

Appendix C

Revised Energy Consumption

Construction Fuel Use

Construction Offroad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor	Number of days	Average Daily Factor	Diesel Fuel Usage
Site Preparation	Rubber Tired Dozers	2	8.00	247	0.4	10	0.6	474
Site Preparation	Tractors/Loaders/Backhoes	2	8.00	97	0.37	10	0.6	172
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73	20	0.6	284
Demolition	Excavators	3	8.00	158	0.38	20	0.6	865
Demolition	Rubber Tired Dozers	2	8.00	247	0.4	20	0.6	948
Grading	Graders	1	8.00	187	0.41	20	0.6	368
Grading	Excavators	1	8.00	158	0.38	20	0.6	288
Grading	Rubber Tired Dozers	1	8.00	247	0.40	20	0.6	474
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37	20	0.6	517
Building Construction	Cranes	1	7.00	231	0.29	230	0.6	3,236
Building Construction	Forklifts	3	8.00	89	0.20	230	0.6	2,948
Building Construction	Generator Sets	1	8.00	84	0.74	230	0.6	3,431
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37	230	0.6	5,200
Building Construction	Welders	1	8.00	46	0.45	230	0.6	1,143
Paving	Pavers	2	8.00	130	0.42	20	0.6	524
Paving	Paving Equipment	2	8.00	132	0.36	20	0.6	456
Paving	Rollers	2	8.00	80	0.38	20	0.6	292
Architectural Coating	Air Compressors	1	6.00	78	0.48	20	0.6	135
TOTAL								21,755

Notes: Equipment assumptions are consistent with CalEEMod. Fuel usage average of 0.05 gallons of diesel fuel per horsepower-hour is from the SCAQMD CEQA Air Quality Handbook, Table A9-3E.

Trips and VMT

Phase Name	Daily Worker Trip	Daily Vendor Trip	Daily Haul Trip	Days per Year	Total Worker Trips	Total Vendor Trips	Total Haul Trips	Worker Trip Length (miles)	Vendor Trip Length (miles)	Haul Trip Length (miles)	Total Worker Trip Length (miles)	Total Vendor Trip Length (miles)	Total Haul Trip Length (miles)	Average Daily Factor	Total gallons of gasoline (on-road)	Total gallons of diesel (on-road)
Site Preparation	18	0	0	10	180	0	0	14.70	6.90	20.00	2646	0	0	0.6	43,201	0
Demolition	15	0	14.3	20	300	0	286	14.70	6.90	20.00	4410	0	5720	0.6	72,002	22,417
Grading	15	0	0	20	300	0	0	14.70	6.90	20.00	4410	0	0	0.6	72,002	0
Building Construction	101	42	0	230	23230	9660	0	14.70	6.90	20.00	341481	66654	0	0.6	5,575,322	261,219
Paving	15	0	0	20	300	0	0	14.70	6.90	20.00	4410	0	0	0.6	72,002	0
Architectural Coating	20	0	0	20	400	0	0	14.70	6.90	20.00	5880	0	0	0.6	96,002	0
TOTAL															5,930,530	283,635
															(+ off-road equipment)	305,391

Notes: Consistent with CalEEMod, worker vehicles assumed to be gasoline and 50% LDA, 25% LDT1, and 25% LDT2. Vendor and haul trips are assumed to be 100% diesel Heavy-Duty Trucks (T7).

EMFAC2017 (v1.0.2) Emissions Inventory

Region Type: County

Region: SAN BERNARDINO

Calendar Year: 2020

Season: Annual

Vehicle Classification: EMFAC2011 Categories

Units: miles/day for VMT, trips/day for Trips, tons/day for Emissions, 1000 gallons/day for Fuel Consumption

Region	CalYr	VehClass	MdlYr	Speed miles/hr	Fuel	Population vehicles	VMT miles/day	Trips trips/day	Fuel gas 00 gallons/	Diesel gas 00 gallons/	Miles per gallon	Gasoline miles per	Diesel miles per
San Bernardino	2020	LDA	Aggregated	Aggregated	GAS	871457.6	36867297	4100557	1229.3031	0.00	29.99	27.21	6.53
San Bernardino	2020	LDT1	Aggregated	Aggregated	GAS	92778.61	3339879	417651.8	131.04229	0.00	25.49		
San Bernardino	2020	LDT2	Aggregated	Aggregated	GAS	286801	10910047	1330042	466.67846	0.00	23.38		
San Bernardino	2020	T7 tractor	Aggregated	Aggregated	DSL	1197.771	84173.86	5415.077	0	12.886962	6.53		

Notes: Consistent with CalEEMod, worker vehicles assumed to be gasoline and 50% LDA, 25% LDT1, and 25% LDT2. Vendor and haul trips are assumed to be 100% diesel Heavy-Duty Trucks (T7).

Operational Fuel Use

EMFAC2014 (v1.0.7) Emissions Inventory

Region Type: County

Region: San Bernardino

Calendar Year: 2022

Season: Annual

Vehicle Classification: EMFAC2007 Categories

Model Year and Speed: Aggregated

Units: miles/day for VMT, trips/day for Trips, tons/day for Emissions, 1000 gallons/day for Fuel Consumption

