

Blue Wave Express Car Wash and Hotel Project

Last Updated: March 27, 2019

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 Phase 1

Construction Equipment	#	Hours per		Load Factor	Construction Phase	Fuel Used (gallons)
		Day	Horsepower			
Concrete/Industrial Saws	1	8	81	0.73	Demo	555.96
Rubber Tired Dozers	1	8	247	0.40	Demo	835.59
Tractors/Loaders/Backhoes	3	8	97	0.37	Demo	1,012.34
Graders	1	8	187	0.41	Site Prep	97.26
Scrapers	1	8	367	0.48	Site Prep	223.48
Tractors/Loaders/Backhoes	1	7	97	0.37	Site Prep	44.29
Graders	1	8	187	0.41	Grading	194.53
Rubber Tired Dozer	1	8	247	0.40	Grading	250.68
Tractors/Loaders/Backhoes	2	7	97	0.37	Grading	177.16
Total Fuel Used						3,391.30 (Gallons)

Construction Phase	Days of Operation
Demolition Phase	20
Site Preparation Phase	3
Grading Phase	6

WORKER TRIPS - Construction Phase 1

Constuction Phase	MPG [2]	Trips	Trip Length (miles)	Fuel Used (gallons)
Demolition	24.0	13	10.8	5.85
Site Prep Phase	24.0	8	10.8	3.60
Grading Phase	24.0	10	10.8	4.50
Total				13.95

HAULING AND VENDOR TRIPS - Construction Phase 1

Trip Class	MPG [2]	Trips	Trip Length (miles)	Fuel Used (gallons)
Vendor Trips	7.4	-	7.3	-
Hauling Trips	7.4	53	20.0	143.24
Total				143.24

Total Gasoline Consumption (gallons)	13.95
Total Diesel Consumption (gallons)	3,534.54

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. 2018. *National Transportation Statistics 2018* . Available at: <https://www.bts.gov/sites/bts.dot.gov/files/docs/browse-statistical-products-and-data/national-transportation-statistics/223001/ntsntire2018q4.pdf>.

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CONSTRUCTION EQUIPMENT - Construction Phase 2

Construction Equipment	#	Hours per Day	Horsepower	Load Factor	Construction Phase	Fuel Used (gallons)
Cranes	1	4	231	0.29	Building	2,053.79
Forklifts	2	6	89	0.20	Building	1,820.05
Tractors/Loaders/Backhoes	2	8	97	0.37	Building	4,892.99
Air Compressors	1	6	78	0.48	Arch Coating	660.04
Cement and Mortar Mixers	4	6	9	0.56	Paving	49.76
Pavers	1	7	130	0.42	Paving	141.42
Rollers	1	7	80	0.38	Paving	87.54
Tractors/Loaders/Backhoes	1	7	97	0.37	Paving	103.34
Total Fuel Used						9,808.92 (Gallons)

Construction Phase	Days of Operation
Building Construction Phase	145
Architectural Coating Phase	50
Paving Phase	7

WORKER TRIPS - Construction Phase 2

Constuction Phase	MPG [2]	Trips	Trip Length (miles)	Fuel Used (gallons)
Building Phase	24.0	4	10.8	1.80
Paving Phase	24.0	18	10.8	8.10
Architectural Coating Phase	24.0	1	10.8	0.45
Total				10.35

HAULING AND VENDOR TRIPS - Construction Phase 2

Trip Class	MPG [2]	Trips	Trip Length (miles)	Fuel Used (gallons)
Vendor Trips	7.4	2	7.3	1.97
Hauling Trips	7.4	-	20.0	-
Total				1.97

Total Gasoline Consumption (gallons)	10.35
Total Diesel Consumption (gallons)	9,810.90

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. 2018. *National Transportation Statistics 2018* . Available at: <https://www.bts.gov/sites/bts.dot.gov/files/docs/browse-statistical-products-and-data/national-transportation-statistics/223001/ntsntire2018q4.pdf>.

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Values above are expressed in gallons per horsepower-hour/BSFC.

CONSTRUCTION EQUIPMENT - Construction Phase 3

Construction Equipment	#	Hours per Day	Horsepower	Load Factor	Construction Phase	Fuel Used (gallons)
Cranes	1	6	231	0.29	Building	10,028.18
Forklifts	1	6	89	0.20	Building	2,962.28
Generator Sets	1	8	84	0.74	Building	13,792.91
Tractors/Loaders/Backhoes	1	6	97	0.37	Building	5,972.82
Welders	3	8	46	0.45	Building	13,779.60
Air Compressors	1	6	78	0.48	Arch Coating	3,115.39
Cement and Mortar Mixers	1	6	9	0.56	Paving	42.65
Pavers	1	6	130	0.42	Paving	415.60
Paving Equipment	1	8	132	0.36	Paving	482.28
Rollers	1	7	80	0.38	Paving	300.12
Tractors/Loaders/Backhoes	1	8	97	0.37	Paving	404.94
Total Fuel Used						51,296.77

