.001	0.024	0.0000	0.0208	0.0000
Crew Truck	0.605	0.671	0.084	0.001	0.024	0.000	0.021	0.000	0.605	0.671	0.084	0.001	0.024	0.0000	0.0208	0.0000
Worker Commute	1.162	0.121	0.119	0.001	0.010	1.432	0.006	0.242	1.162	0.121	0.119	0.001	0.010	1.4322	0.0065	0.2420
Total	6.373	8.138	1.285	0.010	0.538	1.910	0.487	0.323	6.373	8.138	1.285	0.010	0.538	1.910	0.487	0.323



**TL-4: Underground Cable Installation**

	Emissions Without Watering								Emissions With Watering							
	CO	NOx	ROG	SOx	PM <sub>10</sub> Exhaust	PM <sub>10</sub> Fugitive Dust	PM <sub>2.5</sub> Exhaust	PM <sub>2.5</sub> Fugitive Dust	CO	NOx	ROG	SOx	PM <sub>10</sub> Exhaust	PM <sub>10</sub> Fugitive Dust	PM <sub>2.5</sub> Exhaust	PM <sub>2.5</sub> Fugitive Dust
	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day
Bucket Truck	1.539	5.022	0.395	0.005	0.239	0.000	0.210	0.000	1.539	5.022	0.395	0.005	0.239	0.0000	0.2103	0.0000
Reel Truck	1.539	5.022	0.395	0.005	0.239	0.000	0.210	0.000	1.539	5.022	0.395	0.005	0.239	0.0000	0.2103	0.0000
Worker Commute	5.811	0.603	0.595	0.006	0.052	7.161	0.032	1.210	5.811	0.603	0.595	0.006	0.052	7.1608	0.0323	1.2102
<b>Total</b>	<b>8.889</b>	<b>10.646</b>	<b>1.386</b>	<b>0.016</b>	<b>0.531</b>	<b>7.161</b>	<b>0.453</b>	<b>1.210</b>	<b>8.889</b>	<b>10.646</b>	<b>1.386</b>	<b>0.016</b>	<b>0.531</b>	<b>7.161</b>	<b>0.453</b>	<b>1.210</b>

	Emissions Without Watering								Emissions With Watering							
	CO	NOx	ROG	SOx	PM <sub>10</sub> Exhaust	PM <sub>10</sub> Fugitive Dust	PM <sub>2.5</sub> Exhaust	PM <sub>2.5</sub> Fugitive Dust	CO	NOx	ROG	SOx	PM <sub>10</sub> Exhaust	PM <sub>10</sub> Fugitive Dust	PM <sub>2.5</sub> Exhaust	PM <sub>2.5</sub> Fugitive Dust
	Site Disturbance	0.000	0.000	0.000	0.000	0.000	5.0	0.0	1.0	0.000	0.000	0.000	0.000	0.000	2.500	0.0000

Note:

1. Grading emission factors were used for calculating the emissions from the disturbance within the construction site. A 50% control efficiency is used for watering the site twice per day.
2. Detailed references for the emission factors can be found in Appendix B.

**Appendix F1-A:  
Table A6: Daily Operation Emissions**

Vehicle Trips           1     trip/day/vehicle  
 Round Trip Distance   40    miles/RT  
 Number of Vehicles    2  
 Vehicle Type            Passenger

**Emission Calculations**

		<b>CO</b>	<b>NOx</b>	<b>ROG</b>	<b>SOx</b>	<b>PM<sub>10</sub> Exhaust</b>	<b>PM<sub>10</sub> Fugitive</b>	<b>PM<sub>2.5</sub> Exhaust</b>	<b>PM<sub>2.5</sub> Fugitive</b>
Emission Factors	lb/mile	0.009686	0.001005	0.000992	1.07E-05	8.60E-05	0.011934628	5.38E-05	0.002016952
Emissions	lb/day	0.775	0.080	0.079	0.00085	0.0069	0.95	0.0043	0.16

Note:  
 Note: Detailed references for the emission factors can be found in Appendix B.

## Appendix F1-A:

### Table A7: Assumptions for Proposed Project

#### Construction Assumptions for Proposed Project

1. For all on-road vehicles listed below, the round-trip distance is assumed to be 40 miles/round trip. It was assumed that each round trip would take about 2 hours. The number of round trips were estimated using the operating hours provided in the project description.

