

APPENDIX 4.14

Construction Diesel and Petroleum Fuel Consumption Tables

**Table 4.14-1
Off-Road Construction Equipment Diesel Fuel Consumption - Heller Site**

Phase	Equipment Type	Units	Hours	Horse Power	Load Factor	Number of Days	Fuel Usage/ HP/hr	Diesel Usage (in gallons)	
Demolition	Air Compressors	5	4.8	78	0.48	80	0.05	3594	
	Generator Sets	1	4.8	84	0.74	80	0.05	1193	
	Excavators	2	4.8	158	0.38	80	0.05	2306	
	Rubber Tired Loaders	2	4.8	203	0.36	80	0.05	2806	
	Signal Boards	1	8	6	0.82	80	0.05	157	
	Sweepers/Scrubbers	1	4.8	64	0.46	80	0.05	565	
Site Preparation	Crawler Tractors	2	5.6	212	0.43	10	0.05	510	
	Excavators	2	5.6	158	0.38	10	0.05	336	
	Generator Sets	1	5.6	84	0.74	10	0.05	174	
	Graders	1	5.6	187	0.41	10	0.05	215	
	Off-highway Tractors	1	5.6	124	0.44	10	0.05	153	
	Off-highway Trucks	1	5.6	402	0.38	10	0.05	428	
	Pumps	1	5.6	84	0.74	10	0.05	174	
	Rubber Tired Loaders	1	5.6	203	0.36	10	0.05	205	
	Scrapers	1	5.6	367	0.48	10	0.05	493	
	Signal Boards	2	5.6	6	0.82	10	0.05	28	
	Skid Steer Loaders	1	5.6	65	0.37	10	0.05	67	
	Sweepers/Scrubbers	1	5.6	64	0.46	10	0.05	82	
	Grading	Excavators	4	5.60	158	0.38	13	0.05	874
		Graders	3	5.60	187	0.41	13	0.05	837
Rubber Tired Dozers		2	5.60	247	0.40	13	0.05	719	
Scrapers		3	5.60	367	0.48	13	0.05	1924	
Crawler Tractors		4	5.60	212	0.43	13	0.05	1327	
Generator Sets		1	5.60	84	0.74	13	0.05	226	
Off-Highway Tractors		2	5.60	124	0.44	13	0.05	397	
Off-Highway Trucks		2	5.60	402	0.38	13	0.05	1112	
Plate Compactors		6	5.60	8	0.43	13	0.05	75	
Pumps		2	5.60	84	0.74	13	0.05	453	
Rollers		2	5.60	80	0.38	13	0.05	221	
Rough Terrain Forklifts		1	5.60	100	0.40	13	0.05	146	
Rubber Tired Loaders		3	5.60	203	0.36	13	0.05	798	
Scrapers		3	5.60	367	0.48	13	0.05	1924	
Signal Boards		6	8.00	6	0.82	13	0.05	154	
Skid Steer Loaders		2	5.60	65	0.37	13	0.05	175	
Sweepers/Scrubbers		2	5.60	64	0.46	13	0.05	214	
Building Construction	Cranes	3	3.20	231	0.29	660	0.05	21222	
	Forklifts	2	3.20	89	0.20	660	0.05	3759	

Phase	Equipment Type	Units	Hours	Horse Power	Load Factor	Number of Days	Fuel Usage/ HP/hr	Diesel Usage (in gallons)
	Generator Sets	4	3.20	84	0.74	660	0.05	26256
	Aerial Lifts	12	3.20	63	0.31	660	0.05	24748
	Air Compressors	6	3.20	78	0.48	660	0.05	23722
	Concrete/Industrial Saws	4	3.20	81	0.73	660	0.05	24977
	Other Construction Equipment	6	3.20	172	0.42	660	0.05	45771
	Pressure Washers	1	3.20	13	0.30	660	0.05	412
	Pumps	2	3.20	84	0.74	660	0.05	13128
	Rough Terrain Forklifts	4	3.20	100	0.40	660	0.05	16896
	Signal Boards	4	8.00	6	0.82	660	0.05	5196
	Skid Steer Loaders	2	3.20	65	0.37	660	0.05	5079
	Sweepers/Scrubbers	1	3.20	64	0.46	660	0.05	3109
Paving	Pavers	1	5.60	130	0.42	15	0.05	229
	Paving Equipment	1	5.60	132	0.36	15	0.05	200
	Rollers	2	5.60	80	0.38	15	0.05	255
	Plate Compactors	2	5.60	8	0.43	15	0.05	29
	Rubber Tired Loaders	2	5.60	203	0.36	15	0.05	614
	Signal Boards	2	8.00	6	0.82	15	0.05	59
	Skid Steer Loaders	2	5.60	65	0.37	15	0.05	202
	Sweepers/Scrubbers	1	5.60	64	0.46	15	0.05	124
	Graders	2	5.6	187	0.41	15	0.05	644
Architectural Coating	Aerial Lifts	8	1.20	63	0.31	63	0.05	591
	Air Compressors	2	1.20	78	0.48	63	0.05	283
	Cement and Mortar Mixers	6	1.20	9	0.56	63	0.05	114
	Cranes	1	1.20	231	0.29	63	0.05	253
	Generator Sets	2	1.20	84	0.74	63	0.05	470
	Other Construction Equipment	2	1.20	172	0.42	63	0.05	546
	Pressure Washers	1	1.20	13	0.30	63	0.05	15
	Rough Terrain Forklifts	2	1.20	100	0.40	63	0.05	302
Heller Site Total								244,270
<hr/> <i>Source: Construction Schedule in Appendix 4.2; Illingworth and Rodkin, 2018.</i>								

