

APPENDIX K - ENERGY DEMAND CALCULATIONS

Construction Phase Fuel Consumption



Project Name: Camarillo Springs GPA 2017-2

Construction Equipment Fuel Consumption

Construction Phase	Days	Equipment	Amount	Usage Hours	Horsepower	Load Factor	HP-Hours/Day	Total Fuel Consumption (gal. diesel fuel)
Grading	140	Excavators	1	8.0	158	0.38	480.3	3,362
Grading	140	Graders	2	8.0	187	0.41	1,226.7	8,587
Grading	140	Rubber Tired Dozers	2	8.0	247	0.40	1,580.8	11,066
Grading	140	Scrapers	16	8.0	367	0.48	22,548.5	157,839
Grading	140	Tractors/Loaders/Backhoes	7	8.0	97	0.37	2,009.8	14,069
Grading	140	Off-Highway Trucks	5	8.0	402	0.38	6,110.4	42,773
Building Construction	1,245	Cranes	1	7.0	231	0.29	468.9	29,191
Building Construction	1,245	Forklifts	3	8.0	89	0.20	427.2	26,593
Building Construction	1,245	Generator Sets	1	8.0	84	0.74	497.3	30,956
Building Construction	1,245	Tractors/Loaders/Backhoes	3	7.0	97	0.37	753.7	46,917
Building Construction	1,245	Welders	1	8.0	46	0.45	165.6	10,309
Paving	15	Pavers	2	8.0	130	0.42	873.6	655
Paving	15	Paving Equipment	2	8.0	132	0.36	760.3	570
Paving	15	Rollers	2	8.0	80	0.38	486.4	365
Architectural Coating	1,245	Air Compressors	1	6.0	78	0.48	224.6	13,984
Infrastructure	120	Excavators	1	8.0	158	0.38	480.3	2,882
Infrastructure	120	Scrapers	1	8.0	367	0.48	1,409.3	8,456
Infrastructure	120	Tractors/Loaders/Backhoes	1	8.0	97	0.37	287.1	1,723
Total Construction Fuel Demand								410,296

Total fuel consumption based on a fuel usage rate of 0.05 gallon of diesel fuel per horsepower-hour based on SCAQMD CEQA Air Quality Handbook Table A9-3E.

Source of construction equipment data: CalEEMod sheets prepared for the project.

Ventura County 2021 Aggregated Vehicle Fuel Consumption

Vehicle Class	Fuel	Daily VMT	Daily Fuel Consumption (1000 gallons)	Miles/gallon	Percent of Vehicle Class VMT	Range Average (miles/gallon)
Light Duty Vehicles						
LDA	Gas	11,118,380	356.98	31.15	89.74%	30.9
LDA	Diesel	129,035	2.70	47.82	1.04%	
LDT1	Gas	1,142,009	43.36	26.34	9.22%	
LDT1	Diesel	509	0.02	23.97	0.00%	
Heavy Duty Vehicles						
LHDT1	Gas	291,242	27.82	10.47	7.88%	17.8
LHDT1	Diesel	294,178	14.24	20.66	7.96%	
LHDT2	Gas	50,610	5.55	9.11	1.37%	
LHDT2	Diesel	106,038	5.64	18.81	2.87%	
MDV	Gas	2,552,226	130.05	19.62	69.08%	
MDV	Diesel	64,262	2.41	26.61	1.74%	
HHDT	Gas	173	0.04	0.00	0.00%	
HHDT	Diesel	335,876	50.81	6.61	9.09%	

Source of VMT and fuel consumption data: EMFAC 2017 sheets.

Construction Worker and Vendor Fuel Consumption

Construction Phase	Days	Daily Trips	Trip Length	Miles/Day	Total Miles	Vehicle Class	Average Vehicle Fuel Economy (mpg)	Total Fuel Consumption (gallons)
Construction Worker Trips								
Grading	140	83	10.8	896	125,496	Light Duty Mix	30.9	4,065
Building Construction	1,245	179	10.8	1,933	2,406,834	Light Duty Mix	30.9	77,952
Paving	15	15	10.8	162	2,430	Light Duty Mix	30.9	79
Architectural Coating	1,245	36	10.8	389	484,056	Light Duty Mix	30.9	15,677
Infrastructure	120	8	10.8	86	10,368	Light Duty Mix	30.9	336
Total Construction Worker Fuel Demand								98,108
Vendor Trips								
Building Construction	1,245	27	7.3	197	245,390	Heavy Duty Mix	17.8	13,820
Total Construction Fuel Demand								111,929

Source of trip and trip length data: CalEEMod sheets prepared for the project.

