

## **APPENDIX D.2**

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### **Detailed Energy Calculations**

Water Usage for Control of Fugitive Dust during Construction

Phase	Days	Average Daily Acreage Disturbed	Total Gallons	Electricity
Demolition	44	0	0	0
Site Preparation	20	1.5	90,600	906
Grading	102	1.5	462,060	4,621
Building Construction	440	0	0	0
Paving	50	0	0	0
Architectural Coating	50	0	0	0
		Total	552,660	5,527

Water application rate = 3020 gal/acre/day  
 kWhr equivalent = 0.01 kWhr

Notes:

Gallons per year of water usage for dust control is calculated based on a minimum control efficiency of 66% (three times daily) with an application rate of 3,020 gal/acre/day (Air & Waste Management Association Air Pollution Engineering Manual (1992 Edition)) and average of 26 construction days per month.

CalEEMod Default: Each gallon of delivered potable water in Southern California is associated with 0.009727 kWhr of electricity.

Electrical Equipment (Generator)

Horse Power	84 kW
Typical Load	74 %
Average Output	62.16 kW
Daily Usage	8 hours
Average Daily Output	497.28 kWh
Building Construction Phase	440 days
Total Construction Power	218,803 kWh

Notes:

Horse power rating and load factor information was taken from the CalEEMod data sheets prepared for the GHG Analysis.

**Total Construction Electricity Consumption**

**224,330 kWh**

Calendar Year: 2021  
 Season: Annual  
 Vehicle Classification: EMFAC2007 Categories  
 Units: miles/day for VMT, trips/day for Trips, tons/day for Emissions, 1000 gallons/day for Fuel Consumption

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Population	VMT	Trips	Fuel Consumption	Miles Per Gallon	
<b>Hauling</b>											
LOS ANGELES	2021	HHDT	Aggregated	Aggregated	DSL	57397.7449	6891921.3	574782.189	1076.08102	<b>6.40</b>	
<b>Vendor</b>											
LOS ANGELES	2021	LHDT1	Aggregated	Aggregated	DSL	61698.8458	2667214.83	776093.864	124.558737	21.41	
LOS ANGELES	2021	LHDT2	Aggregated	Aggregated	DSL	24847.529	1035822.88	312550.657	53.6927664	19.29	
LOS ANGELES	2021	MHDT	Aggregated	Aggregated	DSL	66201.0402	4146736.97	650607.292	407.545763	10.17	
<b>Average MPG:</b>										<b>16.96</b>	
<b>Worker</b>											
LOS ANGELES	2021	LDA	Aggregated	Aggregated	GAS	3998082.55	154957028	18859046.2	5253.03608	29.50	50
LOS ANGELES	2021	LDT1	Aggregated	Aggregated	GAS	451923.146	17065391.3	2083892.52	670.361256	25.46	25
LOS ANGELES	2021	LDT2	Aggregated	Aggregated	GAS	1370275.92	52553142.2	6426189.16	2238.86259	23.47	25
<b>Average MPG:</b>										<b>26.14</b> 26.9818203	

Note: Consistent with CalEEMod, a worker trip is assumed to be a mix of LD (LDA, LDT1, and LDT2), a vendor trip is assumed to be a mix of HDT (LHDT1, LHDT2, and MHDT); a hauler trip is assumed to be HHDT.

CONSTRUCTION - OFFROAD (Diesel)

Phase Name	Offroad Equipment Type	Amount	Usage Hours	HP	Gal of Diesel	Load Factor	Days	Total Gallons	Total hp-hr
Demolition	Concrete/Industrial Saws	1	8	8	81	0.05	0.73	44	20814
Demolition	Rubber Tired Dozers	1	8	8	247	0.05	0.4	44	34778
Demolition	Tractors/Loaders/Backhoes	3	8	8	97	0.05	0.37	44	37900
Site Preparation	Graders	1	8	8	187	0.05	0.41	20	12267
Site Preparation	Rubber Tired Dozers	1	7	7	247	0.05	0.4	20	13832
Site Preparation	Tractors/Loaders/Backhoes	1	8	8	97	0.05	0.37	20	5742
Grading	Graders	1	6	6	187	0.05	0.41	102	46922
Grading	Rubber Tired Dozers	1	6	6	247	0.05	0.4	102	60466
Grading	Tractors/Loaders/Backhoes	1	7	7	97	0.05	0.37	102	25625
Building Construction	Cranes	1	6	6	231	0.05	0.29	440	176854
Building Construction	Forklifts	1	6	6	89	0.05	0.2	440	46992
Building Construction	Generator Sets	1	8	8	84	0.05	0.74	440	218803
Building Construction	Tractors/Loaders/Backhoes	1	6	6	97	0.05	0.37	440	94750
Building Construction	Welders	3	8	8	46	0.05	0.45	440	218592
Paving	Cement and Mortar Mixers	1	6	6	9	0.05	0.56	50	1512
Paving	Pavers	1	6	6	130	0.05	0.42	50	16380
Paving	Paving Equipment	1	8	8	132	0.05	0.36	50	19008
Paving	Rollers	1	7	7	80	0.05	0.38	50	10640
Paving	Tractors/Loaders/Backhoes	1	8	8	97	0.05	0.37	50	14356
Architectural Coating	Air Compressors	1	6	6	78	0.05	0.48	50	11232
								54,373	1,087,464

