

**ENERGY CALCULATIONS**  
**for the**  
**PALM & HOLLISTER DEVELOPMENT**  
**OTAY MESA-NESTOR (CITY OF SAN DIEGO)**

*Prepared for:*

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**198-Dwelling Unit Project Energy Calculations**

**Natural Gas – kBTU/year**

Apartments, Mid-Rise – 1,440,660

General Office Building – 74,512

**Total – 1,515,172**

**Electricity – kWh/year**

Apartments, Mid-Rise – 760,348

General Office Building – 48,137

**Total – 808,485**

**Operational Emissions**

The project would have an estimated annual VMT of 2,747,601. The average daily trip rate is 1,069.2 trips per day. Total mobile source CO<sub>2</sub>e is 898 Metric Tons. CalEEMod assumes 92.5% of VMT burns gasoline while the remaining 7.5% burn diesel. Thus, of the 898 MT of mobile emissions, 830 MT is generated by gasoline combustion and 67 MT is generated from diesel combustion. The project would have an annual gasoline demand of 94,570 gallons and an annual diesel demand of 6,594 gallons.

**Construction Worker Gasoline Demand**

Year	Phase	Days/Phase	Trips/Phase	VMT/Phase	Kg CO <sub>2</sub> e/Phase	Kg CO <sub>2</sub> /Gal*	Gallons Gasoline Demand
2024	Demolition	20	15	162	947.6	8.78	108
	Site Preparation	10	18	194	568.6	8.78	65
	Grading	20	15	162	947.6	8.78	108
	Building Const.	213	133	1,436	96,432	8.78	10,983
2025	Building Const.	17	11	119	7,985	8.78	909
	Paving	20	15	162	924.2	8.78	105
	Arch. Coating	20	29	313	1,787	8.78	204
<b>Total - 2024</b>							<b>11,264</b>
<b>Total - 2025</b>							<b>1,218</b>

**Construction Vendor Diesel Fuel Demand**

Year	Phase	Days/Phase	Trips/Phase	VMT/Phase	Kg CO <sub>2</sub> e/Phase	Kg CO <sub>2</sub> /Gal*	Gallons Diesel Demand
2024	Demolition	20	0	0	0	10.21	0
	Site Preparation	10	0	0	0	10.21	0
	Grading	20	0	0	0	10.21	0
	Building Const.	213	133	971	47,998	10.21	4,701
2025	Building Const.	17	11	80	3,998	10.21	392
	Paving	20	0	0	0	10.21	0
	Arch. Coating	20	0	0	0	10.21	0
<b>Total - 2024</b>							<b>4,701</b>
<b>Total - 2025</b>							<b>392</b>

**Construction Haul Diesel Fuel Demand**

Year	Phase	Days/Phase	Trips/Phase	VMT/Phase	Kg CO <sub>2</sub> e/Phase	Kg CO <sub>2</sub> /Gal*	Gallons Diesel Demand
2024	Demolition	20	0	0	0	10.21	0
	Site Preparation	10	0	0	0	10.21	0
	Grading	20	2,875	57,500	88,884	10.21	8,706
	Building Const.	213	0	0	0	10.21	0
2025	Building Const.	17	0	0	0	10.21	0
	Paving	20	0	0	0	10.21	0
	Arch. Coating	20	0	0	0	10.21	0
<b>Total - 2024</b>							<b>8,706</b>
<b>Total - 2025</b>							<b>0</b>

**Construction Equipment Diesel Fuel Demand**

Year	Phase	Days/Phase	Equipment Units	Kg CO <sub>2</sub> e/Phase	Kg CO <sub>2</sub> /Gal*	Gallons
2024	Demolition	20	6	34,234	10.21	3,353
	Site Preparation	10	7	16,864	10.21	1,652
	Grading	20	6	26,275	10.21	2,573
	Building Const.	213	9	247,213	10.21	24,213
2025	Building Const.	17	9	20,995	10.21	2,056
	Paving	20	6	20,181	10.21	1,977
	Arch. Coating	20	1	2,557	10.21	250
<b>Total - 2024</b>						<b>31,791</b>
<b>Total - 2025</b>						<b>4,283</b>

**206-Dwelling Unit Project Energy Calculations**

**Natural Gas – kBTU/year**

Apartments, Mid-Rise – 1,498,870

General Office Building – 74,512

**Total – 1,573,382**

**Electricity – kWh/year**

Apartments, Mid-Rise – 791,069

General Office Building – 48,137

**Total – 839,206**

**Operational Emissions**

The project would have an estimated annual VMT of 2,858,616. The average daily trip rate is 1,112.4 trips per day. Total mobile source CO<sub>2</sub>e is 884 Metric Tons. CalEEMod assumes 92.5% of VMT burns gasoline while the remaining 7.5% burn diesel. Thus, of the 884 MT of mobile emissions, 818 MT is generated by gasoline combustion and 66 from diesel combustion. The project would have an annual gasoline demand of 93,132 gallons and an annual diesel demand of 6,494 gallons.