2. It was assumed that all the following vehicles travel on paved roads.

- Dump Truck
- Flat Bed
- SUV
- Cement Truck
- Pick Up

3. It was assumed that the workers commute is 40 miles per round trip per day.

4. The following vehicles were assumed to be used mainly within the construction site, and were categorized as follows:

Water Truck	On Road Heavy Duty
Boom Truck	On Road Heavy Duty
Bucket Truck	On Road Heavy Duty
Lift Truck	On Road Heavy Duty
Line Truck	On Road Heavy Duty
Reel truck	On Road Heavy Duty
Stake Truck	On Road Delivery
Test Truck	On Road Delivery
Utility truck	On Road Delivery
Crew Truck	On Road Delivery

Emission factors used on-road vehicle emission factors. Fugitive dust emissions associated with the movements of these vehicles within the construction site were included in the 10 lb/day emissions of site disturbance and grading; therefore, they were not calculated separately. Fugitive emissions from the water truck was assumed to be minimal.

5. Fugitive dust emissions associated with the movements of construction equipment within the construction site were included in the 10 lb/day emissions of site disturbance and grading; therefore, they were not calculated separately.

6. It was assumed that no stockpiles will be present on the construction site.

7. Substation Construction

Maximum daily disturbed (grading) area:	Assumed to be 0.5 acre, based on the information that a total of 5 acres will be graded during construction.
Maximum paving area:	Assumed to be 1 acre/day.

8. Waste Recycle

Assumed that vehicles required to deliver the wastes are included in the equipment list of each construction phase.

#### Operation Assumptions for Proposed Project

Assumed to have 2 pick-up trucks for routine maintenance, round trip distance 40 miles.

# Air Quality Emissions Calculations

## Appendix F1-A:

Table A8: Maximum Construction Emissions - Onsite

### Maximum Daily Onsite Construction Emissions

	<b>CO (lb/day)</b>	<b>NOx (lb/day)</b>	<b>PM<sub>10</sub> (lb/day)</b>	<b>PM<sub>2.5</sub> (lb/day)</b>
Maximum Construction Equipment Exhaust	47	82	3.7	3.4
Maximum Workers Commute	28	2.9	0.24	0.15
Maximum Fugitive Dust	NA	NA	2.7	0.6
<b>Maximum Combined Daily Emissions</b>	<b>70</b>	<b>85</b>	<b>6.6</b>	<b>4.0</b>
<b>SCAQMD LST Thresholds (2.5 acre site, 25 meters to receptor)</b>	1097	257	8	5
<b>Exceeding Thresholds?</b>	NO	NO	NO	NO

Note: Onsite emissions only included emissions occurred within the construction site boundary.

### LST Thresholds (lb/day) <sup>1</sup>

<b>At 25 meters</b>	<b>CO</b>	<b>NOx</b>	<b>PM<sub>10</sub></b>	<b>PM<sub>2.5</sub></b>
5 acre	1732	371	13	8
2 acre	970	234	7	4
<b>2.5 acre</b>	<b>1097</b>	<b>257</b>	<b>8</b>	<b>4.7</b>

Note:

Source: Final Localized Significance Threshold Methodology (SCAQMD, 2008b), and Final Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds (SCAQMD, 2006).

**Appendix F1-B:**Table B1: Fugitive PM<sub>10</sub> Emission Factors Summary**Fugitive Emission Factors for Construction Activities**

<b>Construction Activity</b>	<b>Fugitive PM<sub>10</sub> Emission Factor</b>	<b>Unit</b>
Site Disturbance <sup>1</sup>	10	lb/acre/day
Vehicle Travel on Paved Road (heavy trucks) <sup>2</sup>	0.099	lb/VMT
Vehicle Travel on Paved Road (light trucks) <sup>2</sup>	0.012	lb/VMT
Site Water Spray Control Efficiency <sup>3,4</sup>	50%	

Note:

1. Emission rate from URBEMIS2007 model defaults (average emission factor).
2. Source: EPA AP-42, 13.2.1, see Appendix B, Table B5 for details.
3. Source: SCAQMD CEQA Air Quality Handbook, Table 11-4, November 1993. Fugitive dust control efficiency is assumed to be 50% by watering the site 2 times per day.
4. The site water spray control efficiency applies to all fugitive dust emissions within the construction site.
5. Fugitive dust emissions from operation of the construction equipment are included in the site grading dust emissions; therefore, they are not calculated separately.

