

APPENDIX D

ENERGY ASSESSMENT

Construction Fuel Consumption

| On-Site Diesel ¹ | MTCO ₂ e | Gallons of Fuel ⁴ | Construction Year 2024 County Fuel | Percent |
|-----------------------------|---------------------|------------------------------|---------------------------------------|---------|
| Demolition | 221 | 21,754 | | |
| Site Preparation/Grading | 989 | 97,463 | | |
| Building Construction | 383 | 37,690 | | |
| Paving | 144 | 14,219 | | |
| Architectural Coating | 16 | 1,549 | | |
| Total | 1,753 | 172,676 | 280,932,332 | 0.0615% |

| Off-Site Diesel ¹ | | | | |
|------------------------------|-----|--------|-------------|---------|
| Demolition | 97 | 9,604 | | |
| Site Preparation/Grading | 0 | 0 | | |
| Building Construction | 332 | 32,745 | | |
| Paving | 0 | 0 | | |
| Architectural Coating | 0 | 0 | | |
| Total | 430 | 42,348 | 280,932,332 | 0.0151% |

| Off-Site Gasoline ² | | | | |
|--------------------------------|-----|--------|-------------|---------|
| Demolition | 8 | 921 | | |
| Site Preparation/Grading | 32 | 3,642 | | |
| Building Construction | 444 | 50,396 | | |
| Paving | 9 | 997 | | |
| Architectural Coating | 70 | 7,933 | | |
| Total | 563 | 63,889 | 861,345,274 | 0.0074% |

| | | | | |
|-------------------------|-------|---------|-------------|---------|
| Total Diesel Fuel | | 215,024 | 280,932,332 | 0.0765% |
| Total Gasoline Fuel | | 63,889 | 861,345,274 | 0.0074% |
| Total Construction Fuel | 2,745 | 278,913 | | |

| 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) |
| 2023 | 111 | 50 | 4 | 74 | 0 | 3 | 179 | 0 | 6 |
| 2024 | 0 | 0 | 0 | 0 | 0 | 0 | 242 | 0 | 7 |
| 2025 | 110 | 48 | 4 | 74 | 0 | 3 | 420 | 0 | 13 |
| 2026 | | | | | | | | | |
| Total | 221 | 97 | 8 | 148 | 0 | 7 | 841 | 0 | 25 |

| 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) |
| 2023 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2024 | 104 | 219 | 331 | 89 | 0 | 5 | 12 | 0 | 67 |
| 2025 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2026 | 279 | 113 | 113 | 55 | 0 | 3 | 4 | 0 | 3 |
| Total | 383 | 332 | 444 | 144 | 0 | 9 | 16 | 0 | 70 |

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.

Climate Registry Conversion Ratios:

- Gasoline: 10.15 kg CO₂ per gallon / 1,000 kg per metric ton

Construction Water Energy

| | | |
|---------------------------------------|--------|-----------------|
| Daily Soil Disturbance ¹ | 4 | acres |
| Days of Soil Disturbance ² | 197 | days |
| Water Concentration ³ | 3,020 | gallons/acre |
| Water Energy Intensity ⁴ | 11,110 | kWh/MG |
| Total Construction Water | 2.38 | million gallons |
| Construction Water Energy | 26,439 | kWh |
| | 0.0264 | GWh |

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 (site prep and grading phases) 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 Fuel

| Vehicle Type | Percent ¹ | Annual VMT ² | MPG ³ | Annual Fuel (Gallons) | Fuel Type | San Bernardino Gallons ⁴ | San Bernardino Percent | |
|---------------------|----------------------|-------------------------|------------------|-----------------------|-----------|-------------------------------------|------------------------|----------|
| Passenger Cars | 0.93 | 47,385,452 | 21.6 | 2,193,771 | Gas | 861,345,274 | 0.2547% | 298,552 |
| Light/Medium Trucks | 0.05 | 2,630,577 | 17.2 | 152,941 | Diesel | 280,932,332 | 0.0544% | 0.01463% |
| Heavy Trucks/Other | 0.02 | 888,227 | 6.1 | 145,611 | Diesel | 280,932,332 | 0.0518% | 0.1063% |
| Total | 1.00 | 50,904,205 | | 2,492,322 | | 1,142,277,606 | | |

