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## **Appendix B**

### Air Quality and Greenhouse Gas Emissions Estimates



**APPENDIX B**

**AIR QUALITY AND  
GREENHOUSE GAS EMISSIONS ESTIMATES**

DRAFT



Ash Hill Communication Site  
Construction Emission Summary

Daily Emissions Summary Construction Phase/Emissions Source	Emissions (lbs/day)					
	ROG	CO	NOx	PM <sub>10</sub>	PM <sub>2.5</sub>	SOx
<b>Boulder Removal</b>						
Construction Equipment	0.90	5.82	9.24	0.44	0.41	0.11
On-Road Vehicles	0.08	2.88	0.83	0.14	0.06	0.01
Fugitive Dust, Paved & Unpaved Road Dust	0.00	0.00	0.00	24.71	5.41	0.00
Total Construction Emissions	0.98	8.70	10.07	25.30	5.88	0.12
<b>Site Preparation</b>						
Construction Equipment	1.52	11.21	15.66	0.80	0.74	0.02
On-Road Vehicles	0.10	3.47	2.56	0.24	0.08	0.01
Fugitive Dust, Paved & Unpaved Road Dust	0.00	0.00	0.00	38.42	9.80	0.00
Total Construction Emissions	1.61	14.68	18.22	39.46	10.62	0.03
<b>Tower Foundation-Concrete Pour/Tower Stack</b>						
Construction Equipment	0.61	4.57	6.18	0.27	0.25	0.01
On-Road Vehicles	0.12	3.74	4.48	0.34	0.10	0.02
Paved Road Dust & Unpaved Road Dust	0.00	0.00	0.00	63.99	5.67	0.00
Total Construction Emissions	0.73	8.32	10.66	64.60	6.03	0.03
<b>Equipment Demobilization</b>						
Construction Equipment	0.07	0.51	0.69	0.03	0.03	0.00
On-Road Vehicles	0.12	2.25	3.55	0.25	0.12	0.01
Paved Road Dust & Unpaved Road Dust	0.00	0.00	0.00	41.90	4.02	0.00
Total Construction Emissions	0.19	2.75	4.24	42.19	4.17	0.02
Max Daily (lbs/day)	1.61	14.68	18.22	64.60	10.62	0.12
MDAOMD Daily Emission Threshold	137	548	137	82	65	137
Exceed Threshold?	No	No	No	No	No	No

Annual Emissions Summary - 2020 Construction Phase/Emissions Source	Emissions (tons/year)						Tons
	ROG	CO	NOx	PM <sub>10</sub>	PM <sub>2.5</sub>	SOx	CO <sub>2</sub> e
<b>Boulder Removal</b>							
Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.62
On-Road Vehicles	0.00	0.00	0.00	0.00	0.00	0.00	0.50
Fugitive Dust, Paved & Unpaved Road Dust	0.00	0.00	0.00	0.01	0.00	0.00	0
Total Construction Emissions	0.00	0.00	0.01	0.01	0.00	0.00	1.12
<b>Site Preparation</b>							
Construction Equipment	0.00	0.01	0.01	0.00	0.00	0.00	0.98
On-Road Vehicles	0.00	0.00	0.00	0.00	0.00	0.00	0.79
Fugitive Dust, Paved & Unpaved Road Dust	0.00	0.00	0.00	0.02	0.00	0.00	0
Total Construction Emissions	0.00	0.01	0.01	0.02	0.01	0.00	1.78
<b>Tower Foundation-Concrete Pour/Tower Stack</b>							
Construction Equipment	0.01	0.09	0.12	0.01	0.01	0.00	23.39
On-Road Vehicles	0.00	0.05	0.01	0.00	0.00	0.00	16.48
Paved Road Dust & Unpaved Road Dust	0.00	0.00	0.00	0.02	0.01	0.00	0
Total Construction Emissions	0.01	0.15	0.13	0.03	0.02	0.00	39.87
<b>Equipment Demobilization</b>							
Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.07
On-Road Vehicles	0.00	0.00	0.00	0.00	0.00	0.00	7.21
Paved Road Dust & Unpaved Road Dust	0.00	0.00	0.00	0.03	0.00	0.00	0
Total Construction Emissions	0.00	0.00	0.00	0.03	0.00	0.00	7.27
Total Annual Emissions	0.01	0.16	0.15	0.09	0.03	0.00	50.04
MDAOMD Annual Emission Threshold (tons)	25	100	25	15	12	25	100,000
Exceed Threshold?	No	No	No	No	No	No	No

Phase	Length (days)
Boulder Removal	1
Site Preparation	1
Tower Foundation-Concrete Pour/Tower Stack	40
Equipment Demobilization	1

Constants	
ton	2000 lbs
1	2000

Daily Operational Emissions Summary Emissions Source	Emissions (lbs/day)					
	ROG	CO	NOx	PM <sub>10</sub>	PM <sub>2.5</sub>	SOx
On-Road Vehicles	0.15	2.83	3.23	38.17	4.55	0.01
Emergency Generators	0.00	1.09	0.84	0.04	0.04	0.00
Total	0.15	3.93	4.08	38.21	4.59	0.01

Annual Operational Emissions Summary Emissions Source	Emissions (tons/year)						CO <sub>2</sub> e
	ROG	CO	NOx	PM <sub>10</sub>	PM <sub>2.5</sub>	SOx	
On-Road Vehicles	0.00	0.02	0.01	0.19	0.02	0.00	8.201224827
Emergency Generators	0.00	0.03	0.02	0.00	0.00	0.00	7.14
Total	0.00	0.04	0.03	0.20	0.02	0.00	15.34



CalEEMod  
 Equipment HP and Load Factors

OFFROAD Equipment Type	Horsepower	Load Factor
Aerial Lifts	63	0.31
Air Compressors	78	0.48
Bore/Drill Rigs	221	0.50
Cement and Mortar Mixers	9	0.56
Concrete/Industrial Saws	81	0.73
Cranes	231	0.29
Crawler Tractors	212	0.43
Crushing/Proc. Equipment	85	0.78
Dumpers/Tenders	16	0.38
Excavators	158	0.38
Forklifts	89	0.201
Generator Sets	84	0.74
Graders	187	0.41
Off-Highway Tractors	124	0.44
Off-Highway Trucks	402	0.38
Other Construction Equipment	171	0.42
Other General Industrial Equipment	88	0.34
Other Material Handling Equipment	168	0.40
Pavers	130	0.42
Paving Equipment	132	0.36
Plate Compactors	8	0.43
Pressure Washers	13	0.3
Pumps	84	0.74
Rollers	80	0.38
Rough Terrain Forklifts	100	0.40
Rubber Tired Dozers	247	0.4
Rubber Tired Loaders	203	0.36
Scrapers	367	0.48
Signal Boards	6	0.82
Skid Steer Loaders	65	0.37
Surfacing Equipment	263	0.30
Sweepers/Scrubbers	64	0.46
Tractors/Loaders/Backhoes	97	0.37
Trenchers	78	0.50
Welders	46	0.45

OFFROAD Grams Per Horsepower-Hour Derivation

Constants	
lb	grams
1	453.5924
ton	lbs
1	2000

Region	CalYr	VehClass	MdlYr	HP_Bin	Fuel	ROG g_hp-hr	CO g_hp-hr	Nox g_hp-hr	CO2 g_hp-hr	PM10 g_hp-hr	PM2_5 g_hp-hr	PM g_hp-hr	Sox g_hp-hr	NH3 g_hp-hr	gal/hp-hr
San Bernardino	2020	ConstMin - Bore/Drill Rigs	Aggregated	300	Diesel	0.072924544	0.542299609	0.924189938	263.4208338	0.026856065	0.02470758	0.026856065	0.002433648	0.002150005	0.02581
San Bernardino	2020	ConstMin - Cranes	Aggregated	300	Diesel	0.108085402	0.507388808	1.297237989	152.0271844	0.053038427	0.048795353	0.053038427	0.001402887	0.001240825	0.014896
San Bernardino	2020	ConstMin - Excavators	Aggregated	75	Diesel	0.138030592	1.441382729	2.039572731	201.8930447	0.117985038	0.108546235	0.117985038	0.001863179	0.001647824	0.019782
San Bernardino	2020	ConstMin - Excavators	Aggregated	175	Diesel	0.088977654	1.179507549	0.874860209	201.7122153	0.042520805	0.039119141	0.042520805	0.001862723	0.001646348	0.019764
San Bernardino	2020	ConstMin - Graders	Aggregated	175	Diesel	0.227317402	1.464043338	2.218866303	216.0611387	0.12386176	0.113952819	0.12386176	0.001991956	0.001763462	0.02117
San Bernardino	2020	ConstMin - Off-Highway Trucks	Aggregated	600	Diesel	0.094146169	0.545356054	0.903155193	201.4048305	0.032974003	0.030336083	0.032974003	0.001859753	0.001643839	0.019734
San Bernardino	2020	ConstMin - Rough Terrain Forklifts	Aggregated	100	Diesel	0.060497214	1.294874533	0.897514232	212.4282451	0.029826172	0.027440078	0.029826172	0.001962505	0.001733811	0.020814
San Bernardino	2020	ConstMin - Rubber Tired Dozers	Aggregated	300	Diesel	0.266279098	1.399470426	2.836341407	208.5483874	0.138133177	0.127082523	0.138133177	0.001921531	0.001702144	0.020434
San Bernardino	2020	ConstMin - Tractors/Loaders/Backhoes	Aggregated	100	Diesel	0.116701124	1.314701558	1.18569024	194.9877027	0.074186756	0.068251815	0.074186756	0.001799865	0.001591463	0.019105
San Bernardino	2020	Portable Equipment - Non-Rental Generator	Aggregated	100	Diesel	0.076250321	1.147632362	0.752863045	154.5845927	0.058700348	0.05400432	0.058700348	0.001427321	0.001261699	0.015146
San Bernardino	2020	OFF - ConstMin - Cement and Mortar Mixers	Aggregated	25	Diesel	0.312583805	1.827252845	2.35899981	318.9817464	0.093745559	0.086245915	0.093745559	0.004780333	0.002671129	0.032066

CH4 Emissions Factor (g/gallon diesel): 0.57

N2O Emissions Factor (g/gallon diesel): 0.26

\*Source: EPA 2018. Emission Factors for Greenhouse Gas Inventories:

[https://www.epa.gov/sites/production/files/2018-03/documents/emission-factors\\_mar\\_2018\\_0.pdf](https://www.epa.gov/sites/production/files/2018-03/documents/emission-factors_mar_2018_0.pdf)



OFFROAD Tons Per Year and Gallons Per Horsepower-Hour Calculation

Constants	
year	days
1	365

Region	CalYr	VehClass	MdYr	HP_Bin	Fuel	HC_tpy	ROG_tpy	TOG_tpy	CO_tpy	NOx_tpy	CO2_tpy	PM10_tpy	PM2_5_tpy	PM_tpy	SOx_tpy	NH3_tpy	gal/hp-hr
San Bernardino	2020	ConstMin - Bore/Drill Rigs	Aggregated	50	Diesel	0.04747846	0.057449	0.068369	0.361991	0.372824	48.05764	0.023605	0.021717	0.023605	0.000442892	0.00039224	0.029448
San Bernardino	2020	ConstMin - Bore/Drill Rigs	Aggregated	75	Diesel	0.037293122	0.045125	0.053702	0.551973	0.662401	83.71956	0.034823	0.032037	0.034823	0.00077291	0.000683308	0.025678
San Bernardino	2020	ConstMin - Bore/Drill Rigs	Aggregated	100	Diesel	0.078913496	0.095485	0.113635	1.362601	1.095519	215.1499	0.055778	0.051316	0.055778	0.0019868	0.001756024	0.02558
San Bernardino	2020	ConstMin - Bore/Drill Rigs	Aggregated	175	Diesel	0.094804966	0.114714	0.136519	1.932414	1.227999	347.4489	0.054412	0.050059	0.054412	0.003209493	0.002835831	0.026064
San Bernardino	2020	ConstMin - Bore/Drill Rigs	Aggregated	300	Diesel	0.112255445	0.135829	0.161648	1.010086	1.721394	490.647	0.050022	0.04602	0.050022	0.004532908	0.004004595	0.02581
San Bernardino	2020	ConstMin - Bore/Drill Rigs	Aggregated	600	Diesel	0.171248297	0.20721	0.246598	1.771249	2.368136	938.7361	0.074592	0.068625	0.074592	0.008673944	0.007661838	0.025735
San Bernardino	2020	ConstMin - Bore/Drill Rigs	Aggregated	750	Diesel	0.061335168	0.074216	0.088323	0.654412	0.817938	354.3057	0.028645	0.026353	0.028645	0.003273892	0.002891795	0.026245
San Bernardino	2020	ConstMin - Bore/Drill Rigs	Aggregated	9999	Diesel	0.073578999	0.089031	0.105954	0.490869	1.979511	259.822	0.048051	0.044206	0.048051	0.002399976	0.002120632	0.025944
San Bernardino	2020	ConstMin - Cranes	Aggregated	25	Diesel	0.001426756	0.001726	0.002055	0.008088	0.007397	0.919041	0.000555	0.000511	0.000555	8.45419E-06	7.50109E-06	0.016559
San Bernardino	2020	ConstMin - Cranes	Aggregated	50	Diesel	0.045566292	0.055135	0.065615	0.193218	0.155932	14.89163	0.016467	0.01515	0.016467	0.000136313	0.000121543	0.016725
San Bernardino	2020	ConstMin - Cranes	Aggregated	75	Diesel	0.013764696	0.016655	0.019821	0.057482	0.125821	6.695025	0.011679	0.010745	0.011679	6.14859E-05	5.46439E-05	0.015003
San Bernardino	2020	ConstMin - Cranes	Aggregated	100	Diesel	0.399838359	0.483804	0.575767	2.756325	4.241435	345.6103	0.299111	0.275182	0.299111	0.003183344	0.002820825	0.014849
San Bernardino	2020	ConstMin - Cranes	Aggregated	175	Diesel	0.852661731	1.031721	1.227833	6.860703	10.65776	1020.454	0.57282	0.526995	0.57282	0.009409023	0.008328808	0.014919
San Bernardino	2020	ConstMin - Cranes	Aggregated	300	Diesel	1.07990929	1.30669	1.555069	6.134038	15.68286	1837.921	0.641204	0.589908	0.641204	0.016960095	0.015000865	0.014896
San Bernardino	2020	ConstMin - Cranes	Aggregated	600	Diesel	1.42930113	1.729454	2.058194	13.9138	21.03417	3051.533	0.828967	0.76265	0.828967	0.028170052	0.024906198	0.01487
San Bernardino	2020	ConstMin - Cranes	Aggregated	750	Diesel	0.048978723	0.059264	0.070529	0.482343	0.631581	48.88634	0.032565	0.02996	0.032565	0.000450509	0.000399004	0.014955
San Bernardino	2020	ConstMin - Cranes	Aggregated	9999	Diesel	0.204868278	0.247891	0.29501	2.116065	2.835583	171.1248	0.135305	0.124481	0.135305	0.001575988	0.001396698	0.01489
San Bernardino	2020	ConstMin - Crawler Tractors	Aggregated	50	Diesel	0.14171372	0.171474	0.204068	0.609767	0.471338	48.18159	0.04938	0.04543	0.04938	0.000441211	0.000393252	0.024504
San Bernardino	2020	ConstMin - Crawler Tractors	Aggregated	75	Diesel	0.048558011	0.058755	0.069924	0.19047	0.465308	15.90334	0.034116	0.031386	0.034116	0.000145578	0.000129801	0.02237
San Bernardino	2020	ConstMin - Crawler Tractors	Aggregated	100	Diesel	2.306625853	2.791017	3.321541	15.96076	23.49751	2113.853	1.962577	1.805571	1.962577	0.019474421	0.017252984	0.022227
San Bernardino	2020	ConstMin - Crawler Tractors	Aggregated	175	Diesel	1.741917813	2.107721	2.508362	14.74144	21.54299	2322.559	1.20517	1.108756	1.20517	0.021420948	0.018956411	0.022177
San Bernardino	2020	ConstMin - Crawler Tractors	Aggregated	300	Diesel	1.619486635	1.959579	2.332061	10.30004	24.31672	2482.803	0.975765	0.897704	0.975765	0.022906164	0.020264308	0.022166
San Bernardino	2020	ConstMin - Crawler Tractors	Aggregated	600	Diesel	3.511001744	4.248312	5.055843	26.63008	51.42251	8403.87	1.932838	1.778211	1.932838	0.077592615	0.068591256	0.022191
San Bernardino	2020	ConstMin - Crawler Tractors	Aggregated	750	Diesel	0.106489692	0.128853	0.153345	0.664596	2.043555	180.5613	0.059876	0.055086	0.059876	0.001666184	0.001473717	0.022132
San Bernardino	2020	ConstMin - Crawler Tractors	Aggregated	9999	Diesel	0.325945887	0.394395	0.469362	1.663215	6.389664	495.003	0.18117	0.166676	0.18117	0.00456677	0.004040148	0.022222
San Bernardino	2020	ConstMin - Excavators	Aggregated	25	Diesel	0.001332792	0.001613	0.001919	0.004529	0.003076	0.238293	0.000429	0.000394	0.000429	2.16316E-06	1.94492E-06	0.021926
San Bernardino	2020	ConstMin - Excavators	Aggregated	50	Diesel	1.607591841	1.945186	2.314932	14.76475	13.22698	1928.351	0.728684	0.670389	0.728684	0.017780333	0.015738941	0.021973
San Bernardino	2020	ConstMin - Excavators	Aggregated	75	Diesel	0.034408132	0.041634	0.049548	0.434761	0.615191	60.89652	0.035588	0.032741	0.035588	0.000561986	0.000497029	0.019782
San Bernardino	2020	ConstMin - Excavators	Aggregated	100	Diesel	1.135595828	1.374071	1.635258	16.31144	14.05013	2444.628	0.839656	0.772484	0.839656	0.022567731	0.019952726	0.019664
San Bernardino	2020	ConstMin - Excavators	Aggregated	175	Diesel	1.926089814	2.330569	2.773569	30.89454	22.91499	5283.396	1.113736	1.024638	1.113736	0.048789832	0.043122367	0.019764
San Bernardino	2020	ConstMin - Excavators	Aggregated	300	Diesel	1.885604146	2.281581	2.71527	14.43714	26.06887	6719.404	0.794949	0.731353	0.794949	0.062067656	0.054842874	0.019766
San Bernardino	2020	ConstMin - Excavators	Aggregated	600	Diesel	2.84169947	3.438456	4.092047	24.7165	35.06891	11913.44	1.154376	1.062026	1.154376	0.110060421	0.097235906	0.019712
San Bernardino	2020	ConstMin - Excavators	Aggregated	750	Diesel	0.086649906	0.104846	0.124776	0.556655	1.332708	211.3134	0.043687	0.040192	0.043687	0.001951098	0.001724712	0.019714
San Bernardino	2020	ConstMin - Excavators	Aggregated	9999	Diesel	0.081770784	0.098943	0.11775	0.736238	2.065078	332.9941	0.038719	0.035622	0.038719	0.003076243	0.002717853	0.019774

