

Appendix NRG

Fuel Consumption Calculations

2118 Milvia Street Project

Last Updated: March 2, 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		Load Factor	Construction Phase	Fuel Used (gallons)
		Day	Horsepower			
Concrete/Industrial Saws	1	8	81	0.73	Demolition Phase	1,862.45
Excavators	1	8	158	0.38	Demolition Phase	1,701.08
Rubber Tired Dozers	1	8	247	0.40	Demolition Phase	2,799.24
Tractors/Loaders/Backhoes	1	6	97	0.37	Demolition Phase	847.84
Tractors/Loaders/Backhoes	1	8	97	0.37	Site Preparation Phase	556.79
Graders	1	8	187	0.41	Site Preparation Phase	1,069.91
Rollers	1	8	80	0.38	Grading Phase	457.33
Rubber Tired Dozers	1	8	247	0.40	Grading Phase	1,336.95
Tractors/Loaders/Backhoes	1	6	97	0.37	Grading Phase	404.94
Concrete/Industrial Saws	1	8	81	0.73	Grading Phase	889.53
Cranes	1	4	231	0.29	Building Construction Phase	7,407.82
Forklifts	1	6	89	0.20	Building Construction Phase	3,282.36
Pumps	1	8	84	0.74	Building Construction Phase	15,283.25
Tractors/Loaders/Backhoes	1	8	97	0.37	Building Construction Phase	8,824.26
Air Compressors	1	6	78	0.48	Architectural Coating Phase	66.00
Cement and Mortar Mixers	1	6	9	0.56	Paving Phase	355.41
Pavers	1	7	130	0.42	Paving Phase	4,040.54
Paving Equipment	1	7	132	0.36	Paving Phase	3,516.60
Rollers	1	7	80	0.38	Paving Phase	2,501.01
Tractors/Loaders/Backhoes	1	7	97	0.37	Paving Phase	2,952.67
Total Fuel Used						60,155.97
						(Gallons)

Construction Phase	Days of Operation
Demolition Phase	67
Site Preparation Phase	33
Grading Phase	32
Building Construction Phase	523
Paving Phase	200
Architectural Coating Phase	5
Total Days	860

WORKER TRIPS

Constuction Phase	MPG [2]	Trips	Trip Length (miles)	Fuel Used (gallons)
Demolition Phase	24.4	10	10.8	296.56
Site Preparation Phase	24.4	5	10.8	73.03
Grading Phase	24.4	10	10.8	141.64
Building Construction Phase	24.4	25	10.8	5,787.30
Paving Phase	24.4	13	10.8	1,150.82
Architectural Coating Phase	24.4	5	10.8	11.07
Total				7,460.41

HAULING AND VENDOR TRIPS

Trip Class	MPG [2]	Trips	Trip Length (miles)	Fuel Used (gallons)
HAULING TRIPS				
Demolition Phase	7.5	114	20.0	304.00
Site Preparation Phase	7.5	188	20.0	501.33
Grading Phase	7.5	0	20.0	-
Building Construction Phase	7.5	0	20.0	-
Paving Phase	7.5	0	20.0	-
Architectural Coating Phase	7.5	0	20.0	-
Total				805.33
VENDOR TRIPS				
Demolition Phase	7.5	0	7.3	-
Site Preparation Phase	7.5	0	7.3	-
Grading Phase	7.5	0	7.3	-
Building Construction Phase	7.5	10	7.3	5,090.53
Paving Phase	7.5	0	7.3	-
Architectural Coating Phase	7.5	0	7.3	-
Total				5,090.53

Total Gasoline Consumption (gallons)	7,460.41
Total Diesel Consumption (gallons)	66,051.84

Sources:

[1] United States Environmental Protection Agency. 2018. *Exhaust and Crankcase Emission Factors for Nonroad Compression-Ignition Engines in MOVES2014b* . July 2018. Available at: <https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P100UXEN.pdf>.

[2] United States Department of Transportation, Bureau of Transportation Statistics. 2019. *National Transportation Statistics 2019* . Available at: <https://www.bts.gov/topics/national-transportation-statistics>.

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

Annual VMT	OR	Daily Vehicle Trips
Annual VMT: 1,718,323		Daily Vehicle Trips: Average Trip Distance:

Fleet Class	Fleet Mix	Fuel Economy (MPG) [1]	
Light Duty Auto (LDA)	0.581705	Passenger Vehicles	24.4
Light Duty Truck 1 (LDT1)	0.037849	Light-Med Duty Trucks	17.9
Light Duty Truck 2 (LDT2)	0.193793	Heavy Trucks/Other	7.5
Medium Duty Vehicle (MDV)	0.109044	Motorcycles	44
Light Heavy Duty 1 (LHD1)	0.014574		
Light Heavy Duty 2 (LHD2)	0.005304		
Medium Heavy Duty (MHD)	0.018664		
Heavy Heavy Duty (HHD)	0.026966		
Other Bus (OBUS)	0.002656		
Urban Bus (UBUS)	0.002072		
Motorcycle (MCY)	0.005755		
School Bus (SBUS)	0.000900		
Motorhome (MH)	0.000719		

Fleet Mix					
Vehicle Type	Percent	Fuel Type	Annual VMT: VMT	Vehicle Trips: VMT	Fuel Consumption (Gallons)
Passenger Vehicles	58.17%	Gasoline	999,557	0.00	40,965.45
Light-Medium Duty Trucks	34.07%	Gasoline	585,409	0.00	32,704.39
Heavy Trucks/Other	7.19%	Diesel	123,470	0.00	16,462.68
Motorcycle	0.58%	Gasoline	9,889	0.00	224.75

Total Gasoline Consumption (gallons)	73,894.59
Total Diesel Consumption (gallons)	16,462.68

Sources:

[1] United States Department of Transportation, Bureau of Transportation Statistics. 2019. National Transportation Statistics 2019. Available at: <https://www.bts.gov/topics/national-transportation-statistics>.