| Land Use | LDA | LDT1 | LDT2 | MCY | MDV | LHD1 | LHD2 | MHD | OBUS | UBUS | SBUS | MH | HHD |
|--------------------------|----------|----------|---------|----------|----------|----------|----------|---------|----------|----------|----------|---------|----------|
| Apartments Low Rise | 0.540566 | 0.056059 | 0.17268 | 0.025076 | 0.136494 | 0.026304 | 0.007104 | 0.01168 | 0.000554 | 0.000251 | 0.000954 | 0.00483 | 0.017449 |
| Fast Food Drive Thru | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Discount Superstore | | | | | | | | | | | | | |
| Sit Down Restaurant | | | | | | | | | | | | | |
| Regional Shopping Center | | | | | | | | | | | | | |
| Unrefrigerated Warehouse | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| | 0.540566 | 0.056059 | 0.17268 | 0.025076 | 0.136494 | 0.026304 | 0.007104 | 0.01168 | 0.000554 | 0.000251 | 0.000954 | 0.00483 | 0.017449 |

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 2017 model of projected operational fuel usage.

Operational Water Energy

| | | | | | |
|--|-----------|-----------------|----------|-------|-------------------|
| Mitigated Indoor | 69.7 | million gallons | 112.2 | | |
| Indoor Energy Intensity Factor ¹ | 13,021 | kWh/MG | | | |
| Mitigated Outdoor | 42 | million gallons | | | |
| Outdoor Energy Intensity Factor ² | 11,110 | kWh/MG | | | |
| Operational Water Energy | 1,379,552 | kWh | 1.379552 | 0.01% | 277704 0.0032% |

| Land Use ³ | Unmitigated (MG) | | Mitigated (MG) | |
|--------------------------------|------------------|-----------|----------------|-----------|
| | Indoor | Outdoor | Indoor | Outdoor |
| Apartments Low Rise | 24.4 | 15.4 | 20 | 14 |
| City Park | 0.0 | 5.9 | 0 | 6 |
| Fast Food Drive Thru | 1.8 | 0.1 | 1 | 0 |
| Sit Down Restaurant | 1.5 | 0.1 | 1 | 0 |
| Regional Shopping Center | 17.2 | 10.6 | 14 | 10 |
| Single Family Housing | 20.8 | 13.1 | 17 | 12 |
| Unrefrigerated Warehouse | 21.3 | 0.0 | 17 | 0 |
| Total Operational Water | 87 | 45 | 70 | 42 |

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).

Electricity/Natural Gas Energy

| | Mitigated Project Annual Energy | San Bernardino County Annual Energy ³ | Percentage Increase | |
|-------------------------|------------------------------------|---|------------------------|------------|
| Electricity (kWh/yr) | 7,411,951 | 15,968,515,536 | 0.0464% | 7.411951 |
| Natural Gas (kBTU/yr) | 16,019,523 | 52,723,642,800 | 0.0304% | |
| Natural Gas (therms/yr) | 160,195 | 527,236,428 | 0.0304% | 0.16019523 |

| Land Use | Electricity ¹ (kWh/yr) | | Natural Gas ² (kBTU/yr) | |
|--------------------------|-----------------------------------|------------------|------------------------------------|-------------------|
| | Unmitigated | Mitigated | Unmitigated | Mitigated |
| Apartments Low Rise | 1,563,730 | 1,549,720 | 5,672,220 | 4,990,020 |
| Fast Food Drive Thru | 276,960 | 263,688 | 1,635,960 | 1,543,690 |
| Sit Down Restaurant | 230,800 | 219,740 | 1,363,300 | 1,286,410 |
| Regional Shopping Center | 2,826,190 | 2,635,760 | 512,160 | 423,696 |
| Single Family Housing | 2,548,690 | 2,535,900 | 9,051,820 | 7,627,380 |
| Unrefrigerated Warehouse | 213,208 | 207,143 | 184,719 | 148,327 |
| Total Energy | 7,659,578 | 7,411,951 | 18,420,179 | 16,019,523 |

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.