OFFROAD Tons Per Year and Gallons Per Horsepower-Hour Calculation

Constants	
year	days
1	365

Region	CalYr	VehClass	MdYr	HP_Bin	Fuel	HC_tpy	ROG_tpy	TOG_tpy	CO_tpy	NOx_tpy	CO2_tpy	PM10_tpy	PM2_5_tpy	PM_tpy	SOx_tpy	NH3_tpy	gal/hp-hr
San Bernardino	2020	ConstMin - Graders	Aggregated	50	Diesel	0.045831953	0.05457	0.065998	0.178308	0.127867	11.9923	0.015712	0.014455	0.015712	0.0001095	9.78795E-05	0.023497
San Bernardino	2020	ConstMin - Graders	Aggregated	75	Diesel	0.020008499	0.02421	0.028812	0.151888	0.185836	19.76404	0.013145	0.012093	0.013145	0.000182128	0.000161311	0.021138
San Bernardino	2020	ConstMin - Graders	Aggregated	100	Diesel	0.47928494	0.579935	0.69017	2.433404	4.506795	266.2565	0.372518	0.342717	0.372518	0.002447294	0.002173149	0.020944
San Bernardino	2020	ConstMin - Graders	Aggregated	175	Diesel	2.80536751	3.394495	4.039729	21.86233	33.13398	3226.407	1.849608	1.701639	1.849608	0.029745569	0.026333498	0.02117
San Bernardino	2020	ConstMin - Graders	Aggregated	300	Diesel	3.66183414	4.430819	5.273041	17.83205	55.40274	6812.096	1.837447	1.690451	1.837447	0.06287135	0.055599411	0.021152
San Bernardino	2020	ConstMin - Graders	Aggregated	600	Diesel	0.158976937	0.192362	0.228927	0.688807	2.544611	297.0983	0.078743	0.072443	0.078743	0.002742051	0.002424876	0.021245
San Bernardino	2020	ConstMin - Graders	Aggregated	9999	Diesel	0.179853497	0.217623	0.258989	0.919312	3.011826	230.9393	0.094445	0.086889	0.094445	0.002129752	0.001884895	0.021143
San Bernardino	2020	ConstMin - Off-Highway Tractors	Aggregated	50	Diesel	1.140663374	1.380203	1.642555	7.530124	6.364042	799.7202	0.47403	0.436107	0.47403	0.00735959	0.006527209	0.025
San Bernardino	2020	ConstMin - Off-Highway Tractors	Aggregated	75	Diesel	0.28851299	0.349101	0.415459	3.751422	3.347144	549.3065	0.201706	0.18557	0.201706	0.005069956	0.004483366	0.022528
San Bernardino	2020	ConstMin - Off-Highway Tractors	Aggregated	100	Diesel	0.420557271	0.508874	0.605602	3.504179	4.665409	466.568	0.386354	0.355446	0.386354	0.004301036	0.003808065	0.022607
San Bernardino	2020	ConstMin - Off-Highway Tractors	Aggregated	175	Diesel	0.36778952	0.445025	0.529617	5.279814	4.746447	868.6969	0.230276	0.211854	0.230276	0.0080205	0.007090187	0.022517
San Bernardino	2020	ConstMin - Off-Highway Tractors	Aggregated	300	Diesel	0.294650859	0.356528	0.424297	1.896397	4.271876	777.0618	0.144698	0.133122	0.144698	0.007175482	0.006342274	0.022478
San Bernardino	2020	ConstMin - Off-Highway Tractors	Aggregated	600	Diesel	0.597349468	0.722793	0.860183	4.804408	7.088328	2377.07	0.239841	0.220653	0.239841	0.021959272	0.019401327	0.02246
San Bernardino	2020	ConstMin - Off-Highway Tractors	Aggregated	750	Diesel	0.051521396	0.062341	0.074191	0.279439	0.6213	138.4056	0.025217	0.023199	0.025217	0.001278082	0.001129648	0.022243
San Bernardino	2020	ConstMin - Off-Highway Tractors	Aggregated	9999	Diesel	0.050266342	0.060822	0.072384	0.324313	0.916474	135.1082	0.02412	0.022191	0.02412	0.001247635	0.001102735	0.022513
San Bernardino	2020	ConstMin - Off-Highway Trucks	Aggregated	25	Diesel	0.010423123	0.012612	0.015009	0.047215	0.03102	3.392225	0.003206	0.00295	0.003206	3.10501E-05	2.76869E-05	0.021951
San Bernardino	2020	ConstMin - Off-Highway Trucks	Aggregated	50	Diesel	0.084293262	0.101996	0.121383	0.705482	0.592387	73.50303	0.041216	0.037919	0.041216	0.000677043	0.000599922	0.021827
San Bernardino	2020	ConstMin - Off-Highway Trucks	Aggregated	75	Diesel	0.010967077	0.01327	0.015793	0.171729	0.100768	23.15268	0.004062	0.003737	0.004062	0.000213729	0.000188969	0.019728
San Bernardino	2020	ConstMin - Off-Highway Trucks	Aggregated	100	Diesel	0.03962175	0.047942	0.057055	0.404765	0.407411	53.60623	0.032881	0.03025	0.032881	0.000494428	0.000437527	0.019732
San Bernardino	2020	ConstMin - Off-Highway Trucks	Aggregated	175	Diesel	0.903845304	1.093653	1.301537	11.65444	9.264021	1829.663	0.485526	0.446684	0.485526	0.016889025	0.014933462	0.019717
San Bernardino	2020	ConstMin - Off-Highway Trucks	Aggregated	300	Diesel	1.609389367	1.947361	2.317521	9.858634	17.76932	3727.219	0.692326	0.63694	0.692326	0.034411708	0.030421062	0.019657
San Bernardino	2020	ConstMin - Off-Highway Trucks	Aggregated	600	Diesel	6.178297502	7.47574	8.896748	43.30436	71.71565	15992.69	2.618323	2.408857	2.618323	0.147674966	0.130530155	0.019734
San Bernardino	2020	ConstMin - Off-Highway Trucks	Aggregated	750	Diesel	2.603331025	3.150031	3.748797	20.22038	30.45544	5386.002	1.191292	1.095989	1.191292	0.049718156	0.043959821	0.019711
San Bernardino	2020	ConstMin - Off-Highway Trucks	Aggregated	9999	Diesel	4.224707916	5.111897	6.083579	25.22237	77.8534	9566.173	1.96778	1.810358	1.96778	0.08831727	0.078077816	0.019817
San Bernardino	2020	ConstMin - Other Construction Equipment	Aggregated	50	Diesel	0.647212906	0.783128	0.931987	3.94731	3.678387	431.3357	0.295957	0.272281	0.295957	0.003968496	0.003520504	0.023965
San Bernardino	2020	ConstMin - Other Construction Equipment	Aggregated	75	Diesel	0.083543489	0.101088	0.120303	0.444536	0.851815	48.36845	0.063427	0.058353	0.063427	0.000444684	0.000394777	0.021284
San Bernardino	2020	ConstMin - Other Construction Equipment	Aggregated	100	Diesel	1.014419748	1.227448	1.460764	9.117421	11.36258	1305.537	0.842116	0.774746	0.842116	0.012039907	0.010655619	0.021469
San Bernardino	2020	ConstMin - Other Construction Equipment	Aggregated	175	Diesel	0.451100465	0.545832	0.649585	4.540192	5.781149	737.0298	0.305496	0.281057	0.305496	0.006800673	0.006015538	0.021407
San Bernardino	2020	ConstMin - Other Construction Equipment	Aggregated	300	Diesel	0.476939464	0.577097	0.686793	3.070756	7.221465	984.9202	0.274835	0.252849	0.274835	0.009091768	0.008038787	0.021591
San Bernardino	2020	ConstMin - Other Construction Equipment	Aggregated	600	Diesel	1.270587414	1.537411	1.829646	10.77991	18.58776	3753.75	0.656703	0.604167	0.656703	0.034667165	0.030637605	0.021445
San Bernardino	2020	ConstMin - Other Construction Equipment	Aggregated	750	Diesel	0.194790849	0.235697	0.280499	1.461577	2.813121	686.5218	0.091937	0.084582	0.091937	0.006341391	0.005603299	0.021416
San Bernardino	2020	ConstMin - Other Construction Equipment	Aggregated	9999	Diesel	0.072861319	0.088162	0.10492	0.496044	1.698141	236.8974	0.039781	0.036598	0.039781	0.002188048	0.001933525	0.021467
San Bernardino	2020	ConstMin - Pavers	Aggregated	50	Diesel	0.097768903	0.1183	0.140787	0.495711	0.427554	52.82483	0.036092	0.033205	0.036092	0.000485459	0.000431149	0.023909
San Bernardino	2020	ConstMin - Pavers	Aggregated	75	Diesel	0.136591808	0.165276	0.196692	0.667907	1.241778	86.52082	0.118592	0.109105	0.118592	0.00079583	0.000706171	0.021393
San Bernardino	2020	ConstMin - Pavers	Aggregated	100	Diesel	0.232861329	0.281762	0.33532	2.807274	2.987216	421.5186	0.191056	0.175771	0.191056	0.003890163	0.003440378	0.0214
San Bernardino	2020	ConstMin - Pavers	Aggregated	175	Diesel	0.305533628	0.369696	0.439968	3.998686	3.926677	700.2656	0.193668	0.178174	0.193668	0.006465137	0.005715474	0.021525
San Bernardino	2020	ConstMin - Pavers	Aggregated	300	Diesel	0.151878295	0.183773	0.218705	1.059659	2.832596	546.2113	0.08145	0.074934	0.08145	0.005045438	0.004458103	0.021459
San Bernardino	2020	ConstMin - Pavers	Aggregated	600	Diesel	0.02277865	0.027562	0.032801	0.185332	0.349745	98.83866	0.011984	0.011026	0.011984	0.000913129	0.000806708	0.021535
San Bernardino	2020	ConstMin - Pavers	Aggregated	750	Diesel	0.003704411	0.004482	0.005334	0.037489	0.046017	20.45745	0.00202	0.001859	0.00202	0.000189028	0.000166971	0.021484

