

Appendix D

Energy Calculations

EMFAC2017 (v1.0.2) Emissions Inventory

Region Type: County

Region: LOS ANGELES

Calendar Year: 2022

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	Calendar Year	Vehicle Cat	Model Year	Speed	Fuel	Population	VMT	Trips	Fuel Consumption
LOS ANGELES	2022	LDA	Aggregated	Aggregated	GAS	4040505	1.54E+08	19063483	5096.55014
LOS ANGELES	2022	LDT1	Aggregated	Aggregated	GAS	466456.3	17402686	2155710	666.5509097
LOS ANGELES	2022	LDT2	Aggregated	Aggregated	GAS	1395328	52851239	6550846	2173.392058
LOS ANGELES	2022	LHD1	Aggregated	Aggregated	GAS	107665	3912115	1604048	374.458459
LOS ANGELES	2022	LHD2	Aggregated	Aggregated	GAS	18107.1	636816.2	269768.8	69.95440206
LOS ANGELES	2022	MCY	Aggregated	Aggregated	GAS	181916.5	1290804	363833	36.08497322
LOS ANGELES	2022	MDV	Aggregated	Aggregated	GAS	941584.3	33063464	4363838	1672.525685
LOS ANGELES	2022	MH	Aggregated	Aggregated	GAS	19672.44	198291.7	1968.031	38.63505089
LOS ANGELES	2022	OBUS	Aggregated	Aggregated	GAS	4028.136	167752.6	80594.95	33.55748039
LOS ANGELES	2022	SBUS	Aggregated	Aggregated	GAS	1393.898	56948.1	5575.592	6.189684102
LOS ANGELES	2022	T6TS	Aggregated	Aggregated	GAS	14670	811414.7	293517.3	160.7054395
LOS ANGELES	2022	T7IS	Aggregated	Aggregated	GAS	55.46638	5860.691	1109.771	1.426947994
LOS ANGELES	2022	UBUS	Aggregated	Aggregated	GAS	463.7252	33581.36	1854.901	7.944288802
							2.65E+08		10337.97552
								25.61	

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Region	Calendar	Vehicle Category	Model Year	Speed	Fuel	VMT	Trips	Fuel Consumption
LOS ANGELES	2022	All Other Buses	Aggregated	Aggregated	DSL	146501.733	20383.43	14.3421019
LOS ANGELES	2022	LDA	Aggregated	Aggregated	DSL	1405948.59	168445.8	29.71915281
LOS ANGELES	2022	LDT1	Aggregated	Aggregated	DSL	6755.98135	979.171	0.309652997
LOS ANGELES	2022	LDT2	Aggregated	Aggregated	DSL	384253.17	44544.02	11.04279173
LOS ANGELES	2022	LHD1	Aggregated	Aggregated	DSL	2829556.45	835716.2	130.1752661
LOS ANGELES	2022	LHD2	Aggregated	Aggregated	DSL	1100164.26	337381.6	56.1858244
LOS ANGELES	2022	MDV	Aggregated	Aggregated	DSL	791156.805	97958.74	29.43021248
LOS ANGELES	2022	MH	Aggregated	Aggregated	DSL	64185.8587	614.2766	6.094200677
LOS ANGELES	2022	Motor Coach	Aggregated	Aggregated	DSL	93044.16	10080.06	14.28409549
LOS ANGELES	2022	PTO	Aggregated	Aggregated	DSL	79209.0386	0	16.05411209
LOS ANGELES	2022	SBUS	Aggregated	Aggregated	DSL	122197.418	44623.46	16.06384209
LOS ANGELES	2022	T6 Ag	Aggregated	Aggregated	DSL	101.966645	53.26112	0.012181572
LOS ANGELES	2022	T6 CAIRP heavy	Aggregated	Aggregated	DSL	67083.5226	4955.726	5.807813802
LOS ANGELES	2022	T6 CAIRP small	Aggregated	Aggregated	DSL	9464.3274	2653.116	0.875877811
LOS ANGELES	2022	T6 instate construction heavy	Aggregated	Aggregated	DSL	170126.842	11493.3	16.71218546
LOS ANGELES	2022	T6 instate construction small	Aggregated	Aggregated	DSL	450145.756	38256.72	43.95843647
LOS ANGELES	2022	T6 instate heavy	Aggregated	Aggregated	DSL	1455514.97	121711.8	131.8685352
LOS ANGELES	2022	T6 instate small	Aggregated	Aggregated	DSL	1972425.14	447021.3	190.7940541
LOS ANGELES	2022	T6 OOS heavy	Aggregated	Aggregated	DSL	38838.8121	2856.316	3.358836601
LOS ANGELES	2022	T6 OOS small	Aggregated	Aggregated	DSL	5388.10771	1523.982	0.499529555
LOS ANGELES	2022	T6 Public	Aggregated	Aggregated	DSL	70713.4171	13733.04	8.660830266
LOS ANGELES	2022	T6 utility	Aggregated	Aggregated	DSL	17105.5263	11664.95	1.766075853
LOS ANGELES	2022	T7 Ag	Aggregated	Aggregated	DSL	102.893089	22.84943	0.01852168
LOS ANGELES	2022	T7 CAIRP	Aggregated	Aggregated	DSL	1134600.88	93177.48	164.6523981
LOS ANGELES	2022	T7 CAIRP construction	Aggregated	Aggregated	DSL	122203.588	3063.817	16.7040882
LOS ANGELES	2022	T7 NNOOS	Aggregated	Aggregated	DSL	1383134.92	100865.8	190.1637574