Region	VehClass	Fuel	Population	VMT (mi/day)	% of vehicle class	% CalEEMod	% project vehicle	VMT by project		Fuel_Consumption	Fuel	
					EMFAC	vehicle class	class	vehicle class (mi/yr)	Gallons of fuel	(1000 gal/day)	(gal/day)	mi/gal
San Bernardino	HHDT	GAS	125.56249	16825.75022	0.003873207	0.063797	0.000247099	595.7124257	120.451463	3.402121801	3402.121801	4.945663678
San Bernardino	HHDT	DSL	25008.28911	4327313.338	0.996126793	0.063797	0.063549901	153207.6901	23968.34002	676.9798395	676979.8395	6.392085976
San Bernardino	LDA	GAS	926424.7905	35495838.49	0.942456392	0.553113	0.521284882	1256726.626	40591.38243	1146.490513	1146490.513	30.96042931
San Bernardino	LDA	DSL	9450.455371	388024.9186	0.010302519	0.553113	0.005698457	13737.98359	332.3650867	9.387544748	9387.544748	41.33401534
San Bernardino	LDA	ELEC	34468.28443	1779246.316	0.047241089	0.553113	0.02612966	62994.03857	0	0	0	0
San Bernardino	LDT1	GAS	73194.12291	2475611.321	0.998587576	0.036408	0.036356576	87649.3435	3396.345986	95.92807243	95928.07243	25.80695367
San Bernardino	LDT1	DSL	96.71141942	2303.121602	0.00092901	0.036408	3.38234E-05	81.54232238	2.769601644	0.078225996	78.22599588	29.44189557
San Bernardino	LDT1	ELEC	34.25664452	1198.435794	0.000483413	0.036408	1.76001E-05	42.43077648	0	0	0	0
San Bernardino	LDT2	GAS	317193.9523	12252684.9	0.998084921	0.180286	0.179940738	433805.6298	18633.98327	526.3101947	526310.1947	23.28034878
San Bernardino	LDT2	DSL	554.1893405	23509.88509	0.001915079	0.180286	0.000345262	832.3661787	26.2709991	0.742014976	742.0149759	31.68384178
San Bernardino	LHDT1	GAS	18990.94259	507531.4008	0.461098494	0.016165	0.007453657	17969.46302	1664.152522	47.0024986	47002.4986	10.7979664
San Bernardino	LHDT1	DSL	19183.62656	593169.2242	0.538901506	0.016165	0.008711343	21001.5231	1035.31919	29.24166394	29241.66394	20.28507083
San Bernardino	LHDT2	GAS	3287.098652	108985.9579	0.313788217	0.005101	0.001600634	3858.84773	375.0618894	10.59292362	10592.92362	10.28856261
San Bernardino	LHDT2	DSL	6774.183869	238337.3382	0.686211783	0.005101	0.003500366	8438.770595	445.0551341	12.56975229	12569.75229	18.96118019
San Bernardino	MCY	GAS	45945.51695	401971.4623	1	0.005903	0.005903	14231.09998	373.9492212	10.56256477	10562.56477	38.05623643
San Bernardino	MDV	GAS	231282.1978	7775471.484	0.981552739	0.116335	0.114188938	275289.5461	16435.78333	464.2238198	464223.8198	16.74940223
San Bernardino	MDV	DSL	3530.888603	146131.888	0.018447261	0.116335	0.002146062	5173.78029	213.3692998	6.026552515	6026.552515	24.24800707
San Bernardino	MH	GAS	6647.05352	49979.60822	0.777377832	0.000944	0.000733845	1769.171085	223.7041311	6.319708096	6319.708096	7.908531131
San Bernardino	MH	DSL	1826.096935	14312.94832	0.222622168	0.000944	0.000210155	506.6477152	48.20173312	1.361713267	1361.713267	10.51098544
San Bernardino	MHDT	GAS	2105.828068	123303.7464	0.099394714	0.018218	0.001810773	4365.456593	560.1025398	15.82027906	15820.27906	7.794031062
San Bernardino	MHDT	DSL	19688.69629	1117242.566	0.900605286	0.018218	0.016407227	39554.95326	4396.629557	124.1842369	124184.2369	8.996653628
San Bernardino	OBUS	GAS	1034.684212	60139.51125	0.650929828	0.001357	0.000883312	2129.510115	266.0177063	7.512608055	7512.608055	8.00514426
San Bernardino	OBUS	DSL	396.8020538	32250.64915	0.349070172	0.001357	0.000473688	1141.97941	151.0521917	4.265866088	4265.866088	7.56016445
San Bernardino	SBUS	GAS	286.1955999	13441.95626	0.24431108	0.000808	0.000197403	475.9049381	40.61014997	1.147035502	1147.035502	11.7188668
San Bernardino	SBUS	DSL	1097.358117	41577.88257	0.75568892	0.000808	0.000610597	1472.041662	203.0470985	5.735074376	5735.074376	7.249754727
San Bernardino	UBUS	GAS	319.3796366	48288.17873	0.453202892	0.001565	0.000709263	1709.90783	337.0343795	9.517926095	9517.926095	5.073392907
San Bernardino	UBUS	DSL	394.1324698	58260.52065	0.546797108	0.001565	0.000855737	2063.033295	410.0039426	11.57860284	11578.60284	5.031740137

Project VMT (mi/yr)	2,410,825
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Gasoline Sum	83,019
Diesel Sum	31,232

Operational Electricity Consumption

MHCF Electricity Consumption	1252830 kWh/year
MHCF Water Consumption	10 Mgal/year
MHCF Electricity Required for Water Treatment and Delivery	15938 kWh/year
Total Operational Electricity Usage	1268768 kWh/year

CIM 2020 Total Projected Water Usage	454 Mgal/year
CIM 2020 Total Projected Electricity Requirement for Water Treatment and Delivery	692 MWh/year
CIM Electricity to Water Conversion Factor	1.5 MWh/Mgal
	1524 kWh/Mgal

Sources: Electricity and Water Consumption from project-specific CalEEMod run, CIM specific data from CDCR CAP and CEC-500-2006-118 Table 9