**Construction Worker Gasoline Demand**

Year	Phase	Days/Phase	Trips/Phase	VMT/Phase	Kg CO <sub>2</sub> e/Phase	Kg CO <sub>2</sub> /Gal*	Gallons Gasoline Demand
2024	Demolition	22	15	162	1,022	8.78	116
	Site Preparation	85	18	194	4,736	8.78	539
	Grading	88	15	162	4,086	8.78	465
	Building Const.	66	42	454	30,647	8.78	3,491
2025	Building Const.	238	108	1,166	106,729	8.78	12,156
	Paving	23	8	86	1,031	8.78	117
	Arch. Coating	23	16	173	2,063	8.78	235
2026	Paving	20	7	76	869	8.78	99
	Arch. Coating	20	14	151	1,737	8.78	198
<b>Total - 2024</b>							<b>4,612</b>
<b>Total - 2025</b>							<b>12,508</b>
<b>Total - 2026</b>							<b>297</b>

**Construction Vendor Diesel Fuel Demand**

Year	Phase	Days/Phase	Trips/Phase	VMT/Phase	Kg CO <sub>2</sub> e/Phase	Kg CO <sub>2</sub> /Gal*	Gallons Diesel Demand
2024	Demolition	22	0	0	0	10.21	0
	Site Preparation	85	0	0	0	10.21	0
	Grading	88	0	0	0	10.21	0
	Building Const.	66	6	44	15,622	10.21	1,530
2025	Building Const.	238	17	124	55,261	10.21	5,412
	Paving	23	0	0	0	10.21	0
	Arch. Coating	23	0	0	0	10.21	0
2026	Paving	20	0	0	0	10.21	0
	Arch. Coating	20	0	0	0	10.21	0
<b>Total - 2024</b>							<b>1,530</b>
<b>Total - 2025</b>							<b>5,412</b>
<b>Total - 2026</b>							<b>0</b>

**Construction Haul Diesel Fuel Demand**

Year	Phase	Days/Phase	Trips/Phase	VMT/Phase	Kg CO <sub>2</sub> e/Phase	Kg CO <sub>2</sub> /Gal*	Gallons Diesel Demand
2024	Demolition	22	14	280	433	10.21	42
	Site Preparation	85	0	0	0	10.21	0
	Grading	88	2,938	58,760	90,832	10.21	8,896
	Building Const.	66	0	0	0	10.21	0
2025	Building Const.	238	0	0	0	10.21	0
	Paving	23	0	0	0	10.21	0
	Arch. Coating	23	0	0	0	10.21	0
2026	Paving	20	0	0	0	10.21	0
	Arch. Coating	20	0	0	0	10.21	0
<b>Total - 2024</b>							<b>8,939</b>
<b>Total - 2025</b>							<b>0</b>
<b>Total - 2026</b>							<b>0</b>

**Construction Equipment Diesel Fuel Demand**

Year	Phase	Days/Phase	Equipment Units/phase	Kg CO <sub>2</sub> e/Phase	Kg CO <sub>2</sub> /Gal*	Gallons Diesel Demand
2024	Demolition	22	6	37,657	10.21	3,688
	Site Preparation	85	7	143,342	10.21	14,039
	Grading	88	6	115,609	10.21	11,323
	Building Const.	66	9	76,963	10.21	7,538
2025	Building Const.	238	9	277,606	10.21	27,190
	Paving	23	6	23,208	10.21	2,273
	Arch. Coating	23	1	2,940	10.21	288
2026	Paving	20	6	20,181	10.21	1,977
	Arch. Coating	20	1	2,557	10.21	250
<b>Total - 2024</b>						<b>36,589</b>
<b>Total - 2025</b>						<b>29,751</b>
<b>Total - 2026</b>						<b>2,227</b>

\*GHG EFs: [https://www.epa.gov/system/files/documents/2023-03/ghg\\_emission\\_factors\\_hub.pdf](https://www.epa.gov/system/files/documents/2023-03/ghg_emission_factors_hub.pdf)