

Appendix D

## Energy Calculations

Construction Fuel Consumption

| On-Site Diesel <sup>1</sup> (off-road construction Equipment) | MTCO <sub>2</sub> e | Gallons of Fuel <sup>4</sup> | County Fuel in 2025 (Start of Construction) | Percent |
|---------------------------------------------------------------|---------------------|------------------------------|---------------------------------------------|---------|
| Demolition                                                    | 0                   | 0                            |                                             |         |
| Site Preparation/Grading                                      | 31                  | 3,076                        |                                             |         |
| Building Construction                                         | 44                  | 4,330                        |                                             |         |
| Paving                                                        | 8                   | 744                          |                                             |         |
| Architectural Coating                                         | 1                   | 60                           |                                             |         |
| Total                                                         | 83                  | 8,209                        | 281,399,849                                 | 0.0029% |

| Off-Site Diesel <sup>1</sup> (on-road construction trips) |    |       |             |         |
|-----------------------------------------------------------|----|-------|-------------|---------|
| Demolition                                                | 0  | 0     |             |         |
| Site Preparation/Grading                                  | 33 | 3,237 |             |         |
| Building Construction                                     | 1  | 131   |             |         |
| Paving                                                    | 0  | 0     |             |         |
| Architectural Coating                                     | 0  | 0     |             |         |
| Total                                                     | 34 | 3,368 | 281,399,849 | 0.0012% |

| Off-Site Gasoline <sup>2</sup> |   |     |             |         |
|--------------------------------|---|-----|-------------|---------|
| Demolition                     | 0 | 0   |             |         |
| Site Preparation/Grading       | 2 | 224 |             |         |
| Building Construction          | 1 | 120 |             |         |
| Paving                         | 2 | 243 |             |         |
| Architectural Coating          | 0 | 4   |             |         |
| Total                          | 5 | 590 | 828,612,797 | 0.0001% |

|                         |     |        |             |         |            |
|-------------------------|-----|--------|-------------|---------|------------|
| Total Diesel Fuel       |     | 11,577 | 281,399,849 | 0.0041% | 0.00004    |
| Total Gasoline Fuel     |     | 590    | 828,612,797 | 0.0001% | 0.00000004 |
| Total Construction Fuel | 123 | 12,168 |             |         |            |

| Construction Phase <sup>3</sup> | Demolition                |                                  |                            | Site Preparation          |                                  |                            | Grading/Infrastructure Improvements |                                  |                            |
|---------------------------------|---------------------------|----------------------------------|----------------------------|---------------------------|----------------------------------|----------------------------|-------------------------------------|----------------------------------|----------------------------|
|                                 | On-Site Diesel (Off-Road) | Off-Site Diesel (Hauling/Vendor) | Off-Site Gasoline (Worker) | On-Site Diesel (Off-Road) | Off-Site Diesel (Hauling/Vendor) | Off-Site Gasoline (Worker) | On-Site Diesel (Off-Road)           | Off-Site Diesel (Hauling/Vendor) | Off-Site Gasoline (Worker) |
| 2025                            | 0                         | 0                                | 0                          | 7                         | 0                                | 1                          | 24                                  | 33                               | 1                          |
|                                 | 0                         | 0                                | 0                          | 0                         | 0                                | 0                          | 0                                   | 0                                | 0                          |
|                                 |                           |                                  |                            |                           |                                  |                            |                                     |                                  |                            |
| Total                           | 0                         | 0                                | 0                          | 7                         | 0                                | 1                          | 24                                  | 33                               | 1                          |

