

# Appendix H

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Energy Calculation Sheets

# AMKO Recycling Facility Project

Last Updated: 6/3/2023

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		Load Factor	Construction Phase	Fuel Used (gallons)
		Hours per Day	Horsepower			
Graders	1	8	148	0.41	Site Preparation Phase	77
Tractors/Loaders/Backhoes	1	8	84	0.37	Site Preparation Phase	44
Plate Compactors	1	8	8	0.43	Site Preparation Phase	5
Rubber Tired Dozers	1	8	367	0.4	Site Preparation Phase	186
Excavators	1	8	36	0.38	Site Preparation Phase	19
Paving Equipment	1	8	89	0.36	Site Preparation Phase	45
Scrapers	1	8	423	0.48	Site Preparation Phase	258
Graders	1	8	148	0.41	Grading Phase	154
Rubber Tired Dozers	1	6	367	0.4	Grading Phase	279
Tractors/Loaders/Backhoes	1	7	84	0.37	Grading Phase	77
Excavators	1	8	36	0.38	Grading Phase	39
Paving Equipment	1	8	89	0.36	Grading Phase	90
Rollers	1	8	36	0.38	Grading Phase	39
Skid Steer Loaders	1	8	71	0.37	Grading Phase	74
Scrapers	1	8	423	0.48	Grading Phase	515
Cranes	1	4	82	0.29	Building Construction Phase	1,548
Forklifts	1	6	82	0.2	Building Construction Phase	1,602
Cement and Mortar Mixers	1	8	10	0.56	Building Construction Phase	729
Concrete/Industrial Saws	1	8	33	0.73	Building Construction Phase	3,137
Plate Compactors	1	8	8	0.43	Building Construction Phase	448
Air Compressors	1	8	37	0.48	Building Construction Phase	2,313
Dumpers/Tenders	1	8	16	0.38	Building Construction Phase	792
Graders	1	8	148	0.41	Building Construction Phase	7,108
Paving Equipment	1	8	89	0.36	Building Construction Phase	4,172
Signal Boards	1	8	6	0.82	Building Construction Phase	641
Sweepers/Scrubbers	1	8	36	0.46	Building Construction Phase	2,156
Trenchers	1	8	40	0.5	Building Construction Phase	2,604
Welders	1	8	46	0.45	Building Construction Phase	2,696
Tractors/Loaders/Backhoes	2	8	84	0.37	Building Construction Phase	8,095
Air Compressors	1	6	37	0.48	Architectural Coating Phase	88
Pressure Washers	1	8	11	0.3	Site Preparation Phase	22
Paving Equipment	1	8	89	0.36	Site Preparation Phase	211
Pumps	1	8	11	0.74	Site Preparation Phase	54
Signal Boards	1	8	6	0.82	Paving Phase	32
Graders	1	8	148	0.41	Paving Phase	359
<b>Total Fuel Used</b>						<b>40,707</b>
						<b>(Gallons)</b>

Construction Phase	Days of Operation
Site Preparation Phase	3
Grading Phase	6
Building Construction Phase	277
Paving Phase	14
Architectural Coating Phase	14
<b>Total Days</b>	<b>314</b>

**WORKER TRIPS**

<b>Constuction Phase</b>	<b>MPG [2]</b>	<b>Trips</b>	<b>Trip Length (miles)</b>	<b>Fuel Used (gallons)</b>
Site Preparation Phase	24.1	20	13.4	33.36
Grading Phase	24.1	20	13.4	66.72
Building Construction Phase	24.1	10	13.4	1466.24
Paving Phase	24.1	13	13.4	97.30
Architectural Coating Phase	24.1	2	13.4	14.79
<b>Total Fuel Used</b>				<b>1,678.41</b>

**HAULING AND VENDOR TRIPS**

<b>Trip Class</b>	<b>MPG [2]</b>	<b>Trips</b>	<b>Trip Length (miles)</b>	<b>Fuel Used (gallons)</b>
<b>HAULING TRIPS</b>				
Site Preparation Phase	7.5	20	20.0	52.00
Grading Phase	7.5	0	20.0	0.00
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 Fuel Used</b>				<b>52.00</b>
<b>VENDOR TRIPS</b>				
Site Preparation Phase	7.5	0	10.2	0.00
Grading Phase	7.5	0	10.2	0.00
Building Construction Phase	7.5	4	8.3	1141.40
Paving Phase	7.5	0	10.2	0.00
Architectural Coating Phase	7.5	0	10.2	0.00
<b>Total Fuel Used</b>				<b>1,141.40</b>

<b>Total Gasoline Consumption (gallons)</b>	<b>1,678</b>
<b>Total Diesel Consumption (gallons)</b>	<b>41,900</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>.

# AMKO Recycling Facility Project

Last Updated: 6/2/2023

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

Annual VMT		OR	Daily Vehicle Trips	
Annual VMT:	478,927		Daily Vehicle Trips:	
		Average Trip Distance:		

Fleet Class	Fleet Mix	Fuel Economy (MPG) [1]	
Light Duty Auto (LDA)	0.641791	Passenger Vehicles	24.1
Light Duty Truck 1 (LDT1)	0.000000	Light-Med Duty Trucks	17.6
Light Duty Truck 2 (LDT2)	0.000000	Heavy Trucks/Other	7.5
Medium Duty Vehicle (MDV)	0.000000	Motorcycles	44
Light Heavy Duty 1 (LHD1)	0.000000		
Light Heavy Duty 2 (LHD2)	0.000000		
Medium Heavy Duty (MHD)	0.104478		
Heavy Heavy Duty (HHD)	0.253731		
Other Bus (OBUS)	0.000000		
Urban Bus (UBUS)	0.000000		
Motorcycle (MCY)	0.000000		
School Bus (SBUS)	0.000000		
Motorhome (MH)	0.000000		

## Fleet Mix

Vehicle Type	Percent	Fuel Type	Annual VMT:		Fuel Consumption (Gallons)
			VMT	Vehicle Trips: VMT	
Passenger Vehicles	64.18%	Gasoline	307,371	0.00	12,754
Light-Medium Duty Trucks	0.00%	Gasoline	0	0.00	0
Heavy Trucks/Other	35.82%	Diesel	171,556	0.00	22,874
Motorcycle	0.00%	Gasoline	0	0.00	0

<b>Total Gasoline Consumption (gallons)</b>	<b>12,754</b>
<b>Total Diesel Consumption (gallons)</b>	<b>22,874</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>.