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SUBJECT: PACIFIC POINTE WEST ENERGY TABLES

The following Energy Tables were prepared for the proposed Pacific Pointe West development (referred to as “Project”) which is located in the City of Lakewood.

CONSTRUCTION EQUIPMENT ELECTRICITY USAGE ESTIMATES

Based on the *2022 National Construction Estimator* (1), the typical power cost per 1,000 square feet of building construction per month is estimated to be \$2.41. The Project is proposed to consist of up to 37,500 square feet (sf) of high-cube cold storage warehouse use (10 percent [%] of total square footage), 18,750 sf of general light industrial use (5% of total square footage), and 318,750 sf of warehousing use (85% of the total square footage) for a total of 375,000 sf within two buildings (Buildings 26 and 27). Table 1 estimates the total power cost of the on-site electricity usage during the construction of the proposed Project to be approximately \$43,372.91.

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
General Light Industrial (5%)	\$2.41	18.750	20	\$903.75
Warehousing (85%)	\$2.41	318.750	20	\$15,363.75
High-Cube Cold Storage (10%)	\$2.41	37.500	20	\$1,807.50
Parking Lot	\$2.41	247.600	20	\$11,934.32
Other Asphalt Surfaces	\$2.41	277.253	20	\$13,363.59
CONSTRUCTION POWER COST				\$43,372.91

Electricity would be provided to the Project by Southern California Edison (SCE). The SCE general service rate schedule were used to determine the Project’s electrical usage. As of January 1, 2021, SCE’s general service rate is \$0.13 per kilowatt hours (kWh) of electricity for industrial services (2), the total electricity usage from on-site Project construction related activities is estimated to be approximately 329,281 kWh.

Per the 2019 California Energy Code section 110.10 B., Low-rise and High-rise Multifamily Buildings, Hotel/Motel Occupancies, and Nonresidential Buildings are required to have a solar zone, a portion of

roof designated for future installation of solar electric or solar thermal system. The solar zone must be within 250 feet of the building or on covered parking installed within the Project building area and be no less than of 15% of the total roof area excluding skylight area.

TABLE 2: PROJECT CONSTRUCTION ELECTRICITY USAGE

Land Use	Cost per kWh	Project Construction Electricity Usage (kWh)
General Light Industrial (5%)	\$0.13	6,861
Warehousing (85%)	\$0.13	116,639
High-Cube Cold Storage (10%)	\$0.13	13,722
Parking Lot	\$0.13	90,604
Other Asphalt Surfaces	\$0.13	101,455
CONSTRUCTION ELECTRICITY USAGE		329,281

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 76,677 gallons of diesel fuel over the course of the Project construction period, approximately 20 months.

TABLE 3: CONSTRUCTION EQUIPMENT FUEL CONSUMPTION ESTIMATES

Construction Activity	Duration (Days)	Equipment	HP Rating	Quantity	Usage Hours	Load Factor	HP-hrs/day	Total Fuel Consumption
Demolition	30	Concrete/Industrial Saws	81	1	8	0.73	473	767
		Excavators	158	3	8	0.38	1,441	2,337
		Rubber Tired Dozers	247	2	8	0.40	1,581	2,563
Site Preparation	15	Crawler Tractors	212	4	8	0.43	2,917	2,365
		Rubber Tired Dozers	247	3	8	0.40	2,371	1,923
Grading	35	Crawler Tractors	212	2	8	0.43	1,459	2,759
		Excavators	158	2	8	0.38	961	1,817
		Graders	187	1	8	0.41	613	1,160
		Rubber Tired Dozers	247	1	8	0.40	790	1,495
		Scrapers	367	2	8	0.48	2,819	5,332
Building Construction	370	Cranes	231	1	8	0.29	536	10,718
		Forklifts	89	3	8	0.20	427	8,544
		Generator Sets	84	1	8	0.74	497	9,946
		Tractors/Loaders/Backhoes	97	3	8	0.37	861	17,227
		Welders	46	1	8	0.45	166	3,312
Paving	30	Pavers	130	2	8	0.42	874	1,417
		Paving Equipment	132	2	8	0.36	760	1,233
		Rollers	80	2	8	0.38	486	789
Architectural Coating	60	Air Compressors	78	1	8	0.48	300	971
CONSTRUCTION FUEL DEMAND (GALLONS DIESEL FUEL)								76,677

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 2020.4.0 model defaults utilized within the AQIA. Vehicle fuel efficiencies for LDAs were estimated using information generated within the 2017 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 75,473 gallons of fuel will be consumed related to construction worker trips over the course of the Project construction period, approximately 20 months .