EMFAC2017-El-2007Class-VENTURA-2021-Annual-20200624151426

EMFAC2017 (v1.0.2) Emissions Inventory									
Region Type: County									
Region: VENTURA									
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. Note 'day' in the unit is operation day.									
Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Population	VMT	Trips	Fuel Consumption
VENTURA	2021	HHDT	Aggregated	Aggregated	GAS	1.9116252457462600	172.80876185226900	38.24779791689120	0.04028514823102410
VENTURA	2021	HHDT	Aggregated	Aggregated	DSL	3103.151389722000	335876.11973566500	30425.862297307100	50.807231335217500
VENTURA	2021	HHDT	Aggregated	Aggregated	NG	146.4107165391200	5955.809031823320	571.0017945025700	2.613106552161940
VENTURA	2021	LDA	Aggregated	Aggregated	GAS	282572.19894750600	11118379.5592212	1327524.082534070	356.9774718371460
VENTURA	2021	LDA	Aggregated	Aggregated	DSL	3243.5471690636400	129034.79982556400	15176.421798053500	2.698305087827770
VENTURA	2021	LDA	Aggregated	Aggregated	ELEC	4327.761078844250	183540.33259067500	21648.65540513370	0
VENTURA	2021	LDT1	Aggregated	Aggregated	GAS	31463.048834716100	1142008.6531512100	142108.94968655600	43.36360545244480
VENTURA	2021	LDT1	Aggregated	Aggregated	DSL	29.173709100164000	508.96386063739700	95.08891312981490	0.021232287811674400
VENTURA	2021	LDT1	Aggregated	Aggregated	ELEC	125.01482963021700	5370.126104476110	625.6873015784290	0
VENTURA	2021	LDT2	Aggregated	Aggregated	GAS	95089.75617813730	3613871.4916973600	440675.64059744400	149.0188812206590
VENTURA	2021	LDT2	Aggregated	Aggregated	DSL	587.5336450051850	25980.211714294000	2866.700595680130	0.7421267973801610
VENTURA	2021	LDT2	Aggregated	Aggregated	ELEC	587.0818310964910	20813.707389485600	2980.7059184348300	0
VENTURA	2021	LHDT1	Aggregated	Aggregated	GAS	8150.344282502680	291241.97706842100	121427.98579630900	27.82421239034340
VENTURA	2021	LHDT1	Aggregated	Aggregated	DSL	7713.436156153420	294178.0156321760	97025.32334172560	14.238789975051900
VENTURA	2021	LHDT2	Aggregated	Aggregated	GAS	1420.134230183940	50610.49780604730	21157.88402973770	5.552695432624340
VENTURA	2021	LHDT2	Aggregated	Aggregated	DSL	2731.547891623200	106038.07168230300	34359.43618937210	5.637326271196530
VENTURA	2021	MCY	Aggregated	Aggregated	GAS	16154.612534924700	82650.93604300350	32309.225069849500	2.2929152095171000
VENTURA	2021	MDV	Aggregated	Aggregated	GAS	74995.26264109270	2552225.620423720	341239.5506243190	130.05153637946700
VENTURA	2021	MDV	Aggregated	Aggregated	DSL	1556.4006583787600	64261.56916973030	7545.504471309660	2.4144879535281700
VENTURA	2021	MDV	Aggregated	Aggregated	ELEC	264.2809002114210	9673.405373630710	1355.2824951142000	0
VENTURA	2021	MH	Aggregated	Aggregated	GAS	3292.778777234470	28309.698888274500	329.40958887453600	5.642022895712780
VENTURA	2021	MH	Aggregated	Aggregated	DSL	1099.0450909603700	10050.051435995300	109.90450909603700	0.9653339324598540
VENTURA	2021	MHDT	Aggregated	Aggregated	GAS	713.5840046792370	35785.675878208000	14277.38876562220	6.9967542999982600
VENTURA	2021	MHDT	Aggregated	Aggregated	DSL	5651.510167502240	344491.4820933650	57817.351195724500	32.682782292612900
VENTURA	2021	OBUS	Aggregated	Aggregated	GAS	243.17908263874600	9399.482599022090	4865.527085436030	1.8762835718053500
VENTURA	2021	OBUS	Aggregated	Aggregated	DSL	153.74334539807800	9184.54176489	1365.7748826670700	1.002121519976320
VENTURA	2021	SBUS	Aggregated	Aggregated	GAS	66.59448779711530	2675.450486313330	266.37795118846100	0.295843515968701
VENTURA	2021	SBUS	Aggregated	Aggregated	DSL	301.0154445861740	9371.987055828200	3473.6764963213400	1.2921178519840400
VENTURA	2021	UBUS	Aggregated	Aggregated	GAS	58.69200419304680	4376.266035187610	234.7680167721870	0.8173080645390270
VENTURA	2021	UBUS	Aggregated	Aggregated	DSL	38.25548192416500	2859.8131057028200	153.02192769666000	0.48008406202570400
VENTURA	2021	UBUS	Aggregated	Aggregated	ELEC	0.10825859459473800	2.5108431072174200	0.4330343783789540	0
VENTURA	2021	UBUS	Aggregated	Aggregated	NG	118.30145605475900	12457.6763898756	473.2058242190360	2.5103682511038800

