

## **Appendix C:** **Air Quality, Greenhouse Gas, and Energy Supporting Information**

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# **Appendix C: Air Quality, Greenhouse Gas Emissions, and Energy Supporting Information**

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### Pleasanton Housing Element Update CalEEMod Notes

Note 1. Land uses associated with development of the proposed project represent the below land use data:

| Site Number   | Name                              | Density    | Maximum Capacity | Buildable Acreage | Person Per Household | Population Projection | CalEEMod Land Use          |
|---------------|-----------------------------------|------------|------------------|-------------------|----------------------|-----------------------|----------------------------|
| 2             | Stoneridge Shopping Center (Mall) | High       | 1,440            | 18.00             | 2.2                  | 3168                  | Apartments Low Rise        |
| 4             | Owens (Motel 6 and Tommy T)       | High       | 94               | 2.36              | 2.2                  | 207                   |                            |
| 5             | Laborer Council                   | High       | 54               | 1.36              | 2.2                  | 119                   |                            |
| 6             | Signature Center                  | High       | 440              | 11.00             | 2.2                  | 968                   |                            |
| 7             | Hacienda Terrace                  | High       | 80               | 2.00              | 2.2                  | 176                   |                            |
| 9             | Metro 580                         | High       | 375              | 5.00              | 2.2                  | 825                   |                            |
| 11            | Old Santa Rita Area               | High       | 1,311            | 21.85             | 2.2                  | 2885                  |                            |
| 12            | Pimlico Area (North side)         | High       | 85               | 2.12              | 2.2                  | 187                   |                            |
| 18            | Valley Plaza                      | High       | 220              | 5.50              | 2.2                  | 484                   |                            |
| 20            | Boulder Court                     | High       | 378              | 9.45              | 2.2                  | 832                   |                            |
| 21a           | Kiewit                            | High       | 200              | 5.00              | 2.2                  | 440                   |                            |
| 23            | Sunol Boulevard Properties        | High       | 956              | 23.89             | 2.2                  | 2104                  |                            |
| 29            | Oracle                            | High       | 225              | 3.00              | 2.2                  | 495                   |                            |
| <b>TOTALS</b> |                                   |            | <b>5,858</b>     | <b>110.53</b>     | <b>2.2</b>           | <b>12,890</b>         | <b>Apartments Low Rise</b> |
| 1             | Lester                            | Low        | 31               | 12.90             | 2.99                 | 93                    | Single Family Housing      |
| 3             | PUSD-Donlon                       | Low        | 28               | 5.50              | 2.99                 | 84                    |                            |
| 22            | Merritt                           | Low        | 91               | 45.59             | 2.99                 | 273                   |                            |
| 26            | St. Augustine                     | Low        | 29               | 4.15              | 2.99                 | 87                    |                            |
| 27            | PUSD-Vineyard                     | Low        | 25               | 5.00              | 2.99                 | 75                    |                            |
| 15            | Rheem Drive Area (southwest side) | Low/Medium | 137              | 9.77              | 2.99                 | 410                   |                            |
| 21b           | Kiewit                            | Low/Medium | 560              | 40.00             | 2.99                 | 1675                  |                            |

|               |                         |        |            |               |             |              |                              |
|---------------|-------------------------|--------|------------|---------------|-------------|--------------|------------------------------|
| -             | -                       | ADUs   | 93         | -             | 2.2         | 205          |                              |
| <b>TOTALS</b> |                         |        | <b>901</b> | <b>122.91</b> | <b>2.99</b> | <b>2,902</b> | <b>Single Family Housing</b> |
| 8             | Muslim Community Center | Medium | 125        | 5.00          | 2.48        | 310          | Condo/Townhouse              |
| 14            | St. Elizabeth Seton     | Medium | 51         | 2.85          | 2.48        | 127          |                              |
| 16            | Tri-Valley Inn          | Medium | 62         | 2.47          | 2.48        | 154          |                              |
| 19            | Black Avenue            | Medium | 65         | 2.59          | 2.48        | 162          |                              |
| 24            | Sonoma Drive Area       | Medium | 163        | 6.51          | 2.48        | 405          |                              |
| 25            | PUSD-District           | Medium | 163        | 10.17         | 2.48        | 405          |                              |
| <b>TOTALS</b> |                         |        | <b>629</b> | <b>29.59</b>  | <b>2.48</b> | <b>1,563</b> | <b>Condo/Townhouse</b>       |
| -             | BART                    | High   | 306        | -             | 2.2         | 674          | Apartments Mid Rise          |
| <b>TOTALS</b> |                         |        | <b>306</b> | <b>-</b>      | <b>2.2</b>  | <b>674</b>   | <b>Apartments Mid Rise</b>   |

All building square footages were left as CalEEMod default.