**Appendix F1-B:**

Table B2: Light to Mid-Duty Vehicles Emission Factors

**Highest (Most Conservative) EMFAC2007 (version 2.3)  
Emission Factors for On-Road Passenger Vehicles & Delivery Trucks**

Projects in the SCAQMD (Scenario Years 2007 - 2026)

Derived from Peak Emissions Inventory (**Winter**, **Annual**, **Summer**)

**Vehicle Class:**

**Passenger Vehicles (<8500 pounds) & Delivery Trucks (>8500 pounds)**

<b>Passenger Vehicles</b>	Year	CO	NOx	ROG	SOx	PM <sub>10</sub>	PM <sub>2.5</sub>	CO <sub>2</sub>	CH <sub>4</sub>
		lb/VMT	lb/VMT	lb/VMT	lb/VMT	lb/VMT	lb/VMT	lb/VMT	lb/VMT
	2009	0.00968562	0.00100518	0.00099245	0.00001066	0.00008601	0.00005384	1.09755398	0.00008767

  

<b>Delivery Trucks</b>	Year	CO	NOx	ROG	SOx	PM <sub>10</sub>	PM <sub>2.5</sub>	CO <sub>2</sub>	CH <sub>4</sub>
		lb/VMT	lb/VMT	lb/VMT	lb/VMT	lb/VMT	lb/VMT	lb/VMT	lb/VMT
	2009	0.02016075	0.02236636	0.00278899	0.00002679	0.00080550	0.00069228	2.72330496	0.00013655

Source: SCAQMD CEQA Handbook website: <http://www.aqmd.gov/ceqa/handbook/onroad/onroad.html>. Accessed August 2008.

**Appendix F1-B:**

Table B3: Heavy Heavy Duty Vehicles Emission Factors

**Highest (Most Conservative) EMFAC2007 (version 2.3)  
Emission Factors for On-Road Heavy-Heavy-Duty Diesel Trucks**

Projects in the SCAQMD (Scenario Years 2007 - 2026)  
Derived from Peak Emissions Inventory (**Winter**, **Annual**, **Summer**)

**Vehicle Class:**

**Heavy-Heavy-Duty Diesel Trucks (33,001 to 60,000 pounds)**

The following emission factors were compiled by running the California Air Resources Board's EMFAC2007 (version 2.3) Burden Model and extracting the Heavy-Heavy-Duty Diesel Truck (HHDT) Emission Factors.

These emission factors can be used to calculate on-road mobile source emissions for the vehicle/emission categories listed in the tables below, by use of the following equation:

$$\text{Emissions (pounds per day)} = N \times TL \times EF$$

where N = number of trips, TL = trip length (miles/day), and EF = emission factor (pounds per mile)

The HHDT-DSL vehicle/emission category accounts for all emissions from heavy-heavy-duty diesel trucks, including start, running and idling exhaust. In addition, ROG emission factors account for diurnal, hot soak, running and resting emissions, and the PM<sub>10</sub> & PM<sub>2.5</sub> emission factors account for tire and brake wear.

The HHDT-DSL, Exh vehicle/emission category includes only the exhaust portion of PM<sub>10</sub> & PM<sub>2.5</sub> emissions from heavy-heavy-duty diesel trucks.

	CO	NOx	ROG	SOx	PM <sub>10</sub>	PM <sub>2.5</sub>	CO <sub>2</sub>	CH <sub>4</sub>
	lb/VMT	lb/VMT	lb/VMT	lb/VMT	lb/VMT	lb/VMT	lb/VMT	lb/VMT
2009	0.01282236	0.04184591	0.00329320	0.00004013	0.00199572	0.00175227	4.21080792	0.00015249

Source: SCAQMD CEQA Handbook website: <http://www.aqmd.gov/ceqa/handbook/onroad/onroad.html>. Accessed August 2008.