OFFROAD Tons Per Year and Gallons Per Horsepower-Hour Calculation

Constants	
year	days
1	365

Region	CalYr	VehClass	ModYr	HP_Bin	Fuel	HC_tpy	ROG_tpy	TOG_tpy	CO_tpy	NOx_tpy	CO2_tpy	PM10_tpy	PM2_5_tpy	PM_tpy	SOx_tpy	NH3_tpy	gal/hp-hr
San Bernardino	2020	ConstMin - Paving Equipment	Aggregated	50	Diesel	0.0580709	0.070266	0.083622	0.477552	0.446872	65.78766	0.024527	0.022565	0.024527	0.000606497	0.00053695	0.020317
San Bernardino	2020	ConstMin - Paving Equipment	Aggregated	75	Diesel	0.010611492	0.01284	0.015281	0.067172	0.110337	8.02315	0.008489	0.00781	0.008489	7.38597E-05	6.54839E-05	0.018328
San Bernardino	2020	ConstMin - Paving Equipment	Aggregated	100	Diesel	0.155394764	0.188028	0.223768	1.83015	1.83648	274.9632	0.120495	0.110855	0.120495	0.002537509	0.002244213	0.018398
San Bernardino	2020	ConstMin - Paving Equipment	Aggregated	175	Diesel	0.128951909	0.156032	0.185691	1.74391	1.555755	297.8354	0.083847	0.077139	0.083847	0.002749768	0.002430893	0.018334
San Bernardino	2020	ConstMin - Paving Equipment	Aggregated	300	Diesel	0.076355908	0.092391	0.109953	0.473122	1.208067	211.2516	0.042819	0.039393	0.042819	0.001950835	0.001724207	0.018388
San Bernardino	2020	ConstMin - Paving Equipment	Aggregated	600	Diesel	0.07068648	0.085531	0.101789	0.467651	1.134463	217.6396	0.034836	0.032049	0.034836	0.002010065	0.001776345	0.018448
San Bernardino	2020	ConstMin - Paving Equipment	Aggregated	750	Diesel	0.008999197	0.010889	0.012959	0.050635	0.152642	25.95923	0.003893	0.003582	0.003893	0.000239736	0.000211876	0.018373
San Bernardino	2020	ConstMin - Paving Equipment	Aggregated	9999	Diesel	0.002709175	0.003278	0.003901	0.03551	0.084758	19.32677	0.001365	0.001256	0.001365	0.000178604	0.000157743	0.018374
San Bernardino	2020	ConstMin - Rollers	Aggregated	25	Diesel	0.000928302	0.001123	0.001337	0.003099	0.002198	0.16983	0.000295	0.000271	0.000295	1.54231E-06	1.38613E-06	0.021561
San Bernardino	2020	ConstMin - Rollers	Aggregated	50	Diesel	1.411625761	1.708067	2.032741	8.717659	8.366449	1085.495	0.606664	0.558131	0.606664	0.00999359	0.008859663	0.02158
San Bernardino	2020	ConstMin - Rollers	Aggregated	75	Diesel	0.028105611	0.034008	0.040472	0.112446	0.275791	9.77065	0.019375	0.017825	0.019375	8.94913E-05	7.97467E-05	0.019428
San Bernardino	2020	ConstMin - Rollers	Aggregated	100	Diesel	0.998649768	1.208366	1.438056	11.18875	12.14607	1686.497	0.772554	0.710749	0.772554	0.015562537	0.013764958	0.019412
San Bernardino	2020	ConstMin - Rollers	Aggregated	175	Diesel	0.590999129	0.715109	0.851039	9.746583	8.146478	1753.956	0.374212	0.344275	0.374212	0.016198466	0.014315556	0.019387
San Bernardino	2020	ConstMin - Rollers	Aggregated	300	Diesel	0.109876811	0.132951	0.158223	0.863203	1.699191	290.4215	0.05971	0.054933	0.05971	0.002681794	0.002370381	0.019413
San Bernardino	2020	ConstMin - Rollers	Aggregated	600	Diesel	0.044889874	0.054317	0.064641	0.499105	0.675976	170.3955	0.022865	0.021036	0.022865	0.001574004	0.001390745	0.019506
San Bernardino	2020	ConstMin - Rough Terrain Forklifts	Aggregated	25	Diesel	8.25703E-05	9.99E-05	0.000119	0.001806	0.002427	0.293343	7.95E-05	7.31E-05	7.95E-05	2.70962E-06	2.39422E-06	0.023133
San Bernardino	2020	ConstMin - Rough Terrain Forklifts	Aggregated	50	Diesel	0.06792035	0.082184	0.097805	0.390194	0.36842	49.30945	0.024748	0.022768	0.024748	0.000453853	0.000402457	0.023126
San Bernardino	2020	ConstMin - Rough Terrain Forklifts	Aggregated	75	Diesel	0.015314048	0.01853	0.022052	0.071903	0.108755	7.781095	0.008078	0.008078	0.008078	7.14807E-05	6.35083E-05	0.022442
San Bernardino	2020	ConstMin - Rough Terrain Forklifts	Aggregated	100	Diesel	1.00340853	1.214124	1.444908	25.98696	18.0123	4263.243	0.598584	0.550698	0.598584	0.03938569	0.034796013	0.020814
San Bernardino	2020	ConstMin - Rough Terrain Forklifts	Aggregated	175	Diesel	0.490128134	0.593055	0.705785	5.800283	4.65502	1005.302	0.3667	0.337364	0.3667	0.009279816	0.008205143	0.020796
San Bernardino	2020	ConstMin - Rough Terrain Forklifts	Aggregated	300	Diesel	0.011967504	0.014481	0.017233	0.128982	0.205852	69.73898	0.004698	0.004322	0.004698	0.000644412	0.0005692	0.02079
San Bernardino	2020	ConstMin - Rough Terrain Forklifts	Aggregated	600	Diesel	0.003746187	0.004533	0.005395	0.046785	0.069729	25.87838	0.001488	0.001369	0.001488	0.000239146	0.000211216	0.020663
San Bernardino	2020	ConstMin - Rough Terrain Forklifts	Aggregated	750	Diesel	0.000713096	0.000863	0.001027	0.00817	0.011255	4.461204	7.9E-05	7.26E-05	7.9E-05	4.12246E-05	3.64117E-05	0.020774
San Bernardino	2020	ConstMin - Rubber Tired Dozers	Aggregated	50	Diesel	0.083706063	0.101284	0.120537	0.491084	0.370349	48.17189	0.030628	0.028177	0.030628	0.000442862	0.000393172	0.02274
San Bernardino	2020	ConstMin - Rubber Tired Dozers	Aggregated	75	Diesel	0.077441592	0.093704	0.111516	0.365007	0.737177	37.53538	0.058814	0.054109	0.058814	0.00034471	0.000306359	0.020595
San Bernardino	2020	ConstMin - Rubber Tired Dozers	Aggregated	100	Diesel	0.244511056	0.295858	0.352096	1.492336	2.31937	183.4474	0.203603	0.187315	0.203603	0.001688727	0.001497273	0.020642
San Bernardino	2020	ConstMin - Rubber Tired Dozers	Aggregated	175	Diesel	0.225272756	0.27258	0.324393	1.463253	2.677995	197.3336	0.154272	0.14193	0.154272	0.001817689	0.001610611	0.02044
San Bernardino	2020	ConstMin - Rubber Tired Dozers	Aggregated	300	Diesel	0.232619248	0.281469	0.334972	1.479305	2.998144	220.4453	0.146013	0.134332	0.146013	0.002031147	0.001799245	0.020434
San Bernardino	2020	ConstMin - Rubber Tired Dozers	Aggregated	600	Diesel	1.996874581	2.416218	2.875499	19.2771	25.95655	2450.188	1.168053	1.074609	1.168053	0.022593296	0.019998104	0.020562
San Bernardino	2020	ConstMin - Rubber Tired Dozers	Aggregated	750	Diesel	0.026162253	0.031656	0.037674	0.141087	0.476296	69.60272	0.013329	0.012262	0.013329	0.000642727	0.000568088	0.020445
San Bernardino	2020	ConstMin - Rubber Tired Loaders	Aggregated	50	Diesel	0.31456869	0.380628	0.452979	1.74	1.350697	150.8907	0.121899	0.112147	0.121899	0.001385623	0.001231155	0.020847
San Bernardino	2020	ConstMin - Rubber Tired Loaders	Aggregated	100	Diesel	3.230328291	3.908697	4.651673	27.79014	32.97558	3666.531	2.58239	2.375799	2.58239	0.033801987	0.029925733	0.018524
San Bernardino	2020	ConstMin - Rubber Tired Loaders	Aggregated	175	Diesel	5.176461348	6.263518	7.454104	55.69237	58.17063	8714.919	3.201907	2.945754	3.201907	0.080418456	0.071129999	0.018676
San Bernardino	2020	ConstMin - Rubber Tired Loaders	Aggregated	300	Diesel	5.658333727	6.846584	8.148001	31.41161	79.60497	13028.42	2.642743	2.431323	2.642743	0.120284451	0.10633621	0.018669
San Bernardino	2020	ConstMin - Rubber Tired Loaders	Aggregated	600	Diesel	7.684469874	9.298209	11.06564	49.78137	97.02391	16186.52	3.649528	3.357566	3.649528	0.149421914	0.132112238	0.018608
San Bernardino	2020	ConstMin - Rubber Tired Loaders	Aggregated	750	Diesel	0.519910412	0.629092	0.748671	4.137234	6.741125	1198.76	0.239218	0.22008	0.239218	0.011067537	0.009784121	0.018653
San Bernardino	2020	ConstMin - Rubber Tired Loaders	Aggregated	9999	Diesel	0.503522774	0.609263	0.725073	2.486459	10.54506	1124.429	0.266611	0.245282	0.266611	0.010380797	0.009177438	0.018704
San Bernardino	2020	ConstMin - Scrapers	Aggregated	25	Diesel	0.002157155	0.00261	0.003106	0.00733	0.004979	0.385683	0.000694	0.000638	0.000694	3.50112E-06	3.1479E-06	0.027744
San Bernardino	2020	ConstMin - Scrapers	Aggregated	50	Diesel	0.014474142	0.017514	0.020843	0.049424	0.035505	3.069744	0.004896	0.004504	0.004896	2.79471E-05	2.50548E-05	0.02728
San Bernardino	2020	ConstMin - Scrapers	Aggregated	75	Diesel	0.047849547	0.057898	0.068903	0.226015	0.442753	26.1104	0.038692	0.035596	0.038692	0.000239968	0.00021311	0.024997
San Bernardino	2020	ConstMin - Scrapers	Aggregated	100	Diesel	0.120312004	0.145578	0.173249	0.976607	1.491571	128.2696	0.109736	0.100957	0.109736	0.001182307	0.001046919	0.025034
San Bernardino	2020	ConstMin - Scrapers	Aggregated	175	Diesel	1.227781942	1.485616	1.768006	10.90422	15.14549	1667.504	0.814578	0.749412	0.814578	0.015380064	0.01360994	0.02504
San Bernardino	2020	ConstMin - Scrapers	Aggregated	300	Diesel	1.345642434	1.628227	1.937725	7.534017	18.56965	1914.229	0.814524	0.749362	0.814524	0.017657625	0.015623678	0.024862
San Bernardino	2020	ConstMin - Scrapers	Aggregated	600	Diesel	11.09910029	13.42991	15.9827	96.37756	158.3454	24009.68	6.037712	5.554695	6.037712	0.221648445	0.195963798	0.024985
San Bernardino	2020	ConstMin - Scrapers	Aggregated	750	Diesel	0.415940524	0.503288	0.598954	4.742698	6.901643	387.5513	0.281051	0.258567	0.281051	0.003570626	0.003163141	0.025067
San Bernardino	2020	ConstMin - Scrapers	Aggregated	9999	Diesel	0.607470047	0.735039	0.874757	7.363414	9.303655	555.921	0.388766	0.357665	0.388766	0.005121541	0.004537353	0.02494

