

Appendix D

Energy Use Calculations

Fontana Foothill Apartments

3/11/2021

Compression-Ignition Engine Brake-Specific Fuel Consumption (BSFC) Factors [1]:

HP: 0 to 100	0.0588	HP: Greater than 100	0.0529
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Values above are expressed in gallons per horsepower-hour/BSFC.

CONSTRUCTION EQUIPMENT						
Construction Equipment	#	Hours per Day	Horsepower	Load Factor	Construction Phase	Fuel Used (gallons)
Rubber Tired Dozers	3	8	247	0.4	Site Preparation Phase	8,272
Tractors/Loaders/Backhoes	4	8	97	0.37	Site Preparation Phase	4,454
Graders	1	8	187	0.41	Grading Phase	1,427
Excavators	1	8	158	0.38	Grading Phase	1,117
Rubber Tired Dozers	1	8	247	0.4	Grading Phase	1,838
Tractors/Loaders/Backhoes	3	8	97	0.37	Grading Phase	2,227
Cranes	1	7	231	0.29	Building Construction Phase	11,303
Forklifts	3	8	89	0.2	Building Construction Phase	11,447
Generator Sets	1	8	84	0.74	Building Construction Phase	13,325
Tractors/Loaders/Backhoes	3	7	97	0.37	Building Construction Phase	20,196
Welders	1	8	46	0.45	Building Construction Phase	4,437
Air Compressors	1	6	78	0.48	Architectural Coating Phase	3,709
Pavers	2	8	130	0.42	Paving Phase	22,027
Paving Equipment	2	8	132	0.36	Paving Phase	19,171
Rollers	2	8	80	0.38	Paving Phase	13,634
Total Fuel Used						138,586
						(Gallons)

Construction Phase	Days of Operation
Site Preparation Phase	66
Grading Phase	44
Building Construction Phase	456
Paving Phase	477
Architectural Coating Phase	281
Total Days	1324

WORKER TRIPS				
Constuction Phase	MPG [2]	Trips	Trip Length (miles)	Fuel Used (gallons)
Site Preparation Phase	24.1	18	14.7	724.63
Grading Phase	24.1	15	14.7	402.57
Building Construction Phase	24.1	204	14.7	56740.78
Paving Phase	24.1	15	14.7	4364.25
Architectural Coating Phase	24.1	41	14.7	7027.33
Total				69,259.57

HAULING AND VENDOR TRIPS				
Trip Class	MPG [2]	Trips	Trip Length (miles)	Fuel Used (gallons)
HAULING TRIPS				
Site Preparation Phase	7.5	0	20.0	0.00
Grading Phase	7.5	5125	20.0	13666.67
Building Construction Phase	7.5	0	20.0	0.00

Paving Phase	7.5	0	20.0	0.00
Architectural Coating Phase	7.5	0	20.0	0.00
			Total	13,666.67

VENDOR TRIPS

Site Preparation Phase	7.5	0	14.7	0.00
Grading Phase	7.5	0	14.7	0.00
Building Construction Phase	7.5	45	14.7	40219.20
Paving Phase	7.5	0	14.7	0.00
Architectural Coating Phase	7.5	0	14.7	0.00
			Total	40,219.20

Total Gasoline Consumption (gallons)	69,260
Total Diesel Consumption (gallons)	192,472

Sources:

[1] United States Environmental Protection Agency. 2021. *Exhaust and Crankcase Emission Factors for Nonroad Compression-Ignition Engines in MOVES3.0.2*. September. Available at: <https://www.epa.gov/system/files/documents/2021-08/420r21021.pdf>.

[2] United States Department of Transportation, Bureau of Transportation Statistics. 2021. *National Transportation Statistics*. Available at: <https://www.bts.gov/topics/national-transportation-statistics>.

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Last Updated: DATE

Populate one of the following tables (Leave the other blank):

Annual VMT	OR	Daily Vehicle Trips
Annual VMT: 4,842,275		Daily Vehicle Trips: Average Trip Distance:

Fleet Class	Fleet Mix	Fuel Economy (MPG) [1]	
Light Duty Auto (LDA)	0.541709	Passenger Vehicles	24.1
Light Duty Truck 1 (LDT1)	0.062136	Light-Med Duty Trucks	17.6
Light Duty Truck 2 (LDT2)	0.185590	Heavy Trucks/Other	7.5
Medium Duty Vehicle (MDV)	0.128486	Motorcycles	44
Light Heavy Duty 1 (LHD1)	0.023783		
Light Heavy Duty 2 (LHD2)	0.006533		
Medium Heavy Duty (MHD)	0.012157		
Heavy Heavy Duty (HHD)	0.009216		
Other Bus (OBUS)	0.000814		
Urban Bus (UBUS)	0.000297		
Motorcycle (MCY)	0.024669		
School Bus (SBUS)	0.000753		
Motorhome (MH)	0.003657		

Fleet Mix

Vehicle Type	Percent	Fuel Type	Annual VMT:		Fuel Consumption
			VMT	Vehicle Trips: VMT	(Gallons)
Passenger Vehicles	54.17%	Gasoline	2,623,104	0.00	108,842
Light-Medium Duty Trucks	37.62%	Gasoline	1,821,722	0.00	103,507
Heavy Trucks/Other	5.72%	Diesel	277,027	0.00	36,937
Motorcycle	2.47%	Gasoline	119,454	0.00	2,715

Total Gasoline Consumption (gallons)	215,064
Total Diesel Consumption (gallons)	36,937

Sources:

[1] United States Department of Transportation, Bureau of Transportation Statistics. 2021. National Transportation Statistics. Available at: <https://www.bts.gov/topics/national-transportation-statistics>.