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SUBJECT: SIMPSON ROAD WAREHOUSE ENERGY TABLES

The following Energy Tables were prepared for the proposed Simpson Road Warehouse development (referred to as "Project") which is in the western portion of the City of Hemet at the intersection of Warren Road and Simpson Road.

CONSTRUCTION EQUIPMENT ELECTRICITY USAGE ESTIMATES

Based on the *2023 National Construction Estimator* (1), the typical power cost per 1,000 square feet of building construction per month is estimated to be $2.50. The Project consists of the development of two new speculative industrial buildings totaling approximately 1,192,418 sf, a trailer parking lot, and related improvements. Table 1 estimates the total power cost of the on-site electricity usage during the construction of the proposed Project to be approximately $115,147.85.

TABLE 1: PROJECT CONSTRUCTION POWER COST

Land Use	Power Cost (per 1,000 SF)	Size (1,000 SF)	Construction Duration (months)	Project Construction Power Cost
Project Construction				
Building 1	$2.50	883.080	14	$30,907.80
Building 2	$2.50	309.338	14	$10,826.83
Landscape	$2.50	483.977	14	$16,939.20
Parking	$2.50	462.114	14	$16,173.99
Other Asphalt Surfaces	$2.50	1,038.920	14	$36,362.20
Off-Site Construction				
Off-Site Infrastructure and Improvements	$2.50	196.891	8	$3,937.82
			CONSTRUCTION POWER COST	***$115,147.85***

Electricity would be provided to the Project by Southern California Edison (SCE). The SCE general service rate schedule was used to determine the Project's electrical usage. As of October 1, 2023, SCE's general

service rate is $0.13 per kilowatt hours (kWh) of electricity for general services (2), the total electricity usage from on-site Project construction related activities is estimated to be approximately 894,494 kWh.

TABLE 2: PROJECT CONSTRUCTION ELECTRICITY USAGE

Land Use	Cost per kWh	Project Construction Electricity Usage (kWh)
Project Construction		
Building 1	$0.13	240,182
Building 2	$0.13	84,134
Landscape	$0.13	131,633
Parking	$0.13	125,687
Other Asphalt Surfaces	$0.13	282,568
Off-Site Construction		
Off-Site Infrastructure and Improvements	$0.13	30,291
CONSTRUCTION ELECTRICITY USAGE		***894,494***

CONSTRUCTION EQUIPMENT FUEL ESTIMATES

Fuel consumption estimates are presented in Table 3. The aggregate fuel consumption rate for all equipment is estimated at 18.5 hp-hr-gal., obtained from California Air Resources Board (CARB) 2018 Emissions Factors Tables and cited fuel consumption rate factors presented in Table D-24 of the Moyer guidelines (3). For the purposes of this analysis, the calculations are based on all construction equipment being diesel-powered which is standard practice consistent with industry standards. Diesel fuel would be supplied by existing commercial fuel providers serving the City and region. As presented in Table 3, Project construction activities would consume an estimated 146,442 gallons of diesel fuel over the course of the Project construction period.

TABLE 3: CONSTRUCTION EQUIPMENT FUEL CONSUMPTION ESTIMATES (1 OF 3)

Construction Activity	Duration (Days)	Equipment	HP Rating	Quantity	Usage Hours	Load Factor	HP-hrs/day	Total Fuel Consumption
Project Construction								
Site Preparation	15	Rubber Tired Dozers	367	4	8	0.40	4,698	3,809
		Crawler Tractors	87	4	8	0.43	1,197	971
Grading	50	Excavators	36	6	8	0.38	657	1,775
		Graders	148	6	8	0.41	2,913	7,872
		Rubber Tired Dozers	367	6	8	0.40	7,046	19,044
		Scrapers	423	6	8	0.48	9,746	26,340
		Crawler Tractors	87	6	8	0.43	1,796	4,853
Building Construction	186	Cranes	367	2	8	0.29	1,703	17,121
		Forklifts	82	4	8	0.20	525	5,276
		Generator Sets	14	1	8	0.74	83	833
		Tractors/Loaders/Backhoes	84	6	8	0.37	1,492	14,999
		Welders	46	1	8	0.45	166	1,665
Architectural Coating	33	Air Compressors	37	4	8	0.48	568	1,014

