

Appendix B

Air Quality/Greenhouse Gas Emissions Data

Eldorado-Lugo-Mohave Series Capacitor Project - SCE

Proponent's Environmental Assessment - Responses to Data Requests

Based on SCE Filename: Q.01 Attachment 1 of 1_ELM_AQ Calc Spreadsheet_20190417 -- transmitted to CPUC 5/1/2019 (abridged to make printable)

Calculation Process

1. Sheets labeled with the prefix "IN" contain data provided by SCE and are project-specific
2. Sheets labeled with the prefix "LU" are look up values that provide emission factors or other constants
3. A table named "Master Impacts" (in unabridged XLS file) holds the annual emissions for each year of construction in each state and for each pollutant
4. The "Emissions Summary" and "GHG Summary" contain rolled up tables summarizing the estimated emissions from "Master Impacts" data
5. The data provided on the "IN" sheets were combined to begin the "Master Impacts" dataset
6. The "LU" sheets were used to collect the appropriate emission factors

Air Quality/GHG, Data Tables

Onroad Vehicle Trip Types and Trip Lengths (round-trip)							(mi)	(mi)	
EquipRename	HPRename	On-Off	Fuel	On Type	Trip Distance	Paved Percent	Paved Distance	Unpaved Distance	Trips per day
1-Ton Crew Cab, 4x4		300 on	Gas	passenger	100	90	90	10	1
4000 Water Truck		425 on	Diesel	hhdt	100	75	75	25	1
Truck, Semi Tractor		400 on	Diesel	hhdt	100	90	90	10	1
Lowboy Truck/Trailer		450 on	Diesel	hhdt	100	90	90	10	1
3/4-Ton Truck, 4x4		275 on	Gas	passenger	100	90	90	10	1
Flat Bed Truck/Trailer		400 on	Diesel	hhdt	100	90	90	10	1
10 C.Y. Dump Truck		500 on	Diesel	hhdt	100	90	90	10	1
Concrete Mixer Truck		350 on	Diesel	hhdt	100	90	90	10	1
Helicopter Support Truck		300 on	Gas	delivery	100	90	90	10	1
Splicing Lab		300 on	Diesel	passenger	100	90	90	10	1
Fuel Truck		300 on	Diesel	hhdt	100	90	90	10	1
Medium duty splicing lab Truck		250 on	Diesel	delivery	100	90	90	10	1
Tool Truck		300 on	Gas	delivery	100	90	90	10	1
Job Site Utility Cart		90 on	Diesel	passenger	100	90	90	10	1
Foreman's Truck		400 on	Gas	passenger	100	90	90	10	1
Low Bed Hauler		300 on	Gas	hhdt	100	90	90	10	1
Test Truck		300 on	Gas	delivery	100	90	90	10	1
Low Bed Equipment Hauler (5 axle)		700 on	Diesel	hhdt	100	90	90	10	1
Low Bed Equipment Hauler (7 axle)		800 on	Diesel	hhdt	100	90	90	10	1
8,000 Gal. Water Pull		900 on	Diesel	hhdt	100	75	75	25	1
Low Side End Dump		500 on	Diesel	hhdt	100	90	90	10	1
2-Ton Truck		300 on	Diesel	delivery	100	90	90	10	1
Worker Commute	NA	on	Diesel	passenger	100	100	100	0	1

Offroad Default Load Factors. Source: CalEEMod Users Guide, Appendix D, Table 3.3

OFFROAD Equipment Type	Load Factor
Aerial Lifts	0.31
Air Compressors	0.48
Bore/Drill Rigs	0.5
Cement and Mortar Mixers	0.56
Concrete/Industrial Saws	0.73
Cranes	0.29
Crawler Tractors	0.43
Crushing/Proc. Equipment	0.78
Dumpers/Tenders	0.38
Excavators	0.38
Forklifts	0.2
Generator Sets	0.74
Graders	0.41
Off-Highway Tractors	0.44
Off-Highway Trucks	0.38
Other Construction Equipment	0.42
Other General Industrial Equipment	0.34
Other Material Handling Equipment	0.4
Pavers	0.42
Paving Equipment	0.36
Plate Compactors	0.43
Pressure Washers	0.3
Pumps	0.74
Rollers	0.38
Rough Terrain Forklifts	0.4
Rubber Tired Dozers	0.4
Rubber Tired Loaders	0.36
Scrapers	0.48
Signal Boards	0.82
Skid Steer Loaders	0.37
Surfacing Equipment	0.3
Sweepers/Scrubbers	0.46

Air Quality/GHG, Data Tables

Tractors/Loaders/Backhoes	0.37
Trenchers	0.5
Welders	0.45

Air Quality/GHG, Data Tables

Data for GHG, SF6 Release										SF6 (lb)	SF6 (lb)	CO2e (ton)	
NO	Equip	Siemens 1 segment	Siemens 2 Segment	Existing Equip	ABB/GE 1 segment	ABB/GE 2-segment	Sourthern Existing Equipment	All	Worst Case	Annual Leaked	Annual CO2e Leaked		
	1 Switch for Lugo Cap at Eldorado Sub	-52	0	-104	81	162				162	0.81	9.6795	
	2 Switch for Newberry Springs Series Cap !	52	104		81	162				162	0.81	9.6795	
	3 Switch Eldorado Caps at Lugo Sub	-52	0	-104	81	162				162	0.81	9.6795	
	4 Switch for Lugo Caps at Mohave Sub	52	104		81	162				162	0.81	9.6795	
	5 Switch for Ludlow Cap Site	52	104		81	162				162	0.81	9.6795	
	6 Switch for Mojave caps at Lugo Sub	-52	0	-104	81	162				162	0.81	9.6795	
	7 Reactor device for Lugo Line at Eldorado Sub						0	1295		1295	6.475	77.37625	
	9 500 Circuit Breakers at Eldorado Sub								180	180	0.9	10.755	
	10 500 Circuit Breakers at Lugo Sub								4240	4240	21.2	253.34	
	11 500 Circuit Breakers at Mohave Sub								5780	5780	28.9	345.355	
	<i>500 Circuit Breakers at McCullough Sub</i>								5780	5780	28.9	345.355	
										18247	91.235	1,090.26	
	Annual Leak Rate	0.005 Note: 0.5% annual leak rate based on manufacturer's guaranteed maximum annual leak rate											
	GWP	23900											
												CO2e (MT)	
												SF6 Release, Total : 989.08	

Air Quality/GHG, Data Tables

Offroad Emission Factors (Uncontrolled). Source: CalEEMod Users Guide, Appendix D, Table 3.4

Equipment Type	Year	Low HP	High HP	Bin Number Low-High	(g/hp-hr)	(g/hp-hr)	(g/hp-hr)	(g/hp-hr)	(g/hp-hr)	(g/hp-hr)	(g/hp-hr)	(g/hp-hr)
					ROG	CO	NOX	SOX	PM10	PM25	CO2	CH4
Aerial Lifts	2020	6	15	1 6_15	0.168	3.09942	2.95486	0.005	0.031	0.028	525.0743	0.17
Aerial Lifts	2020	16	25	2 16_25	0.168	3.09942	2.95486	0.005	0.031	0.028	525.0743	0.17
Aerial Lifts	2020	26	50	3 26_50	0.168	3.09942	2.95486	0.005	0.031	0.028	525.0743	0.17
Aerial Lifts	2020	51	120	4 51_120	0.115	3.1768	1.86859	0.005	0.042	0.038	472.1142	0.153
Aerial Lifts	2020	251	500	7 251_500	0.069	0.94623	0.63803	0.005	0.009	0.008	472.0545	0.153
Aerial Lifts	2020	501	750	8 501_750	0.2	1.013	1.868	0.005	0.057	0.057	568.299	0.018
Aerial Lifts	2021	6	15	1 6_15	0.165	3.11369	2.92238	0.005	0.027	0.024	525.0743	0.17
Aerial Lifts	2021	16	25	2 16_25	0.165	3.11369	2.92238	0.005	0.027	0.024	525.0743	0.17
Aerial Lifts	2021	26	50	3 26_50	0.165	3.11369	2.92238	0.005	0.027	0.024	525.0743	0.17
Aerial Lifts	2021	51	120	4 51_120	0.109	3.17624	1.74368	0.005	0.033	0.031	472.1142	0.153
Aerial Lifts	2021	251	500	7 251_500	0.072	0.95107	0.64021	0.005	0.009	0.008	472.0545	0.153
Aerial Lifts	2021	501	750	8 501_750	0.187	1.004	1.61	0.005	0.05	0.05	568.299	0.016
Air Compressors	2020	6	15	1 6_15	0.731	3.546	4.542	0.008	0.227	0.227	568.299	0.066
Air Compressors	2020	16	25	2 16_25	0.769	2.473	4.538	0.007	0.212	0.212	568.3	0.069
Air Compressors	2020	26	50	3 26_50	1.001	5.164	4.397	0.007	0.25	0.25	568.299	0.09
Air Compressors	2020	51	120	4 51_120	0.489	3.698	3.4	0.006	0.224	0.224	568.299	0.044
Air Compressors	2020	121	175	5 121_175	0.374	3.203	2.558	0.006	0.133	0.133	568.299	0.033
Air Compressors	2020	176	250	6 176_250	0.288	1.121	2.172	0.006	0.069	0.069	568.299	0.026
Air Compressors	2020	251	500	7 251_500	0.279	1.076	1.935	0.005	0.067	0.067	568.299	0.025
Air Compressors	2020	501	750	8 501_750	0.28	1.076	1.982	0.005	0.067	0.067	568.299	0.025
Air Compressors	2020	751	1000	9 751_1000	0.306	1.158	3.828	0.005	0.093	0.093	568.3	0.027
Air Compressors	2021	6	15	1 6_15	0.717	3.531	4.462	0.008	0.214	0.214	568.299	0.064
Air Compressors	2021	16	25	2 16_25	0.752	2.446	4.497	0.007	0.201	0.201	568.299	0.067
Air Compressors	2021	26	50	3 26_50	0.887	5.021	4.221	0.007	0.212	0.212	568.299	0.08
Air Compressors	2021	51	120	4 51_120	0.442	3.67	3.083	0.006	0.19	0.19	568.299	0.039
Air Compressors	2021	121	175	5 121_175	0.343	3.192	2.218	0.006	0.115	0.115	568.299	0.03
Air Compressors	2021	176	250	6 176_250	0.268	1.108	1.859	0.006	0.06	0.06	568.299	0.024
Air Compressors	2021	251	500	7 251_500	0.261	1.064	1.663	0.005	0.058	0.058	568.299	0.023
Air Compressors	2021	501	750	8 501_750	0.262	1.064	1.699	0.005	0.058	0.058	568.299	0.023
Air Compressors	2021	751	1000	9 751_1000	0.284	1.134	3.565	0.005	0.082	0.082	568.3	0.025
Bore/Drill Rigs	2020	6	15	1 6_15	0.716	4.51013	4.6451	0.006	0.294	0.271	535.2948	0.173
Bore/Drill Rigs	2020	16	25	2 16_25	0.716	4.51013	4.6451	0.006	0.294	0.271	535.2948	0.173
Bore/Drill Rigs	2020	26	50	3 26_50	0.716	4.51013	4.6451	0.006	0.294	0.271	535.2948	0.173
Bore/Drill Rigs	2020	51	120	4 51_120	0.246	3.32347	3.06601	0.005	0.159	0.146	463.5827	0.15
Bore/Drill Rigs	2020	121	175	5 121_175	0.174	2.96948	1.87149	0.005	0.082	0.076	477.722	0.155
Bore/Drill Rigs	2020	176	250	6 176_250	0.142	1.06766	1.80732	0.005	0.052	0.048	466.8342	0.151
Bore/Drill Rigs	2020	251	500	7 251_500	0.125	1.01263	1.40938	0.005	0.045	0.041	466.8219	0.151
Bore/Drill Rigs	2020	501	750	8 501_750	0.109	0.97413	1.23085	0.005	0.041	0.038	473.6679	0.153

