

**DATE:** August 30, 2024  
**TO:** Mr. Grant Ross, Orbis Real Estate Partners  
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**JOB NO:** 15638-02 Energy Tables

### **BARKER BUSINESS PARK (DPR 23-00022, SPA 23-05321, TTM 23-05322) ENERGY TABLES**

Mr. Grant Ross,

The following Energy Tables were prepared for the proposed Barker Business Park (DPR 23-00022, SPA 23-05321, TTM 23-05322) development (referred to as "Project"). The Project site totals approximately 25.6 gross acres (24.9 net acres) within the City of Perris, located northeast of the Interstate 215 (I-215)/Placentia Avenue interchange, between Walnut Avenue to the north and Placentia Avenue to the south. The Project site comprises two parcels (APNs 305-050-055 and 305-050-051) bisected by [I-215] East Frontage Road

#### **PROJECT DESCRIPTION**

The Project would develop a currently vacant site with two separate but complementary uses providing rental, lease, sale, and maintenance of trailers and heavy equipment. The Project Development Concept apportions the site into 3 lots, to be developed as summarized below.

- Lot 1, approximately 5.0 acres, is located in the northwest portion of the Project site, and south of E. Frontage Road would serve Tenant 2. Lot 1 would be developed with a 25,750-square-foot building, employee parking areas (80 stalls), and landscaping (approximately 15% or 32,680-square-feet). The proposed building would accommodate vehicle/heavy equipment maintenance activities and supporting office/administrative functions. Access to Lot 1 would be provided by three driveways onto adjacent [I-15] E. Frontage Road.
  - Driveway 1 will serve Lot 1 trucks and passenger cars and will allow for full access (no turn restrictions).
  - Driveway 2 would serve Lot 1 passenger cars only and will be restricted to right-in/right-out access only.
  - Driveway 3 will serve Lot 1 trucks only and will allow for full access.

- Lot 2, approximately 10.3 acres, is located in the southeast portion of the Project site and south of E. Frontage Road would serve Tenant 1. Lot 2 would be developed with a 14,139-square-foot building, heavy equipment and trailer holding/display lot, employee parking area (15 stalls) and landscaping (approximately 15.5% or 69,947-square-feet). The proposed building would accommodate vehicle/heavy equipment maintenance activities and supporting administrative functions. Access to Lot 2 would be provided by two driveways onto adjacent E. Frontage Road.
  - Driveway 4 will serve Lot 2 passenger cars only and will be restricted to right-in/right-out access only.
  - Driveway 5 will serve Lot 2 trucks and will allow for full access.
- Lot 3, approximately 9.6 acres, is located in the northern portion of the Project site, and north of E. Frontage Road would serve Tenant 1. Lot 3 would be developed as a heavy equipment/trailer display lot that would support operations of the Lot 2 tenant (Tenant 1). Access to Lot 3 would be provided by one driveway onto adjacent E. Frontage Road.
  - Driveway 5 will serve Lot 3 trucks and will allow for full access.

The Project is anticipated to be constructed in a single phase with an anticipated Opening Year of 2026. Exhibit 1-B identifies the preliminary site plan for the proposed Project.

**CONSTRUCTION EQUIPMENT ELECTRICITY USAGE ESTIMATES**

Based on the 2024 National Construction Estimator (1), the typical power cost per 1,000 square feet (sf) of building construction per month is estimated to be \$2.66.

Table 1 estimates the total power cost of the on-site electricity usage during the construction of the proposed Project to be approximately \$43,277.37.

**TABLE 1: PROJECT CONSTRUCTION POWER COST**

Land Use	Power Cost <sup>1</sup>	Size (1,000 SF)	Construction Duration	Project Construction Power Cost
Building Area	\$2.66	39.889	15	\$1,591.57
Landscape		167.293		\$6,674.99
Parking		393.952		\$15,718.68
Other Asphalt Surfaces		483.512		\$19,292.13
<b>CONSTRUCTION POWER COST</b>				<b>\$43,277.37</b>

<sup>1</sup> Per 1,000 square feet of construction per month

Electricity would be provided to the Project by Southern California Edison (SCE). The SCE's general service rate schedule was used to determine the Project's electrical usage. As of June 1, 2024, SCE's general service rate is \$0.15 per kilowatt hours (kWh) of electricity for industrial services (2). As shown on Table 4-3, the total electricity usage from on-site Project construction related activities is estimated to be approximately 288,834 kWh.

