MEMORANDUM

URBAN | CROSSROADS

DATE: May 1, 2025
TO: Mr. Adam Cleary, Back Bay Barrels, LLC
FROM: Haseeb Qureshi, Urban Crossroads, Inc.
Alyssa Barnett, Urban Crossroads, Inc.
JOB NO: 16241-11 Energy Tables

SURF FARM ENERGY TABLES

Mr. Adam Cleary,

The following Energy Tables were prepared for the proposed Surf Farm development (referred to as "Project"). The Project is a 15-acre site located at 3100 Irvine Avenue in the City of Newport Beach. To the west and south of the site are residential uses, to the east are commercial uses, and to the north is the Newport Beach Golf Course.

PROJECT DESCRIPTION

The Project would develop a 5-acre lagoon, a 50,341 square foot (SF) three-story clubhouse with 18,137 SF of basement storage and restroom, a 9,432 SF athlete accommodation building with 1,624 SF of ancillary restroom and storage space, 351 parking stalls, and 3 pools, totaling a gross floor area of 79,534 SF.

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 $3,808.09.

TABLE 1: PROJECT CONSTRUCTION POWER COST

Land Use	Power Cost	Size (1,000 SF)	Construction Duration	Project Construction Power Cost
Clubhouse	$2.66	68.478	18	$3,278.73
Athlete Accommodation Building		11.056		$529.36
			CONSTRUCTION POWER COST	***$3,808.09***

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 October 1, 2024, SCE's general service rate is $0.16 per kilowatt hours (kWh) of electricity for commercial services (2). As shown on Table 4-3, the total electricity usage from on-site Project construction related activities is estimated to be approximately 23,801 kWh.

TABLE 2: PROJECT CONSTRUCTION ELECTRICITY USAGE

Land Use	Cost per kWh	Project Construction Electricity Usage
Clubhouse	$0.16	20,492
Athlete Accommodation Building		3,309
CONSTRUCTION ELECTRICITY USAGE		***23,801***

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 68,414 gallons of diesel fuel.

TABLE 3: CONSTRUCTION EQUIPMENT FUEL CONSUMPTION ESTIMASTES

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	2	8	0.38	219	237
Site Preparation	30	Rubber Tired Dozers	367	1	8	0.40	1,174	1,270
		Tractors/Loaders/Backhoes	84	2	8	0.37	497	806
		Crawler Tractors	87	1	8	0.43	299	485
Grading	50	Rubber Tired Loaders	150	2	8	0.36	864	2,335
		Excavators	36	2	8	0.38	219	592
		Graders	148	4	8	0.41	1,942	5,248
		Rubber Tired Dozers	367	2	8	0.40	2,349	6,348
		Scrapers	423	2	8	0.48	3,249	8,780
Building Construction	300	Cranes	367	1	8	0.29	851	13,807
		Forklifts	82	3	8	0.20	394	6,383
		Generator Sets	14	2	8	0.74	166	2,688
		Tractors/Loaders/Backhoes	84	3	8	0.37	746	12,096
		Welders	46	1	8	0.45	166	2,685
Paving	60	Pavers	81	2	8	0.42	544	1,765
		Paving Equipment	89	2	8	0.36	513	1,663
		Rollers	36	2	8	0.38	219	710
Architectural Coating	40	Air Compressors	37	1	8	0.48	142	307
						CONSTRUCTION FUEL DEMAND (GALLONS DIESEL FUEL)		***68,414***

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[1)], and 25% are from light-duty-trucks (LDT2[2]). 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 6,973 gallons of fuel (gasoline) will be consumed related to construction worker trips over the course of the Project construction period.

CONSTRUCTION VENDOR/HAULING FUEL ESTIMATES

It is assumed that 50% of all vendor trips are from Medium-Heavy-Duty-Trucks (MHDT), 50% are from Heavy-Heavy-Duty Trucks (HHDT), and 100% of hauling trips are 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 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 4,035 gallons of fuel (diesel) over the course of the Project construction period.

[1] 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.