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Bore/Drill Rigs	2020	751	1000	9 751_1000	0.133	0.98839	3.05008	0.005	0.061	0.056	471.8492	0.153
Bore/Drill Rigs	2021	6	15	1 6_15	0.711	4.54836	4.63432	0.006	0.291	0.268	535.3782	0.173
Bore/Drill Rigs	2021	16	25	2 16_25	0.711	4.54836	4.63432	0.006	0.291	0.268	535.3782	0.173
Bore/Drill Rigs	2021	26	50	3 26_50	0.711	4.54836	4.63432	0.006	0.291	0.268	535.3782	0.173
Bore/Drill Rigs	2021	51	120	4 51_120	0.217	3.30573	2.73675	0.005	0.131	0.12	464.9725	0.15
Bore/Drill Rigs	2021	121	175	5 121_175	0.154	2.9614	1.5983	0.005	0.07	0.064	477.0482	0.154
Bore/Drill Rigs	2021	176	250	6 176_250	0.132	1.06418	1.55102	0.005	0.047	0.043	467.9916	0.151
Bore/Drill Rigs	2021	251	500	7 251_500	0.117	1.01479	1.22069	0.005	0.041	0.038	469.8158	0.152
Bore/Drill Rigs	2021	501	750	8 501_750	0.098	0.97176	0.95517	0.005	0.033	0.031	474.079	0.153
Bore/Drill Rigs	2021	751	1000	9 751_1000	0.136	0.99261	3.05759	0.005	0.061	0.057	471.8158	0.153
Cement and Mortar Mixers	2020	6	15	1 6_15	0.661	3.47	4.142	0.008	0.161	0.161	568.299	0.059
Cement and Mortar Mixers	2020	16	25	2 16_25	0.723	2.397	4.442	0.007	0.187	0.187	568.299	0.065
Cement and Mortar Mixers	2021	6	15	1 6_15	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
Cement and Mortar Mixers	2021	16	25	2 16_25	0.712	2.381	4.419	0.007	0.18	0.18	568.299	0.064
Concrete/Industrial Saws	2020	16	25	2 16_25	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
Concrete/Industrial Saws	2020	26	50	3 26_50	0.798	4.552	4.196	0.007	0.212	0.212	568.299	0.072
Concrete/Industrial Saws	2020	51	120	4 51_120	0.401	3.535	3.163	0.006	0.19	0.19	568.299	0.036
Concrete/Industrial Saws	2020	121	175	5 121_175	0.306	3.072	2.324	0.006	0.114	0.114	568.299	0.027
Concrete/Industrial Saws	2021	16	25	2 16_25	0.685	2.34	4.332	0.007	0.161	0.161	568.299	0.061
Concrete/Industrial Saws	2021	26	50	3 26_50	0.722	4.481	4.063	0.007	0.184	0.184	568.3	0.065
Concrete/Industrial Saws	2021	51	120	4 51_120	0.369	3.523	2.913	0.006	0.166	0.166	568.299	0.033
Concrete/Industrial Saws	2021	121	175	5 121_175	0.286	3.072	2.055	0.006	0.101	0.101	568.299	0.025
Cranes	2020	26	50	3 26_50	2.084	7.37625	5.98471	0.005	0.624	0.574	517.9263	0.168
Cranes	2020	51	120	4 51_120	0.732	4.17141	6.38117	0.005	0.453	0.417	469.8821	0.152
Cranes	2020	121	175	5 121_175	0.537	3.56232	5.5697	0.005	0.298	0.274	474.5939	0.153
Cranes	2020	176	250	6 176_250	0.384	1.7904	4.56329	0.005	0.188	0.173	472.9488	0.153
Cranes	2020	251	500	7 251_500	0.321	2.66037	3.86243	0.005	0.155	0.142	472.5579	0.153
Cranes	2020	501	750	8 501_750	0.242	1.44353	3.10471	0.005	0.116	0.107	470.4254	0.152
Cranes	2020	1001	9999	10 1001_9999	0.182	0.99943	2.3614	0.005	0.06	0.056	472.0545	0.153
Cranes	2021	26	50	3 26_50	2.115	7.48883	6.01375	0.005	0.631	0.581	517.8995	0.167
Cranes	2021	51	120	4 51_120	0.651	4.06507	5.73085	0.005	0.398	0.366	469.8867	0.152
Cranes	2021	121	175	5 121_175	0.498	3.51648	5.1125	0.005	0.273	0.251	474.5458	0.153
Cranes	2021	176	250	6 176_250	0.349	1.67824	4.10439	0.005	0.167	0.153	472.9057	0.153
Cranes	2021	251	500	7 251_500	0.295	2.44833	3.44253	0.005	0.139	0.127	472.4553	0.153
Cranes	2021	501	750	8 501_750	0.228	1.43956	2.72739	0.005	0.107	0.098	470.5495	0.152
Cranes	2021	1001	9999	10 1001_9999	0.192	1.00751	2.37402	0.005	0.061	0.056	472.0545	0.153
Crawler Tractors	2020	26	50	3 26_50	2.053	7.3	5.64276	0.005	0.591	0.544	515.679	0.167
Crawler Tractors	2020	51	120	4 51_120	0.715	4.04412	6.00933	0.005	0.5	0.46	476.3284	0.154
Crawler Tractors	2020	121	175	5 121_175	0.476	3.33989	4.87226	0.005	0.272	0.25	471.015	0.152
Crawler Tractors	2020	176	250	6 176_250	0.36	1.55491	4.63225	0.005	0.175	0.161	472.941	0.153
Crawler Tractors	2020	251	500	7 251_500	0.301	2.0875	3.62175	0.005	0.141	0.13	475.2338	0.154