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)
2022	LDA						
	Demolition	30	8	14.7	3,528	31.02	114
	Site Preparation	15	9	14.7	1,985	31.02	64
	Grading	35	10	14.7	5,145	31.02	166
	Building Construction	115	189	14.7	319,505	31.02	10,299
	LDT1						
	Demolition	30	4	14.7	1,764	26.34	67
	Site Preparation	15	5	14.7	1,103	26.34	42
	Grading	35	5	14.7	2,573	26.34	98
	Building Construction	115	95	14.7	160,598	26.34	6,098
	LDT2						
	Demolition	30	4	14.7	1,764	24.60	72
	Site Preparation	15	5	14.7	1,103	24.60	45
	Grading	35	5	14.7	2,573	24.60	105
	Building Construction	115	95	14.7	160,598	24.60	6,529
2023	LDA						
	Building Construction	255	189	14.7	708,467	32.02	22,129
	Paving	30	8	14.7	3,528	32.02	110
	Architectural Coating	60	38	14.7	33,516	32.02	1,047

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)
2023	LDT1						
	Building Construction	255	95	14.7	356,108	27.10	13,139
	Paving	30	4	14.7	1,764	27.10	65
	Architectural Coating	60	19	14.7	16,758	27.10	618
	LDT2						
	Building Construction	255	95	14.7	356,108	25.54	13,943
	Paving	30	4	14.7	1,764	25.54	69
	Architectural Coating	60	19	14.7	16,758	25.54	656
TOTAL CONSTRUCTION WORKER FUEL CONSUMPTION							75,473

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 2020.4.0 defaults utilized within the within the AQIA. Vehicle fuel efficiencies for MHDTs and HHDTs were estimated using information generated within EMFAC2017.

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 73,111 gallons over the course of the Project construction period, approximately 20 months .

TABLE 5: CONSTRUCTION VENDOR FUEL CONSUMPTION ESTIMATES (1 OF 2)

Year	Construction Activity	Duration (Days)	Vendor Trips/Day	Trip Length (miles)	VMT	Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption (gallons)
2022	MHDT						
	Demolition	30	5	6.9	1,035	8.90	116
	Site Preparation	15	3	6.9	311	8.90	35
	Grading	35	6	6.9	1,449	8.90	163
	Building Construction	115	61	6.9	48,404	8.90	5,436

TABLE 5: CONSTRUCTION VENDOR FUEL CONSUMPTION ESTIMATES (2 OF 2)

Year	Construction Activity	Duration (Days)	Vendor Trips/Day	Trip Length (miles)	VMT	Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption (gallons)
2022	HHDT (Vendor)						
	Demolition	30	5	6.9	1,035	6.37	162
	Site Preparation	15	3	6.9	311	6.37	49
	Grading	35	6	6.9	1,449	6.37	227
	Building Construction	115	61	6.9	48,404	6.37	7,594
	HHDT (Hauling)						
	Demolition	30	338	20	202,800	6.37	31,818
	Site Preparation	15	0	20	0	6.37	0
	Grading	35	0	20	0	6.37	0
	Building Construction	115	0	20	0	6.37	0
2023	MHDT						
	Building Construction	255	61	6.9	107,330	9.25	11,604
	HHDT (Vendor)						
	Building Construction	255	61	6.9	107,330	6.75	15,908
TOTAL CONSTRUCTION VENDOR/HAULING FUEL CONSUMPTION							73,111

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.

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 7.

TABLE 6: PROJECT-GENERATED TRAFFIC ANNUAL FUEL CONSUMPTION

Vehicle Type	Annual VMT	Average Vehicle Fuel Economy (mpg)	Estimated Annual Fuel Consumption (gallons)
LDA	914,380	32.02	28,560
LDT1	105,518	27.10	3,893
LDT2	314,646	25.54	12,320
MDV	213,578	20.81	10,265
MCY	40,999	35.68	1,149
LHDT1	364,980	13.65	26,736
LHDT2	96,246	35.68	2,697
MHDT	493,703	9.25	53,375
HHDT	1,370,578	6.75	203,137
TRUs	-	-	19
TOTAL (ALL VEHICLES)	3,914,628		342,151

TABLE 7: PROJECT ANNUAL OPERATIONAL NATURAL GAS AND ELECTRICITY DEMAND SUMMARY

Land Use	Natural Gas Demand (kBTU/year)	Electricity Demand (kWh/year)
General Light Industrial (5%)	336,750	203,625
Warehousing (85%)	274,125	1,220,810
High-Cube Cold Storage (10%)	241,875	1,077,190
Parking Lot	0	86,660
Other Asphalt Surfaces	0	0
TOTAL PROJECT ENERGY DEMAND	852,750	2,588,285

REFERENCES

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3. **California Air Resources Board.** *Methods to Find the Cost-Effectiveness of Funding Air Quality Projects For Evaluating Motor Vehicle Registration Fee Projects And Congestion Mitigation and Air Quality Improvement (CMAQ) Projects, Emission Factor Tables.* 2018.