**TABLE 2: PROJECT CONSTRUCTION ELECTRICITY USAGE**

Land Use	Cost per kWh	Project Construction Electricity Usage
Building Area	\$0.15	10,622
Landscape	\$0.15	44,549
Parking	\$0.15	104,907
Other Asphalt Surfaces	\$0.15	128,756
<b>CONSTRUCTION ELECTRICITY USAGE</b>		<b>288,834</b>

#### 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 55,418 gallons of diesel fuel.

**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	20	Concrete/Industrial Saws	33	1	8	0.73	193	208
		Excavators	36	3	8	0.38	328	355
		Rubber Tired Dozers	367	2	8	0.4	2,349	2,539
Site Preparation	10	Rubber Tired Dozers	367	3	8	0.4	3,523	1,904
		Crawler Tractors	87	4	8	0.43	1,197	647
		Excavators	36	2	8	0.38	219	355
Grading	30	Graders	148	1	8	0.41	485	787
		Rubber Tired Dozers	367	1	8	0.4	1,174	1,904
		Scrapers	423	2	8	0.48	3,249	5,268
Building Construction	300	Crawler Tractors	87	2	8	0.43	599	971
		Cranes	367	1	8	0.29	851	13,807
		Forklifts	82	3	8	0.2	394	6,383
		Generator Sets	14	1	8	0.74	83	1,344
		Tractors/Loaders/Backhoes	84	3	8	0.37	746	12,096
Paving	20	Welders	46	1	8	0.45	166	2,685
		Pavers	81	2	8	0.42	544	588
		Paving Equipment	89	2	8	0.36	513	554
Architectural Coating	20	Rollers	36	2	8	0.38	219	237
		Air Compressors	37	1	8	0.48	142	154
<b>CONSTRUCTION FUEL DEMAND (GALLONS DIESEL FUEL)</b>								<b>55,418</b>

### **CONSTRUCTION WORKER FUEL ESTIMATES**

It is assumed that 50% of all construction worker trips are from light-duty-auto vehicles (LDA), 25% are from light-duty-trucks (LDT1<sup>2</sup>), and 25% are from light-duty-trucks (LDT2<sup>3</sup>). Data regarding Project related construction worker trips were based on CalEEMod 2022 model 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 construction worker trips. Based on Table 4, it is estimated that 44,100 gallons of fuel (gasoline) will be consumed related to construction worker trips over the course of the Project construction period.

### **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 defaults utilized within the within the AQIA. Vehicle fuel efficiencies for MHDTs and HHDTs were estimated using information generated within EMFAC2021.

Table 6 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 32,439 gallons of fuel (diesel) over the course of the Project construction period.

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<sup>2</sup> Vehicles under the LDT1 category have a gross vehicle weight rating (GVWR) of less than 6,000 lbs. and equivalent test weight (ETW) of less than or equal to 3,750 lbs.

<sup>3</sup> Vehicles under the LDT2 category have a GVWR of less than 6,000 lbs. and ETW between 3,751 lbs. and 5,750 lbs.

**TABLE 4: CONSTRUCTION WORKER FUEL CONSUMPTION ESTIMATES**

Year	Construction Activity	Duration (Days)	Worker Trips/Day	Trip Length (Miles)	VMT	Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption (gallons)	
2025	LDA							
	Site Preparation	10	9	18.5	1,665	32.49	51	
	Grading	35	10	18.5	6,475	32.49	199	
	Building Construction	87	110	18.5	177,0	32.49	5,449	
	LDT1							
	Site Preparation	10	5	18.5	925	25.14	37	
	Grading	35	5	18.5	3,238	25.14	129	
	Building Construction	87	55	18.5	88,52	25.14	3,521	
	LDT2							
	Site Preparation	10	5	18.5	925	25.29	37	
	Grading	35	5	18.5	3,238	25.29	128	
	Building Construction	87	55	18.5	88,52	25.29	3,500	
	2026	LDA						
		Building Construction	213	110	18.5	433,4	33.43	12,965
		Paving	20	8	18.5	2,960	33.43	89
Architectural Coating		40	22	18.5	16,28	33.43	487	
LDT1								
Building Construction		213	55	18.5	216,7	25.70	8,432	
Paving		20	4	18.5	1,480	25.70	58	
Architectural Coating		40	11	18.5	8,140	25.70	317	
LDT2								
Building Construction		213	55	18.5	216,7	26.01	8,333	
Paving	20	4	18.5	1,480	26.01	57		
Architectural Coating	40	11	18.5	8,140	26.01	313		
<b>TOTAL CONSTRUCTION WORKER FUEL CONSUMPTION</b>							<b>44,100</b>	