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Crawler Tractors	2020	501	750	8 501_750	0.256	1.31018	3.13716	0.005	0.115	0.106	473.3119	0.153
Crawler Tractors	2020	751	1000	9 751_1000	0.463	2.02764	7.23682	0.005	0.212	0.195	475.6525	0.154
Crawler Tractors	2021	26	50	3 26_50	2.064	7.34869	5.61511	0.005	0.591	0.543	516.1077	0.167
Crawler Tractors	2021	51	120	4 51_120	0.673	4.00549	5.65746	0.005	0.466	0.428	476.437	0.154
Crawler Tractors	2021	121	175	5 121_175	0.436	3.30982	4.3947	0.005	0.245	0.225	471.421	0.152
Crawler Tractors	2021	176	250	6 176_250	0.343	1.51456	4.33394	0.005	0.163	0.15	472.9246	0.153
Crawler Tractors	2021	251	500	7 251_500	0.283	2.02434	3.27633	0.005	0.129	0.119	474.4843	0.153
Crawler Tractors	2021	501	750	8 501_750	0.239	1.26985	2.82478	0.005	0.104	0.095	473.0941	0.153
Crawler Tractors	2021	751	1000	9 751_1000	0.399	1.89563	6.3992	0.005	0.182	0.167	471.8224	0.153
Crushing/Proc. Equipment	2020	26	50	3 26_50	0.947	5.211	4.347	0.007	0.233	0.233	568.299	0.085
Crushing/Proc. Equipment	2020	51	120	4 51_120	0.473	3.722	3.249	0.006	0.206	0.206	568.299	0.042
Crushing/Proc. Equipment	2020	121	175	5 121_175	0.367	3.234	2.392	0.006	0.124	0.124	568.299	0.033
Crushing/Proc. Equipment	2020	176	250	6 176_250	0.289	1.125	2.014	0.006	0.065	0.065	568.299	0.026
Crushing/Proc. Equipment	2020	251	500	7 251_500	0.281	1.078	1.799	0.005	0.063	0.063	568.299	0.025
Crushing/Proc. Equipment	2020	501	750	8 501_750	0.281	1.077	1.835	0.005	0.063	0.063	568.299	0.025
Crushing/Proc. Equipment	2020	1001	9999	10 1001_9999	0.329	1.153	3.699	0.005	0.089	0.089	568.299	0.029
Crushing/Proc. Equipment	2021	26	50	3 26_50	0.862	5.136	4.211	0.007	0.201	0.201	568.299	0.077
Crushing/Proc. Equipment	2021	51	120	4 51_120	0.438	3.711	2.989	0.006	0.178	0.178	568.299	0.039
Crushing/Proc. Equipment	2021	121	175	5 121_175	0.344	3.235	2.114	0.006	0.109	0.109	568.299	0.031
Crushing/Proc. Equipment	2021	176	250	6 176_250	0.274	1.119	1.756	0.006	0.057	0.057	568.299	0.024
Crushing/Proc. Equipment	2021	251	500	7 251_500	0.268	1.072	1.574	0.005	0.055	0.055	568.3	0.024
Crushing/Proc. Equipment	2021	501	750	8 501_750	0.268	1.072	1.606	0.005	0.055	0.055	568.299	0.024
Crushing/Proc. Equipment	2021	1001	9999	10 1001_9999	0.314	1.136	3.487	0.005	0.08	0.08	568.299	0.028
Dumpers/Tenders	2020	16	25	2 16_25	0.685	2.339	4.336	0.007	0.165	0.165	568.299	0.061
Dumpers/Tenders	2021	16	25	2 16_25	0.685	2.339	4.333	0.007	0.163	0.163	568.299	0.061
Excavators	2020	16	25	2 16_25	0.593	4.50032	4.03131	0.005	0.222	0.204	525.3675	0.17
Excavators	2020	26	50	3 26_50	0.593	4.50032	4.03131	0.005	0.222	0.204	525.3675	0.17
Excavators	2020	51	120	4 51_120	0.299	3.50495	3.08964	0.005	0.185	0.17	468.0546	0.151
Excavators	2020	121	175	5 121_175	0.231	3.08597	2.27838	0.005	0.11	0.102	472.2891	0.153
Excavators	2020	176	250	6 176_250	0.177	1.11778	2.02738	0.005	0.061	0.056	471.8828	0.153
Excavators	2020	251	500	7 251_500	0.153	1.1016	1.57199	0.005	0.052	0.048	470.2956	0.152
Excavators	2020	501	750	8 501_750	0.17	1.14543	1.79718	0.005	0.061	0.056	468.8706	0.152
Excavators	2021	16	25	2 16_25	0.562	4.46094	3.91866	0.005	0.202	0.186	525.3774	0.17
Excavators	2021	26	50	3 26_50	0.562	4.46094	3.91866	0.005	0.202	0.186	525.3774	0.17
Excavators	2021	51	120	4 51_120	0.275	3.49196	2.84891	0.005	0.161	0.148	467.7906	0.151
Excavators	2021	121	175	5 121_175	0.216	3.08975	2.03357	0.005	0.099	0.091	472.3586	0.153
Excavators	2021	176	250	6 176_250	0.163	1.10324	1.70572	0.005	0.052	0.048	471.7931	0.153
Excavators	2021	251	500	7 251_500	0.143	1.08777	1.33174	0.005	0.045	0.041	469.6156	0.152
Excavators	2021	501	750	8 501_750	0.165	1.14978	1.61856	0.005	0.056	0.052	469.547	0.152
Forklifts	2020	26	50	3 26_50	1.124	5.70563	4.68572	0.005	0.36	0.331	525.4833	0.17
Forklifts	2020	51	120	4 51_120	0.459	3.75954	4.13299	0.005	0.308	0.283	471.5285	0.153

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Forklifts	2020	121	175	5 121_175	0.338	3.24885	3.3196	0.005	0.18	0.165	472.1062	0.153
Forklifts	2020	176	250	6 176_250	0.293	1.44178	3.24149	0.005	0.126	0.116	473.3255	0.153
Forklifts	2020	251	500	7 251_500	0.251	1.47807	2.43991	0.005	0.097	0.089	473.6151	0.153
Forklifts	2021	26	50	3 26_50	1.002	5.53477	4.5202	0.005	0.318	0.292	525.4833	0.17
Forklifts	2021	51	120	4 51_120	0.412	3.72	3.75592	0.005	0.267	0.245	471.5285	0.153
Forklifts	2021	121	175	5 121_175	0.308	3.23128	2.9207	0.005	0.158	0.145	472.1062	0.153
Forklifts	2021	176	250	6 176_250	0.249	1.33672	2.58195	0.005	0.099	0.091	473.3255	0.153
Forklifts	2021	251	500	7 251_500	0.254	1.48481	2.30266	0.005	0.094	0.086	473.6151	0.153
Generator Sets	2020	6	15	1 6_15	0.646	3.546	4.516	0.008	0.212	0.212	568.299	0.058
Generator Sets	2020	16	25	2 16_25	0.721	2.473	4.538	0.007	0.205	0.205	568.299	0.065
Generator Sets	2020	26	50	3 26_50	0.691	3.995	4.075	0.007	0.194	0.194	568.299	0.062
Generator Sets	2020	51	120	4 51_120	0.364	3.38	3.173	0.006	0.179	0.179	568.299	0.032
Generator Sets	2020	121	175	5 121_175	0.267	2.93	2.38	0.006	0.105	0.105	568.299	0.024
Generator Sets	2020	176	250	6 176_250	0.198	1.026	2.016	0.006	0.057	0.057	568.299	0.017
Generator Sets	2020	251	500	7 251_500	0.188	1.005	1.816	0.005	0.055	0.055	568.299	0.017
Generator Sets	2020	501	750	8 501_750	0.191	1.005	1.858	0.005	0.056	0.056	568.299	0.017
Generator Sets	2020	1001	9999	10 1001_9999	0.242	1.082	3.608	0.005	0.079	0.079	568.3	0.021
Generator Sets	2021	6	15	1 6_15	0.634	3.531	4.441	0.008	0.201	0.201	568.299	0.057
Generator Sets	2021	16	25	2 16_25	0.712	2.446	4.497	0.007	0.196	0.196	568.299	0.064
Generator Sets	2021	26	50	3 26_50	0.613	3.905	3.916	0.007	0.165	0.165	568.299	0.055
Generator Sets	2021	51	120	4 51_120	0.326	3.361	2.888	0.006	0.153	0.153	568.299	0.029
Generator Sets	2021	121	175	5 121_175	0.243	2.925	2.068	0.006	0.091	0.091	568.299	0.021
Generator Sets	2021	176	250	6 176_250	0.183	1.016	1.73	0.006	0.049	0.049	568.299	0.016
Generator Sets	2021	251	500	7 251_500	0.175	0.996	1.562	0.005	0.048	0.048	568.299	0.015
Generator Sets	2021	501	750	8 501_750	0.177	0.996	1.596	0.005	0.048	0.048	568.299	0.016
Generator Sets	2021	1001	9999	10 1001_9999	0.22	1.06	3.372	0.005	0.07	0.07	568.3	0.019
Graders	2020	26	50	3 26_50	2.516	8.13394	5.82549	0.005	0.709	0.652	492.8615	0.159
Graders	2020	51	120	4 51_120	0.976	4.56142	7.72513	0.005	0.622	0.572	469.3371	0.152
Graders	2020	121	175	5 121_175	0.567	3.62102	5.53045	0.005	0.309	0.284	478.0403	0.155
Graders	2020	176	250	6 176_250	0.352	1.34183	4.67787	0.005	0.15	0.138	475.3037	0.154
Graders	2020	251	500	7 251_500	0.322	1.5256	3.10731	0.005	0.121	0.111	471.9795	0.153
Graders	2020	501	750	8 501_750	0.319	1.229	2.031	0.005	0.072	0.072	568.299	0.028
Graders	2021	26	50	3 26_50	2.235	7.62621	5.48468	0.005	0.631	0.581	492.9352	0.159
Graders	2021	51	120	4 51_120	0.901	4.45175	7.12535	0.005	0.57	0.524	469.0701	0.152
Graders	2021	121	175	5 121_175	0.505	3.55896	4.83947	0.005	0.27	0.248	478.5289	0.155
Graders	2021	176	250	6 176_250	0.335	1.30687	4.38134	0.005	0.139	0.128	474.5386	0.153
Graders	2021	251	500	7 251_500	0.322	1.46044	3.01257	0.005	0.117	0.108	471.8981	0.153
Graders	2021	501	750	8 501_750	0.303	1.207	1.808	0.005	0.064	0.064	568.299	0.027
Off-Highway Tractors	2020	51	120	4 51_120	0.448	3.78798	4.18317	0.005	0.307	0.282	474.1481	0.153
Off-Highway Tractors	2020	121	175	5 121_175	0.271	3.21511	2.89032	0.005	0.14	0.129	472.9169	0.153
Off-Highway Tractors	2020	176	250	6 176_250	0.221	1.1813	2.57547	0.005	0.086	0.079	470.943	0.152