[2] 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)
			LDA				
	Demolition	20	5	18.5	1,850	34.81	53
	Site Preparation	30	4	18.5	2,220	34.81	64
	Grading	50	15	18.5	13,875	34.81	399
	Building Construction	97	13	18.5	23,329	34.81	670
			LDT1				
	Demolition	20	3	18.5	1,110	26.28	42
2026	Site Preparation	30	2	18.5	1,110	26.28	42
	Grading	50	8	18.5	7,400	26.28	282
	Building Construction	97	7	18.5	12,562	26.28	478
			LDT2				
	Demolition	20	3	18.5	1,110	26.07	43
	Site Preparation	30	2	18.5	1,110	26.07	43
	Grading	50	8	18.5	7,400	26.07	284
	Building Construction	97	7	18.5	12,562	26.07	482
			LDA				
	Building Construction	203	13	18.5	48,822	35.67	1,369
	Paving	60	8	18.5	8,880	35.67	249
	Architectural Coating	40	3	18.5	2,220	35.67	62
			LDT1				
	Building Construction	203	7	18.5	26,289	26.76	982
2027	Paving	60	4	18.5	4,440	26.76	166
	Architectural Coating	40	2	18.5	1,480	26.76	55
			LDT2				
	Building Construction	203	7	18.5	26,289	26.65	987
	Paving	60	4	18.5	4,440	26.65	167
	Architectural Coating	40	2	18.5	1,480	26.65	56
	TOTAL CONSTRUCTION WORKER FUEL CONSUMPTION						***6,973***

TABLE 5: CONSTRUCTION VENDOR/HAULING FUEL CONSUMPTION ESTIMATES

Year	Construction Activity	Duration (Days)	Vendor/ Hauling Trips/Day	Trip Length (Miles)	VMT	Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption (gallons)
2026	MHDT						
	Demolition	20	1	10.2	204	7.76	26
	Site Preparation	30	1	10.2	306	7.76	39
	Grading	50	1	10.2	510	7.76	66
	Building Construction	97	4	10.2	3,958	7.76	510
	HHDT (Vendor)						
	Demolition	20	1	10.2	204	6.20	33
	Site Preparation	30	1	10.2	306	6.20	49
	Grading	50	1	10.2	510	6.20	82
	Building Construction	97	4	10.2	3,958	6.20	638
	HHDT (Hauling)						
	Demolition	20	9	8	1,440	6.20	232
2027	MHDT						
	Building Construction	203	4	10.2	8,282	7.91	1,048
	HHDT						
	Building Construction	203	4	10.2	8,282	6.32	1,311
	TOTAL CONSTRUCTION VENDOR/HAULING FUEL CONSUMPTION						***4,035***

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	Average Vehicle Fuel Economy (mpg)	Annual VMT	Estimated Annual Fuel Consumption (gallons)
LDA	35.67	2,966,844	83,183
LDT1	26.76	239,837	8,962
LDT2	26.65	1,415,427	53,116
MDV	21.86	871,057	39,850
LHDT1	17.30	166,959	9,649
LHDT2	16.21	43,783	2,701
MHDT	7.91	93,154	11,782
HHDT	6.32	34,590	5,473
OBUS	6.48	3,597	555
UBUS	3.79	2,133	563
MCY	42.49	133,077	3,132
SBUS	6.65	5,795	872
MH	5.96	21,568	3,616
TOTAL (ALL VEHICLES)		***5,997,818***	***223,454***
EXISTING		*5,282,945*	*196,821*
NET TOTAL (ALL VEHICLES)		***714,873***	***26,633***

FACILITY ENERGY DEMANDS

Project building operations and Project site maintenance activities would result in the consumption of electricity and natural gas, which would be supplied to the Project by SCE and SoCal Gas. Annual natural gas and electricity demands of the Project are summarized in Table 7.

TABLE 7: ANNUAL OPERATIONAL ENERGY DEMAND SUMMARY

Land Use	Natural Gas Demand (kBTU/year)	Electricity Demand (kWh/year)
Project	12,158,880	12,031,284
ON-SITE SOLAR GENERATION	--	*2,375,568*
TOTAL PROJECT ENERGY DEMAND	**12,158,880**	**9,655,716**
EXISTING	*900,000*	*96,160*
TOTAL PROJECT ENERGY DEMAND	**11,258,880**	**9,559,556**[A]

[A] The total estimated electrical consumption of the proposed project is the cumulative sums of wave making, water treatment, water heating, water circulation and building & site operations. The wave making equipment and water treatment figures were provided by Roberto Pascual at Wavegarden and verified in emails dated 10/29/24, 12/20/24, 1/8/25, 3/21/25. The water heating totals were provided by Jim Johndro at AquaCal in March of 2024 and verified by Aaron Lawson at Coffman Engineering in emails in September of 2024. The building and site operations figures were provided by James Klatt of Linwood Engineering in October 2024. The solar offset was provided by Perry Meek at Cal Solar in a summation of the total proposed array calculation provided 1/27/25.

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.
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.