TABLE 3: CONSTRUCTION EQUIPMENT FUEL CONSUMPTION ESTIMATES (2 OF 3)

Construction Activity	Duration (Days)	Equipment	HP Rating	Quantity	Usage Hours	Load Factor	HP-hrs/day	Total Fuel Consumption
Off-Site Construction								
Grubbing/Clearing	4	Rubber Tired Dozers	247	4	8	0.40	3,162	684
		Crawler Tractors	97	4	8	0.37	1,148	248
		Excavators	187	4	8	0.41	2,453	530
		Signal Boards	6	3	8	0.82	118	26
Grading	6	Crawler Tractors	158	2	8	0.38	961	312
		Excavators	187	2	8	0.41	1,227	398
		Graders	247	2	8	0.40	1,581	513
		Rollers	80	6	8	0.38	1,459	473
		Rubber Tired Loaders	247	3	8	0.40	2,371	769
		Scrapers	367	2	8	0.48	2,819	914
		Signal Boards	6	8	8	0.82	315	102
		Tractors/Loaders/Backhoes	97	4	8	0.37	1,148	372
Drainage/Utilities	164	Air Compressors	78	2	8	0.48	599	5,310
		Generator Sets	84	2	8	0.74	995	8,817
		Plate Compactors	8	2	8	0.43	55	488
		Pumps	84	2	8	0.74	995	8,817
		Tractors/Loaders/Backhoes	97	2	8	0.37	574	5,091

TABLE 3: CONSTRUCTION EQUIPMENT FUEL CONSUMPTION ESTIMATES (3 OF 3)

Construction Activity	Duration (Days)	Equipment	HP Rating	Quantity	Usage Hours	Load Factor	HP-hrs/day	Total Fuel Consumption
Off-Site Construction								
Paving	12	Pavers	130	2	8	0.42	874	567
		Paving Equipment	132	2	8	0.36	760	493
		Rollers	80	4	8	0.38	973	631
		Rubber Tired Dozers	367	2	8	0.40	7,046	4,571
		Tractors/Loaders/Backhoes	97	4	8	0.37	1,148	745
CONSTRUCTION FUEL DEMAND (GALLONS FUEL)								***146,442***

CONSTRUCTION WORKER FUEL ESTIMATES

It is assumed that all construction worker trips are from light duty autos (LDA) along area roadways. Data regarding Project related construction worker trips were based on CalEEMod 2022.1.1.20 defaults utilized within the AQIA. Vehicle fuel efficiencies for LDAs were estimated using information generated within the 2021 version of the EMFAC developed by the CARB.

Table 4 provides an estimated annual fuel consumption resulting from the Project generated by LDAs related to construction worker trips. Based on Table 4, it is estimated that 65,735 gallons of fuel will be consumed related to construction worker trips over the course of the Project construction period.

TABLE 4: CONSTRUCTION WORKER FUEL CONSUMPTION ESTIMATES (1 OF 2)

Year	Construction Activity	Duration (Days)	Worker Trips/Day	Trip Length (miles)	VMT	Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption (gallons)
Project Construction							
2025	LDA						
	Site Preparation	15	10	18.5	2,775	32.49	85
	Grading	50	38	18.5	35,150	32.49	1,082
	Building Construction	108	251	18.5	501,498	32.49	15,435
	LDT1						
	Site Preparation	15	5	18.5	1,388	25.14	55
	Grading	50	19	18.5	17,575	25.14	699
	Building Construction	108	126	18.5	251,748	25.14	10,014
	LDT2						
	Site Preparation	15	5	18.5	1,388	25.29	55
	Grading	50	19	18.5	17,575	25.29	695
	Building Construction	108	126	18.5	251,748	25.29	9,954
2026	LDA						
	Building Construction	78	251	18.5	362,193	33.43	10,833
	Architectural Coating	33	50	18.5	30,525	33.43	913