OFFROAD Tons Per Year and Gallons Per Horsepower-Hour Calculation

Constants	
year	days
1	365

Region	CalYr	VehClass	MdYr	HP_Bin	Fuel	HC_tpy	ROG_tpy	TOG_tpy	CO_tpy	NOx_tpy	CO2_tpy	PM10_tpy	PM2_5_tpy	PM_tpy	SOx_tpy	NH3_tpy	gal/hp-hr
San Bernardino	2020	ConstMin - Skid Steer Loaders	Aggregated	50	Diesel	0.505293963	0.611406	0.727623	5.238915	5.137531	821.6573	0.201405	0.185293	0.201405	0.00758147	0.006706256	0.021267
San Bernardino	2020	ConstMin - Skid Steer Loaders	Aggregated	75	Diesel	1.257569613	1.521659	1.8109	26.47734	20.15591	4268.276	0.861285	0.792382	0.861285	0.039424603	0.034837096	0.019057
San Bernardino	2020	ConstMin - Skid Steer Loaders	Aggregated	100	Diesel	0.027626447	0.033428	0.039782	0.575932	0.520156	89.32523	0.03375	0.03105	0.03375	0.000825027	0.000729061	0.018846
San Bernardino	2020	ConstMin - Skid Steer Loaders	Aggregated	175	Diesel	0.007138369	0.008637	0.010279	0.158825	0.095534	29.45323	0.004018	0.003697	0.004018	0.000272096	0.000240393	0.019004
San Bernardino	2020	ConstMin - Skid Steer Loaders	Aggregated	300	Diesel	0.004157573	0.005031	0.005987	0.050265	0.063513	27.35686	0.001801	0.001657	0.001801	0.000252803	0.000223283	0.019054
San Bernardino	2020	ConstMin - Skid Steer Loaders	Aggregated	600	Diesel	0.001900419	0.00223	0.002737	0.014768	0.031	7.914069	0.001331	0.001225	0.001331	7.31125E-05	6.45936E-05	0.019083
San Bernardino	2020	ConstMin - Skid Steer Loaders	Aggregated	9999	Diesel	0.004855082	0.005875	0.006991	0.033618	0.089301	10.71278	0.00293	0.002696	0.00293	9.88994E-05	8.74363E-05	0.019029
San Bernardino	2020	ConstMin - Surfacing Equipment	Aggregated	50	Diesel	0.00561905	0.006799	0.008091	0.049934	0.053812	7.60417	0.002747	0.002527	0.002747	7.01358E-05	6.20642E-05	0.017533
San Bernardino	2020	ConstMin - Surfacing Equipment	Aggregated	75	Diesel	0.004761241	0.005761	0.006856	0.040632	0.067695	5.794173	0.004227	0.003889	0.004227	5.34272E-05	4.72913E-05	0.015639
San Bernardino	2020	ConstMin - Surfacing Equipment	Aggregated	100	Diesel	0.021165063	0.02561	0.030478	0.282748	0.278234	43.6617	0.015709	0.014452	0.015709	0.000403039	0.000356361	0.015601
San Bernardino	2020	ConstMin - Surfacing Equipment	Aggregated	175	Diesel	0.019592512	0.023707	0.028213	0.235032	0.275251	40.87058	0.01348	0.012402	0.01348	0.000377281	0.00033358	0.015572
San Bernardino	2020	ConstMin - Surfacing Equipment	Aggregated	300	Diesel	0.028684738	0.034709	0.041306	0.218477	0.524299	80.76761	0.016931	0.015576	0.016931	0.000745876	0.000659214	0.015598
San Bernardino	2020	ConstMin - Surfacing Equipment	Aggregated	600	Diesel	0.051397855	0.062191	0.074013	0.526338	0.777868	256.0682	0.027982	0.025743	0.027982	0.002365936	0.002089994	0.015584
San Bernardino	2020	ConstMin - Surfacing Equipment	Aggregated	750	Diesel	0.031163597	0.037708	0.044876	0.244574	0.573921	126.2666	0.020236	0.018617	0.020236	0.001166463	0.001030571	0.015591
San Bernardino	2020	ConstMin - Surfacing Equipment	Aggregated	9999	Diesel	0.016056756	0.019429	0.023122	0.09135	0.380478	41.91124	0.009084	0.008357	0.009084	0.000387008	0.000342074	0.015589
San Bernardino	2020	ConstMin - Sweepers/Scrubbers	Aggregated	25	Diesel	0.007534211	0.009116	0.010849	0.025051	0.01725	1.318155	0.002371	0.002182	0.002371	1.1961E-05	1.07586E-05	0.026205
San Bernardino	2020	ConstMin - Sweepers/Scrubbers	Aggregated	50	Diesel	0.938516719	1.135605	1.351464	5.218553	4.32316	499.2522	0.392	0.36064	0.392	0.004587678	0.004074829	0.026189
San Bernardino	2020	ConstMin - Sweepers/Scrubbers	Aggregated	75	Diesel	0.146554508	0.177331	0.211038	1.032076	1.460295	135.7688	0.117654	0.108242	0.117654	0.001250854	0.001108127	0.023651
San Bernardino	2020	ConstMin - Sweepers/Scrubbers	Aggregated	100	Diesel	0.480289032	0.58115	0.691616	4.551544	5.078224	637.8792	0.407619	0.375009	0.407619	0.005883101	0.005206284	0.023555
San Bernardino	2020	ConstMin - Sweepers/Scrubbers	Aggregated	175	Diesel	0.139095327	0.168305	0.200297	1.224889	1.680338	192.9787	0.086449	0.079533	0.086449	0.001780011	0.001575066	0.023572
San Bernardino	2020	ConstMin - Sweepers/Scrubbers	Aggregated	300	Diesel	0.040467222	0.048965	0.058273	0.249784	0.606841	115.8925	0.019486	0.017928	0.019486	0.00107027	0.000945899	0.023572
San Bernardino	2020	ConstMin - Sweepers/Scrubbers	Aggregated	600	Diesel	0.012597406	0.015243	0.01814	0.207389	0.174918	15.65115	0.00883	0.008124	0.00883	0.000144325	0.000127743	0.023572
San Bernardino	2020	ConstMin - Sweepers/Scrubbers	Aggregated	9999	Diesel	0.007688825	0.009303	0.011072	0.040039	0.161112	20.10935	0.004572	0.004206	0.004572	0.00018569	0.00016413	0.023572
San Bernardino	2020	ConstMin - Tractors/Loaders/Backhoes	Aggregated	50	Diesel	1.931507974	2.337125	2.781371	14.18473	12.38993	1625.676	0.810947	0.746071	0.810947	0.014972236	0.013268549	0.021049
San Bernardino	2020	ConstMin - Tractors/Loaders/Backhoes	Aggregated	75	Diesel	0.649870416	0.786343	0.935813	2.619006	6.174131	258.0973	0.49519	0.455575	0.49519	0.002366741	0.002106555	0.019058
San Bernardino	2020	ConstMin - Tractors/Loaders/Backhoes	Aggregated	100	Diesel	12.77779258	15.46113	18.40002	174.178	157.086	25832.91	9.82862	9.04233	9.82862	0.238454762	0.210844767	0.019105
San Bernardino	2020	ConstMin - Tractors/Loaders/Backhoes	Aggregated	175	Diesel	1.751892811	2.11979	2.522726	26.81146	20.84932	4515.321	1.050468	0.96643	1.050468	0.041693827	0.036853445	0.018951
San Bernardino	2020	ConstMin - Tractors/Loaders/Backhoes	Aggregated	300	Diesel	0.996918796	1.206272	1.435563	6.571073	14.59233	2792.662	0.487149	0.448177	0.487149	0.025789636	0.022793331	0.019024
San Bernardino	2020	ConstMin - Tractors/Loaders/Backhoes	Aggregated	600	Diesel	1.188126012	1.437632	1.710901	9.774707	15.67502	3715.043	0.553829	0.509523	0.553829	0.034311775	0.030321685	0.018883
San Bernardino	2020	ConstMin - Tractors/Loaders/Backhoes	Aggregated	750	Diesel	0.027030207	0.032707	0.038923	0.252589	0.301028	125.6512	0.008301	0.007637	0.008301	0.001160897	0.001025548	0.018828
San Bernardino	2020	ConstMin - Tractors/Loaders/Backhoes	Aggregated	9999	Diesel	0.349099072	0.42241	0.502703	2.490389	8.179717	1269.667	0.166019	0.152737	0.166019	0.011728224	0.010362848	0.019068
San Bernardino	2020	ConstMin - Trenchers	Aggregated	50	Diesel	0.729213527	0.882348	1.050667	4.712623	4.559932	574.8931	0.347195	0.319419	0.347195	0.005293296	0.0046922	0.028941
San Bernardino	2020	ConstMin - Trenchers	Aggregated	75	Diesel	0.056916029	0.068868	0.081959	0.32666	0.575838	38.36867	0.039518	0.036356	0.039518	0.00035303	0.00031316	0.026082
San Bernardino	2020	ConstMin - Trenchers	Aggregated	100	Diesel	0.338403225	0.409468	0.487301	2.677647	3.75068	378.2194	0.284405	0.261653	0.284405	0.003486674	0.003086976	0.026031
San Bernardino	2020	ConstMin - Trenchers	Aggregated	175	Diesel	0.056534304	0.068407	0.081409	0.541367	0.725212	85.06468	0.03708	0.034114	0.03708	0.000784769	0.000694286	0.025899
San Bernardino	2020	ConstMin - Trenchers	Aggregated	300	Diesel	0.112768164	0.136449	0.162386	0.643198	1.672285	206.5254	0.067378	0.061988	0.067378	0.001906047	0.001685632	0.026061
San Bernardino	2020	ConstMin - Trenchers	Aggregated	600	Diesel	0.095220632	0.115217	0.137118	0.971896	1.350889	277.2257	0.050782	0.046719	0.050782	0.002560233	0.002262679	0.026087
San Bernardino	2020	ConstMin - Trenchers	Aggregated	750	Diesel	0.010473075	0.012672	0.015081	0.163175	0.106699	90.4926	0.001557	0.001432	0.001557	0.000836335	0.000738588	0.02601
San Bernardino	2020	ConstMin - Trenchers	Aggregated	9999	Diesel	0.013604832	0.016462	0.019591	0.195397	0.188883	7.501084	0.008722	0.008024	0.008722	6.89431E-05	6.12228E-05	0.025998
San Bernardino	2020	OFF - Light Commercial - Air Compressors	Aggregated	50	Diesel	0.441655566	0.525607	0.635984	3.359938	2.85802	378.4209	0.157215	0.144638	0.157215	0.004892037	0.003193666	0.027645
San Bernardino	2020	OFF - Light Commercial - Generator Sets	Aggregated	25	Diesel	0.739860192	0.880495	1.065399	4.571092	7.020071	884.6469	0.320866	0.295196	0.320866	0.012347333	0.007410216	0.042282
San Bernardino	2020	OFF - Light Commercial - Generator Sets	Aggregated	50	Diesel	0.843753283	1.004136	1.215005	7.241115	7.347514	1047.379	0.337562	0.310557	0.337562	0.013539992	0.008796071	0.042398
San Bernardino	2020	Portable Equipment - Non-Rental Generator	Aggregated	100	Diesel	0.596575642	0.721857	0.859069	10.86456	7.127302	1463.442	0.555712	0.511255	0.555712	0.013512347	0.011944414	0.015146
San Bernardino	2020	OFF - Const/Min - Cement and Mortar Mixers	Aggregated	25	Diesel	0.036812035	0.043809	0.053009	0.256094	0.330619	44.70605	0.013139	0.012088	0.013139	0.000669975	0.000374365	0.032066

OFFROAD2017 (v1.0.1) Emissions Inventory

Region Type: County

Region: San Bernardino

Calendar Year: 2020

Scenario: All Adopted Rules - Exhaust

Vehicle Classification: OFFROAD2017 Equipment Types

Units: Emissions: tons/day, Fuel Consumption: gallons/year, Activity: hours/year, HP-Hours: HP-hours/year

Region	CalYr	VehicleClass	MdYr	HP_Bin	Fuel	HC_tpd	ROG_tpd	TOG_tpd	CO_tpd	NOx_tpd	CO2_tpd	PM10_tpd	PM2_5_tpd	PM_tpd	SOx_tpd	NH3_tpd	Fuel_gpy	Total_Activ	Total_Popu	Horsepower_Hours_hpy
San Bernar	2020	ConstMin - Bore/Drill Rigs	Aggregated	50	Diesel	0.000130078	0.000157394	0.000187312	0.000991755	0.001021436	0.131665	6.46725E-05	5.94987E-05	6.46725E-05	1.2134E-06	1.07463E-06	4271.718582	3697.631	10.63749	145058.68
San Bernar	2020	ConstMin - Bore/Drill Rigs	Aggregated	75	Diesel	0.000102173	0.000123629	0.000147129	0.001512255	0.001814798	0.229369	9.54059E-05	8.77734E-05	9.54059E-05	2.11756E-06	1.87208E-06	7441.613862	3947.179	8.957888	289804.2634
San Bernar	2020	ConstMin - Bore/Drill Rigs	Aggregated	100	Diesel	0.000216201	0.000261604	0.00031133	0.003733155	0.003001423	0.589452	0.000152817	0.000140591	0.000152817	5.44329E-06	4.81103E-06	19124.11101	8725.435	23.51446	747616.0505
San Bernar	2020	ConstMin - Bore/Drill Rigs	Aggregated	175	Diesel	0.00025974	0.000314285	0.000374025	0.005294286	0.003364381	0.951915	0.000149073	0.000137147	0.000149073	8.79313E-06	7.7694E-06	30883.82322	7926.082	25.64196	1184920.033
San Bernar	2020	ConstMin - Bore/Drill Rigs	Aggregated	300	Diesel	0.000307549	0.000372134	0.000442871	0.002767359	0.004716148	1.344238	0.000137047	0.000126083	0.000137047	1.24189E-05	1.09715E-05	43612.33642	8173.382	25.64196	1689720.206
San Bernar	2020	ConstMin - Bore/Drill Rigs	Aggregated	600	Diesel	0.000469173	0.0005677	0.00067561	0.004852738	0.006488043	2.57188	0.000204362	0.000188013	0.000204362	2.37642E-05	2.09913E-05	83441.80935	7740.982	22.17077	3242397.491
San Bernar	2020	ConstMin - Bore/Drill Rigs	Aggregated	750	Diesel	0.000168042	0.00020333	0.00024198	0.001792908	0.002240927	0.9707	7.8479E-05	7.22007E-05	7.8479E-05	8.96957E-06	7.92273E-06	31493.30733	1857.496	4.254997	1199951.385
San Bernar	2020	ConstMin - Bore/Drill Rigs	Aggregated	9999	Diesel	0.000201586	0.000243919	0.000290284	0.001344846	0.005423317	0.711841	0.000131645	0.000121114	0.000131645	6.57528E-06	5.80995E-06	23094.90107	478.4876	0.671842	890174.8457
San Bernar	2020	ConstMin - Cranes	Aggregated	25	Diesel	3.90892E-06	4.72797E-06	5.62884E-06	2.21592E-05	2.02665E-05	0.002518	1.5208E-06	1.39914E-06	1.5208E-06	2.31622E-08	2.05509E-08	81.69118793	197.332	0.421889	4933.330716
San Bernar	2020	ConstMin - Cranes	Aggregated	50	Diesel	0.000124839	0.000151055	0.000179768	0.000529364	0.000427211	0.040799	4.51155E-05	4.15362E-05	4.51155E-05	3.73462E-07	3.22996E-07	1323.677766	1919.528	4.500147	79143.22645
San Bernar	2020	ConstMin - Cranes	Aggregated	75	Diesel	3.77115E-05	4.56309E-05	5.43046E-05	0.000157484	0.000344716	0.018343	3.19975E-05	2.94377E-05	3.19975E-05	1.68454E-07	1.49709E-07	595.1033595	566.4311	1.546926	3966.610817
San Bernar	2020	ConstMin - Cranes	Aggregated	100	Diesel	0.001095448	0.001325492	0.001577444	0.007551574	0.011620371	0.946878	0.000819483	0.000753925	0.000819483	8.72149E-06	7.72829E-06	30720.40184	23435.44	54.28302	2068849.742
San Bernar	2020	ConstMin - Cranes	Aggregated	175	Diesel	0.00233606	0.002826632	0.003363926	0.018796447	0.029199333	2.795764	0.001569371	0.001443821	0.001569371	2.57781E-05	2.28187E-05	90705.49333	41389.78	92.53427	6079958.521
San Bernar	2020	ConstMin - Cranes	Aggregated	300	Diesel	0.002958656	0.003579973	0.004260464	0.016805585	0.04296674	5.0354	0.001756723	0.001616186	0.001756723	4.6466E-05	4.10983E-05	163368.0145	49326.56	106.4566	10967340.89
San Bernar	2020	ConstMin - Cranes	Aggregated	600	Diesel	0.003915894	0.004738231	0.005638887	0.038120003	0.057627873	8.360363	0.002271142	0.002089451	0.002271142	7.71782E-05	6.82362E-05	271242.7731	49280.13	102.3783	18241386.87
San Bernar	2020	ConstMin - Cranes	Aggregated	750	Diesel	0.000134188	0.000162368	0.000193231	0.001321487	0.00173036	0.133935	8.92193E-05	8.20818E-05	8.92193E-05	1.23427E-06	1.09316E-06	4345.379158	453.9605	1.125037	290569.6498
San Bernar	2020	ConstMin - Cranes	Aggregated	9999	Diesel	0.000561283	0.000679152	0.000808247	0.005797438	0.007768721	0.468835	0.000370699	0.000341043	0.000370699	4.31778E-06	3.82657E-06	15210.84144	1088.784	2.250074	1021548.791
San Bernar	2020	ConstMin - Crawler Tractors	Aggregated	50	Diesel	0.000383036	0.000469791	0.00055909	0.001670594	0.001291338	0.132004	0.000135288	0.000124465	0.000135288	1.2088E-06	1.0774E-06	4282.735919	4158.776	12.48126	174778.3409
San Bernar	2020	ConstMin - Crawler Tractors	Aggregated	75	Diesel	0.000133036	0.000160973	0.000191571	0.000521837	0.001274816	0.043571	9.34672E-05	8.59898E-05	9.34672E-05	3.98843E-07	3.55619E-07	1413.606804	875.1361	4.243628	63192.1419
San Bernar	2020	ConstMin - Crawler Tractors	Aggregated	100	Diesel	0.006319523	0.007646623	0.009100113	0.043728097	0.064376749	5.791378	0.005376923	0.004946769	0.005376923	5.33546E-05	4.72685E-05	187894.8887	96582.53	209.8099	8453286.735
San Bernar	2020	ConstMin - Crawler Tractors	Aggregated	175	Diesel	0.004772378	0.005774577	0.006872224	0.040387518	0.059021892	6.363174	0.003301834	0.003037688	0.003301834	5.86875E-05	5.19354E-05	206446.1774	62437.88	141.2878	9308861.684
San Bernar	2020	ConstMin - Crawler Tractors	Aggregated	300	Diesel	0.00443695	0.005388709	0.006389208	0.028219281	0.066621153	6.802201	0.00267333	0.002459464	0.00267333	6.27566E-05	5.55187E-05	220689.9234	48137.91	112.4561	9956133.62
San Bernar	2020	ConstMin - Crawler Tractors	Aggregated	600	Diesel	0.000619183	0.011639211	0.013851623	0.072959119	0.14088359	23.0243	0.005295448	0.004871812	0.005295448	0.000212553	0.000187921	746998.0905	87454.02	186.5948	33661800.87
San Bernar	2020	ConstMin - Crawler Tractors	Aggregated	750	Diesel	0.000291753	0.000353021	0.000420124	0.00182081	0.00559878	0.494689	0.000164043	0.00015092	0.000164043	4.56489E-06	4.03758E-06	16049.62537	1148.472	2.621064	725185.8804
San Bernar	2020	ConstMin - Crawler Tractors	Aggregated	9999	Diesel	0.000893002	0.01080533	0.01285923	0.004556752	0.017505928	1.356173	0.000496356	0.000456648	0.000496356	1.25117E-05	1.10689E-05	43999.52499	2023.978	3.744377	1979961.064
San Bernar	2020	ConstMin - Excavators	Aggregated	25	Diesel	3.65148E-06	4.4183E-06	5.25814E-06	1.24074E-05	8.42764E-06	0.000653	1.17456E-06	1.0806E-06	1.17456E-06	5.92646E-06	5.32854E-06	21.18127792	38.64102	0.125062	966.0253987
San Bernar	2020	ConstMin - Excavators	Aggregated	50	Diesel	0.004404361	0.00529277	0.00634228	0.040451362	0.036238292	5.283153	0.001996394	0.001836682	0.001996394	4.87132E-05	4.31204E-05	171406.0904	218103.8	305.4016	7800695.592
San Bernar	2020	ConstMin - Excavators	Aggregated	75	Diesel	9.42689E-05	0.000114065	0.000135747	0.001191126	0.001685456	0.16684	9.75001E-05	8.97001E-05	9.75001E-05	1.53969E-06	1.36172E-06	5412.93286	3728.649	5.027335	213631.9761
San Bernar	2020	ConstMin - Excavators	Aggregated	100	Diesel	0.003111221	0.003764578	0.004480159	0.044688874	0.03849351	6.697611	0.002300427	0.002116393	0.002300427	6.18294E-05	5.4665E-05	217296.6187	135360.3	214.4816	11705478.02
San Bernar	2020	ConstMin - Excavators	Aggregated	175	Diesel	0.005276958	0.00638512	0.00759882	0.084642565	0.062780787	14.47506	0.000351333	0.002807226	0.000351333	0.000133671	0.000118143	469627.2905	162742.6	281.765	23761655.29
San Bernar	2020	ConstMin - Excavators	Aggregated	300	Diesel	0.005166039	0.006250907	0.007439096	0.039553807	0.071421573	18.40933	0.002177941	0.002003706	0.002177941	0.000170048	0.000150254	597270.3305	138350.7	242.3705	30217674.28
San Bernar	2020	ConstMin - Excavators	Aggregated	600	Diesel	0.007785478	0.009420428	0.011211088	0.06771645	0.096079197	32.63957	0.000162675	0.002909661	0.000162675	0.000031535	0.00002664	1058954.741	195086.5	254.2514	53721930.02
San Bernar	2020	ConstMin - Excavators	Aggregated	750	Diesel	0.000237397	0.00028725	0.000341852	0.001525083	0.003651255	0.578941	0.000119691	0.000110116	0.000119691	5.34547E-06	4.72524E-06	18783.10092	1520.949	2.751367	952792.2411
San Bernar	2020	ConstMin - Excavators	Aggregated	9999	Diesel	0.00022403	0.000271076	0.000322603	0.002017089	0.005657747	0.912313	0.00010608	9.75936E-05	0.00010608	8.42806E-06	7.44617E-06	29598.98053	1243.348	1.875932	1496829.223

