

Appendix E
Energy Calculations

Construction Fuel

| On-Site Diesel ¹ | MTCO ₂ e | Gallons of Fuel ⁴ | 2022 County Fuel | Percent Increase Countywide |
|--------------------------------------|---------------------|------------------------------|-----------------------|-----------------------------|
| Demolition | 38 | 3,744 | | |
| Site Preparation/Grading | 67 | 6,632 | | |
| Building Construction | 223 | 21,941 | | |
| Paving | 24 | 2,388 | | |
| Architectural Coating | 8 | 820 | | |
| Total | 361 | 35,524 | 102,962,955.83 | 0.0345% |
| Off-Site Diesel¹ | | | | |
| Demolition | 0 | 3 | | |
| Site Preparation/Grading | 7 | 673 | | |
| Building Construction | 75 | 7,429 | | |
| Paving | 0 | 0 | | |
| Architectural Coating | 0 | 0 | | |
| Total | 82 | 8,104 | 102,962,955.83 | 0.0079% |
| Off-Site Gasoline² | | | | |
| Demolition | 1 | 118 | | |
| Site Preparation/Grading | 2 | 272 | | |
| Building Construction | 58 | 6,553 | | |
| Paving | 1 | 129 | | |
| Architectural Coating | 4 | 455 | | |
| Total | 66 | 7,528 | 604,762,380 | 0.0012% |
| Total Diesel Fuel | | 43,629 | 102,962,956 | 0.0424% |
| Total Gasoline Fuel | | 7,528 | 604,762,380 | 0.0012% |
| Total Construction Fuel | 509 | 51,156 | | |

| Construction Phase ³ | Demolition | | | Site Preparation | | | Grading | | |
|---------------------------------|---------------------------|----------------------------------|-----------------------|---------------------------|----------------------------------|-----------------------|---------------------------|----------------------------------|-----------------------|
| | On-Site Diesel (Off-Road) | Off-Site Diesel (Hauling/Vendor) | Off-Site Gas (Worker) | On-Site Diesel (Off-Road) | Off-Site Diesel (Hauling/Vendor) | Off-Site Gas (Worker) | On-Site Diesel (Off-Road) | Off-Site Diesel (Hauling/Vendor) | Off-Site Gas (Worker) |
| 2022 | 38 | 0 | 1 | 37 | 0 | 1 | 30 | 7 | 1 |
| 2023 | | | | | | | | | |
| Total | 38 | 0 | 1 | 37 | 0 | 1 | 30 | 7 | 1 |
| Construction Phase ³ | Building Construction | | | Paving | | | Architectural Coating | | |
| | On-Site Diesel (Off-Road) | Off-Site Diesel (Hauling/Vendor) | Off-Site Gas (Worker) | On-Site Diesel (Off-Road) | Off-Site Diesel (Hauling/Vendor) | Off-Site Gas (Worker) | On-Site Diesel (Off-Road) | Off-Site Diesel (Hauling/Vendor) | Off-Site Gas (Worker) |
| 2022 | | | | 20 | 0 | 1 | | | |
| 2023 | 223 | 75 | 58 | 4 | 0 | 0 | 8 | 0 | 4 |
| Total | 223 | 75 | 58 | 24 | 0 | 1 | 8 | 0 | 4 |

Notes:

¹ Fuel used for off-road, hauling, and vendor trips assumed to be diesel.

² Fuel used for worker trips assumed to be gasoline.

³ MTCO₂e rates from CalEEMod (3.0 Construction Details).

⁴ For CO₂e emissions, see Chapter 13 (page 94); Conversion Ratios: Climate Registry, General Reporting Protocol, 2016.

Operational Fuel

| Vehicle Type | Percent ¹ | Annual VMT ² | MGP ³ | Annual Fuel | Fuel Type | County Gallons ⁴ | County Percent | Statewide | Statewide percent |
|---------------------|----------------------|-------------------------|------------------|-------------|-----------|-----------------------------|----------------|----------------|-------------------|
| Passenger Cars | 0.592 | 760,792 | 21.6 | 35,222 | Gas | 600,613,962 | 0.0059% | 15,355,377,116 | 0.0002% |
| Light/Medium Trucks | 0.168 | 215,900 | 17.2 | 12,552 | Diesel | 103,122,398 | 0.0016% | 3,683,414,417 | 0.0003% |
| Heavy Trucks/Other | 0.24 | 308,429 | 6.1 | 50,562 | Diesel | 103,122,398 | 0.0063% | | |
| Total | 1.000 | 1,285,121 | | 63,114 | | 806,858,758 | 0.0612% | | |

Notes:

- ¹ Percent of vehicle trip distribution based on fleet mix from CalEEMod (4.4 Fleet Mix).
- ² Total annual operational VMT based on mitigated annual VMT from CalEEMod (4.2 Trip Summary Information).
- ³ Average fuel economy derived from Department of Transportation.
- ⁴ Total annual county fuel per EMFAC 2021 model of projected operational fuel usage.