CONSTRUCTION - ONROAD (diesel)

Phase Name	Days	Daily Vendor	Vendor Trip Length	Total Vendor Length	Vendor mpg	Vendor Gallons	Total Hauling Trips	Hauling Trip Length	Total Hauling Miles	Hauling mpg	Hauling Gallons	Total Vendor and Hauling Gallons
Demolition		44	0	6.9	0	16.96	0	191	29	5539	6.40	864.8405139
Site Preparation		20	0	6.9	0	16.96	0	0	20	0	6.40	0
Grading		102	0	6.9	0	16.96	0	16250	29	471250	6.40	73579.3631
Building Construction		440	75	6.9	227700	16.96	13425.74077	0	20	0	6.40	13,426
Paving		50	0	6.9	0	16.96	0	0	20	0	6.40	0
Architectural Coating		50	0	6.9	0	16.96	0	0	20	0	6.40	0
												87,870

CONSTRUCTION - ONROAD (gasoline)

Phase Name	Days	Daily Worker	Worker Trip Length	Total Worker Length	Worker mpg	Total Gallons
Demolition		44	13	14.7	8408.4	26.14
Site Preparation		20	8	14.7	2352	26.14
Grading		102	8	14.7	11995.2	26.14
Building Construction		440	254	14.7	1642872	26.14
Paving		50	13	14.7	9555	26.14
Architectural Coating		50	51	14.7	37485	26.14
						65,512

TOTAL GALLONS

Gasoline 65,512  
 Diesel 142,243

Land Use	MITIGATED				Water-Related Electricity Use (kWhr/yr)	Total Annual Electricity Use (kWhr)
	Electricity Use (kWh/yr)	Water Usage				
		Indoor (Mgal/yr)	Outdoor (Mgal/yr)			
Apartments - High Rise	0	7.08876	5.24549		129708.1172	129,708
Enclosed Parking with Elevator	0	0	0		0	0
High Turnover (Sit Down Restaurant)	0	2.39185	0.179198		28292.59395	28,293
Hotel	0	9.01028	1.17509		111444.2084	111,444
Other Non-Asphalt Surfaces	0	0	0		0	0
Quality Restaurant	0	3.16889	0.237414		37484.00498	37,484
Movie Theater (No Matinee)	0	3.56301	0.266941		42145.94611	42,146
<b>Total</b>	0	25	7		349,075	<b>349,075</b>

Notes: Indoor Water results in 0.0111 kWhr of electricity usage per gallon from delivery, treatment, and distribution of water within Southern California (CalEEMod). Outdoor water results in 0.009727 kWhr of electricity usage per gallon from delivery and distribution of water within Southern California (CalEEMod).

EMFAC2017 (v1.0.2) Emissions Inventory

Region Type: County

Region: LOS ANGELES

Calendar Year: 2024

Season: Annual

Vehicle Classification: EMFAC2007 Categories

Units: miles/day for VMT, trips/day for Trips, tons/day for Emissions, 1000 gallons/day for Fuel Consumption. Note 'day' in the unit is operation day.