OFFROAD2017 (v1.0.1) Emissions Inventory

Region Type: County

Region: San Bernardino

Calendar Year: 2020

Scenario: All Adopted Rules - Exhaust

Vehicle Classification: OFFROAD2017 Equipment Types

Units: Emissions: tons/day, Fuel Consumption: gallons/year, Activity: hours/year, HP-Hours: HP-hours/year

Region	CalYr	VehClass	MdYr	HP_Bin	Fuel	HC_tpd	ROG_tpd	TOG_tpd	CO_tpd	NOx_tpd	CO2_tpd	PM10_tpd	PM2_5_tpd	PM_tpd	SOx_tpd	NH3_tpd	Fuel_gpy	Total_Activ	Total_Popu	Horsepower_Hours_hppy
San Bernar	2020	ConstMin - Graders	Aggregated	50	Diesel	0.000125567	0.000151936	0.000180816	0.000488515	0.000350322	0.032856	4.30466E-05	3.96029E-05	4.30466E-05	2.99999E-07	2.68163E-07	1065.964569	1253.089	3.644584	45366.83524
San Bernar	2020	ConstMin - Graders	Aggregated	75	Diesel	5.48187E-05	6.63295E-05	7.89376E-05	0.00041613	0.000509139	0.054148	3.61242E-05	3.31341E-05	3.61242E-05	4.98981E-07	4.41949E-07	1756.774283	1156.643	3.141883	83109.53496
San Bernar	2020	ConstMin - Graders	Aggregated	100	Diesel	0.001313109	0.001588862	0.001890878	0.00666686	0.012347385	0.72947	0.001020598	0.00093895	0.001020598	6.70492E-06	5.95383E-06	23666.84252	12579.53	34.93774	1129992.536
San Bernar	2020	ConstMin - Graders	Aggregated	175	Diesel	0.007685938	0.009299985	0.011067751	0.059896786	0.090778023	8.83947	0.005067419	0.004662026	0.005067419	8.14947E-05	7.21466E-05	286786.8818	91147.86	197.6873	13546845.74
San Bernar	2020	ConstMin - Graders	Aggregated	300	Diesel	0.010032422	0.012139231	0.014446688	0.048854928	0.151788317	18.66328	0.005034101	0.004631373	0.005034101	0.00017225	0.000152327	605509.4513	132075.3	177.9563	28262175.34
San Bernar	2020	ConstMin - Graders	Aggregated	600	Diesel	0.000435553	0.000527019	0.000627197	0.001887142	0.006971537	0.813968	0.000215733	0.000198474	0.000215733	7.51247E-06	6.6435E-06	26408.29011	3543.385	4.901337	1243037.165
San Bernar	2020	ConstMin - Graders	Aggregated	9999	Diesel	0.000492749	0.000596227	0.000799559	0.002518663	0.008251579	6.63271	0.000258753	0.000238053	0.000258753	5.83494E-06	5.1641E-06	20527.58958	536.6174	0.754052	970913.6272
San Bernar	2020	ConstMin - Off-Highway Tractors	Aggregated	50	Diesel	0.003125105	0.003781377	0.004500151	0.020630476	0.017435732	2.191014	0.001298711	0.001194814	0.001298711	1.78828E-05	71085.04566	75361.91	117.1043	2843381.586	
San Bernar	2020	ConstMin - Off-Highway Tractors	Aggregated	75	Diesel	0.000790447	0.00095644	0.001138243	0.010277869	0.009170258	1.504949	0.00055262	0.000508411	0.00055262	1.38933E-05	1.22832E-05	48826.42304	30563.99	48.61865	2167375.681
San Bernar	2020	ConstMin - Off-Highway Tractors	Aggregated	100	Diesel	0.001152212	0.001394176	0.001659185	0.00960049	0.012781943	1.278268	0.001058505	0.000973824	0.001058505	1.17837E-05	1.04331E-05	41472.01312	23016.14	36.52568	1834461.3
San Bernar	2020	ConstMin - Off-Highway Tractors	Aggregated	175	Diesel	0.001001643	0.001219247	0.001451005	0.014465245	0.013003964	2.379911	0.000630893	0.000580421	0.000630893	2.1974E-05	1.94252E-05	77216.19953	21658.45	32.32017	3429211.965
San Bernar	2020	ConstMin - Off-Highway Tractors	Aggregated	300	Diesel	0.000807263	0.000976788	0.01162458	0.005196408	0.011703771	2.128936	0.000396432	0.000364718	0.000396432	1.96589E-05	1.73761E-05	69070.99598	14161.11	22.58176	3072874.635
San Bernar	2020	ConstMin - Off-Highway Tractors	Aggregated	600	Diesel	0.001636574	0.001980254	0.002356666	0.013162763	0.019420077	6.512521	0.000657098	0.00064053	0.000657098	6.01624E-05	5.31543E-05	211291.5717	26316.37	38.87024	9407257.501
San Bernar	2020	ConstMin - Off-Highway Tractors	Aggregated	750	Diesel	6.000141155	0.000170797	0.000203262	0.000765586	0.001702192	0.379193	6.9087E-05	6.356E-05	6.9087E-05	3.5016E-06	3.09492E-06	12302.50903	867.4169	1.239776	553095.3067
San Bernar	2020	ConstMin - Off-Highway Tractors	Aggregated	9999	Diesel	0.000137716	0.000166636	0.000198311	0.000888528	0.002510888	0.37016	6.60828E-05	6.07961E-05	6.60828E-05	3.41818E-06	3.02119E-06	12009.41801	326.3481	0.616988	533433.2044
San Bernar	2020	ConstMin - Off-Highway Trucks	Aggregated	25	Diesel	2.85565E-05	3.45534E-05	4.11214E-05	0.000129356	8.49868E-05	0.009294	8.78431E-06	8.08157E-06	8.78431E-06	8.50688E-08	7.58545E-08	301.5260202	549.4617	0.366791	13736.54233
San Bernar	2020	ConstMin - Off-Highway Trucks	Aggregated	50	Diesel	0.000230942	0.00027944	0.000332557	0.001932828	0.001622979	0.201378	0.00011292	0.000103887	0.00011292	1.85491E-06	1.64362E-06	6533.492924	10399.13	6.602236	299331.7051
San Bernar	2020	ConstMin - Off-Highway Trucks	Aggregated	75	Diesel	3.00468E-05	3.63566E-05	4.32674E-05	0.00047049	0.000276076	0.063432	1.11281E-05	1.02378E-05	1.11281E-05	5.85559E-07	5.17723E-07	2057.981347	1466.459	0.978109	104315.9185
San Bernar	2020	ConstMin - Off-Highway Trucks	Aggregated	100	Diesel	0.000108553	0.000131349	0.000156316	0.001108946	0.001116193	0.146866	9.00842E-05	8.28775E-05	9.00842E-05	1.3546E-06	1.1987E-06	4764.91798	2743.49	2.200745	241486.0276
San Bernar	2020	ConstMin - Off-Highway Trucks	Aggregated	175	Diesel	0.002476289	0.002996309	0.003588855	0.013929979	0.02538088	5.012775	0.001330208	0.001223791	0.001330208	4.62713E-05	4.09136E-05	162633.9575	52283.96	38.14625	8248329.919
San Bernar	2020	ConstMin - Off-Highway Trucks	Aggregated	300	Diesel	0.004409286	0.005335236	0.006493732	0.027009955	0.048683059	10.21156	0.001896785	0.001745042	0.001896785	9.42787E-05	8.33454E-05	331302.7975	79839.28	64.06614	16854073.34
San Bernar	2020	ConstMin - Off-Highway Trucks	Aggregated	600	Diesel	0.016926842	0.020481479	0.024374653	0.118642095	0.196481223	43.81558	0.007173487	0.006599608	0.007173487	0.000404589	0.000357617	1421548.194	191375.1	144.0266	72035615.17
San Bernar	2020	ConstMin - Off-Highway Trucks	Aggregated	750	Diesel	0.007132414	0.008630221	0.010270576	0.053983308	0.083439573	14.75617	0.003263815	0.003002709	0.003263815	0.000136214	0.000120438	478747.6446	36565.82	30.81044	24288000.22
San Bernar	2020	ConstMin - Off-Highway Trucks	Aggregated	9999	Diesel	0.0011574542	0.014005196	0.016667341	0.069102377	0.213294996	26.20869	0.005391179	0.004959884	0.005391179	0.000241965	0.000213912	850312.166	33946.75	24.57499	42907429.87
San Bernar	2020	ConstMin - Other Construction Equip	Aggregated	50	Diesel	0.001773186	0.002145555	0.002553388	0.010814549	0.010077772	1.181742	0.000810841	0.000745974	0.000810841	1.08726E-05	9.64522E-06	38340.30875	41986.69	90.40667	1599874.229
San Bernar	2020	ConstMin - Other Construction Equip	Aggregated	75	Diesel	0.000228886	0.000276952	0.000329596	0.001217906	0.002333739	0.132514	0.000173772	0.000159877	0.000173772	1.21831E-06	1.08158E-06	4299.45819	2765.498	9.004163	20202.1856
San Bernar	2020	ConstMin - Other Construction Equip	Aggregated	100	Diesel	0.002779232	0.003362871	0.004002094	0.024979237	0.031130366	3.576814	0.002307166	0.002125993	0.002307166	3.2986E-05	2.91935E-05	116045.802	65908.16	59.0399	5405217.859
San Bernar	2020	ConstMin - Other Construction Equip	Aggregated	175	Diesel	0.001235892	0.001495429	0.001779684	0.011438883	0.015838763	2.01926	0.000836974	0.000770018	0.000836974	1.8632E-05	1.64809E-05	65512.654	20992.48	49.76625	3065301.306
San Bernar	2020	ConstMin - Other Construction Equip	Aggregated	300	Diesel	0.001306683	0.001581087	0.001881624	0.008413031	0.019784836	2.698412	0.000752974	0.000692736	0.000752974	2.4909E-05	2.20241E-05	87546.99283	18477.51	46.84598	4054771.393
San Bernar	2020	ConstMin - Other Construction Equip	Aggregated	600	Diesel	0.003481061	0.004212084	0.005012728	0.029533992	0.050925377	10.28425	0.001799188	0.001655253	0.001799188	9.49785E-05	8.39386E-05	333661.0762	46008.96	93.20526	15559230.28
San Bernar	2020	ConstMin - Other Construction Equip	Aggregated	750	Diesel	0.000533674	0.000645745	0.000768489	0.00400432	0.00770718	1.880882	0.000251881	0.00023173	0.000251881	1.73737E-05	1.53515E-05	61023.13733	4602.514	8.882485	2849431.197
San Bernar	2020	ConstMin - Other Construction Equip	Aggregated	9999	Diesel	0.00019962	0.00024154	0.000287453	0.001359024	0.004652442	0.649034	0.000108988	0.000100269	0.000108988	5.99465E-06	5.29733E-06	21057.19259	1075.2	2.31188	980893.5662
San Bernar	2020	ConstMin - Pavers	Aggregated	50	Diesel	0.00026786	0.000324111	0.000385718	0.001358113	0.00117138	0.144726	9.88823E-05	9.09771E-05	9.88823E-05	1.33002E-06	1.18123E-06	4695.461251	5073.985	14.64552	196386.2647
San Bernar	2020	ConstMin - Pavers	Aggregated	75	Diesel	0.000374224	0.000452811	0.000538883	0.001829882	0.003402132	0.237043	0.000324991	0.000298917	0.000324991	2.18036E-06	1.93472E-06	7690.609772	4970.523	14.15734	359496.1422
San Bernar	2020	ConstMin - Pavers	Aggregated	100	Diesel	0.000637976	0.000771951	0.000918686	0.007691162	0.008184155	1.154845	0.00052344	0.000481565	0.00052344	1.0658E-05	9.42569E-06	37467.68872	21613.45	56.38527	1750799.224
San Bernar	2020	ConstMin - Pavers	Aggregated	175	Diesel	0.000837078	0.001012865	0.001205393	0.010955303	0.01075802	1.918536	0.000530596	0.000488149	0.000530596	1.77127E-05	1.56588E-05	62244.78773	18332.75	48.69637	2891722.2
San Bernar	2020	ConstMin - Pavers	Aggregated	300	Diesel	0.004041605	0.000503487	0.000599991	0.002903714	0.0007460536	1.496469	0.00022315	0.000203598	0.00022315	1.82321E-05	1.2214E-05	48551.2953	10217.53	23.31079	262552.601
San Bernar	2020	ConstMin - Pavers	Aggregated	600	Diesel	6.24073E-05	7.55128E-05	8.98465E-05	0.000507559	0.000958207	0.270791	3.28342E-05	3.02075E-05	3.28342E-05	2.50172E-06	2.21016E-06	8785.511031	1111.125	2.562967	407958.2418
San Bernar	2020	ConstMin - Pavers	Aggregated	750	Diesel	1.01491E-05	1.22804E-05	1.46147E-05	0.000102711	0.000126075	0.056048	5.53465E-06	5.09188E-06	5.53465E-06	5.17885E-07	4.57455E-07	1818.409735	112.8551	0.244092	84641.29427