| Construction Phase <sup>3</sup> | Building Construction     |                                  |                            | Paving                    |                                  |                            | Architectural Coating     |                                  |                            |
|---------------------------------|---------------------------|----------------------------------|----------------------------|---------------------------|----------------------------------|----------------------------|---------------------------|----------------------------------|----------------------------|
|                                 | On-Site Diesel (Off-Road) | Off-Site Diesel (Hauling/Vendor) | Off-Site Gasoline (Worker) | On-Site Diesel (Off-Road) | Off-Site Diesel (Hauling/Vendor) | Off-Site Gasoline (Worker) | On-Site Diesel (Off-Road) | Off-Site Diesel (Hauling/Vendor) | Off-Site Gasoline (Worker) |
| 2025                            | 44                        | 1                                | 1                          | 7                         | 0                                | 2                          | 1                         | 0                                | 0                          |
|                                 | 0                         | 0                                | 0                          | 0                         | 0                                | 0                          | 0                         | 0                                | 0                          |
|                                 |                           |                                  |                            |                           |                                  |                            |                           |                                  |                            |
| Total                           | 44                        | 1                                | 1                          | 8                         | 0                                | 2                          | 1                         | 0                                | 0                          |

Notes:

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

<sup>2</sup> Fuel used for worker trips assumed to be gasoline.

<sup>3</sup> MTCO<sub>2</sub>e rates from CalEEMod (3.0 Construction Emissions Details).

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

**Construction Water Energy**

|                                          |          |                 |
|------------------------------------------|----------|-----------------|
| Daily Soil Disturbance <sup>1</sup>      | 2.5      | acres           |
| Days of Soil Disturbance <sup>2</sup>    | 49       | days            |
| Water Concentration <sup>3</sup>         | 3,020    | gallons/acre    |
| Water Energy Intensity <sup>4</sup>      | 4,238    | kWh/MG          |
| Total Construction Water                 | 0.37     | million gallons |
| Construction Water Energy                | 1,568    | kWh             |
|                                          | 0.0016   | GWh             |
| San Bernardino County Annual Electricity | 16,630   | GWh             |
| Percentage Increase                      | 0.00001% |                 |

**Notes:**

<sup>1</sup> Total daily acres disturbed from offroad equipment per CalEEMod (3.0 Construction Emissions Detail) and maximum SCAQMD LST values for soil-disturbing equipment.

<sup>2</sup> Number of days of construction with soil-disturbing equipment per CalEEMod (5.1 Construction Schedule).

<sup>3</sup> Water application rate per Air and Waste Management Association's Air Pollution Engineering Manual.

<sup>4</sup> Water energy intensity factor for subarea per CalEEMod User Guide, Appendix G, Tab G-32.

| MITIGATED           |         |                         |                  |                       |           |                                            |            |
|---------------------|---------|-------------------------|------------------|-----------------------|-----------|--------------------------------------------|------------|
| Vehicle Type        | Percent | Annual VMT <sup>1</sup> | MPG <sup>2</sup> | Annual Fuel (Gallons) | Fuel Type | San Bernardino County Gallons <sup>3</sup> | RS Percent |
| Passenger Cars      | 0.92    | 1,014,482               | 21.6             | 46,967                | Gas       | 828,612,796                                | 0.0057%    |
| Light/Medium Trucks | 0.06    | 62,924                  | 17.2             | 3,658                 | Diesel    | 281,399,849                                | 0.0013%    |
| Heavy Trucks/Other  | 0.02    | 21,509                  | 6.1              | 3,526                 | Diesel    | 281,399,849                                | 0.0013%    |
| Trucks Total        |         | 84,432                  |                  | 7,184                 |           | 281,399,849                                | 0.0026%    |
| Total               |         | 1,098,914               |                  |                       |           |                                            |            |

| Land Use <sup>5</sup>              | LDA    | LDT1   | LDT2   | MCY    | MDV    | LHD1   | LHD2   | MHD    | OBUS   | UBUS   | SBUS   | MH     | HHD    |
|------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Unrefrigerated Warehouse - No Rail | 0.4864 | 0.0444 | 0.2086 | 0.0263 | 0.1574 | 0.0346 | 0.0094 | 0.0054 | 0.0005 | 0.0002 | 0.0011 | 0.0061 | 0.0196 |

Notes:

<sup>1</sup> Total annual operational VMT based on annual VMT from CalEEMod (5.9 Operational Mobile Sources).

<sup>2</sup> Average fuel economy derived from Department of Transportation.

<sup>3</sup> Total annual county fuel per EMFAC 2021 model of projected operational fuel usage.