TABLE 4: CONSTRUCTION WORKER FUEL CONSUMPTION ESTIMATES (2 OF 2)

Year	Construction Activity	Duration (Days)	Worker Trips/Day	Trip Length (miles)	VMT	Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption (gallons)
Project Construction							
2026	LDT1						
	Building Construction	78	126	18.5	181,818	25.70	7,074
	Architectural Coating	33	25	18.5	15,263	25.70	594
	LDT2						
	Building Construction	78	126	18.5	181,818	26.01	6,991
	Architectural Coating	33	25	18.5	15,263	26.01	587
Off-Site Construction							
2025	LDA						
	Grubbing/Clearing	4	19	18.5	1,406	32.49	43
	Grading	6	37	18.5	4,107	32.49	126
	LDT1						
	Grubbing/Clearing	4	10	18.5	740	25.14	29
	Grading	6	19	18.5	2,109	25.14	84
	LDT2						
	Grubbing/Clearing	4	10	18.5	740	25.29	29
	Grading	6	19	18.5	2,109	25.29	83
2026	LDA						
	Paving	12	18	18.5	3,996	33.43	120
	LDT1						
	Paving	12	9	18.5	1,998	25.70	78
	LDT2						
	Paving	12	9	18.5	1,998	26.01	77
TOTAL CONSTRUCTION WORKER FUEL CONSUMPTION							***65,735***

CONSTRUCTION VENDOR FUEL ESTIMATES

It is assumed that 50% of all vendor trips are from Medium-Heavy-Duty-Trucks (MHDT) and 50% are from Heavy-Heavy-Duty Trucks (HHDT). These assumptions are consistent with the CalEEMod 2022.1.1.20 defaults utilized within the within the AQIA. Vehicle fuel efficiencies for MHDTs and HHDTs were estimated using information generated within EMFAC2021.

Table 5 shows the estimated fuel economy of MHDTs and HHDTs accessing the Project site. Based on Table 5, fuel consumption from construction trips will total approximately 73,822 gallons over the course of the Project construction period.

TABLE 5: CONSTRUCTION VENDOR FUEL CONSUMPTION ESTIMATES

Year	Construction Activity	Duration (Days)	Vendor Trips/Day	Trip Length (miles)	VMT	Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption (gallons)
2025	MHDT						
	Site Preparation	15	5	10.2	765	8.58	89
	Grading	50	16	10.2	8,160	8.58	951
	Building Construction	108	59	10.2	64,994	8.58	7,574
	HHDT (Vendor)						
	Site Preparation	15	5	10.2	765	6.22	123
	Grading	50	16	10.2	8,160	6.22	1,312
	Building Construction	108	59	10.2	64,994	6.22	10,453
	HHDT (Hauling)						
	Grading	50	241	20	241,000	6.22	38,761
2026	MHDT						
	Building Construction	78	59	10.2	46,940	8.71	5,392
	Architectural Coating	33	19	10.2	6,395	8.71	735
	HHDT (Vendor)						
	Building Construction	78	59	10.2	46,940	6.33	7,420
	Architectural Coating	33	19	10.2	6,395	6.33	1,011
TOTAL CONSTRUCTION VENDOR FUEL CONSUMPTION							***73,822***

TRANSPORTATION ENERGY DEMANDS

Energy that would be consumed by Project-generated traffic is a function of total VMT and estimated vehicle fuel economies of vehicles accessing the Project site. Table 6 presents the estimated annual fuel consumption from project-generated traffic.