OFFROAD2017 (v1.0.1) Emissions Inventory

Region Type: County

Region: San Bernardino

Calendar Year: 2020

Scenario: All Adopted Rules - Exhaust

Vehicle Classification: OFFROAD2017 Equipment Types

Units: Emissions: tons/day, Fuel Consumption: gallons/year, Activity: hours/year, HP-Hours: HP-hours/yr

Region	CalYr	VehClass	MdlYr	HP_Bin	Fuel	HC_tpd	ROG_tpd	TOG_tpd	CO_tpd	NOx_tpd	CO2_tpd	PM10_tpd	PM2_5_tpd	PM_tpd	SOx_tpd	NH3_tpd	Fuel_gpy	Total_Activ	Total_Popu	Horsepower_Hours_hpy
San Bernar	2020	ConstMin - Paving Equipment	Aggregated	50	Diesel	0.000159098	0.000192509	0.000229102	0.001308362	0.001224308	0.18024	6.71981E-05	6.18222E-05	6.71981E-05	1.66164E-06	1.47111E-06	5847.693641	8297.342	18.03376	287815.6684
San Bernar	2020	ConstMin - Paving Equipment	Aggregated	75	Diesel	2.90726E-05	3.51778E-05	4.18645E-05	0.000184034	0.000302293	0.021981	2.32587E-05	2.1398E-05	2.32587E-05	2.02355E-07	1.79408E-07	713.1568697	579.6777	1.584047	3891.29883
San Bernar	2020	ConstMin - Paving Equipment	Aggregated	100	Diesel	0.000425739	0.000515144	0.000613064	0.005014108	0.005031452	0.753324	0.000330122	0.000303712	0.000330122	6.95208E-06	6.14853E-06	24440.7619	14943.86	33.14313	1328439.955
San Bernar	2020	ConstMin - Paving Equipment	Aggregated	175	Diesel	0.000353293	0.000427484	0.000508742	0.004777836	0.004262341	0.815988	0.000229717	0.00021134	0.000229717	7.53361E-06	6.65998E-06	26473.81618	9974.261	22.17666	1444006.756
San Bernar	2020	ConstMin - Paving Equipment	Aggregated	300	Diesel	0.000209194	0.000253125	0.00030124	0.001296224	0.003309773	0.578772	0.000117312	0.000107927	0.000117312	5.34475E-06	4.72386E-06	18777.60559	4368.174	9.504281	1021174.467
San Bernar	2020	ConstMin - Paving Equipment	Aggregated	600	Diesel	0.000193662	0.000234331	0.000278873	0.001281235	0.003108117	0.596273	9.54401E-05	8.78049E-05	9.54401E-05	5.50703E-06	4.8667E-06	19345.41464	2547.727	5.605089	1048625.058
San Bernar	2020	ConstMin - Paving Equipment	Aggregated	750	Diesel	2.46553E-05	2.9833E-05	3.55037E-05	0.000138727	0.000418198	0.071121	1.06658E-05	9.81251E-06	1.06658E-05	6.56811E-07	5.80481E-07	2307.448226	183.7571	0.365549	125592.2953
San Bernar	2020	ConstMin - Paving Equipment	Aggregated	9999	Diesel	7.4224E-06	8.9811E-06	1.06883E-05	9.72867E-05	0.000232213	0.05295	3.74001E-06	3.44081E-06	3.74001E-06	4.89327E-07	4.32171E-07	1717.906575	110.9067	0.2437	93495.95796
San Bernar	2020	ConstMin - Rollers	Aggregated	25	Diesel	2.54329E-06	3.07739E-06	3.66234E-06	8.49047E-06	6.02784E-06	0.000465	8.07986E-07	7.43473E-07	8.07986E-07	4.2252E-09	3.79762E-09	15.09576002	28.00613	0.125539	700.1531567
San Bernar	2020	ConstMin - Rollers	Aggregated	50	Diesel	0.000367468	0.004679636	0.00569154	0.023883997	0.022921779	2.973959	0.001662094	0.001529126	0.001662094	2.73797E-05	2.42731E-05	96486.81247	125166.1	370.2158	4471045.926
San Bernar	2020	ConstMin - Rollers	Aggregated	75	Diesel	7.70017E-05	9.3172E-05	0.000110882	0.000380871	0.000755591	0.026769	5.30825E-05	4.88359E-05	5.30825E-05	2.45182E-07	2.18484E-07	868.4876058	645.1211	2.887407	44703.91087
San Bernar	2020	ConstMin - Rollers	Aggregated	100	Diesel	0.002736027	0.003310592	0.003939879	0.030654119	0.0332769	4.620638	0.002116585	0.001947258	0.002116585	4.26371E-05	3.77122E-05	149908.2827	88520.08	273.2994	7722470.375
San Bernar	2020	ConstMin - Rollers	Aggregated	175	Diesel	0.001619176	0.001959203	0.002331613	0.026702968	0.022319119	4.80536	0.001025239	0.00094322	0.001025239	4.43794E-05	3.92207E-05	155904.6047	55925.57	159.6862	8041833.328
San Bernar	2020	ConstMin - Rollers	Aggregated	300	Diesel	0.000301032	0.000364249	0.000433487	0.002364939	0.004655317	0.795675	0.000163588	0.000150501	0.000163588	7.34738E-06	6.49419E-06	25814.80841	6152.806	20.46293	1329769.278
San Bernar	2020	ConstMin - Rollers	Aggregated	600	Diesel	0.000122986	0.000148813	0.0001771	0.001367412	0.001851988	0.466837	6.26443E-05	5.76327E-05	6.26443E-05	4.31245E-06	3.81026E-06	15146.01461	2221.026	7.406827	776486.3134
San Bernar	2020	ConstMin - Rough Terrain Forklifts	Aggregated	25	Diesel	2.2622E-07	2.73262E-07	3.25757E-07	4.94721E-06	6.65012E-06	0.000804	2.17793E-07	2.0037E-07	2.17793E-07	7.42362E-09	6.55951E-09	26.07445454	45.08599	0.144875	1127.149835
San Bernar	2020	ConstMin - Rough Terrain Forklifts	Aggregated	50	Diesel	0.000182683	0.000225161	0.00026796	0.00169024	0.0100937	0.135094	6.78034E-05	6.23791E-05	6.78034E-05	1.24343E-06	1.10262E-06	4382.98879	4005.22	14.92216	189524.3791
San Bernar	2020	ConstMin - Rough Terrain Forklifts	Aggregated	75	Diesel	4.19563E-05	5.07671E-05	6.04171E-05	0.000196995	0.000297958	0.021318	2.40492E-05	2.21253E-05	2.40492E-05	1.95837E-07	1.73995E-07	691.6412722	566.2413	2.318006	30819.42766
San Bernar	2020	ConstMin - Rough Terrain Forklifts	Aggregated	100	Diesel	0.002749064	0.00326368	0.003958653	0.07119715	0.049348762	11.68012	0.001639957	0.00150876	0.001639957	0.000107906	9.53315E-05	378948.5229	189386.7	684.6811	18206376.57
San Bernar	2020	ConstMin - Rough Terrain Forklifts	Aggregated	175	Diesel	0.001342817	0.001624808	0.001933656	0.015891186	0.014973977	2.754253	0.001004656	0.000924284	0.001004656	2.54242E-05	2.24798E-05	89358.71277	34664.83	131.1122	4296833.822
San Bernar	2020	ConstMin - Rough Terrain Forklifts	Aggregated	300	Diesel	3.27877E-05	3.96731E-05	4.72143E-05	0.000353375	0.000563979	0.191066	1.28719E-05	1.18422E-05	1.28719E-05	1.76551E-06	1.55945E-06	6198.916392	1418.027	5.790105	298171.3694
San Bernar	2020	ConstMin - Rough Terrain Forklifts	Aggregated	600	Diesel	1.02635E-05	1.24189E-05	1.47795E-05	0.000191038	0.000191038	0.0709	4.07616E-06	3.75007E-06	4.07616E-06	6.55195E-07	5.78674E-07	2300.261756	289.5846	0.159003	111325.236
San Bernar	2020	ConstMin - Rough Terrain Forklifts	Aggregated	750	Diesel	1.95369E-06	2.36396E-06	2.81331E-06	2.2383E-05	3.08347E-05	0.012222	2.16303E-07	1.98998E-07	2.16303E-07	1.12944E-07	9.97582E-08	396.5447659	30.54212	0.144875	19088.82785
San Bernar	2020	ConstMin - Rubber Tired Dozers	Aggregated	50	Diesel	0.000229332	0.000277491	0.000330238	0.001345435	0.001014655	0.131978	8.3911E-05	7.71981E-05	8.3911E-05	1.21332E-06	1.07718E-06	4281.873575	4540.472	4.896996	188299.6429
San Bernar	2020	ConstMin - Rubber Tired Dozers	Aggregated	75	Diesel	0.000212169	0.000256724	0.000305523	0.001000002	0.002019662	0.102837	0.000161135	0.000148245	0.000161135	9.44411E-07	8.39339E-07	3336.421996	2306.007	3.463729	162002.6792
San Bernar	2020	ConstMin - Rubber Tired Dozers	Aggregated	100	Diesel	0.000669893	0.000810571	0.000964646	0.004088591	0.006354438	0.502596	0.000557816	0.00051319	0.000557816	4.62665E-06	4.10212E-06	16306.16141	9400.554	10.7495	789939.8961
San Bernar	2020	ConstMin - Rubber Tired Dozers	Aggregated	175	Diesel	0.000617186	0.000746795	0.000888747	0.004008913	0.007336972	0.54064	0.000422662	0.000388849	0.000422662	4.97997E-06	4.41263E-06	17540.47249	5799.99	7.882969	858163.8838
San Bernar	2020	ConstMin - Rubber Tired Dozers	Aggregated	300	Diesel	0.000637313	0.000771149	0.000917731	0.00405289	0.008214092	0.60396	0.000400036	0.000368033	0.000400036	5.56479E-06	4.92944E-06	19594.80514	4388.728	5.659141	958936.119
San Bernar	2020	ConstMin - Rubber Tired Dozers	Aggregated	600	Diesel	0.005470889	0.006619776	0.007878081	0.052813979	0.071113829	6.712843	0.000200146	0.000294135	0.000200146	6.18994E-05	5.47893E-05	217790.813	28665.55	40.25902	10592124.42
San Bernar	2020	ConstMin - Rubber Tired Dozers	Aggregated	750	Diesel	7.16744E-05	8.67297E-05	0.00103215	0.000386539	0.00130492	0.190692	3.6571E-05	3.35956E-05	3.6571E-05	1.7609E-06	1.55641E-06	6186.804758	465.2249	0.477756	302606.6785
San Bernar	2020	ConstMin - Rubber Tired Loaders	Aggregated	50	Diesel	0.000861832	0.001042817	0.001241038	0.004767124	0.003700539	0.413399	0.00033397	0.000307252	0.00033397	3.79623E-06	3.37411E-06	13412.28365	15461.42	18.42475	643371.1243
San Bernar	2020	ConstMin - Rubber Tired Loaders	Aggregated	100	Diesel	0.008850214	0.01070876	0.012744309	0.076137368	0.090344057	10.04529	0.00707504	0.006590937	0.00707504	9.26082E-05	8.19883E-05	325908.3827	204889.4	228.9399	17593629.46
San Bernar	2020	ConstMin - Rubber Tired Loaders	Aggregated	175	Diesel	0.014182086	0.017160324	0.020422204	0.152581847	0.159371595	23.87649	0.008772348	0.00807056	0.008772348	0.000220325	0.000194877	774646.4529	276410.9	300.2736	41478924.17
San Bernar	2020	ConstMin - Rubber Tired Loaders	Aggregated	300	Diesel	0.015502284	0.018757764	0.022323289	0.086059203	0.218095798	35.6943	0.007240391	0.006661159	0.007240391	0.000329546	0.000291332	1158062.273	294674	280.106	62030654.86
San Bernar	2020	ConstMin - Rubber Tired Loaders	Aggregated	600	Diesel	0.021053342	0.025475444	0.030316813	0.136387329	0.265818936	44.34664	0.009998708	0.009198812	0.009998708	0.000409375	0.000361951	1438777.99	232129.2	246.3688	77321565.41
San Bernar	2020	ConstMin - Rubber Tired Loaders	Aggregated	750	Diesel	0.001424412	0.001723539	0.002051153	0.011334888	0.01847048	3.284275	0.000653391	0.000602959	0.000653391	3.0322E-05	2.68058E-05	106554.6891	8639.007	10.08381	5712591.414
San Bernar	2020	ConstMin - Rubber Tired Loaders	Aggregated	9999	Diesel	0.001139514	0.001669212	0.001986501	0.006812216	0.028890575	3.080627	0.000730441	0.000672005	0.000730441	2.84405E-05	2.51437E-05	99947.55703	5590.991	4.85517	5343617.042

OFFROAD2017 (v1.0.1) Emissions Inventory

Region Type: County

Region: San Bernardino

Calendar Year: 2020

Scenario: All Adopted Rules - Exhaust

Vehicle Classification: OFFROAD2017 Equipment Types

Units: Emissions: tons/day, Fuel Consumption: gallons/year, Activity: hours/year, HP-Hours: HP-hours/yr