Operational Water Energy

| UNMITIGATED                                  |           |                 |
|----------------------------------------------|-----------|-----------------|
| Unmitigated Indoor                           | 0.5       | million gallons |
| Indoor Energy Intensity Factor <sup>1</sup>  | 5,757     | kWh/MG          |
| Unmitigated Outdoor                          | 0         | million gallons |
| Outdoor Energy Intensity Factor <sup>2</sup> | 4,238     | kWh/MG          |
| Operational Water Energy                     | 4,787     | kWh             |
| Operational Water Energy                     | 0.0048    | GWh             |
| Sab Bernardino County Annual Electricity     | 16,630.00 | GWh             |
| Percentage Increase                          | 0.0000%   |                 |
| MITIGATED                                    |           |                 |
| Mitigated Indoor                             | 0.0       | million gallons |
| Indoor Energy Intensity Factor <sup>1</sup>  | 6,807     | kWh/MG          |
| Mitigated Outdoor                            | 0         | million gallons |
| Outdoor Energy Intensity Factor <sup>2</sup> | 4,238     | kWh/MG          |
| Operational Water Energy                     | 0         | kWh             |
| Operational Water Energy                     | 0.0000    | GWh             |
| San Bernardino County Annual Electricity     | 16,630.00 | GWh             |
| Percentage Increase                          | 0.0000%   |                 |

| Land Use <sup>3</sup>             | Unmitigated (gal/year) |         | Mitigated (gal/year) |         |
|-----------------------------------|------------------------|---------|----------------------|---------|
|                                   | Indoor                 | Outdoor | Indoor               | Outdoor |
| Strip Mall                        | 539,248                | 397,077 | 0                    | 0       |
| Parking Lot                       | 0                      | -       |                      |         |
|                                   |                        |         |                      |         |
| Total Operational Water (MG/year) | 1                      | 0       | 0                    | 0       |

Notes:

<sup>1</sup> Indoor water energy intensity factor for subarea per CalEEMod User Guide, Appendix G, Tab G-32. Factor includes supply, treatment, distribution, and wastewater.

<sup>2</sup> Outdoor water energy intensity factor for subarea per CalEEMod User Guide, Appendix G, Tab G-32. Factor includes supply, treatment, and distribution.

<sup>3</sup> Operational water use values per CalEEMod (5.12 Operational Water and Wastewater Consumption).

Elecricity/Natural Gas Energy

| UNMITIGATED             |                                      |                                                     |                        |
|-------------------------|--------------------------------------|-----------------------------------------------------|------------------------|
|                         | Unmitigated Project<br>Annual Energy | San Bernardino County<br>Annual Energy <sup>3</sup> | Percentage<br>Increase |
| Electricity (kWh/yr)    | 98,373                               | 68,484,956,280                                      | 0.0001%                |
| Electricity (GWh/yr)    | 0.0984                               | 68,485                                              | 0.0001%                |
| Natural Gas (kBTU/yr)   | 42,919                               | 282,028,593,500                                     | 0.0000%                |
| Natural Gas (therms/yr) | 429                                  | 2,820,285,935                                       | 0.0000%                |
| MITIGATED               |                                      |                                                     |                        |
|                         | Mitigated Project<br>Annual Energy   | San Bernardino County<br>Annual Energy <sup>3</sup> | Percentage<br>Increase |
| Electricity (kWh/yr)    | 0                                    | 68,484,956,280                                      | 0.0000%                |
| Electricity (GWh/yr)    | 0.0000                               | 68,485                                              | 0.0000%                |
| Natural Gas (kBTU/yr)   | 0                                    | 282,028,593,500                                     | 0.0000%                |
| Natural Gas (therms/yr) | 0                                    | 2,820,285,935                                       | 0.0000%                |

| Land Use    | Electricity <sup>1</sup> (kWh/yr) |           | Natural Gas <sup>2</sup> (kBTU/yr) |           |
|-------------|-----------------------------------|-----------|------------------------------------|-----------|
|             | Unmitigated                       | Mitigated | Unmitigated                        | Mitigated |
| Strip Mall  | 70,822                            | 0         | 42,919                             | 0         |
| Parking Lot | 27,550                            | 0         | 0                                  | 0         |