Project Operational Fuel Consumption



Project Name: Camarillo Springs GPA 2017-2

Ventura County 2027 Aggregated Vehicle Fuel Consumption

Vehicle Class	Fuel	Daily VMT	Daily Fuel Consumption (1000 gallons)	Fuel Type miles/gallon	Percent of Vehicle Class VMT	Vehicle Class Average (miles/gallon)
Heavy-Heavy Duty Trucks (HHDT)	Gas	309	0.06	4.93	0.08%	7.8
	Diesel	366,211	46.80	7.83	99.92%	
Light Duty Automobiles (LDA)	Gas	11,768,152	321.06	36.65	98.79%	36.9
	Diesel	144,710	2.61	55.50	1.21%	
Light Duty Trucks (LDT1)	Gas	1,193,322	38.86	30.71	99.98%	30.7
	Diesel	257	0.01	26.60	0.02%	
Light Duty Trucks (LDT2)	Gas	3,498,468	117.81	29.70	99.08%	29.8
	Diesel	32,379	0.79	41.06	0.92%	
Light Heavy Duty Trucks (LHDT1)	Gas	256,278	22.65	11.31	47.16%	17.2
	Diesel	287,163	12.76	22.51	52.84%	
Light Heavy Duty Trucks (LHDT2)	Gas	46,159	4.72	9.78	29.83%	17.3
	Diesel	108,602	5.31	20.47	70.17%	
Motorcycles (MCY)	Gas	78,823	2.20	35.91	100.00%	35.91
Medium Duty Trucks (MDV)	Gas	2,255,869	94.93	23.76	96.91%	24.0
	Diesel	71,910	2.30	31.21	3.09%	
Motor Homes (MH)	Gas	20,481	3.83	5.35	70.03%	7.0
	Diesel	8,763	0.80	10.91	29.97%	
Medium Heavy Duty Trucks (MHDT)	Gas	41,543	7.34	5.66	9.71%	11.5
	Diesel	386,158	31.89	12.11	90.29%	
Other Buses (OBUS)	Gas	8,505	1.54	5.52	49.96%	7.8
	Diesel	8,519	0.84	10.13	50.04%	
School Buses (SBUS)	Gas	3,571	0.36	9.86	30.03%	8.3
	Diesel	8,318	1.09	7.63	69.97%	
Urban Buses (UBUS)	Gas	4,532	0.75	6.05	65.20%	6.0
	Diesel	2,419	0.41	5.84	34.80%	

Source of VMT and fuel consumption data: EMFAC 2017 sheets.