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Off-Highway Tractors	2020	501	750	8 501_750	0.201	1.13143	2.04663	0.005	0.076	0.07	471.8151	0.153
Off-Highway Tractors	2020	751	1000	9 751_1000	0.15	1.02156	2.39599	0.005	0.063	0.058	472.0545	0.153
Off-Highway Tractors	2021	51	120	4 51_120	0.395	3.74258	3.77306	0.005	0.261	0.24	474.5155	0.153
Off-Highway Tractors	2021	121	175	5 121_175	0.259	3.21953	2.65962	0.005	0.129	0.118	472.9236	0.153
Off-Highway Tractors	2021	176	250	6 176_250	0.2	1.16179	2.11341	0.005	0.072	0.067	471.0028	0.152
Off-Highway Tractors	2021	501	750	8 501_750	0.181	1.12237	1.71505	0.005	0.063	0.058	471.8056	0.153
Off-Highway Tractors	2021	751	1000	9 751_1000	0.16	1.0331	2.41401	0.005	0.064	0.059	472.0545	0.153
Off-Highway Trucks	2020	121	175	5 121_175	0.31	3.3388	2.62769	0.005	0.137	0.126	470.0967	0.152
Off-Highway Trucks	2020	176	250	6 176_250	0.275	1.39106	2.50726	0.005	0.098	0.09	470.1675	0.152
Off-Highway Trucks	2020	251	500	7 251_500	0.246	1.41417	2.34677	0.005	0.086	0.079	474.5787	0.153
Off-Highway Trucks	2020	501	750	8 501_750	0.312	2.02683	3.05816	0.005	0.12	0.11	472.7499	0.153
Off-Highway Trucks	2020	751	1000	9 751_1000	0.303	1.37163	4.79365	0.005	0.125	0.115	469.8892	0.152
Off-Highway Trucks	2021	121	175	5 121_175	0.278	3.32405	2.24626	0.005	0.113	0.104	470.2898	0.152
Off-Highway Trucks	2021	176	250	6 176_250	0.249	1.34839	2.10869	0.005	0.082	0.076	470.1932	0.152
Off-Highway Trucks	2021	251	500	7 251_500	0.225	1.33781	1.95357	0.005	0.072	0.066	474.542	0.153
Off-Highway Trucks	2021	501	750	8 501_750	0.293	1.93522	2.66798	0.005	0.106	0.098	472.991	0.153
Off-Highway Trucks	2021	751	1000	9 751_1000	0.256	1.25154	4.15817	0.005	0.099	0.091	471.0552	0.152
Other Construction Equipment	2020	6	15	1 6_15	1.072	5.40446	5.03626	0.005	0.405	0.373	527.9656	0.171
Other Construction Equipment	2020	16	25	2 16_25	1.072	5.40446	5.03626	0.005	0.405	0.373	527.9656	0.171
Other Construction Equipment	2020	26	50	3 26_50	1.072	5.40446	5.03626	0.005	0.405	0.373	527.9656	0.171
Other Construction Equipment	2020	51	120	4 51_120	0.519	3.73189	4.7712	0.005	0.354	0.325	472.2162	0.153
Other Construction Equipment	2020	121	175	5 121_175	0.388	3.23528	4.11203	0.005	0.217	0.2	469.9837	0.152
Other Construction Equipment	2020	251	500	7 251_500	0.224	1.6338	2.63672	0.005	0.096	0.088	475.2326	0.154
Other Construction Equipment	2021	6	15	1 6_15	1.01	5.30749	4.90234	0.005	0.382	0.351	527.7834	0.171
Other Construction Equipment	2021	16	25	2 16_25	1.01	5.30749	4.90234	0.005	0.382	0.351	527.7834	0.171
Other Construction Equipment	2021	26	50	3 26_50	1.01	5.30749	4.90234	0.005	0.382	0.351	527.7834	0.171
Other Construction Equipment	2021	51	120	4 51_120	0.482	3.70304	4.4558	0.005	0.323	0.298	472.275	0.153
Other Construction Equipment	2021	121	175	5 121_175	0.33	3.18275	3.43847	0.005	0.18	0.165	469.7642	0.152
Other Construction Equipment	2021	251	500	7 251_500	0.215	1.59874	2.42822	0.005	0.09	0.082	475.2124	0.154
Other General Industrial Equipment	2020	6	15	1 6_15	0.946	5.50397	4.62219	0.005	0.334	0.307	526.1761	0.17
Other General Industrial Equipment	2020	16	25	2 16_25	0.946	5.50397	4.62219	0.005	0.334	0.307	526.1761	0.17
Other General Industrial Equipment	2020	26	50	3 26_50	0.946	5.50397	4.62219	0.005	0.334	0.307	526.1761	0.17
Other General Industrial Equipment	2020	51	120	4 51_120	0.446	3.77073	4.06079	0.005	0.296	0.272	469.9998	0.152
Other General Industrial Equipment	2020	121	175	5 121_175	0.268	3.22922	2.57503	0.005	0.135	0.124	471.8502	0.153
Other General Industrial Equipment	2020	176	250	6 176_250	0.237	1.23914	2.66782	0.005	0.09	0.083	473.2231	0.153
Other General Industrial Equipment	2020	251	500	7 251_500	0.208	1.34424	2.06187	0.005	0.072	0.067	472.929	0.153
Other General Industrial Equipment	2020	501	750	8 501_750	0.175	1.46184	1.67591	0.005	0.062	0.057	473.4638	0.153
Other General Industrial Equipment	2020	751	1000	9 751_1000	0.271	1.085	4.85721	0.005	0.119	0.109	472.0545	0.153
Other General Industrial Equipment	2021	6	15	1 6_15	0.831	5.31354	4.42532	0.005	0.289	0.266	526.1761	0.17
Other General Industrial Equipment	2021	16	25	2 16_25	0.831	5.31354	4.42532	0.005	0.289	0.266	526.1761	0.17
Other General Industrial Equipment	2021	26	50	3 26_50	0.831	5.31354	4.42532	0.005	0.289	0.266	526.1761	0.17

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Other General Industrial Equipment	2021	51	120	4 51_120	0.404	3.74029	3.7177	0.005	0.256	0.235	469.9998	0.152
Other General Industrial Equipment	2021	121	175	5 121_175	0.254	3.23421	2.34745	0.005	0.121	0.111	471.8502	0.153
Other General Industrial Equipment	2021	176	250	6 176_250	0.204	1.17138	2.0939	0.005	0.07	0.064	473.2231	0.153
Other General Industrial Equipment	2021	251	500	7 251_500	0.195	1.32956	1.79624	0.005	0.064	0.059	472.929	0.153
Other General Industrial Equipment	2021	501	750	8 501_750	0.166	1.46305	1.38672	0.005	0.054	0.05	473.4638	0.153
Other General Industrial Equipment	2021	751	1000	9 751_1000	0.276	1.09291	4.87557	0.005	0.12	0.11	472.0545	0.153
Other Material Handling Equipment	2020	26	50	3 26_50	1.245	6.1671	5.13925	0.005	0.439	0.404	523.7088	0.169
Other Material Handling Equipment	2020	51	120	4 51_120	0.307	3.58938	3.10396	0.005	0.182	0.168	473.5884	0.153
Other Material Handling Equipment	2020	121	175	5 121_175	0.252	3.17089	2.36653	0.005	0.118	0.109	472.2193	0.153
Other Material Handling Equipment	2020	176	250	6 176_250	0.291	1.31882	3.59889	0.005	0.115	0.106	471.482	0.152
Other Material Handling Equipment	2020	251	500	7 251_500	0.282	1.52346	3.20974	0.005	0.12	0.11	470.2972	0.152
Other Material Handling Equipment	2020	1001	9999	10 1001_9999	0.2	1.04898	3.61407	0.005	0.078	0.072	472.0545	0.153
Other Material Handling Equipment	2021	26	50	3 26_50	1.108	5.95956	4.96638	0.005	0.396	0.364	523.7088	0.169
Other Material Handling Equipment	2021	51	120	4 51_120	0.294	3.60203	2.95622	0.005	0.166	0.152	473.5884	0.153
Other Material Handling Equipment	2021	121	175	5 121_175	0.249	3.19638	2.24633	0.005	0.114	0.105	472.2193	0.153
Other Material Handling Equipment	2021	176	250	6 176_250	0.269	1.30911	3.08193	0.005	0.102	0.094	471.482	0.152
Other Material Handling Equipment	2021	251	500	7 251_500	0.254	1.44188	2.60166	0.005	0.101	0.093	470.2972	0.152
Other Material Handling Equipment	2021	1001	9999	10 1001_9999	0.072	0.97159	2.3179	0.005	0.019	0.018	472.0545	0.153
Pavers	2020	16	25	2 16_25	1.318	5.52345	4.76401	0.005	0.402	0.37	526.2098	0.17
Pavers	2020	26	50	3 26_50	1.318	5.52345	4.76401	0.005	0.402	0.37	526.2098	0.17
Pavers	2020	51	120	4 51_120	0.47	3.60405	4.42718	0.005	0.325	0.299	469.8815	0.152
Pavers	2020	121	175	5 121_175	0.273	3.0097	2.91833	0.005	0.142	0.131	472.7746	0.153
Pavers	2020	176	250	6 176_250	0.176	1.02834	2.77699	0.005	0.076	0.07	472.8337	0.153
Pavers	2020	251	500	7 251_500	0.165	0.98677	2.13394	0.005	0.077	0.071	466.2059	0.151
Pavers	2021	16	25	2 16_25	1.208	5.30162	4.60183	0.005	0.37	0.34	526.5153	0.17
Pavers	2021	26	50	3 26_50	1.208	5.30162	4.60183	0.005	0.37	0.34	526.5153	0.17
Pavers	2021	51	120	4 51_120	0.42	3.56251	4.02622	0.005	0.285	0.262	469.7736	0.152
Pavers	2021	121	175	5 121_175	0.256	3.01647	2.6948	0.005	0.13	0.12	472.5552	0.153
Pavers	2021	176	250	6 176_250	0.165	1.02422	2.4844	0.005	0.07	0.064	472.4765	0.153
Pavers	2021	251	500	7 251_500	0.164	0.9877	2.05298	0.005	0.074	0.068	465.5908	0.151
Paving Equipment	2020	16	25	2 16_25	0.621	4.22322	3.9519	0.005	0.217	0.2	520.1235	0.168
Paving Equipment	2020	26	50	3 26_50	0.621	4.22322	3.9519	0.005	0.217	0.2	520.1235	0.168
Paving Equipment	2020	51	120	4 51_120	0.397	3.58172	3.78064	0.005	0.256	0.235	473.3249	0.153
Paving Equipment	2020	121	175	5 121_175	0.248	3.02393	2.55498	0.005	0.128	0.118	470.7359	0.152
Paving Equipment	2020	176	250	6 176_250	0.243	1.25215	3.2202	0.005	0.111	0.102	472.1514	0.153
Paving Equipment	2021	16	25	2 16_25	0.587	4.21072	3.88226	0.005	0.2	0.184	520.3965	0.168
Paving Equipment	2021	26	50	3 26_50	0.587	4.21072	3.88226	0.005	0.2	0.184	520.3965	0.168
Paving Equipment	2021	51	120	4 51_120	0.355	3.5537	3.45065	0.005	0.219	0.201	473.2205	0.153
Paving Equipment	2021	121	175	5 121_175	0.229	3.03229	2.31505	0.005	0.114	0.105	470.6495	0.152
Paving Equipment	2021	176	250	6 176_250	0.211	1.20904	2.58202	0.005	0.092	0.085	472.151	0.153
Plate Compactors	2020	6	15	1 6_15	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059