LOS ANGELES	2022	T7 NOOS	Aggregated	Aggregated	DSL	445789.868	36799.51	66.33830455
LOS ANGELES	2022	T7 POLA	Aggregated	Aggregated	DSL	1076131.6	63006.26	189.4428135
LOS ANGELES	2022	T7 Public	Aggregated	Aggregated	DSL	111458.069	16688.02	19.18026863
LOS ANGELES	2022	T7 Single	Aggregated	Aggregated	DSL	398912.551	69287.86	60.92726724
LOS ANGELES	2022	T7 single construction	Aggregated	Aggregated	DSL	303164.625	19620.15	44.86801387
LOS ANGELES	2022	T7 SWCV	Aggregated	Aggregated	DSL	56894.3017	5430.756	28.04619094
LOS ANGELES	2022	T7 tractor	Aggregated	Aggregated	DSL	1664070.76	156255.7	233.2857898
LOS ANGELES	2022	T7 tractor construction	Aggregated	Aggregated	DSL	250084.125	16389.96	37.80397958
LOS ANGELES	2022	T7 utility	Aggregated	Aggregated	DSL	8267.09836	4682.517	1.312326899
LOS ANGELES	2022	UBUS	Aggregated	Aggregated	DSL	5105.1453	148.5556	0.807132926
						18239802.3		1781.566463
							10.24	
					HHDT Constru	6.615286		

4th and Hewitt Project Construction On-road Fuel Use

Construction Phase	worker trips	Worker Miles/trip	Days	Worker Miles
Demo	13	14.7	25	4,778
Grade	15	14.7	70	15,435
Construction	220	14.7	547	1,768,998
Paving	13	14.7	70	13,377
Painting	44	14.7	70	45,276
Total Worker Miles				1,847,864
	EMFAC 2022	Gasoline	Avg. miles/gal	25.61
Worker Fuel Use			Total gallons	72,154

Construction Phase	Vendor Trips	Vendor Miles/trip	Days	Vendor Miles
Demo	0	6.9	25	
Grade	0	6.9	70	
Construction	99	6.9	547	373,656
Paving	0	6.9	70	
Painting	0	6.9	70	
Total Vendor Miles				373,656
	EMFAC 2022	Diesel	Avg. miles/gal	10.24
Vendor Fuel Use			Total gallons	36,490

Construction Phase	Haul Trips	Haul Miles/trip		Haul Miles
Demo	218	27		5,886
Grade	10,744	27		290,088
Total Hauling Miles				295,974
	EMFAC 2022	Diesel HHDT Only (T7 tractor construction)	Avg. miles/gal	6.62
Hauling Fuel Use			Total gallons	44,709

Construction Phase	Equipment	Qty	Hrs/day	HP	Load Factor	#Days	HP hr
Demo	Concrete Saw	1	8	81	0.73	25	11,826
	Dozer	1	8	247	0.4	25	19,760
	Loader/Backhoe	3	8	97	0.37	25	21,534
Grading	Excavators	1	6	158	0.38	70	25,217
	Grader	1	6	187	0.41	70	32,201
	Dozer	1	6	247	0.4	70	41,496
	Loader/Backhoe	3	7	97	0.37	70	52,758
Construction	Cranes	1	6	231	0.29	547	219,861
	Forklifts	1	6	89	0.2	547	58,420
	Gen Set	1	8	84	0.74	547	272,012
	Loader/Backhoe	1	6	97	0.37	547	117,791
	Welder	3	8	46	0.45	547	271,750
Paving	Mixer	1	6	9	0.56	70	2,117
	Pavers	1	6	130	0.42	70	22,932
	Paving Equipment	1	8	132	0.36	70	26,611
	Roller	1	7	80	0.38	70	14,896
	Loader/Backhoe	1	8	97	0.37	70	20,098
Painting	Air Compressor	1	6	78	0.48	70	15,725
						Total HP	1,247,005

HP = horsepower
gallons of diesel fuel per HP----hour= 0.05

Gallons 62,350

4th and Hewitt Operational Fuel Use

Light-duty (up to 8,500 lb GVWR)	% VMT	Heavy-duty (> 8,500 lb GVWR)	% VMT
LDA	0.545842	LHD1	0.01535
LDT1	0.044768	LHD2	0.006227
LDT2	0.205288	MHD	0.02046
MDV	0.119317	HHD	0.031333
		OBUS	0.002546
		UBUS	0.002133
		MCY	0.005184
		SBUS	0.000692
		MHD	0.000862
% of VMT	92%		8%

Vehicle Class	% VMT	Annual VMT	EMFAC 2022	Gal/year	Fuel
All		7,222,925			
light duty	0.92	6,645,091	25.61	259,473	gasoline
heavy-duty	0.08	577,834	10.24	56,429	diesel