**Table 4.14-2
Off-Road Construction Equipment Diesel Fuel Consumption - Hagar Site**

Phase	Equipment Type	Units	Hours	Horse Power	Load Factor	Number of Days	Fuel Usage/ HP/hr	Diesel Usage (in gallons)
Residential								
Site Preparation	Crawler Tractors	1	5.60	212	0.43	10	0.05	255
	Air Compressors	1	5.6	78	0.48	10	0.05	105
	Concrete Industrial Saws	1	5.60	81	0.73	10	0.05	166
	Excavators	1	5.60	158	0.38	10	0.05	168
	Generator Sets	1	5.60	84	0.74	10	0.05	174
	Off-Highway Tractors	1	5.60	124	0.44	10	0.05	153
	Rough Terrain Forklifts	1	5.60	100	0.40	10	0.05	112
	Scrapers	1	5.60	367	0.48	10	0.05	493
	Signal Boards	2	5.60	6	0.82	10	0.05	28
	Skid Steer Loaders	1	5.60	65	0.37	10	0.05	67
	Sweepers/Scrubbers	1	5.60	64	0.46	10	0.05	82
	Rubber Tired Loaders	1	5.60	203	0.36	10	0.05	205
Grading	Crawler Tractors	1	5.60	212	0.43	40	0.05	1021
	Excavators	2	5.60	158	0.38	40	0.05	1345
	Generator Sets	1	5.60	84	0.74	40	0.05	696
	Graders	2	5.60	187	0.41	40	0.05	1717
	Off-Highway Tractors	2	5.60	124	0.44	40	0.05	1222
	Plate Compactors	2	5.60	8	0.43	40	0.05	77
	Rollers	2	5.60	80	0.38	40	0.05	681
	Rubber Tired Loaders	2	5.60	203	0.36	40	0.05	1637
	Scrapers	2	5.60	367	0.48	40	0.05	3946
	Signal Boards	2	5.60	6	0.82	40	0.05	110
	Skid Steer Loaders	1	5.60	65	0.37	40	0.05	269
	Sweepers/Scrubbers	1	5.60	64	0.46	40	0.05	330
Building Construction	Aerial Lifts	4	3.20	63	0.31	220	0.05	2750
	Air Compressors	1	3.20	78	0.48	220	0.05	1318
	Cranes	2	3.20	231	0.29	220	0.05	4716
	Generator Sets	1	3.20	84	0.74	220	0.05	2188
	Rough Terrain Forklifts	2	3.20	100	0.40	220	0.05	2816
	Sweepers/Scrubbers	1	3.20	64	0.46	220	0.05	1036
Paving	Pavers	1	5.60	130	0.42	5	0.05	76
	Paving Equipment	1	5.60	132	0.36	5	0.05	67
	Plate Compactors	2	5.60	8	0.43	5	0.05	10
	Rollers	2	5.60	80	0.38	5	0.05	85
	Rubber Tired Loaders	1	5.60	203	0.36	5	0.05	102