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Plate Compactors	2021	6	15	1 6_15	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
Pressure Washers	2020	6	15	1 6_15	0.646	3.546	4.516	0.008	0.212	0.212	568.299	0.058
Pressure Washers	2020	16	25	2 16_25	0.721	2.473	4.538	0.007	0.205	0.205	568.299	0.065
Pressure Washers	2020	26	50	3 26_50	0.499	3.393	3.917	0.007	0.161	0.161	568.299	0.045
Pressure Washers	2020	51	120	4 51_120	0.298	3.225	3.036	0.006	0.151	0.151	568.299	0.026
Pressure Washers	2020	121	175	5 121_175	0.258	2.907	2.383	0.006	0.104	0.104	568.299	0.023
Pressure Washers	2020	176	250	6 176_250	0.098	0.986	0.265	0.006	0.009	0.009	568.299	0.008
Pressure Washers	2021	6	15	1 6_15	0.634	3.531	4.441	0.008	0.201	0.201	568.299	0.057
Pressure Washers	2021	16	25	2 16_25	0.712	2.446	4.497	0.007	0.196	0.196	568.299	0.064
Pressure Washers	2021	26	50	3 26_50	0.439	3.329	3.765	0.007	0.136	0.136	568.299	0.039
Pressure Washers	2021	51	120	4 51_120	0.264	3.21	2.766	0.006	0.129	0.129	568.299	0.023
Pressure Washers	2021	121	175	5 121_175	0.238	2.907	2.118	0.006	0.093	0.093	568.299	0.021
Pressure Washers	2021	176	250	6 176_250	0.098	0.986	0.265	0.006	0.009	0.009	568.299	0.008
Pumps	2020	6	15	1 6_15	0.731	3.546	4.542	0.008	0.227	0.227	568.299	0.066
Pumps	2020	16	25	2 16_25	0.769	2.473	4.538	0.007	0.212	0.212	568.299	0.069
Pumps	2020	26	50	3 26_50	0.755	4.197	4.128	0.007	0.206	0.206	568.299	0.068
Pumps	2020	51	120	4 51_120	0.386	3.432	3.219	0.006	0.189	0.189	568.299	0.034
Pumps	2020	121	175	5 121_175	0.285	2.974	2.418	0.006	0.111	0.111	568.299	0.025
Pumps	2020	176	250	6 176_250	0.212	1.042	2.05	0.006	0.06	0.06	568.299	0.019
Pumps	2020	251	500	7 251_500	0.203	1.017	1.841	0.005	0.057	0.057	568.3	0.018
Pumps	2020	501	750	8 501_750	0.205	1.017	1.884	0.005	0.058	0.058	568.299	0.018
Pumps	2020	1001	9999	10 1001_9999	0.255	1.096	3.649	0.005	0.081	0.081	568.3	0.023
Pumps	2021	6	15	1 6_15	0.717	3.531	4.462	0.008	0.214	0.214	568.299	0.064
Pumps	2021	16	25	2 16_25	0.752	2.446	4.497	0.007	0.201	0.201	568.299	0.067
Pumps	2021	26	50	3 26_50	0.671	4.099	3.966	0.007	0.175	0.175	568.299	0.06
Pumps	2021	51	120	4 51_120	0.347	3.412	2.928	0.006	0.162	0.162	568.3	0.031
Pumps	2021	121	175	5 121_175	0.26	2.968	2.101	0.006	0.096	0.096	568.299	0.023
Pumps	2021	176	250	6 176_250	0.197	1.031	1.759	0.006	0.052	0.052	568.299	0.017
Pumps	2021	251	500	7 251_500	0.189	1.007	1.584	0.005	0.05	0.05	568.299	0.017
Pumps	2021	501	750	8 501_750	0.191	1.007	1.618	0.005	0.05	0.05	568.299	0.017
Pumps	2021	1001	9999	10 1001_9999	0.233	1.074	3.409	0.005	0.072	0.072	568.3	0.021
Rollers	2020	6	15	1 6_15	0.926	4.72504	4.53426	0.005	0.329	0.303	525.8798	0.17
Rollers	2020	16	25	2 16_25	0.926	4.72504	4.53426	0.005	0.329	0.303	525.8798	0.17
Rollers	2020	26	50	3 26_50	0.926	4.72504	4.53426	0.005	0.329	0.303	525.8798	0.17
Rollers	2020	51	120	4 51_120	0.388	3.53135	3.88153	0.005	0.247	0.228	473.8594	0.153
Rollers	2020	121	175	5 121_175	0.215	2.93333	2.45176	0.005	0.113	0.104	471.9177	0.153
Rollers	2020	176	250	6 176_250	0.209	1.25343	2.75095	0.005	0.089	0.082	473.3669	0.153
Rollers	2020	251	500	7 251_500	0.235	2.11346	2.82823	0.005	0.109	0.101	479.3254	0.155
Rollers	2021	6	15	1 6_15	0.847	4.59681	4.35097	0.005	0.294	0.27	525.7908	0.17
Rollers	2021	16	25	2 16_25	0.847	4.59681	4.35097	0.005	0.294	0.27	525.7908	0.17
Rollers	2021	26	50	3 26_50	0.847	4.59681	4.35097	0.005	0.294	0.27	525.7908	0.17

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Rollers	2021	51	120	4 51_120	0.353	3.50719	3.5889	0.005	0.219	0.202	473.9012	0.153
Rollers	2021	121	175	5 121_175	0.193	2.9256	2.11691	0.005	0.097	0.09	471.9799	0.153
Rollers	2021	176	250	6 176_250	0.196	1.22849	2.49332	0.005	0.081	0.075	473.4704	0.153
Rollers	2021	251	500	7 251_500	0.221	1.94995	2.58936	0.005	0.1	0.092	479.3294	0.155
Rough Terrain Forklifts	2020	26	50	3 26_50	0.999	4.68594	4.4946	0.005	0.316	0.291	525.6222	0.17
Rough Terrain Forklifts	2020	51	120	4 51_120	0.189	3.25575	2.45218	0.005	0.103	0.094	472.9842	0.153
Rough Terrain Forklifts	2020	121	175	5 121_175	0.143	2.84466	1.86888	0.005	0.068	0.063	471.7152	0.153
Rough Terrain Forklifts	2020	176	250	6 176_250	0.112	0.97848	1.60906	0.005	0.037	0.034	472.5671	0.153
Rough Terrain Forklifts	2020	251	500	7 251_500	0.089	0.94184	1.30199	0.005	0.028	0.026	465.7709	0.151
Rough Terrain Forklifts	2021	26	50	3 26_50	0.968	4.65658	4.41145	0.005	0.304	0.279	525.3844	0.17
Rough Terrain Forklifts	2021	51	120	4 51_120	0.175	3.25191	2.28534	0.005	0.089	0.081	473.11	0.153
Rough Terrain Forklifts	2021	121	175	5 121_175	0.13	2.8447	1.61661	0.005	0.06	0.055	471.7575	0.153
Rough Terrain Forklifts	2021	176	250	6 176_250	0.115	0.98379	1.61186	0.005	0.037	0.034	472.5469	0.153
Rough Terrain Forklifts	2021	251	500	7 251_500	0.092	0.94604	1.30199	0.005	0.028	0.026	465.7442	0.151
Rubber Tired Dozers	2020	121	175	5 121_175	0.726	3.89288	7.18525	0.005	0.411	0.378	473.0116	0.153
Rubber Tired Dozers	2020	176	250	6 176_250	0.619	2.37104	6.50332	0.005	0.318	0.293	474.7928	0.154
Rubber Tired Dozers	2020	251	500	7 251_500	0.535	4.41134	5.64089	0.005	0.259	0.238	479.7569	0.155
Rubber Tired Dozers	2020	501	750	8 501_750	0.456	2.60108	6.12255	0.005	0.218	0.201	473.0562	0.153
Rubber Tired Dozers	2020	751	1000	9 751_1000	0.522	2.164	5.306	0.005	0.16	0.16	568.299	0.047
Rubber Tired Dozers	2021	121	175	5 121_175	0.691	3.84814	6.79037	0.005	0.386	0.355	472.9751	0.153
Rubber Tired Dozers	2021	176	250	6 176_250	0.6	2.31719	6.29617	0.005	0.306	0.281	474.7984	0.154
Rubber Tired Dozers	2021	251	500	7 251_500	0.492	4.04107	5.081	0.005	0.232	0.214	478.9868	0.155
Rubber Tired Dozers	2021	501	750	8 501_750	0.458	2.60396	6.12254	0.005	0.218	0.201	473.0459	0.153
Rubber Tired Dozers	2021	751	1000	9 751_1000	0.497	2.057	5.095	0.005	0.15	0.15	568.299	0.044
Rubber Tired Loaders	2020	16	25	2 16_25	1.48	6.76793	5.25369	0.005	0.474	0.436	524.6967	0.17
Rubber Tired Loaders	2020	26	50	3 26_50	1.48	6.76793	5.25369	0.005	0.474	0.436	524.6967	0.17
Rubber Tired Loaders	2020	51	120	4 51_120	0.556	3.94839	4.68644	0.005	0.367	0.338	465.6735	0.151
Rubber Tired Loaders	2020	121	175	5 121_175	0.379	3.36809	3.51735	0.005	0.194	0.178	471.2135	0.152
Rubber Tired Loaders	2020	176	250	6 176_250	0.29	1.26885	3.42116	0.005	0.114	0.104	469.5127	0.152
Rubber Tired Loaders	2020	251	500	7 251_500	0.289	1.6304	3.01666	0.005	0.112	0.103	466.7831	0.151
Rubber Tired Loaders	2020	501	750	8 501_750	0.277	1.39991	2.76722	0.005	0.107	0.099	462.193	0.149
Rubber Tired Loaders	2020	751	1000	9 751_1000	0.311	1.20366	5.25309	0.005	0.139	0.127	469.9352	0.152
Rubber Tired Loaders	2021	16	25	2 16_25	1.325	6.44855	4.97419	0.005	0.409	0.376	524.5505	0.17
Rubber Tired Loaders	2021	26	50	3 26_50	1.325	6.44855	4.97419	0.005	0.409	0.376	524.5505	0.17
Rubber Tired Loaders	2021	51	120	4 51_120	0.498	3.8917	4.21491	0.005	0.316	0.291	466.4213	0.151
Rubber Tired Loaders	2021	121	175	5 121_175	0.346	3.35381	3.11886	0.005	0.171	0.157	471.0804	0.152
Rubber Tired Loaders	2021	176	250	6 176_250	0.266	1.24034	2.9977	0.005	0.1	0.092	469.5642	0.152
Rubber Tired Loaders	2021	251	500	7 251_500	0.264	1.52922	2.61037	0.005	0.097	0.09	467.9277	0.151
Rubber Tired Loaders	2021	501	750	8 501_750	0.271	1.39703	2.64092	0.005	0.102	0.094	462.0548	0.149
Rubber Tired Loaders	2021	751	1000	9 751_1000	0.294	1.2055	4.97489	0.005	0.128	0.118	471.2577	0.152
Scrapers	2020	51	120	4 51_120	0.701	4.19756	6.6767	0.005	0.51	0.469	483.745	0.156