Region	CalYr	VehClass	MdYr	HP_Bin	Fuel	HC_tpd	ROG_tpd	TOG_tpd	CO_tpd	Nox_tpd	CO2_tpd	PM10_tpd	PM2_5_tpd	PM_tpd	SOx_tpd	NH3_tpd	Fuel_gpy	Total_Activ	Total_Popu	Hours	hpy
San Bernar	2020	ConstMin - Scrapers	Aggregated	25	Diesel	5.91001E-06	7.15112E-06	8.51042E-06	2.00617E-05	1.36403E-05	0.001057	1.90105E-06	1.74897E-06	1.90105E-06	9.59211E-09	8.62437E-09	34.28239389	49.42752	0.12309	1235.687921	
San Bernar	2020	ConstMin - Scrapers	Aggregated	50	Diesel	3.96525E-05	4.79828E-05	5.71035E-05	0.00135409	9.72729E-05	0.00841	1.34128E-05	1.23398E-05	1.34128E-05	7.65674E-08	6.86434E-08	272.8615623	258.2588	7.338541	9200.34452	
San Bernar	2020	ConstMin - Scrapers	Aggregated	75	Diesel	0.00031095	0.000158625	0.00018776	0.0061922	0.001213022	0.071535	0.000106004	9.75239E-05	0.000106004	6.57447E-07	5.83862E-07	2320.885345	1372.712	3.323435	12848.40043	
San Bernar	2020	ConstMin - Scrapers	Aggregated	100	Diesel	0.000329622	0.000398843	0.000474656	0.002675636	0.004086497	0.351424	0.000300647	0.000276595	0.000300647	3.2392E-06	2.86827E-06	11401.54947	5027.465	8.862494	45544.948	
San Bernar	2020	ConstMin - Scrapers	Aggregated	175	Diesel	0.003363786	0.004070181	0.004843852	0.029874576	0.041494495	4.568503	0.002231721	0.002053183	0.002231721	4.21372E-05	3.72875E-05	148220.0419	35296.46	80.13171	5919417.807	
San Bernar	2020	ConstMin - Scrapers	Aggregated	300	Diesel	0.003686692	0.004460897	0.005308836	0.020641143	0.050875752	5.244463	0.002231572	0.002053046	0.002231572	4.83771E-05	4.28046E-05	170150.8106	30515.31	77.54682	6843759.557	
San Bernar	2020	ConstMin - Scrapers	Aggregated	600	Diesel	0.03040894	0.03794278	0.04388231	0.264048089	0.43823105	65.77995	0.016541677	0.015218343	0.016541677	0.000607256	0.000536887	2134158.064	202484.6	432.1697	85418559.14	
San Bernar	2020	ConstMin - Scrapers	Aggregated	750	Diesel	0.001139563	0.001378871	0.001640971	0.012993694	0.018908612	1.061784	0.000770003	0.000708403	0.000770003	9.78254E-06	8.66614E-06	34448.4231	2208.56	5.785239	1374229.273	
San Bernar	2020	ConstMin - Scrapers	Aggregated	9999	Diesel	0.001664301	0.002013805	0.002396594	0.020173737	0.025489467	1.523071	0.001065112	0.000979903	0.001065112	1.40316E-05	1.24311E-05	49414.37125	1240.493	3.200345	1781139.452	
San Bernar	2020	ConstMin - Skid Steer Loaders	Aggregated	50	Diesel	0.001384367	0.001675084	0.001994489	0.014353191	0.014075427	2.251116	0.000551794	0.000507651	0.000551794	2.07772E-05	1.83733E-05	73034.9725	78806.07	256.3337	3434209.498	
San Bernar	2020	ConstMin - Skid Steer Loaders	Aggregated	75	Diesel	0.003445394	0.004168929	0.004916931	0.02754066	0.055221663	11.69391	0.002359685	0.00217091	0.002359685	0.000108013	9.54441E-05	379395.9422	82542.8	810.8126	19908662.31	
San Bernar	2020	ConstMin - Skid Steer Loaders	Aggregated	100	Diesel	7.56889E-05	9.15836E-05	0.000108992	0.001578996	0.001425084	0.244727	9.24657E-05	8.50685E-05	9.24657E-05	2.26035E-06	1.99743E-06	7939.886806	5519.569	16.39417	421302.655	
San Bernar	2020	ConstMin - Skid Steer Loaders	Aggregated	175	Diesel	1.95572E-05	2.36642E-05	2.81642E-05	0.000433177	0.002611737	0.080694	1.10088E-05	1.10088E-05	7.45467E-07	6.58612E-07	2618.021074	904.9729	341339	137759.6508		
San Bernar	2020	ConstMin - Skid Steer Loaders	Aggregated	300	Diesel	1.13926E-05	1.37826E-05	1.64025E-05	0.000137712	0.000174009	0.07495	4.93489E-06	4.93489E-06	6.92611E-07	6.11734E-07	2431.679573	622.5941	2160473	127260.028		
San Bernar	2020	ConstMin - Skid Steer Loaders	Aggregated	600	Diesel	5.20663E-06	6.30002E-06	7.49755E-06	4.04604E-05	8.49313E-05	0.021682	3.64672E-06	3.35499E-06	3.64672E-06	2.00308E-07	1.76969E-07	703.4610025	77.96602	0.254173	36862.33469	
San Bernar	2020	ConstMin - Skid Steer Loaders	Aggregated	9999	Diesel	1.33016E-05	1.60949E-05	1.91543E-05	9.21048E-05	0.000244661	0.02935	8.02814E-06	7.38589E-06	8.02814E-06	2.70957E-07	2.39552E-07	952.2314756	50.04001	0.254173	50040.00979	
San Bernar	2020	ConstMin - Surfacing Equipment	Aggregated	50	Diesel	1.53947E-05	1.86275E-05	2.21683E-05	0.000136805	0.00014743	0.020833	7.52676E-06	6.6242E-06	7.52676E-06	1.92153E-07	1.70039E-07	675.9148808	1070.615	4.49646	38550.30629	
San Bernar	2020	ConstMin - Surfacing Equipment	Aggregated	75	Diesel	1.30445E-05	1.57838E-05	1.87841E-05	0.0001132	0.000185466	0.015874	1.15808E-05	1.06544E-05	1.15808E-05	1.46376E-07	1.29565E-07	515.0289386	495.2477	1.959995	32931.80637	
San Bernar	2020	ConstMin - Surfacing Equipment	Aggregated	100	Diesel	5.79865E-05	7.01636E-05	8.35005E-05	0.000774652	0.000762285	0.119621	4.30382E-05	3.95951E-05	4.30382E-05	1.10422E-06	9.76331E-07	3880.974448	2770.095	10.49174	248760.8752	
San Bernar	2020	ConstMin - Surfacing Equipment	Aggregated	175	Diesel	5.36781E-05	6.49505E-05	7.72965E-05	0.000643922	0.000754113	0.111974	3.69323E-05	3.39777E-05	3.69323E-05	1.03365E-06	9.13918E-07	3632.879312	1719.671	6.802336	232888.2855	
San Bernar	2020	ConstMin - Surfacing Equipment	Aggregated	300	Diesel	7.88838E-05	9.50919E-05	0.000113167	0.000598568	0.001436436	0.221281	4.63851E-05	4.26743E-05	4.63851E-05	2.0435E-06	1.80607E-06	7179.222517	2018.543	8.41645	460271.3581	
San Bernar	2020	ConstMin - Surfacing Equipment	Aggregated	600	Diesel	0.000140816	0.000170387	0.000202775	0.001442022	0.00231145	0.701557	7.66617E-05	7.05288E-05	7.66617E-05	6.48202E-06	5.72601E-06	22761.23705	3594.693	12.79762	1460594.192	
San Bernar	2020	ConstMin - Surfacing Equipment	Aggregated	750	Diesel	8.53797E-05	0.000103099	0.000122947	0.000670666	0.001572385	0.345936	5.54418E-05	5.10065E-05	5.54418E-05	3.19579E-06	2.82348E-06	11223.51057	1131.829	4.032584	719854.055	
San Bernar	2020	ConstMin - Surfacing Equipment	Aggregated	9999	Diesel	4.39911E-05	5.32292E-05	6.33472E-05	0.000250273	0.001042066	0.118225	2.48889E-05	2.28959E-05	2.48889E-05	1.0603E-06	9.37189E-07	3725.380737	272.7656	1.037645	238974.306	
San Bernar	2020	ConstMin - Sweepers/Scrubbers	Aggregated	25	Diesel	2.06417E-05	2.4974E-05	2.9724E-05	6.86333E-05	4.72595E-05	0.003611	6.49725E-06	5.97747E-06	6.49725E-06	3.27698E-08	2.94756E-08	117.167354	178.8483	2.04421	4471.206421	
San Bernar	2020	ConstMin - Sweepers/Scrubbers	Aggregated	50	Diesel	0.000257129	0.000311247	0.0003702641	0.014297406	0.011844274	1.367814	0.001073971	0.000980854	0.001073971	1.2569E-05	1.11639E-05	4437.22502	47486.39	68.80443	1694524.081	
San Bernar	2020	ConstMin - Sweepers/Scrubbers	Aggregated	75	Diesel	0.000401519	0.000485838	0.000578188	0.002827606	0.004000808	0.371969	0.00032234	0.00032234	3.427E-06	3.03596E-06	12068.13849	7042.695	12.34325	510256.9978		
San Bernar	2020	ConstMin - Sweepers/Scrubbers	Aggregated	100	Diesel	0.00131586	0.001592191	0.001894839	0.012469982	0.013912943	1.747614	0.001116763	0.001027422	0.001116763	1.61818E-05	1.42638E-05	56699.42046	30424.92	43.87352	2407113.956	
San Bernar	2020	ConstMin - Sweepers/Scrubbers	Aggregated	175	Diesel	0.000381083	0.000461111	0.000548876	0.003355861	0.004603667	0.528709	0.000236846	0.000217898	0.000236846	4.87674E-06	4.31525E-06	17153.37611	4552.997	6.477149	127716.1084	
San Bernar	2020	ConstMin - Sweepers/Scrubbers	Aggregated	300	Diesel	0.000110869	0.000134152	0.000159652	0.000648339	0.001662579	0.317514	5.33876E-05	4.91166E-05	5.33876E-05	2.93225E-06	2.5915E-06	10301.38293	2084.018	9.33049	437026.6209	
San Bernar	2020	ConstMin - Sweepers/Scrubbers	Aggregated	600	Diesel	3.45134E-05	4.17613E-05	4.96949E-05	0.00056819	0.000479229	0.042888	2.4192E-05	2.22665E-05	2.4192E-05	3.9541E-07	3.4998E-07	1391.188903	178.8483	2.04421	59019.92475	
San Bernar	2020	ConstMin - Sweepers/Scrubbers	Aggregated	9999	Diesel	2.10653E-05	2.5489E-05	3.0334E-05	0.000109696	0.000414002	0.050594	1.2525E-05	1.1523E-05	1.2525E-05	5.08741E-07	4.49671E-07	1787.46811	89.42413	0.12221	75831.66089	
San Bernar	2020	ConstMin - Tractors/Loaders/Backho	Aggregated	50	Diesel	0.005291803	0.006403081	0.007620196	0.038862287	0.033945003	4.453907	0.002221772	0.002040403	0.002221772	4.10198E-05	3.63522E-05	144502.104	181092.5	358.7469	6685038.594	
San Bernar	2020	ConstMin - Tractors/Loaders/Backho	Aggregated	75	Diesel	0.001780467	0.002154365	0.002563872	0.007175358	0.016915428	7.07116	0.001356685	0.00124815	0.001356685	6.48422E-06	5.77138E-06	22941.59227	16709.86	76.24935	1203766.8	
San Bernar	2020	ConstMin - Tractors/Loaders/Backho	Aggregated	100	Diesel	0.035007651	0.042359258	0.050411017	0.477200049	0.430372533	70.77511	0.02827726	0.024773508	0.02827726	0.000653301	0.000571657	2296220.347	1445657	2359.4605	120188219.8	
San Bernar	2020	ConstMin - Tractors/Loaders/Backho	Aggregated	175	Diesel	0.004799706	0.005807645	0.006911577	0.073456062	0.05712426	12.57074	0.002877994	0.002647755	0.002877994	0.00011423	0.000100968	401355.1323	147704.4	272.4977	21178068	
San Bernar	2020	ConstMin - Tractors/Loaders/Backho	Aggregated	300	Diesel	0.002731284	0.003304854	0.003930349	0.018002909	0.039978973	7.651128	0.001334654	0.001227882	0.001334654	7.06565E-05	6.24475E-05	248232.4364	62853.74	114.124	13048596.75	
San Bernar	2020	ConstMin - Tractors/Loaders/Backho	Aggregated	600	Diesel	0.00235514	0.003938719	0.004687401	0.026780018	0.04294526	10.11782	0.001336744	0.001399553	0.001336744	9.40049E-05	8.30731E-05	330220.5256	51952.17	98.74916	1748	



EMFAC2017 (v1.0.2) Emission Rates

Region Type: County

Region: SAN BERNARDINO

Calendar Year: 2020

Season: Annual

Vehicle Classification: EMFAC2011 Categories

Units: miles/day for VMT, trips/day for Trips, g/mile for RUNEX, PMBW and PMTW, g/trip for STREX, HTSK and RUNLS, g/vehicle/day for IDLEX, RESTL and DIURN

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Population VMT	Percent VMT	Trips	ROG_RUNEX	CO_RUNEX	NOx_RUNEX	PM10_Total	PM2.5_Total	CO2_RUNEX	CH4_RUNEX	N2O_RUNEX	SOx_RUNEX	
SAN BERN#	2020	LDA	Aggregated	Aggregated	GAS	871457.6	36867296.74	61%	4100557	0.012916992	0.780862454	0.051313349	0.046290247	0.019166238	280.1057766	0.003262498	0.00540571	0.002771874
SAN BERN#	2020	LDA	Aggregated	Aggregated	DSL	6569.597	293430.672	0%	31275.43	0.017714752	0.223086628	0.107478951	0.054488848	0.027067543	208.8168286	0.000822816	0.032823098	0.00197407
SAN BERN#	2020	LDT1	Aggregated	Aggregated	GAS	92778.61	3339879.477	6%	417651.8	0.042428406	1.844117053	0.17406018	0.047315021	0.02010865	328.5129241	0.009445319	0.012050931	0.003250902
SAN BERN#	2020	LDT1	Aggregated	Aggregated	DSL	59.61067	1067.91221	0%	194.7341	0.239677641	1.469599576	1.352674518	0.231783563	0.196692567	414.5902215	0.011132568	0.065167809	0.003919369
SAN BERN#	2020	LDT2	Aggregated	Aggregated	GAS	286801	10910046.75	18%	1330042	0.023060588	1.179889495	0.121363844	0.046399854	0.019267069	358.3239942	0.005472835	0.00905234	0.003545906
SAN BERN#	2020	LDT2	Aggregated	Aggregated	DSL	1267.753	57700.70142	0%	6291.57	0.01580499	0.120933106	0.053824905	0.051032622	0.023760831	282.8482272	0.000734112	0.044459802	0.002673933
SAN BERN#	2020	MDV	Aggregated	Aggregated	GAS	243585.8	8975648.035	15%	1110418	0.035564533	1.502355447	0.160982364	0.046446728	0.019311765	440.2116679	0.007608413	0.011450101	0.004356251
SAN BERN#	2020	MDV	Aggregated	Aggregated	DSL	4030.525	178779.223	0%	19675.7	0.01395302	0.209902333	0.083743595	0.051579856	0.024284392	381.6388235	0.000648091	0.059988308	0.003607859
Total																		
						60623849.51												
SAN BERN#	2020	T7 NOOS	Aggregated	Aggregated	DSL	2173.261	393237.4448		31729.62	0.054518823	0.266674927	2.860859509	0.146781453	0.082379925	1343.082606	0.002532258	0.211113882	0.012688778
SAN BERN#	2020	T7 tractor construction	Aggregated	Aggregated	DSL	1197.771	84173.86085		5415.077	0.184672882	0.698997305	5.24128356	0.199117743	0.13245217	1500.37084	0.008577577	0.235837402	0.01417476
SAN BERN#	2020	LHD2	Aggregated	Aggregated	DSL	8374.807	309443.7659	68%	105344.5	0.090780203	0.624825398	2.785985371	0.122831359	0.061934715	537.3543464	0.004216567	0.08446462	0.005079931
SAN BERN#	2020	LHD2	Aggregated	Aggregated	GAS	4171.44	142454.4099	32%	62148.24	0.029026807	0.770711946	0.261245274	0.098268012	0.041220465	939.2688442	0.006376352	0.016435791	0.009294827
Total																		
						451898.1758												
Construction Workers (LDA/LDT1/LDT2)									0.0170175	0.9305345	0.0744772	0.0464359	0.0193026	299.4264121	0.0041157	0.0068112	0.0029624	
Pick-Ups and Other Light/Medium Duty Road Vehicles (LDT1/LDT2/MDV)									0.0305234	1.3878147	0.1436240	0.0466074	0.0194613	385.4006485	0.0068071	0.0108742	0.0038122	
18-Wheeler - (Heavy-Heavy Duty Diesel Neighboring Out-of-state Truck)									0.0545188	0.2666749	2.8608595	0.1467815	0.0823799	1343.0826058	0.0025323	0.2111139	0.0126888	
Flat Bed Large Pick-Up for Material Deliveries to Site (off 18-Wheeler) (LHD2)									0.0713133	0.6708140	1.9900973	0.1150881	0.0554048	664.0521197	0.0048974	0.0630195	0.0064086	