Project Operational Fuel Consumption

Project Annual VMT	Vehicle Class	CalEEMod Fleet Mix Percent	Vehicle Class miles/gallon	Annual Fuel Consumption (gallons)
4,396,089	LDA	60.62%	36.9	72,255
	LDT1	0.04%	30.7	56
	LDT2	0.19%	29.8	277
	MDV	0.10%	24.0	183
	LHD1	0.01%	17.2	38
	LHD2	0.01%	17.3	15
	MHD	0.02%	11.5	78
	HHDT	0.02%	7.8	103
	OBUS	0.00%	7.8	7
	UBUS	0.00%	6.0	8
	MCY	0.00%	35.9	5
	SBUS	0.00%	8.3	2
	MH	0.00%	7.0	7
Total Annual Fuel Consumption				73,033

Source of VMT and fleet mix data: CalEEMod sheets prepared for the project.

EMFAC2017-EI-2007Class-VENTURA-2027-Annual-20200624151500

EMFAC2017 (v1.0.2) Emissions Inventory							
Region Type: County							
Region: VENTURA							
Calendar Year: 2027							
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 c							
Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	VMT	Fuel Consumption
VENTURA	2027	HHDT	Aggregated	Aggregated	GAS	309.33510485888100	0.06274316452579100
VENTURA	2027	HHDT	Aggregated	Aggregated	DSL	366211.07450082200	46.79828706000400
VENTURA	2027	LDA	Aggregated	Aggregated	GAS	11768151.962209500	321.05933622662500
VENTURA	2027	LDA	Aggregated	Aggregated	DSL	144710.25330948800	2.6074549214425600
VENTURA	2027	LDT1	Aggregated	Aggregated	GAS	1193322.125650270	38.85796341343750
VENTURA	2027	LDT1	Aggregated	Aggregated	DSL	257.33651529029000	0.009674121240298210
VENTURA	2027	LDT2	Aggregated	Aggregated	GAS	3498467.8826502900	117.80511056823400
VENTURA	2027	LDT2	Aggregated	Aggregated	DSL	32379.237922776800	0.788602328908083
VENTURA	2027	LHDT1	Aggregated	Aggregated	GAS	256277.7795134620	22.654380624418700
VENTURA	2027	LHDT1	Aggregated	Aggregated	DSL	287163.35319503300	12.755811793111400
VENTURA	2027	LHDT2	Aggregated	Aggregated	GAS	46158.704501465100	4.720106887148430
VENTURA	2027	LHDT2	Aggregated	Aggregated	DSL	108602.34248001100	5.306559198072190
VENTURA	2027	MCY	Aggregated	Aggregated	GAS	78822.94836759550	2.1952115901891300
VENTURA	2027	MDV	Aggregated	Aggregated	GAS	2255869.384142100	94.92540391017320
VENTURA	2027	MDV	Aggregated	Aggregated	DSL	71909.59175936890	2.304260253938690
VENTURA	2027	MH	Aggregated	Aggregated	GAS	20481.344717720300	3.827616061412020
VENTURA	2027	MH	Aggregated	Aggregated	DSL	8763.13578733042	0.8028921762201110
VENTURA	2027	MHDT	Aggregated	Aggregated	GAS	41543.35203999290	7.343168899539140
VENTURA	2027	MHDT	Aggregated	Aggregated	DSL	386158.1348898970	31.888907696830600
VENTURA	2027	OBUS	Aggregated	Aggregated	GAS	8504.860093381320	1.5402145730212100
VENTURA	2027	OBUS	Aggregated	Aggregated	DSL	8519.076554546730	0.8413009538787720
VENTURA	2027	SBUS	Aggregated	Aggregated	GAS	3570.5771605652600	0.36223709020508600
VENTURA	2027	SBUS	Aggregated	Aggregated	DSL	8317.789113570370	1.0903135284042300
VENTURA	2027	UBUS	Aggregated	Aggregated	GAS	4532.112196899950	0.7496654229052750
VENTURA	2027	UBUS	Aggregated	Aggregated	DSL	2418.5624997175600	0.41379383774520500