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Scrapers	2020	121	175	5 121_175	0.478	3.50114	4.86851	0.005	0.262	0.241	478.6077	0.155
Scrapers	2020	176	250	6 176_250	0.446	2.06469	5.089	0.005	0.223	0.205	468.9883	0.152
Scrapers	2020	251	500	7 251_500	0.32	2.40063	3.78254	0.005	0.148	0.136	472.1751	0.153
Scrapers	2020	501	750	8 501_750	0.262	1.72502	3.12592	0.005	0.113	0.104	471.7776	0.153
Scrapers	2021	51	120	4 51_120	0.704	4.21819	6.65882	0.005	0.512	0.471	483.7128	0.156
Scrapers	2021	121	175	5 121_175	0.432	3.45599	4.34133	0.005	0.232	0.213	478.654	0.155
Scrapers	2021	176	250	6 176_250	0.391	1.88374	4.36706	0.005	0.189	0.174	469.1258	0.152
Scrapers	2021	251	500	7 251_500	0.299	2.25454	3.44481	0.005	0.134	0.123	472.4636	0.153
Scrapers	2021	501	750	8 501_750	0.25	1.65772	2.88702	0.005	0.105	0.097	471.7859	0.153
Signal Boards	2020	6	15	1 6_15	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
Signal Boards	2020	26	50	3 26_50	0.788	4.448	4.132	0.007	0.206	0.206	568.299	0.071
Signal Boards	2020	51	120	4 51_120	0.395	3.504	3.134	0.006	0.187	0.187	568.299	0.035
Signal Boards	2020	121	175	5 121_175	0.298	3.043	2.309	0.006	0.11	0.11	568.299	0.026
Signal Boards	2020	176	250	6 176_250	0.274	1.281	2.35	0.007	0.071	0.071	686.695	0.024
Signal Boards	2021	6	15	1 6_15	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
Signal Boards	2021	26	50	3 26_50	0.714	4.38	4.002	0.007	0.179	0.179	568.299	0.064
Signal Boards	2021	51	120	4 51_120	0.363	3.493	2.889	0.006	0.162	0.162	568.299	0.032
Signal Boards	2021	121	175	5 121_175	0.278	3.043	2.043	0.006	0.098	0.098	568.299	0.025
Signal Boards	2021	176	250	6 176_250	0.26	1.273	2.053	0.007	0.063	0.063	686.695	0.023
Skid Steer Loaders	2020	16	25	2 16_25	0.439	3.76397	3.69113	0.005	0.145	0.133	527.7577	0.171
Skid Steer Loaders	2020	26	50	3 26_50	0.439	3.76397	3.69113	0.005	0.145	0.133	527.7577	0.171
Skid Steer Loaders	2020	51	120	4 51_120	0.188	3.2771	2.5046	0.005	0.108	0.1	471.9075	0.153
Skid Steer Loaders	2021	16	25	2 16_25	0.409	3.73158	3.57304	0.005	0.126	0.116	527.4501	0.171
Skid Steer Loaders	2021	26	50	3 26_50	0.409	3.73158	3.57304	0.005	0.126	0.116	527.4501	0.171
Skid Steer Loaders	2021	51	120	4 51_120	0.178	3.27687	2.36588	0.005	0.096	0.089	471.9774	0.153
Surfacing Equipment	2020	26	50	3 26_50	0.536	3.93357	4.23906	0.006	0.216	0.199	535.5275	0.173
Surfacing Equipment	2020	51	120	4 51_120	0.33	3.43932	3.61216	0.005	0.206	0.19	473.8188	0.153
Surfacing Equipment	2020	121	175	5 121_175	0.307	2.93068	3.67232	0.005	0.175	0.161	469.2079	0.152
Surfacing Equipment	2020	176	250	6 176_250	0.212	1.21774	3.22243	0.005	0.097	0.089	476.4261	0.154
Surfacing Equipment	2020	251	500	7 251_500	0.146	1.21902	1.83755	0.005	0.067	0.062	471.6331	0.153
Surfacing Equipment	2020	501	750	8 501_750	0.142	0.99569	2.09374	0.005	0.074	0.068	469.6252	0.152
Surfacing Equipment	2021	26	50	3 26_50	0.507	3.93231	4.18875	0.006	0.204	0.188	535.784	0.173
Surfacing Equipment	2021	51	120	4 51_120	0.312	3.43619	3.46112	0.005	0.191	0.175	474.0906	0.153
Surfacing Equipment	2021	121	175	5 121_175	0.258	2.91895	3.09858	0.005	0.145	0.134	469.1687	0.152
Surfacing Equipment	2021	176	250	6 176_250	0.207	1.21854	2.99364	0.005	0.092	0.085	476.8023	0.154
Surfacing Equipment	2021	251	500	7 251_500	0.141	1.20226	1.75282	0.005	0.064	0.058	471.7484	0.153
Surfacing Equipment	2021	501	750	8 501_750	0.125	0.99181	1.59712	0.005	0.062	0.057	470.4087	0.152
Sweepers/Scrubbers	2020	6	15	1 6_15	1.344	6.1554	5.09515	0.005	0.463	0.426	525.3284	0.17
Sweepers/Scrubbers	2020	16	25	2 16_25	1.344	6.1554	5.09515	0.005	0.463	0.426	525.3284	0.17
Sweepers/Scrubbers	2020	26	50	3 26_50	1.344	6.1554	5.09515	0.005	0.463	0.426	525.3284	0.17
Sweepers/Scrubbers	2020	51	120	4 51_120	0.52	3.82752	4.4821	0.005	0.36	0.331	474.1157	0.153