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Population	VMT	Trips	Fuel Consumption	Miles Per Gallon
LOS ANGELES	2024	HHDT	Aggregated	Aggregated	DSL	60486.5608	7321894.91	609710.597	1032.957171	7.08828509
LOS ANGELES	2024	LDA	Aggregated	Aggregated	DSL	39426.2087	1524143.42	187277.957	30.69961746	49.646984
LOS ANGELES	2024	LDT1	Aggregated	Aggregated	DSL	239.609724	5792.69663	847.725083	0.259374866	22.3332997
LOS ANGELES	2024	LDT2	Aggregated	Aggregated	DSL	10688.5516	433988.651	52394.5001	11.86470605	36.5781208
LOS ANGELES	2024	LHDT1	Aggregated	Aggregated	DSL	75659.9297	3110121.54	951706.736	138.9113597	22.3892527
LOS ANGELES	2024	LHDT2	Aggregated	Aggregated	DSL	30662.4732	1211866.91	385695.34	60.12538811	20.1556605
LOS ANGELES	2024	MDV	Aggregated	Aggregated	DSL	23435.642	890977.044	114506.062	31.49432125	28.2900856
LOS ANGELES	2024	MH	Aggregated	Aggregated	DSL	6733.81758	68909.9733	673.381758	6.375872153	10.807929
LOS ANGELES	2024	MHDT	Aggregated	Aggregated	DSL	69317.8265	4474286.71	685496.244	400.8008787	11.1633655
LOS ANGELES	2024	OBUS	Aggregated	Aggregated	DSL	3242.67237	251615.613	31531.2445	28.8502627	8.7214323
LOS ANGELES	2024	SBUS	Aggregated	Aggregated	DSL	3919.44167	123729.702	45229.8134	15.9223254	7.77083114
LOS ANGELES	2024	UBUS	Aggregated	Aggregated	DSL	31.1389	4437.95841	124.5556	0.666118943	6.66241136
									<b>Weighted Average MPG:</b>	<b>20.57</b>
									<b>Total Fuel Consumption:</b>	<b>642,008,500</b>
LOS ANGELES	2024	LDA	Aggregated	Aggregated	ELEC	108760.006	4606816.53	541506.481		0
LOS ANGELES	2024	LDT1	Aggregated	Aggregated	ELEC	5956.42578	258843.167	29864.61		0
LOS ANGELES	2024	LDT2	Aggregated	Aggregated	ELEC	22868.9518	716376.696	115104.587		0
LOS ANGELES	2024	MDV	Aggregated	Aggregated	ELEC	13797.5581	444370.196	70078.9568		0
LOS ANGELES	2024	UBUS	Aggregated	Aggregated	ELEC	14	1217.55368	56		0
LOS ANGELES	2024	HHDT	Aggregated	Aggregated	GAS	52.340722	6205.87085	1047.23317	1.439448701	4.31128309
LOS ANGELES	2024	LDA	Aggregated	Aggregated	GAS	4116236.09	153254097	19419687.7	4812.001767	31.8483044
LOS ANGELES	2024	LDT1	Aggregated	Aggregated	GAS	494837.591	18036183.2	2293057.3	658.9055258	27.3729426
LOS ANGELES	2024	LDT2	Aggregated	Aggregated	GAS	1446244.82	53548483.3	6797962.89	2061.557099	25.9747757
LOS ANGELES	2024	LHDT1	Aggregated	Aggregated	GAS	107107.329	3837942.25	1595739.61	359.289584	10.6820304
LOS ANGELES	2024	LHDT2	Aggregated	Aggregated	GAS	18386.1191	636642.437	273925.779	68.43699015	9.30260719
LOS ANGELES	2024	MCY	Aggregated	Aggregated	GAS	194917.985	1339730.8	389835.971	37.68391651	35.5517929
LOS ANGELES	2024	MDV	Aggregated	Aggregated	GAS	960343.193	33066846	4461450.5	1570.660853	21.0528237
LOS ANGELES	2024	MH	Aggregated	Aggregated	GAS	19619.1279	198262.499	1962.69755	37.51393187	5.28503648
LOS ANGELES	2024	MHDT	Aggregated	Aggregated	GAS	14933.0645	821324.312	298780.754	157.9322654	5.20048459
LOS ANGELES	2024	OBUS	Aggregated	Aggregated	GAS	4013.56619	160611.981	80303.4324	31.28171396	5.1343728
LOS ANGELES	2024	SBUS	Aggregated	Aggregated	GAS	1602.63927	63772.4487	6410.55707	6.786778282	9.39657169
LOS ANGELES	2024	UBUS	Aggregated	Aggregated	GAS	469.20676	33977.6389	1876.82704	7.377976169	4.60527903
									<b>Weighted Average MPG:</b>	<b>28.58</b>
									<b>Total Fuel Consumption:</b>	<b>3,580,966,765</b>
LOS ANGELES	2024	HHDT	Aggregated	Aggregated	NG	2967.93482	120873.887	11574.9458	52.34797897	
LOS ANGELES	2024	UBUS	Aggregated	Aggregated	NG	4233.31737	448601.299	16933.2695	114.1054295	

Total Vehicles	Total Gas Vehicles	Total Diesel Vehicles	Total Electric and Natural Gas Vehicles
7861205	7378763	323844	158598
Percent of Total:	93.86	4.12	2.02

Total VMT	Total Gas VMT	Total Diesel VMT	Total Electric VMT
291022944	265004079.7	19421765.13	6597099
Percent of Total	91.06	6.67	2.27

Land Use	Annual VMT	Gasoline Usage	Diesel Usage
Apartments - High Rise	1,205,089	39,577	2,413
Enclosed Parking with Elevator	0	0	0
High Turnover (Sit Down Restaurar	895,985	29,426	1,794
Hotel	5,167,474	169,709	10,346
Other Non-Asphalt Surfaces	0	0	0
Quality Restaurant	726,563	23,862	1,455
Movie Theater (No Matinee)	856,099	28,116	1,714
<b>Total</b>	<b>8,851,210</b>	<b>290,689</b>	<b>17,722</b>

	Gasoline	Diesel
Miles/Gallon	28.58	20.57
% Fleet Mix	93.86	4.12