(Gallons)

Construction Phase	Days of Operation
Building Construction Phase	472
Architectural Coating Phase	236
Paving Phase	24

WORKER TRIPS - Construction Phase 3

Constuction Phase	MPG [2]	Trips	Trip Length (miles)	Fuel Used (gallons)
Building Phase	24.0	44	10.8	19.80
Paving Phase	24.0	13	10.8	5.85
Architectural Coating Phase	24.0	9	10.8	4.05
Total				29.70

HAULING AND VENDOR TRIPS - Construction Phase 3

Trip Class	MPG [2]	Trips	Trip Length (miles)	Fuel Used (gallons)
Vendor Trips	7.4	17	7.3	16.77
Hauling Trips	7.4	-	20.0	-
Total				16.77

Total Gasoline Consumption (gallons)	29.70
Total Diesel Consumption (gallons)	51,313.54

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. 2018. *National Transportation Statistics 2018* . Available at: <https://www.bts.gov/sites/bts.dot.gov/files/docs/browse-statistical-products-and-data/national-transportation-statistics/223001/ntsentire2018q4.pdf>.

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

Annual VMT	OR	Daily Vehicle Trips
Annual VMT: 1,730,713		Daily Vehicle Trips: Average Trip Distance:

Fleet Class	Fleet Mix	Fuel Economy (MPG)	
Light Duty Auto (LDA)	0.576985	Passenger Vehicles	24.0
Light Duty Truck 1 (LDT1)	0.039376	Light-Med Duty Trucks	17.4
Light Duty Truck 2 (LDT2)	0.193723	Heavy Trucks/Other	7.4
Medium Duty Vehicle (MDV)	0.112069	Motorcycles	43.9
Light Heavy Duty 1 (LHD1)	0.016317		
Light Heavy Duty 2 (LHD2)	0.005358		
Medium Heavy Duty (MHD)	0.017943		
Heavy Heavy Duty (HHD)	0.025814		
Other Bus (OBUS)	0.002614		
Urban Bus (UBUS)	0.002274		
School Bus (SBUS)	0.000887		
Motorhome (MH)	0.000768		
Motorcycle (MCY)	0.005874		

Fleet Mix					
Vehicle Type	Percent	Fuel Type	Annual VMT: VMT	Vehicle Trips: VMT	Fuel Consumption (Gallons)
Passenger Vehicles	57.70%	Gasoline	998,595	0.00	41,608.14
Light-Medium Duty Trucks	34.52%	Gasoline	597,387	0.00	34,332.57
Heavy Trucks/Other	7.20%	Diesel	124,568	0.00	16,833.52
Motorcycle	0.59%	Gasoline	10,166	0.00	231.58

Total Gasoline Consumption (gallons)	76,172.29
Total Diesel Consumption (gallons)	16,833.52

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Existing Operations

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

Annual VMT	OR	Daily Vehicle Trips
Annual VMT: 633,372		Daily Vehicle Trips: Average Trip Distance:

Fleet Class	Fleet Mix	Fuel Economy (MPG)	
Light Duty Auto (LDA)	0.576985	Passenger Vehicles	24.0
Light Duty Truck 1 (LDT1)	0.039376	Light-Med Duty Trucks	17.4
Light Duty Truck 2 (LDT2)	0.193723	Heavy Trucks/Other	7.4
Medium Duty Vehicle (MDV)	0.112069	Motorcycles	43.9
Light Heavy Duty 1 (LHD1)	0.016317		
Light Heavy Duty 2 (LHD2)	0.005358		
Medium Heavy Duty (MHD)	0.017943		
Heavy Heavy Duty (HHD)	0.025814		
Other Bus (OBUS)	0.002614		
Urban Bus (UBUS)	0.002274		
School Bus (SBUS)	0.000887		
Motorhome (MH)	0.000768		
Motorcycle (MCY)	0.005874		

Fleet Mix

Vehicle Type	Percent	Fuel Type	Annual VMT:		Fuel Consumption
			VMT	Vehicle Trips: VMT	(Gallons)
Passenger Vehicles	57.70%	Gasoline	365,446	0.00	15,226.92
Light-Medium Duty Trucks	34.52%	Gasoline	218,620	0.00	12,564.35
Heavy Trucks/Other	7.20%	Diesel	45,587	0.00	6,160.40
Motorcycle	0.59%	Gasoline	3,720	0.00	84.75

Total Gasoline Consumption (gallons)	27,876.02
Total Diesel Consumption (gallons)	6,160.40