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Sweepers/Scrubbers	2020	121	175	5 121_175	0.462	3.35909	4.60809	0.005	0.237	0.218	473.1221	0.153
Sweepers/Scrubbers	2020	176	250	6 176_250	0.207	1.13655	2.4856	0.005	0.079	0.073	470.1263	0.152
Sweepers/Scrubbers	2021	6	15	1 6_15	1.219	5.89996	4.84946	0.005	0.412	0.379	525.3284	0.17
Sweepers/Scrubbers	2021	16	25	2 16_25	1.219	5.89996	4.84946	0.005	0.412	0.379	525.3284	0.17
Sweepers/Scrubbers	2021	26	50	3 26_50	1.219	5.89996	4.84946	0.005	0.412	0.379	525.3284	0.17
Sweepers/Scrubbers	2021	51	120	4 51_120	0.44	3.75746	3.96194	0.005	0.291	0.268	474.1157	0.153
Sweepers/Scrubbers	2021	121	175	5 121_175	0.385	3.24726	3.70723	0.005	0.187	0.172	473.1221	0.153
Sweepers/Scrubbers	2021	176	250	6 176_250	0.164	1.1084	1.75821	0.005	0.055	0.051	470.1263	0.152
Tractors/Loaders/Backhoes	2020	16	25	2 16_25	0.83	5.03491	4.39784	0.005	0.288	0.265	515.874	0.167
Tractors/Loaders/Backhoes	2020	26	50	3 26_50	0.83	5.03491	4.39784	0.005	0.288	0.265	515.874	0.167
Tractors/Loaders/Backhoes	2020	51	120	4 51_120	0.331	3.60147	3.32571	0.005	0.21	0.193	475.1543	0.154
Tractors/Loaders/Backhoes	2020	121	175	5 121_175	0.246	3.10518	2.41467	0.005	0.122	0.112	467.5132	0.151
Tractors/Loaders/Backhoes	2020	176	250	6 176_250	0.225	1.19592	2.73794	0.005	0.09	0.083	470.4998	0.152
Tractors/Loaders/Backhoes	2020	251	500	7 251_500	0.194	1.35815	2.07976	0.005	0.073	0.067	468.2447	0.151
Tractors/Loaders/Backhoes	2020	501	750	8 501_750	0.268	1.60984	3.11926	0.005	0.117	0.108	468.6602	0.152
Tractors/Loaders/Backhoes	2021	16	25	2 16_25	0.756	4.90172	4.22643	0.005	0.254	0.234	515.1213	0.167
Tractors/Loaders/Backhoes	2021	26	50	3 26_50	0.756	4.90172	4.22643	0.005	0.254	0.234	515.1213	0.167
Tractors/Loaders/Backhoes	2021	51	120	4 51_120	0.296	3.57072	2.995	0.005	0.177	0.162	475.3621	0.154
Tractors/Loaders/Backhoes	2021	121	175	5 121_175	0.221	3.0907	2.06221	0.005	0.104	0.096	467.5285	0.151
Tractors/Loaders/Backhoes	2021	176	250	6 176_250	0.209	1.18606	2.36922	0.005	0.08	0.074	470.5716	0.152
Tractors/Loaders/Backhoes	2021	251	500	7 251_500	0.179	1.34147	1.776	0.005	0.064	0.059	469.3025	0.152
Tractors/Loaders/Backhoes	2021	501	750	8 501_750	0.247	1.43254	2.75417	0.005	0.104	0.096	466.4564	0.151
Trenchers	2020	6	15	1 6_15	0.905	4.8331	4.67651	0.005	0.356	0.328	527.0962	0.17
Trenchers	2020	16	25	2 16_25	0.905	4.8331	4.67651	0.005	0.356	0.328	527.0962	0.17
Trenchers	2020	26	50	3 26_50	0.905	4.8331	4.67651	0.005	0.356	0.328	527.0962	0.17
Trenchers	2020	51	120	4 51_120	0.61	3.83272	5.51952	0.005	0.413	0.38	475.1265	0.154
Trenchers	2020	121	175	5 121_175	0.421	3.32968	4.46042	0.005	0.228	0.21	467.7348	0.151
Trenchers	2020	176	250	6 176_250	0.392	1.77405	4.8091	0.005	0.195	0.179	473.5951	0.153
Trenchers	2020	251	500	7 251_500	0.233	1.85932	2.775	0.005	0.105	0.097	470.6367	0.152
Trenchers	2020	501	750	8 501_750	0.07	0.95004	0.56006	0.005	0.009	0.008	472.6556	0.153
Trenchers	2021	6	15	1 6_15	0.809	4.66576	4.45891	0.005	0.313	0.288	527.0165	0.17
Trenchers	2021	16	25	2 16_25	0.809	4.66576	4.45891	0.005	0.313	0.288	527.0165	0.17
Trenchers	2021	26	50	3 26_50	0.809	4.66576	4.45891	0.005	0.313	0.288	527.0165	0.17
Trenchers	2021	51	120	4 51_120	0.556	3.78912	5.10594	0.005	0.371	0.341	475.287	0.154
Trenchers	2021	121	175	5 121_175	0.407	3.30363	4.27237	0.005	0.219	0.201	467.7343	0.151
Trenchers	2021	176	250	6 176_250	0.356	1.66826	4.36036	0.005	0.172	0.158	473.8538	0.153
Trenchers	2021	251	500	7 251_500	0.221	1.86493	2.49105	0.005	0.1	0.092	470.701	0.152
Trenchers	2021	501	750	8 501_750	0.066	0.94677	0.47513	0.005	0.009	0.008	472.5289	0.153
Welders	2020	6	15	1 6_15	0.731	3.546	4.542	0.008	0.227	0.227	568.299	0.066
Welders	2020	16	25	2 16_25	0.769	2.473	4.538	0.007	0.212	0.212	568.299	0.069
Welders	2020	26	50	3 26_50	0.937	4.84	4.304	0.007	0.238	0.238	568.299	0.084

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Welders	2020	51	120	4 51_120	0.455	3.605	3.351	0.006	0.216	0.216	568.299	0.041
Welders	2020	121	175	5 121_175	0.344	3.122	2.523	0.006	0.127	0.127	568.299	0.031
Welders	2020	176	250	6 176_250	0.261	1.093	2.143	0.006	0.066	0.066	568.299	0.023
Welders	2020	251	500	7 251_500	0.252	1.055	1.91	0.005	0.064	0.064	568.299	0.022
Welders	2021	6	15	1 6_15	0.717	3.531	4.462	0.008	0.214	0.214	568.299	0.064
Welders	2021	16	25	2 16_25	0.752	2.446	4.497	0.007	0.201	0.201	568.299	0.067
Welders	2021	26	50	3 26_50	0.829	4.708	4.133	0.007	0.203	0.203	568.299	0.074
Welders	2021	51	120	4 51_120	0.411	3.579	3.042	0.006	0.184	0.184	568.299	0.037
Welders	2021	121	175	5 121_175	0.315	3.112	2.189	0.006	0.11	0.11	568.299	0.028
Welders	2021	176	250	6 176_250	0.243	1.081	1.836	0.006	0.057	0.057	568.299	0.021
Welders	2021	251	500	7 251_500	0.236	1.044	1.642	0.005	0.055	0.055	568.299	0.021

Offroad Emission Factors (Controlled). Source: CalEEMod Users Guide Appendix D, Table 3.5

Tier 4 Final		(hp)	(g/hp-hr)	(g/hp-hr)	(g/hp-hr)	(g/hp-hr)	(g/hp-hr)	(g/hp-hr)
Tier 4 Bin	Low	High	ROG	CO	NOX	PM10	PM25	
1	25	49	0.12	4.1	2.75	0.008	0.008	
2	50	74	0.12	3.7	2.74	0.008	0.008	
3	75	119	0.12	3.7	0.26	0.008	0.008	
4	120	174	0.06	3.7	0.26	0.008	0.008	
5	175	299	0.06	2.2	0.26	0.008	0.008	
6	300	599	0.06	2.2	0.26	0.008	0.008	
7	600	750	0.06	2.2	0.26	0.008	0.008	
8	751	2000	0.06	2.6	2.24	0.016	0.016	

Air Quality/GHG, Data Tables

Onroad Emission Factors, Uncontrolled Exhaust (typ MDAB per CalEEMod 2016.3.2, Q.46 SCE, 6/8/2018)

(lb/mi) (lb/mi) (lb/mi) (lb/mi) (lb/mi) (lb/mi) (lb/mi) (lb/mi)

On Uncontrolled Exhaust

Vehicle Type	ROG	NOX	CO	SOX	PM10	PM25	CO2	CH4
passenger	0.000308	0.000279	0.003281	0.00000792	0.00000475	0.00000421	0.788512	0.0000282
delivery	0.000346	0.004683	0.002023	0.0000231	0.0001496	0.0001431	2.397769	0.00003
hhdt	0.000161	0.006102	0.000923	0.0000308	0.0000343	0.0000328	3.233361	0.0000172

Onroad Uncontrolled Dust

(lb/mi) (lb/mi)

On Uncontrolled Dust

Vehicle Type	Road Type	PM10	PM25	State	Lookup
passenger	Paved	0.0007597	0.0002014	Nevada	passenger_Paved_Nevada
delivery	Paved	0.0009749	0.000292	Nevada	delivery_Paved_Nevada
hhdt	Paved	0.0008759	0.0002402	Nevada	hhdt_Paved_Nevada
passenger	Unpaved	1.4717771	0.146894	Nevada	passenger_Unpaved_Nevada
delivery	Unpaved	1.4719923	0.1469846	Nevada	delivery_Unpaved_Nevada
hhdt	Unpaved	1.4718933	0.1469328	Nevada	hhdt_Unpaved_Nevada
passenger	Paved	0.0007597	0.0002014	California	passenger_Paved_California
delivery	Paved	0.0009749	0.000292	California	delivery_Paved_California
hhdt	Paved	0.0008759	0.0002402	California	hhdt_Paved_California
passenger	Unpaved	1.4717771	0.146894	California	passenger_Unpaved_California
delivery	Unpaved	1.4719923	0.1469846	California	delivery_Unpaved_California
hhdt	Unpaved	1.4718933	0.1469328	California	hhdt_Unpaved_California

Air Quality/GHG, Data Tables

Onroad Emission Factors, Controlled Exhaust (typ MDAB per CalEEMod 2016.3.2, Q.46 SCE, 6/8/2018)
 (lb/mi) (lb/mi) (lb/mi) (lb/mi) (lb/mi) (lb/mi) (lb/mi) (lb/mi)
 On Controlled Exhaust

Vehicle Type	ROG	NOX	CO	SOX	PM10	PM25	CO2	CH4
passenger	0.000308	0.000279	0.003281	0.00000792	0.00000457	4.21E-06	0.788512	2.82E-05
delivery	0.000346	0.004683	0.002023	0.0000231	0.0001496	0.000143	2.397769	0.00003
hhdt	0.000161	0.006102	0.000923	0.0000308	0.0000343	3.28E-05	3.233361	1.72E-05

Onroad Controlled Dust
 (lb/mi) (lb/mi)
 On Controlled Dust

Vehicle Type	Road Type	PM10	PM25	State	Lookup
passenger	Paved	0.0007597	0.0002014	Nevada	passenger_Paved_Nevada
delivery	Paved	0.0009137	0.0002663	Nevada	delivery_Paved_Nevada
hhdt	Paved	0.0008753	0.00024	Nevada	hhdt_Paved_Nevada
passenger	Unpaved	0.4055636	0.0404448	Nevada	passenger_Unpaved_Nevada
delivery	Unpaved	0.4057787	0.0405354	Nevada	delivery_Unpaved_Nevada
hhdt	Unpaved	0.4056797	0.0404836	Nevada	hhdt_Unpaved_Nevada
passenger	Paved	0.0007597	0.0002014	California	passenger_Paved_California
delivery	Paved	0.0009137	0.0002663	California	delivery_Paved_California
hhdt	Paved	0.0008753	0.00024	California	hhdt_Paved_California
passenger	Unpaved	0.235484336	0.02350304	California	passenger_Unpaved_California
delivery	Unpaved	0.235518768	0.023517536	California	delivery_Unpaved_California
hhdt	Unpaved	0.235502928	0.023509248	California	hhdt_Unpaved_California