Electricity and Natural Gas

| | Mitigated Project Annual Energy | County Annual Energy ³ | Percentage Increase |
|-------------------------------|------------------------------------|--------------------------------------|------------------------|
| Electricity (kWh/yr) | 971,139 | 16,435,721,919 | 0.0059% |
| Electricity (MWh/yr) | 971 | 16,435,722 | 0.0059% |
| Electricity (GWh/yr) | 0.971 | 16,435.72 | 0.0059% |
| Adjusted Electricity (GWh/yr) | 2.496 | 16,436 | 0.0152% |
| Natural Gas (million therms) | | 419 | |
| Natural Gas (kBTU/yr) | - | 41,868,441,600 | 0.0000% |
| Natural Gas (therms) | - | 418,684,416.00 | 0.0000% |

| Land Use | Electricity ¹ (kWh/yr) | | Natural Gas ² (kBTU/yr) | |
|----------------------------------|-----------------------------------|----------------|------------------------------------|-----------|
| | Unmitigated | Mitigated | Unmitigated | Mitigated |
| Parking Lot | 34287.8 | 34287.8 | 0 | 0 |
| Unrefrigerated Warehouse-No Rail | 936851 | 936851 | 0 | 0 |
| Total Energy | 971,139 | 971,139 | 0 | 0 |

Notes:

¹ Electricity use per CalEEMod (5.3 Energy by Land Use).

² Natural Gas use per CalEEMod (5.2 Natural Gas by Land Use).

³ County total energy values from California Energy Commission energy reports available through ecdms.energy.ca.gov.

Construction Water

| | | |
|---------------------------------------|-----------|-----------------|
| Daily Soil Disturbance ¹ | 33 | acres |
| Days of Soil Disturbance ² | 23 | days |
| Water Concentration ³ | 3,020 | gallons/acre |
| Water Energy Intensity ⁴ | 3,500 | kWh/MG |
| Total Construction Water | 2.29 | million gallons |
| Construction Water Energy | 8,023 | kWh |
| | 8.0226 | MWh |
| Percentage Increase Countywide | 0.000049% | |

Notes:

- ¹ Total daily acres disturbed from offroad equipment per CalEEMod (3.0 Construction Detail) and maximum SCAQMD LST values for soil-disturbing equipment.
- ² Number of days of construction with soil-disturbing equipment per CalEEMod (3.0 Construction Detail).
- ³ Water application rate per Air and Waste Management Association's Air Pollution Engineering Manual.
- ⁴ Water energy intensity factor for county subarea per CalEEMod User Guide, Appendix D, page D-343.

Operational Water

| | | |
|--|------------|-----------------|
| Mitigated Indoor | 31 | million gallons |
| Indoor Energy Intensity Factor ¹ | 5,411 | kWh/MG |
| Mitigated Outdoor | 0 | million gallons |
| Outdoor Energy Intensity Factor ² | 3,500 | kWh/MG |
| Operational Water Energy | 168444.43 | kWh |
| Operational Water Energy | 168.44443 | MWh |
| Operational Water Energy | 0.16844443 | GWh |
| Percentage Countywide | 0.0010% | |
| Total water use | 31 | million gallons |

| Land Use ³ | Unmitigated (MG) | | Mitigated (MG) | |
|----------------------------------|------------------|----------|----------------|----------|
| | Indoor | Outdoor | Indoor | Outdoor |
| Parking Lot | 0 | 0 | 0 | 0 |
| Unrefrigerated Warehouse-No Rail | 31 | 0 | 31 | 0 |
| Total Operational Water | 31 | 0 | 31 | 0 |

Notes:

¹ Indoor water energy intensity factor for county subarea per CalEEMod User Guide, Appendix D, page D-343. Factor includes supply, treatment, distribution, and wastewater

² Outdoor water energy intensity factor for county subarea per CalEEMod User Guide, Appendix D, page D-343. Factor includes supply, treatment, and distribution.

³ Operational water use values per CalEEMod (7.2 Water by Land Use).