Fugitive Dust Emissions - Earthwork

**Earthwork Fugitive Particulate Matter Emissions - Bulldozing, Scraping and Grading**

Activity	Equipment	Daily Activity Level	Total Activity Level	PM10 Emission Factor (lb/activity)	PM2.5 Emission Factor (lb/activity)	Unmitigated		Unmitigated		Mitigated		Mitigated	
						PM10 (lb/day)	PM2.5 (lb/day)	PM <sub>10</sub> (tons)	PM <sub>2.5</sub> (tons)	PM10 (lb/day)	PM2.5 (lb/day)	PM <sub>10</sub> (tons)	PM <sub>2.5</sub> (tons)
Boulder Removal	1	9.0	9.0	0.753	0.415	6.77	3.73	0.0034	0.0019	3.05	1.68	0.00	0.00
Site Preparation	2	9.0	18.0	0.753	0.415	13.55	7.47	0.0068	0.0037	6.10	3.36	0.00	0.00
Tower Foundation-Concrete Pour/Tower Stack	0	0.0	0.0	0.753	0.415	0.00	0.00	0.0000	0.0000	0.00	0.00	0.00	0.00

Total Earthwork Fugitive Dust Emissions	Unmitigated		Mitigated	
	PM10 (lbs/day)	PM2.5 (lbs/day)	PM10 (lbs/day)	PM2.5 (lbs/day)
Boulder Removal	6.77	3.7333	3.05	1.68
Site Preparation	13.55	7.4667	6.10	3.36
Tower Foundation-Concrete Pour/Tower Stack	0.00	0.0000	0.00	0.00

Fugitive Dust Mitigation	0.55 percent reduction
Source: Percent reduction from CalEEMod default for watering twice per day	

Paved Roads Fugitive Dust Emissions

Paved Roads		100%		Paved Road Dust Emissions (lbs/day)		Paved Road Dust Emissions (tons)	
				PM10	PM2.5	PM10	PM2.5
Truck Delivery	Vehicle Type	No.	Miles Per Day				
Tower Foundation-Concrete Pour/Tower Stack	Haul Truck/Material Truck (18 Wheeler)	1	120	0.495	0.122	0.0002	0.0001
Solar Panels and Carrier Equipment	Haul Truck/Material Truck (18 Wheeler)	1	120	0.495	0.122	0.0002	0.0001
Flat Bed Large Pick-Up (Construction Equipment Mobilization - Boulder Removal)	Haul Truck/Material Truck (LHD12)	4	120	0.495	0.122	0.0002	0.0001
Flat Bed Large Pick-Up (Construction Equipment Mobilization - Site Prep)	Haul Truck/Material Truck (LHD12)	4	240	0.990	0.243	0.0005	0.0001
Flat Bed Large Pick-Up (Construction Equipment Mobilization - Tower Foundation)	Haul Truck/Material Truck (LHD12)	2	120	0.495	0.122	0.0002	0.0001
Equipment Demobilization	Haul Truck/Material Truck (LHD12)	12	720	2.971	0.729	0.0015	0.0004

Phase	Vehicle Type	No.	Miles Per Day	PM10 (lbs/day)	PM2.5 (lbs/day)	PM10 (tons/phase)	PM2.5 (tons/phase)
Boulder Removal	Worker/Pick Up	16	60	0.62	0.15	0.000	0.000
Site Preparation	Worker/Pick Up	16	60	0.62	0.15	0.000	0.000
Tower Foundation-Concrete Pour/Tower Stack	Worker/Pick Up	16	60	0.62	0.15	0.012	0.003
Equipment Demobilization	Worker/Pick Up	8	60	0.31	0.08	0.006	0.002

PM emissions include offsite travel. Onsite travel assumed to be unpaved roads.

Paved Road Dust

$$EF_{DUST} = [(k(s)^{0.91} \times (W)^{1.02}) \cdot (1 - P/4N)]$$

Source: AP-42 Section 13.2.1 (Paved Roads) - <http://www.epa.gov/ttnchie1/ap42/ch13/final/c13s0201.pdf>

Variable	Value	Description
k (PM10)	0.0022	particle size multiplier for particle size range and units of interest (lb/VMT)
k (PM2.5)	0.00054	particle size multiplier for particle size range and units of interest (lb/VMT)
s	0.1	road surface silt loading (g/m <sup>2</sup> )
W	2.4	average weight (tons) of vehicles (2.4 tons)
W	14.75	haul truck tons
P	.30	number of "wet" days with at least 0.254 mm of precipitation during the averaging period
N	365	number of days in averaging period

Pickup and Worker

EF (PM10)	0.000647473	lb/VMT
EF (PM2.5)	0.000158925	lb/VMT

Haul Truck

Variable	Value	Description
k		particle size multiplier for particle size range and units of interest
s		surface material silt content (%)
M		surface material moisture content (%)
S		mean vehicle speed (mph)
C		emission factors for 1980's vehicle exhaust, brake wear, and tire wear
P		number of "wet" days with at least 0.254 mm of precipitation during the averaging period
EF (PM10)	0.004126423	lb/VMT
EF (PM2.5)	0.001012849	lb/VMT

Unpaved Road Dust

$$EF_{DUST} = ((k/s/12)^1 (S/30)^{0.5}) / (M/0.5)^{0.2} \cdot C \cdot (1 - P/365)$$

Fugitive Dust - Unpaved Roads

Daily On-Site Construction Motor Vehicle Fugitive Particulate Matter Emissions																	
	Vehicle Type	Max Daily Number of Trips	Miles per Trip	Surface Type	Silt Loading (g/m <sup>2</sup> )/ Silt Content	Vehicle Weight (tons)	Uncontrolled Emission Factors (lb/mi) <sup>b</sup>		Uncontrolled Emissions (lb/day) <sup>c</sup>		Control Efficiency <sup>d</sup>	Controlled Emissions (lb/day) <sup>e</sup>		Uncontrolled Emissions (tons)	Uncontrolled Emissions (tons)	Controlled Emissions (tons)	Controlled Emissions (tons)
							PM10	PM2.5	PM10	PM2.5		PM10	PM2.5	PM10	PM2.5	PM10	PM2.5
Boulder Removal-Light/Medium Duty Vehicles	Worker/Pick up Truck	8	5.77	Unpaved	3.9	2.4	0.52	0.04	24.2	2.0	57%	10.39	0.87	0.01	0.00	0.01	0.00
Boulder Removal - Equipment Mobilization	Truck	2	5.77	Unpaved	3.9	14.75	1.30	0.11	15.0	1.2	57%	6.44	0.54	0.01	0.00	0.00	0.00
Site Prep-Light/Medium Duty Vehicles	Worker/Pick up Truck	8	5.77	Unpaved	3.9	2.4	0.52	0.04	24.2	2.0	57%	10.39	0.87	0.01	0.00	0.01	0.00
Site Prep- Equipment Mobilization	Truck	4	5.77	Unpaved	3.9	14.75	1.30	0.11	29.9	2.5	57%	12.87	1.07	0.01	0.00	0.01	0.00
Tower Foundation-Light/Medium Duty Vehicles	Worker/Pick up Truck	8	5.77	Unpaved	3.9	2.4	0.52	0.04	24.2	2.0	57%	10.39	0.87	0.48	0.04	0.21	0.00
Tower Foundation - Equipment Mobilization and Solar Panel/Carrier Equipment Delivery	Truck	16	5.77	Unpaved	3.9	14.75	1.30	0.11	119.8	10.0	57%	51.49	4.29	0.07	0.01	0.03	0.00
Equipment Demobilization	Truck	12	5.77	Unpaved	3.9	14.75	1.30	0.11	89.8	7.5	57%	38.62	3.22	0.04	0.00	0.02	0.00

Note: Totals may not match sum of individual values because of rounding.

<sup>a</sup> Unpaved surface silt content from USEPA, AP-42, Section 13.2.2 - Unpaved Roads - Related Information: Surface Material Silt Content by state (CA)

<sup>b</sup> Equations:

EF (unpaved) =  $k_s (e/12)^a (W/3)^b$

Ref: AP-42, Section 13.2.2, "Unpaved Roads," November 2006

Constants:

$k_s$  = 1.8 (Particle size multiplier for PM)  
 0.15 (Particle size multiplier for PM2.5)  
 $a$  = 1 for PM10  
 1 for PM2.5  
 $b$  = 0.5 for PM10  
 0.5 for PM2.5

<sup>c</sup> Uncontrolled emissions [lb/day] = Emission factor [lb/mi] x Number x Daily miles traveled [mi/vehicle-day]

<sup>d</sup> Control efficiency from limiting maximum speed to 15 mph (57%), from SCAQMD Table XI-A, Mitigation Measure Examples.

Fugitive Dust from Construction & Demolition, <http://www.aqmd.gov/home/rules-compliance/ceqa/air-quality-analysis-handbook/mitigation-measures-and-control-efficiencies/fugitive-dust>

<sup>e</sup> Controlled emissions [lb/day] = Uncontrolled emissions [lb/day] x (1 - Control efficiency [%])

**Fugitive Dust Emission Factors**

Truck Loading Fugitive Dust Emission Factors

$$EF_D = k \times (0.0032) \times ((U/5)^{1.3}) / ((M/2)^{1.4})$$

Variable	Amount	Units
EF (PM <sub>10</sub> )	0.0005	lb/ton
EF (PM <sub>2.5</sub> )	0.00007	lb/ton
k (PM <sub>10</sub> )	0.35	factor
k (PM <sub>2.5</sub> )	0.053	factor
U (mean wind speed)	11.10	miles/hr
M (moisture content)	7.90	percent
Soil density (CalEEMod default)	1.26	tons/cy
Rip rap density	2.23	tons/cy
Derrick/Grouted stone density	1.96	tons/cy

WRCC average Annual Wind Speed Data for Daggett-Barstow AP  
 USEPA, AP-42, July 1998, Table 11.9-3 Typical Values for Correction Factors  
 Applicable to the Predictive Emission Factor Equations

$$E \text{ (lbs)} = EF \text{ (lb/ton)} \times TP \text{ (tons)}$$

**Bulldozing, Scraping and Grading**

$$PM_{10} \text{ Emission Factor [lb/hr]} = 0.75 \times (\text{silt content [\%]} )^{1.5} / (\text{moisture})^{1.4}$$

$$PM_{2.5} \text{ Emission Factor [lb/hr]} = 0.60 \times (\text{silt content [\%]} )^{1.2} / (\text{moisture})^{1.3}$$

Reference: AP-42, Table 11.9-1, July 1998

Parameter	Value	Basis
Silt Content	6.9	USEPA, AP-42, July 1998, Table 11.9-3 Typical Values for Correction Factors Applicable to the Predictive Emission Factor Equations
Moisture	7.9	to the Predictive Emission Factor Equations

PM10 Emission Factor 0.75 lb/hr  
 PM2.5 Emission Factor 0.41 lb/hr

$$\text{Emissions [pounds per day]} = \text{Controlled emission factor [pounds per hour]} \times \text{Bulldozing, scraping or grading time [hours/day]}$$

Operational Emissions

On-Road Vehicle Trips and Emergency Generator	Maximum Daily Trips	Distance	Average Daily Mileage	Frequency Per Year	Annual Mileage	Maximum Daily Emissions Summary (lbs/day)													Annual Emissions Summary (tons)									
						ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH <sub>4</sub>	N <sub>2</sub> O	CO2e	ROG	NO <sub>x</sub>	CO	PM10	PM2.5	SOx	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	CO2e			
						Worker Trips (Running Exhaust)	18	65.77	1,183.86	12	14,206	0.04	2.43	0.19	0.12	0.05	0.00	781.49	0.00	0.21	838.03	0.00	0.01	0.00	0.00	0.00	0.00	0.00
Worker Trips Fugitive Dust - Unpaved Roads	18	5.77	103.86	12	1,246	-	-	-	23.37	2.58	-	-	-	-	-	-	-	-	0.14	0.02	-	-	-	-	-	-		
Worker Trips Fugitive Dust - Paved Roads	18	60	1,080.00	12	12,960	-	-	-	0.70	0.17	-	-	-	-	-	-	-	-	0.0042	0.0010	-	-	-	-	-	-		
Fuel Truck Trip (Running Exhaust)	2	65.77	131.54	12	1,578	0.05	0.20	1.52	0.06	0.04	0.00	435.10	0.00	0.07	453.30	0.00	0.00	0.01	0.00	0.00	0.00	0.00	2.61	0.00	0.00	2.72		
Truck Trips Fugitive Dust - Unpaved Roads	2	5.77	11.54	12	138	-	-	-	6.44	0.71	-	-	-	-	-	-	-	-	0.04	0.00	-	-	-	-	-	-		
Truck Trips Fugitive Dust - Paved Roads	2	60	120.00	12	1,440	-	-	-	0.50	0.12	-	-	-	-	-	-	-	-	0.00	0.00	-	-	-	-	-	-		
Water Truck Trip (Running Exhaust)	2	65.77	131.54	2	263	0.05	0.20	1.52	0.06	0.04	0.00	435.10	0.00	0.07	453.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.44	0.00	0.00	0.45		
Water Trips Fugitive Dust - Unpaved Roads	2	5.77	11.54	2	23	-	-	-	6.44	0.71	-	-	-	-	-	-	-	-	0.01	0.00	-	-	-	-	-	-		
Water Trips Fugitive Dust - Paved Roads	2	60	120.00	2	240	-	-	-	0.50	0.12	-	-	-	-	-	-	-	-	0.00	0.00	-	-	-	-	-	-		
<b>Total</b>						<b>0.1515</b>	<b>2.8341</b>	<b>3.2343</b>	<b>38.1676</b>	<b>4.5453</b>	<b>0.0083</b>	<b>1,651.6956</b>	<b>0.0051</b>	<b>0.3501</b>	<b>1,744.6168</b>	<b>0.0006</b>	<b>0.0160</b>	<b>0.0118</b>	<b>0.1941</b>	<b>0.0229</b>	<b>0.0000</b>	<b>7.7347</b>	<b>0.0000</b>	<b>0.0018</b>	<b>8.2012</b>			

Notes: Assumes three maintenance-related trips per month, one fuel truck delivery trip per month, and two water truck trips per year. Max daily emissions conservatively assume all activities occur on same day.

Stationary Source Emissions	Quantity	Size (hp)	Hrs Per Week	Weeks Per Year	Annual Usage (hrs)	Maximum Daily Emissions Summary (lbs/day)								Annual Emissions Summary (tons)										
						ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH <sub>4</sub>	CO2e	ROG	NO <sub>x</sub>	CO	PM10	PM2.5	SOx	CO <sub>2</sub>	CH <sub>4</sub>	CO2e	
Emergency Generator		2	134.102	0.5	52	26	0.000665	1.093884	0.842586	0.044347	0.044347	0.00146	0.3399909	9.789446	274.4445	0.00	0.03	0.02	0.00	0.00	0.00	0.01	0.25	7.14

Diesel Emergency Generator Emission Factor (g/hp-hr)	Emission Factor						
	ROG	CO	NOx	PM10	PM2.5	SOx	CO <sub>2</sub>
Emergency Generator 100-175	0.00225	3.7	2.85	0.15	0.15	0.00494	1.15

Source: CalEEMod Version 2016.3.2 Appendix D (Default Data Tables)

Constants		
lb	grams	
1	453.59237	
ton	lbs	
1	2000	
ton	grams	
1	907185	
GWP CO2e	CH4	
28	1	
GWP CO2e	N2O	
265	1	
ton	lbs	
1	2000	
kW	hp	
1	1.34102	