Phase	Equipment Type	Units	Hours	Horse Power	Load Factor	Number of Days	Fuel Usage/ HP/hr	Diesel Usage (in gallons)
	Signal Boards	2	5.60	6	0.82	5	0.05	14
	Skid Steer Loaders	1	5.60	65	0.37	5	0.05	34
	Sweepers/Scrubbers	1	5.60	64	0.46	5	0.05	41
Architectural Coating	Aerial Lifts	1	1.20	63	0.31	180	0.05	211
Daycare Center								
Site Preparation	Crawler Tractors	1	5.60	212	0.43	5	0.05	128
	Air Compressors	1	5.6	78	0.48	5	0.05	52
	Excavators	1	5.60	158	0.38	5	0.05	84
	Generator Sets	1	5.60	84	0.74	5	0.05	87
	Off-Highway Tractors	1	5.60	124	0.44	5	0.05	76
	Scrapers	1	5.60	367	0.48	5	0.05	247
	Signal Boards	2	5.60	6	0.82	5	0.05	14
	Skid Steer Loaders	1	5.60	65	0.37	5	0.05	34
	Sweepers/Scrubbers	1	5.60	64	0.46	5	0.05	41
Grading	Crawler Tractors	1	5.60	212	0.43	15	0.05	383
	Excavators	2	5.60	158	0.38	15	0.05	504
	Generator Sets	1	5.60	84	0.74	15	0.05	261
	Graders	2	5.60	187	0.41	15	0.05	644
	Off-Highway Tractors	2	5.60	124	0.44	15	0.05	458
	Plate Compactors	2	5.60	8	0.43	15	0.05	29
	Rollers	2	5.60	80	0.38	15	0.05	255
	Rubber Tired Loaders	2	5.60	203	0.36	15	0.05	614
	Scrapers	2	5.60	367	0.48	15	0.05	1480
	Signal Boards	2	5.60	6	0.82	15	0.05	41
	Skid Steer Loaders	1	5.60	65	0.37	15	0.05	101
	Sweepers/Scrubbers	1	5.60	64	0.46	15	0.05	124
Building Construction	Air Compressors	1	3.20	78	0.48	160	0.05	958
	Cranes	2	3.20	231	0.29	160	0.05	3430
	Generator Sets	1	3.20	84	0.74	160	0.05	1591
	Aerial Lifts	4	3.20	63	0.31	160	0.05	2000
	Rough Terrain Forks	2	3.20	100	0.40	160	0.05	2048
	Sweepers/Scrubbers	1	3.20	64	0.46	160	0.05	754
Paving	Pavers	1	5.60	130	0.42	5	0.05	76
	Paving Equipment	1	5.60	132	0.36	5	0.05	67
	Plate Compactors	2	5.60	8	0.43	5	0.05	10
	Rollers	2	5.60	80	0.38	5	0.05	85
	Signal Boards	2	5.60	6	0.82	5	0.05	14
	Skid Steer Loaders	1	5.60	65	0.37	5	0.05	34
	Sweepers/Scrubbers	1	5.60	64	0.46	5	0.05	41

Phase	Equipment Type	Units	Hours	Horse Power	Load Factor	Number of Days	Fuel Usage/ HP/hr	Diesel Usage (in gallons)
Architectural Coating	Aerial Lifts	1	1.20	63	0.31	130	0.05	152
Hagar Site Total								47,441
<i>Source: Construction Schedule in Appendix 4.2; Illingworth and Rodkin, 2018.</i>								

**Table 4.14-3
Construction Period Petroleum Fuel Consumption – Heller Site**

Phase	Number of Daily Trips	Number of Days	Average Round-Trip Commute Distance (in miles)	Fuel Usage (mpg) ^a	Gasoline/Diesel Usage (in gallons)
Worker Trips (Gasoline)					
Demolition	12	80	10.8	18.6	557
Site Preparation	38	10	10.8	18.6	221
Grading	120	13	10.8	18.6	906
Building Construction	756	660	10.8	18.6	289,719
Paving	38	15	10.8	18.6	331
Architectural Coating	151	63	10.8	18.6	5524
Total Gasoline Usage					297,257
Vendor Trips (Diesel)					
Building Construction	121	660	7.30	6.5	89,689
Hauling Trips (Diesel)					
Demolition	1,086 ^b	--	20	6.5	3342
Grading	1,250 ^b	--	20	6.5	3846
Total Diesel Usage					7,188
<i>Source: CalEEMod Model Data; Illingworth & Rodkin 2018</i>					
<i>Notes:</i>					
<i>mpg – miles per gallon</i>					
<i>a. This is a conservatively estimated total, as it assumes no electric, hybrid or other alternate fuel use vehicles in the fleet mix.</i>					
<i>b. Total number of haul trips for entire phase</i>					

**Table 4.14-4
Construction Period Petroleum Fuel Consumption – Hagar Site**

Phase	Number of Daily Trips	Number of Days	Average Round-Trip Commute Distance (in miles)	Fuel Usage (mpg) ^a	Gasoline/Diesel Usage (in gallons)
Residential					
Worker Trips (Gasoline)					
Site Preparation	33	10	10.80	18.6	192
Grading	50	40	10.80	18.6	1161
Building Construction	127	220	10.80	18.6	16223
Paving	25	5	10.80	18.6	73
Architectural Coating	28	180	10.80	18.6	2926
Total Gasoline Usage					20,575
Vendor Trips (Diesel)					
Building Construction	25	220	7.3	6.5	6,177
Hauling Trips (Diesel)					
Grading	2,125 ^b	--	20	6.5	6,538
Total Diesel Usage					12,715
Daycare					
Worker Trips (Gasoline)					
Site Preparation	28	5	10.80	18.6	81
Grading	50	15	10.80	18.6	435
Building Construction	14	160	10.80	18.6	1301
Paving	25	5	10.80	18.6	73
Architectural Coating	9	130	10.80	18.6	679
Total Gasoline Usage					2,569
Vendor Trips (Diesel)					
Building Construction	5	160	7.3	6.5	898
Total Diesel Usage					898
<p>Source: CalEEMod Model Data; Illingworth & Rodkin 2018</p> <p>Notes:</p> <p>mpg – miles per gallon</p> <p>a. This is a conservatively estimated total, as it assumes no electric, hybrid or other alternate fuel use vehicles in the fleet mix.</p> <p>b. Total number of haul trips for entire phase</p>					