**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	10	2	10.2	204	8.58	24
	Grading	35	5	10.2	1,785	8.58	208
	Building Construction	87	38	10.2	33,72	8.58	3,930
	HHDT						
	Site Preparation	10	2	10.2	204	6.22	33
2026	Grading	35	5	10.2	1,785	6.22	287
	Building Construction	87	38	10.2	33,72	6.22	5,423
	MHDT						
	Building Construction	213	38	10.2	82,55	8.71	9,483
HHDT							
Building Construction	213	38	10.2	82,55	6.33	13,051	
<b>TOTAL CONSTRUCTION VENDOR FUEL CONSUMPTION</b>							<b>32,439</b>

**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.

**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 Project, on-site modeled operational equipment includes up to one (1) 175 hp, natural gas-powered cargo handling equipment – port tractor operating 4 hours a day<sup>4</sup> 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

<sup>4</sup> 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.

consumption associated on-site equipment. Table 7 presents the estimated fuel consumption from on-site equipment.

**TABLE 6: PROJECT-GENERATED TRAFFIC ANNUAL FUEL CONSUMPTION**

Vehicle Type	Average Vehicle Fuel Economy (mpg)	Annual VMT	Estimated Annual Fuel Consumption (gallons)
LDA	33.43	995,203	29,766
LDT1	25.70	76,185	2,964
LDT2	26.01	411,030	15,804
MDV	20.88	317,492	15,206
LHDT1	16.89	493,453	29,209
LHDT2	16.01	140,680	8,788
MHDT	8.71	347,263	39,890
HHDT	6.33	573,739	90,696
MCY	42.07	46,373	1,102
<b>TOTAL (ALL VEHICLES)</b>		<b>3,401,418</b>	<b>233,425</b>

**TABLE 7: 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	1	4	365	18,742	5,895	4,642
<b>ON-SITE CARGO HANDLING EQUIPMENT FUEL DEMAND (GALLONS FUEL)</b>						<b>4,642</b>

**EMERGENCY ENGINE FUEL DEMANDS**

It is anticipated that the Project would utilize two 300-hp diesel-powered emergency backup fire pumps. For analytical purposes, it is anticipated that each emergency fire pump would operate for a maximum time of 1 hour per day and 50 hours per year for maintenance and testing purposes. As presented in Table 8, emergency engine operation for maintenance and testing purposes would consume an estimated 592 gallons of diesel fuel per year.



**TABLE 8: EMERGENCY ENGINE FUEL CONSUMPTION ESTIMATES**

Equipment	Horsepower	HP- hrs/day	Activity (hrs/yr)	Total Fuel Consumption
Emergency Fire Pump	300	219	50	592
<b>EMERGENCY ENGINE FUEL DEMAND (GALLONS FUEL)</b>				<b>592</b>

**FACILITY ENERGY DEMANDS**

Project building operations and Project site maintenance activities would result in the consumption of electricity, which would be supplied to the Project by SCE. Annual natural gas and electricity demands of the Project are summarized in Table 8.

Based on information provided by the Project Applicant, the Project would not use natural gas for the building envelope. All buildings would be powered solely by electricity.

**TABLE 8: ANNUAL OPERAITONAL ENERGY DEMAND SUMMARY**

Land Use	Natural Gas Demand (kBtu/year)	Electricity Demand (kWh/year)
Building Area	0	8,458,194
Landscape	0	0
Parking	0	344,953
Other Asphalt Surfaces	0	0
<b>TOTAL PROJECT ENERGY DEMAND</b>	<b>0</b>	<b>8,803,147</b>

## REFERENCES

1. **Pray, Richard.** *2024 National Construction Estimator*. Carlsbad : Craftsman Book Company, 2024.
2. **Southern California Edison.** Schedule GS-1 General Service. *Regulatory Information - Rates Pricing*. [Online] [https://library.sce.com/content/dam/sce-doclib/public/regulatory/tariff/electric/schedules/general-service-&-industrial-rates/ELECTRIC\\_SCHEDULES\\_GS-1.pdf](https://library.sce.com/content/dam/sce-doclib/public/regulatory/tariff/electric/schedules/general-service-&-industrial-rates/ELECTRIC_SCHEDULES_GS-1.pdf).
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.