# Air Quality Emissions Calculations

## Appendix F1-B:

Table B4: Off-road Construction Equipment Emission Factors

### Construction Equipment Emission Factors (lb/hour)

Equipment Name	Hp	CO	NOX	ROG	SOX	PM	CO <sub>2</sub>	CH <sub>4</sub>
Aerial Lifts	Composite	0.2149	0.3748	0.0710	0.0004	0.0259	34.7	0.0064
Air Compressors	Composite	0.3699	0.7664	0.1180	0.0007	0.0547	63.6	0.0106
Bore/Drill Rigs	Composite	0.5200	1.2287	0.1162	0.0017	0.0541	165	0.0105
Cement and Mortar Mixers	Composite	0.0440	0.0626	0.0107	0.0001	0.0040	7.2	0.0010
Concrete/Industrial Saws	Composite	0.4340	0.6906	0.1363	0.0007	0.0581	58.5	0.0123
Cranes	Composite	0.5705	1.5293	0.1683	0.0014	0.0678	129	0.0152
Crawler Tractors	Composite	0.6616	1.4607	0.1961	0.0013	0.0898	114	0.0177
Crushing/Proc. Equipment	Composite	0.7440	1.5130	0.2274	0.0015	0.0976	132	0.0205
Dumpers/Tenders	Composite	0.0345	0.0662	0.0114	0.0001	0.0039	7.6	0.0010
Excavators	Composite	0.5697	1.2340	0.1584	0.0013	0.0681	120	0.0143
Forklifts	Composite	0.2366	0.5560	0.0741	0.0006	0.0302	54.4	0.0067
Generator Sets	Composite	0.3378	0.6718	0.1020	0.0007	0.0414	61.0	0.0092
Graders	Composite	0.6428	1.5237	0.1825	0.0015	0.0796	133	0.0165
Off-Highway Tractors	Composite	0.8664	2.0818	0.2470	0.0017	0.1017	151	0.0223
Off-Highway Trucks	Composite	0.7931	2.5505	0.2597	0.0027	0.0929	260	0.0234
Other Construction Equipment	Composite	0.4291	1.0812	0.1130	0.0013	0.0471	123	0.0102
Other General Industrial Equipmen	Composite	0.6281	1.7488	0.1941	0.0016	0.0779	152	0.0175
Other Material Handling Equipment	Composite	0.5801	1.6943	0.1867	0.0015	0.0753	141	0.0168
Pavers	Composite	0.5756	1.0321	0.1867	0.0009	0.0739	77.9	0.0168
Paving Equipment	Composite	0.4544	0.9400	0.1405	0.0008	0.0655	68.9	0.0127
Plate Compactors	Composite	0.0263	0.0321	0.0051	0.0001	0.0018	4.3	0.0005
Pressure Washers	Composite	0.0680	0.1020	0.0212	0.0001	0.0074	9.4	0.0019
Pumps	Composite	0.3147	0.5779	0.0991	0.0006	0.0410	49.6	0.0089
Rollers	Composite	0.4272	0.8166	0.1250	0.0008	0.0574	67.1	0.0113
Rough Terrain Forklifts	Composite	0.4815	0.8505	0.1368	0.0008	0.0719	70.3	0.0123
Rubber Tired Dozers	Composite	1.5020	3.1254	0.3508	0.0025	0.1347	239	0.0316
Rubber Tired Loaders	Composite	0.5214	1.2255	0.1530	0.0012	0.0688	109	0.0138
Scrapers	Composite	1.3277	3.0630	0.3347	0.0027	0.1321	263	0.0302
Signal Boards	Composite	0.0959	0.1678	0.0234	0.0002	0.0096	16.7	0.0021
Skid Steer Loaders	Composite	0.2565	0.3057	0.0783	0.0004	0.0276	30.3	0.0071
Surfacing Equipment	Composite	0.6589	1.6559	0.1647	0.0017	0.0639	166	0.0149
Sweepers/Scrubbers	Composite	0.5475	0.9059	0.1689	0.0009	0.0733	78.5	0.0152
Tractors/Loaders/Backhoes	Composite	0.3993	0.7227	0.1109	0.0008	0.0559	66.8	0.0100
Trenchers	Composite	0.4992	0.7910	0.1762	0.0007	0.0663	58.7	0.0159
Welders	Composite	0.2281	0.3015	0.0847	0.0003	0.0280	25.6	0.0076

Source: SCAQMD CEQA Handbook website: <http://www.aqmd.gov/ceqa/handbook/offroad/offroad.html>.  
 Accessed August 2008.



**Appendix F1-B:**

Table B5: Fugitive PM<sub>10</sub> Emission Factors for Vehicle Travel on Paved Surfaces

**Fugitive Emission Factors for Vehicle Travel on Paved Surfaces**

Emission Factor <sup>1</sup> = (k [(sL/2)<sup>0.65</sup>] [(W/3)<sup>1.5</sup>-C] x [1-(P/4N)] lb/vehicle mile traveled (vmt)

	<b>k</b>	<b>sL</b>	<b>W</b>	<b>P</b>	<b>PM<sub>10</sub> Emission factor (lb/VMT)</b>
Heavy Duty Trucks	0.016	1.4	12	34	0.099
Passenger Vehicles and Light Duty Trucks	0.016	1.4	3	34	0.012