Air Quality/GHG, Data Tables

Helicopter Emission Factors, Exhaust

Mode	Fuel Flow (kilograms per second)	Time in Mode (minutes)	Emission Factor (pounds per minute)								
			CO	ROG	NO _x	SO _x	PM10	PM2.5	CO ₂	CH ₄	
Taxi Out	0.013		2	0.007	0.069	0.007	0.004	0.01	0.009	10.838	0.0004
Takeoff	0.119		1	0.228	0.001	0.228	0.04	0.054	0.0486	98.788	0.0032
Climbout	0.117		2	0.227	0.001	0.227	0.04	0.045	0.0405	97.732	0.0032
Approach	0.029		24	0.032	0.001	0.032	0.01	0.018	0.0162	23.855	0.0008
Taxi In	0.013		1	0.007	0.069	0.007	0.004	0.01	0.009	10.838	0.0004
Total		Pounds per hour ->		2.942	0.468	2.942	0.744	1.212	1.0908	1798.6	0.0583

*Assume 90% of PM = PM2.5 and 100% of PM is PM10

Pollutant	EF (lb/hr)
CO	2.942
ROG	0.468
NOX	2.942
SOX	0.744
PM10	1.212
PM25	1.0908
CO2	1798.572
CH4	0.058261

kilograms CO ₂ per Gallon of Jet A Fuel - Helicopters	9.57 kilograms per gallon	CCAR GRP v3.1 Table C.3
grams CO ₂ per Gallon of Jet A Fuel - Helicopters	9570 grams per gallon	
grams N ₂ O per Gallon of Jet A Fuel - Helicopters	0.31 grams per gallon	CCAR GRP v3.1 Table C.6
grams CH ₄ per Gallon of Jet A Fuel - Helicopters	0.27 grams per gallon	CCAR GRP v3.1 Table C.6

Air Quality/GHG, Data Tables

Earthwork Emission Factors, Fugitive Dust			
<i>Uncontrolled</i>		(lb/hr)	(lb/hr)
Category	PM10	PM25	
Soil Handling	0.00162	0.000336	
Grading	1.481	0.308	

<i>Controlled</i>		(lb/hr)	(lb/hr)
Category	PM10	PM25	
Soil Handling	0.000891	0.0001848	
Grading	0.81455	0.1694	

Total Construction Duration, Uncontrolled Emissions (by year, by state)										
		(ton)	(ton)	(ton)	(ton)	(ton)	(ton)	(ton)	(ton)	(ton)
Uncontrolled Annual Emissions (tons per year)										
State	Year	ROG	NOX	CO	SOX	PM10	PM25	CO2	CH4	
California	2020	1.1	10.0	9.3	0.3	52.7	5.9	2971.2	0.5	
California	2021	2.1	15.6	17.2	1.5	62.4	8.6	6525.5	0.7	
Nevada	2020	1.5	12.6	12.0	0.8	53.7	6.8	4417.6	0.5	
Nevada	2021	0.4	3.0	3.1	0.1	19.8	2.2	944.0	0.1	
Total Construction		5.0	41.2	41.6	2.7	188.5	23.5	14858.3	1.8	

Total Construction Duration, Controlled Emissions (by year, by state)										
		(ton)	(ton)	(ton)	(ton)	(ton)	(ton)	(ton)	(ton)	(ton)
Controlled Annual Emissions (tons per year)										
State	Year	ROG	NOX	CO	SOX	PM10	PM25	CO2	CH4	
California	2020	0.5	3.4	11.2	0.3	9.2	1.3	2971.2	0.5	
California	2021	1.5	8.7	19.1	1.5	12.8	3.4	6525.5	0.7	
Nevada	2020	1.0	5.8	13.5	0.8	16.1	2.8	4417.6	0.5	
Nevada	2021	0.2	1.1	3.4	0.1	5.7	0.7	944.0	0.1	
Total Construction		3.2	19.0	47.2	2.7	43.9	8.3	14858.3	1.8	

Total Construction Duration, Uncontrolled Emissions (by source type)									
		(ton)	(ton)	(ton)	(ton)	(ton)	(ton)	(ton)	(ton)
Category	On-Off	ROG	NOX	CO	SOX	PM10	PM25	CO2	CH4
	NA	1.6	10.2	10.2	2.6	4.2	3.8	6223.1	0.2
	off	2.5	26.9	22.9	0.1	1.6	1.1	4967.5	1.5
	on	0.9	4.1	8.5	0.0	182.7	18.7	3667.7	0.1
Total Construction		5.0	41.2	41.6	2.7	188.5	23.5	14858.3	1.8

Total Construction Duration, Controlled Emissions (by source type)									
		(ton)	(ton)	(ton)	(ton)	(ton)	(ton)	(ton)	(ton)
Category	On-Off	ROG	NOX	CO	SOX	PM10	PM25	CO2	CH4
	NA	1.6	10.2	10.2	2.6	4.2	3.8	6223.1	0.2
	off	0.7	4.7	28.4	0.1	0.4	0.1	4967.5	1.5
	on	0.9	4.1	8.5	0.0	39.3	4.3	3667.7	0.1
Total Construction		3.2	19.0	47.2	2.7	43.9	8.3	14858.3	1.8

Sum of CO2e, GWP:	1	25
	(ton)	(ton)
	CO2e	CO2e (CH4)
	14,858.3	45.3

Estimate of Energy Use | from: US CO2 Emission Factors for Transport Fuels

(kg CO2 / gal)	(gal)		(MTCO2e)	(MTCO2e)
Transport Fuel (TCR Table 13.1)		Estimate	CO2e	CO2e
9.75 Jet Fuel (Jet A)		579,032	Helicopter	5,650
10.21 Diesel		441,386	Offroad	4,541
8.78 Gasoline		378,965	Onroad	3,329
			(/ 30 yr)	
			13,520.4	450.7

Source: The Climate Registry (5/1/2018) default emission factors for 2018

Total Construction Duration, GHG Summary					Exhaust (excludes SF6)
	(ton)	(ton)	(ton)		(MTCO2e)
Column1	CO2	CH4	CO2e	CO2e with SF6	
GWP		1	25		
2020	7388.8	1.0	7414.1	8504.4	
2021	7469.5	0.8	7489.5	8579.7	
Total Construction	14,858.3	1.8	14,903.6		13,520.4

SF6 (in CO2e ton/yr) 1,090.26

SF6 (in MTCO2e/yr) 989.08

Air Quality/GHG, Data Tables

Southern California Edison

ELM Project A.18-05-007

Q.AQ-2 Response: DATA REQUEST SET A1805007-ED-SCE-001

Generator Location	Approximate Generator Output (kW)	Equiv.Gen Output (hp)	Est fuel inp: 30% effic (MMBtu/hr)	Emission Factor (g/kW-hr) NOx	Emission Factor (g/kW-hr) CO	NSPS JJJJ Std (g/hp-hr) VOC	AP-42 Est (lb/MMBtu) PM10/PM2.5	AP-42 Est (lb/MMBtu) SO2	GWP = 25 210											
									Emission Factor (g/kW-hr) CO2	Emission Factor (g/kW-hr) CH4	Emission Factor (g/kW-hr) N2O									
									Each Repeater Site	36.9	49.5	0.4	7.6	69.3	1.0	7.7E-05	5.9E-04	706.7	0.033	0.008
									Each Capacitor Site	351.0	470.7	4.0	2.7	4.4	1.0	7.7E-05	5.9E-04	740.5	0.147	0.011

Q.AQ-2 Response, SCE's Notes:

- ☐ NO_x = oxides of nitrogen, CO = carbon monoxide, CO₂ = carbon dioxide, CH₄ = methane, N₂O = nitrous oxide
- ☐ Repeater site generator CAP emission factors obtained from the United States (U.S.) Environmental Protection Agency's (EPA's) exhaust emission data sheet (EDS-1168).
- ☐ Capacitor site generator CAP emission factors obtained from the U.S. EPA's Mobile 40 CFR Part 1048 standards (Nonroad Tier 2).
- ☐ GHG emission factors were obtained from the U.S. EPA's annual certification data. In the absence of test results from matching engine families, emission factors from similar engine families were averaged. Additional emission factors: VOC ~ 1.0 g/hp-hr (40 CFR 60 Subpart JJJJ Table 1); PM10/PM2.5 ~ 0.000077 lb/MMBtu input (USEPA AP-42 Table 3.2-2)

Daily Emissions

These generators at each repeater site will be tested weekly by operating each for approximately 30 minutes.

The generators at each capacitor site will be tested quarterly for approximately 30 minutes. One of these quarterly tests will be extended to approximately 3 hours.

As a result, the capacitor generators will require approximately 4.5 hours of testing annually. The table that follows provides the maximum estimated daily emissions for each generator, by location.

Generator Location	Approximate Generator Output (kW)	Approximate Daily Testing Duration per Site (hours/day)	(lb/d) NOx	(lb/d) CO	(lb/d) VOC	(lb/d) PM10/PM2.5	(lb/d) SO2	(lb/d) CO2	(lb/d) CH4	(lb/d) N2O
Each Capacitor Site	351	3	6.27	10.21	3.11	2.04E-06	1.55E-05	1719.02	0.34	0.03

Annual Emissions

As described previously, each generator at each repeater site would be tested weekly and each generator at each capacitor site would be tested quarterly.

The table that follows presents the total approximate annual emissions from the testing process.

Generator Location (Qty)	Engines # Overall	Approximate Annual Testing Duration per Site (hr/yr)	(lb/yr) NOx	(lb/yr) CO	(lb/yr) VOC	(lb/yr) PM10/PM2.5	(lb/yr) SO2	(lb/yr) CO2	(lb/yr) CH4	(lb/yr) N2O
Capacitor Sites (2)	2	4.5	18.80	30.64	9.34	6.11E-06	4.66E-05	5157.05	1.02	0.08
Total	--	--	0.034	0.235	0.009	5.84E-09	4.45E-08	4.40		

Notes:

- ☐ CO2e= carbon dioxide equivalent
- ☐ CH4 global warming potential (GWP) = 25, N2O GWP = 210