

# Appendix C

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Energy Fuel Consumption Calculations

# Stow Grove Park CEQA

Last Updated: 7/21/2023

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			
Rubber Tired Dozers	0	8	367	0.4	Demolition Phase	0
Tractors/Loaders/Backhoes	0	8	84	0.37	Demolition Phase	0
Scrapers	0	8	367	0.48	Demolition Phase	0
Graders	1	8	148	0.41	Site Preparation Phase	154
Tractors/Loaders/Backhoes	1	8	84	0.37	Site Preparation Phase	88
Rubber Tired Dozers	0	8	367	0.4	Site Preparation Phase	0
Scrapers	0	8	367	0.48	Site Preparation Phase	0
Graders	1	6	148	0.41	Grading Phase	115
Rubber Tired Dozers	1	6	367	0.4	Grading Phase	279
Tractors/Loaders/Backhoes	1	7	84	0.37	Grading Phase	77
Tractors/Loaders/Backhoes	0	8	84	0.37	Grading Phase	0
Scrapers	0	8	367	0.48	Grading Phase	0
Cranes	1	4	367	0.4	Building Construction Phase	3,104
Forklifts	2	6	82	0.2	Building Construction Phase	1,156
Generator Sets	0	8	84	0.74	Building Construction Phase	0
Tractors/Loaders/Backhoes	2	8	84	0.37	Building Construction Phase	2,922
Welders	0	8	46	0.45	Building Construction Phase	0
Aerial Lifts	0	8	63	0.31	Building Construction Phase	0
Air Compressors	1	6	37	0.48	Architectural Coating Phase	31
Forklifts	0	8	82	0.2	Architectural Coating Phase	0
Tractors/Loaders/Backhoes	1	7	84	0.37	Paving Phase	64
Cement and Mortar Mixers	4	6	10	0.56	Paving Phase	39
Rollers	1	7	36	0.38	Paving Phase	28
Pavers	1	7	81	0.42	Paving Phase	70
<b>Total Fuel Used</b>						<b>8,129</b>
						<b>(Gallons)</b>

Construction Phase	Days of Operation
Demolition Phase	0
Site Preparation Phase	6
Grading Phase	6
Building Construction Phase	100
Paving Phase	5
Architectural Coating Phase	5
<b>Total Days</b>	<b>122</b>

WORKER TRIPS				
Constuction Phase	MPG [2]	Trips	Trip Length (miles)	Fuel Used (gallons)
Demolition Phase	24.1	0	14.7	0.00
Site Preparation Phase	24.1	5	17.6	21.91
Grading Phase	24.1	8	17.6	32.86
Building Construction Phase	24.1	0	14.7	0.00

Paving Phase	24.1	18	17.6	63.90
Architectural Coating Phase	24.1	0	14.7	0.00
<b>Total</b>				<b>118.67</b>

**HAULING AND VENDOR TRIPS**

Trip Class	MPG [2]	Trips	Trip Length (miles)	Fuel Used (gallons)
<b>HAULING TRIPS</b>				
Demolition Phase	7.5	0	20.0	0.00
Site Preparation Phase	7.5	11	20.0	28.00
Grading Phase	7.5	11	20.0	28.00
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
<b>Total</b>				<b>56.00</b>
<b>VENDOR TRIPS</b>				
Demolition Phase	7.5	0	14.7	0.00
Site Preparation Phase	7.5	0	14.7	0.00
Grading Phase	7.5	0	14.7	0.00
Building Construction Phase	7.5	0	14.7	0.00
Paving Phase	7.5	0	14.7	0.00
Architectural Coating Phase	7.5	0	14.7	0.00
<b>Total</b>				<b>-</b>

<b>Total Gasoline Consumption (gallons)</b>	<b>119</b>
<b>Total Diesel Consumption (gallons)</b>	<b>8,185</b>

**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>.

# Stow Grove CEQA

Last Updated: 7/24/2023

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

<b>Annual VMT</b>	<b>OR</b>	<b>Daily Vehicle Trips</b>
Annual VMT: 199,900		Daily Vehicle Trips: Average Trip Distance:

Fleet Class	Fleet Mix	Fuel Economy (MPG) [1]	
Light Duty Auto (LDA)	0.440582	Passenger Vehicles	24.1
Light Duty Truck 1 (LDT1)	0.053677	Light-Med Duty Trucks	17.6
Light Duty Truck 2 (LDT2)	0.232706	Heavy Trucks/Other	7.5
Medium Duty Vehicle (MDV)	0.168779	Motorcycles	44
Light Heavy Duty 1 (LHD1)	0.036995		
Light Heavy Duty 2 (LHD2)	0.008896		
Medium Heavy Duty (MHD)	0.012945		
Heavy Heavy Duty (HHD)	0.006394		
Other Bus (OBUS)	0.000961		
Urban Bus (UBUS)	0.000650		
Motorcycle (MCY)	0.028807		
School Bus (SBUS)	0.003905		
Motorhome (MH)	0.004702		

Fleet Mix					
Vehicle Type	Percent	Fuel Type	Annual VMT: VMT	Vehicle Trips: VMT	Fuel Consumption (Gallons)
Passenger Vehicles	44.06%	Gasoline	88,072	0.00	3,654
Light-Medium Duty Trucks	45.52%	Gasoline	90,987	0.00	5,170
Heavy Trucks/Other	7.54%	Diesel	15,082	0.00	2,011
Motorcycle	2.88%	Gasoline	5,759	0.00	131

<b>Total Gasoline Consumption (gallons)</b>	<b>8,955</b>
<b>Total Diesel Consumption (gallons)</b>	<b>2,011</b>

**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>.