TABLE 6: PROJECT-GENERATED TRAFFIC ANNUAL FUEL CONSUMPTION

Vehicle Type	Annual VMT	Average Vehicle Fuel Economy (mpg)	Estimated Annual Fuel Consumption (gallons)
LDA	5,975,835	33.43	178,736
LDT1	457,889	25.70	17,815
LDT2	2,467,942	26.01	94,889
MDV	1,906,946	20.88	91,330
LHDT1	1,178,094	16.89	69,735
LHDT2	335,739	16.01	20,974
MHDT	1,095,836	8.71	125,878
HHDT	1,057,715	6.33	167,202
MCY	278,281	42.07	6,615
TOTAL (ALL VEHICLES)	***14,754,276***		***773,174***

STATIONARY SOURCE ENERGY DEMANDS

Fuel consumption estimates from stationary sources are presented in Table 7. The proposed Project was conservatively assumed to include installation of a 238-horsepower diesel-powered fire pump which is estimated to operate for up to 1 hour per day, 1 day per week for up to 50 hours per year for maintenance and testing purposes. As presented in Table 8, Project stationary sources would consume an estimated 3,428 gallons of diesel fuel.

TABLE 7: STATIONARY SOURCE EQUIPMENT FUEL CONSUMPTION ESTIMATES

Equipment	HP Rating	Quantity	Usage Hours	Annual Hourly Usage	Load Factor	HP-hrs/day	Total Fuel Consumption
Fire Pump	238	1	1	50	0.73	174	3,428
STATIONARY SOURCE FUEL DEMAND (GALLONS DIESEL FUEL)							***3,428***

ON-SITE CARGO HANDLING EQUIPMENT FUEL DEMANDS

It is common for industrial buildings to require the operation of exterior cargo handling equipment in the building's truck court areas. For this particular Project, on-site modeled operational equipment

includes up to four (4) 175 horsepower (hp), natural gas-powered cargo handling equipment – port tractors operating at 4 hours a day[1] for 365 days of the year.

Project operational activity estimates and associated fuel consumption estimates are based on the annual EMFAC2021 offroad emissions for the 2026 operational year and was used to derive the total annual fuel consumption associated on-site equipment. As presented in Table 8, Project on-site equipment would consume an estimated 18,568 gallons of natural gas.

TABLE 8: ON-SITE CARGO HANDLING EQUIPMENT FUEL CONSUMPTION ESTIMATES

Equipment	Quantity	Usage Hours	Days of Operation	EMFAC2021 Fuel Consumption (gal./yr)	EMFAC2021 Activity (hrs./yr)	Total Fuel Consumption
Cargo Handling Equipment	4	4	365	18,742	5,895	18,568
ON-SITE CARGO HANDLING EQUIPMENT FUEL DEMAND (GALLONS FUEL)						***18,568***

FACILITY ENERGY DEMANDS

Project building operations and Project site maintenance activities would result in the consumption of natural gas and electricity. Natural gas would be supplied to the Project by Southern California Gas (SoCalGas) and electricity would be supplied to the Project by SCE. Annual natural gas and electricity demands of the Project are summarized in Table 9.

TABLE 9: PROJECT ANNUAL OPERATIONAL NATURAL GAS AND ELECTRICITY DEMAND SUMMARY

Land Use	Natural Gas Demand (kBTU/year)	Electricity Demand (kWh/year)
Building 1	0	4,064,244
Building 2	0	1,423,682
Landscape	0	0
Parking	0	404,862
Other Asphalt Surfaces	0	0
TOTAL PROJECT ENERGY DEMAND	***0***	***5,892,788***

[1] Based on Table II-3, Port and Rail Cargo Handling Equipment Demographics by Type, from CARB's Technology Assessment: Mobile Cargo Handling Equipment document, a single piece of equipment could operate up to 2 hours per day (Total Average Annual Activity divided by Total Number Pieces of Equipment). As such, the analysis conservatively assumes that the tractor/loader/backhoe would operate up to 4 hours per day.

REFERENCES

1. **Pray, Richard.** *2021 National Construction Estimator.* Carlsbad : Craftsman Book Company, 2021.
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