Note:

1. Emission factors were calculated using EPA AP-42 13.2.1, equation 2.

**Calculation Factors**

<b>Parameters</b>	<b>Description</b>	<b>Assumptions</b>	<b>Note</b>
W <sup>2</sup>	Mean Vehicle Weight (tons)	12	For heavy duty trucks (8-16 tons).
	Mean Vehicle Weight (tons)	3	For passenger vehicles and light duty trucks and autos (1 - 5 tons).
P <sup>3</sup>	Number of Days > 0.01 in. Precipitation	34	Average for SCAB.
N	Days in a Year	365	

Note:

1. Weight of trucks were obtained from SCAQMD CEQA Handbook, Table A9-9-D-3.
2. Average SCAB precipitation conditions were from SCAQMD CEQA Handbook, Table A9-9-D-4.

**Appendix F1-B:**

Table B6: Emission Factors for Asphalt Paving

**Asphalt Off-Gas ROG Emission Factor**

	ROG EF	Unit	Reference
Emission Rate	2.62	lb ROG/acre	Emission rate from URBEMIS2007 model defaults.

# Air Quality Emissions Calculations

## Appendix F1-B:

Table B7: PM<sub>2.5</sub> Fraction of PM<sub>10</sub>

Category	PM <sub>2.5</sub> Fraction of PM <sub>10</sub>
Exhaust, Diesel Off-road Equipment	0.920
Exhaust, On-road Vehicles	0.964
Fugitive Dust - Construction	0.208
Fugitive Dust - Paved Road	0.169

Source: Appendix A of the Final PM<sub>2.5</sub> Calculation Methodology and PM<sub>2.5</sub> Significance Thresholds (SCAQMD, 2006).

**Circuit Breakers with SF6 Gas**

Description	Number	Estimated SF6 (lbs)	Total SF6 (lbs)
115 kV Breaker	5	60	300
<b>Total</b>			<b>300</b>
<b>Assumed Leakage Rate (per year)</b>			<b>0.01</b>
<b>Annual SF6 Emissions (lbs)</b>			<b>3.0</b>
<b>Total Yearly Operational GHG (SF6 tons CO2 eq)</b>			<b>32.53176044</b>
<b>OPERATIONAL SF6</b>			<b>33</b>

<b>Operational Emissions</b>				
	lbs	GWP*	total Metric Tons	rounded value
<b>total CO2</b>	32,049	1	14.54128857	15
<b>total CH4</b>	2.56	21	0.024392015	0.02
<b>total SF6</b>	3	23900	32.53176044	33
				<b>48</b>

\*GWP = Global Warming Potential

**Combustion Emission Calculations**

	CO2	CH4	GHG CO2 Eq	CH4	CO2
Emission Factors	lb/mile	1.097553983	8.7669E-05	1.099395032	
Emissions	lbs/yr	32048.57631	2.559934865	53.75863216	
	GWP	1	21		
	MTCO2e/yr	14.54109633	0.024391394	16.05116747	<b>0.024391394</b> <b>14.5411</b>
<b>OPERATIONAL MOBILE</b>			<b>15</b>		
<b>OPERATIONAL TOTAL</b>			<b>48</b>		

Total Construction Emissions (lbs.)	CO2 lbs	CH4 lbs
<b>PHASE</b>		
TS-1	307349.8	25.96067
TS-2: MEER	103167.3	7.366142
TS-3: Transformer test and prep	218116.8	20.24124
TS-4: Electrical Construction	179661.9	14.45162
TS-5: Transformer Installation	199429.9	24.36632
TS-6: Paving	43686.15	4.493155
TS-7: Test Crew	39948.21	2.316407
15 kV Line Installation	40116.44	2.431046
ST-2: Setting New Steel Poles	34689.8	2.642931
ST-3: Installing Overhead Conductor	20771.39	1.499612
12 Kv Distribution Line Getaway	2239.397	0.213008
TL-1: Substation Communications Installation	10536.52	0.841622
TL-2: Overhead Communications Installation	29655.06	1.265604
TL-3: Underground Trenching	5630.901	0.625173
TL-4: Underground Cable Installation	10014.76	0.535191

Construction Emissions		
	lbs	GWP*
<b>total CO2</b>	109.2497	1
<b>total CH4</b>	0	21
		0.049568844
		0.001652295
<b>Total Construction Emissions</b>		<b>19 MT CO2e / yr</b>

\*GWP = Global Warming Potential