Note 2. Fehr & Peers prepared a Transportation Assessment for the proposed project, dated August 2022,<sup>1</sup> which forms the basis for values altered in CalEEMod to estimate project-generated mobile source emissions. As discussed therein, current citywide home-based per resident VMT constitutes 28.2 miles daily and a citywide average per resident home-based VMT of 25.6 miles in 2040 with the proposed project. Taking the home-based per resident VMT for 2040 to represent buildout conditions of the proposed project in 2031, the modeling contained in this analysis utilizes the 25.6 per resident VMT to characterize anticipated vehicle activity under buildout of the proposed project. The below table illustrates the trip distances utilized for the mobile input factors in CalEEMod to account for this information. Daily VMT data in the Transportation Assessment is assumed to represent weekday vehicle activity. All adjusted trips were assigned as 100 percent primary and to the “H-W” trip category. No trips were assigned in CalEEMod to diverted or pass-by trips or to the “H-S” or “H-O” trip categories.

<sup>1</sup> Fehr & Peers. 2022. Pleasanton Housing Element – Transportation Assessment. August.

| CalEEMod Land Use                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Metric        | Quantity | Population | Home-Based<br>Per Resident<br>Daily VMT<br>(2031) | Total<br>Weekday<br>VMT<br>(2031) | CalEEMod<br>Default<br>Weekday<br>Trip Rate | CalEEMod<br>Default Trip<br>Distance <sup>1</sup> | Adjusted<br>Trip<br>Distance <sup>2</sup> |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|----------|------------|---------------------------------------------------|-----------------------------------|---------------------------------------------|---------------------------------------------------|-------------------------------------------|
| Apartments Low Rise                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Dwelling Unit | 5,858    | 12,890     | 25.6                                              | 329,984                           | 7.32                                        | 8.319                                             | 7.70                                      |
| Apartments Mid Rise                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Dwelling Unit | 306      | 674        | 25.6                                              | 17,254                            | 5.44                                        | 8.319                                             | 10.37                                     |
| Condo/Townhouse                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Dwelling Unit | 629      | 1,563      | 25.6                                              | 40,013                            | 7.32                                        | 8.319                                             | 8.69                                      |
| Single Family Housing                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Dwelling Unit | 901      | 2,902      | 25.6                                              | 74,291                            | 9.44                                        | 8.319                                             | 8.73                                      |
| <b>Notes:</b> <ol style="list-style-type: none"> <li>1. This model default travel distance represents a weighted average. CalEEMod default trip distances for the above land uses consist of 10.8 miles for “H-W” (Home-Work) trips at 31 percent of total trips, 4.8 miles for “H-S” (Home-Shop) at 15 percent of total trips, and 5.7 miles for “H-O” (Home-Other) trips at 54 percent of total trips.</li> <li>2. The adjusted trip distances were identified by multiplying the population for each land use by the weekday daily VMT per resident rate. That total weekday daily VMT retrieved for each land use was then divided by that same land use’s dwelling unit count and then divided by the default weekday trip generate rate to identify an average travel distance per trip.</li> </ol> |               |          |            |                                                   |                                   |                                             |                                                   |                                           |

Note 3. The proposed project would be required to comply with BAAQMD District Regulation 6, Rule 3, which prohibits any person or builder from installing a wood-burning device in new building construction. Therefore, no wood-burning hearths are included in the project modeling.

## Pleasanton Housing Element Update 2031 - Alameda County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****Pleasanton Housing Element Update 2031****Alameda County, Annual****1.0 Project Characteristics****1.1 Land Usage**

| Land Uses             | Size     | Metric        | Lot Acreage | Floor Surface Area | Population |
|-----------------------|----------|---------------|-------------|--------------------|------------|
| Apartments Low Rise   | 5,858.00 | Dwelling Unit | 110.53      | 5,858,000.00       | 12890      |
| Apartments Mid Rise   | 306.00   | Dwelling Unit | 8.05        | 306,000.00         | 674        |
| Condo/Townhouse       | 629.00   | Dwelling Unit | 29.59       | 629,000.00         | 1563       |
| Single Family Housing | 901.00   | Dwelling Unit | 122.91      | 1,621,800.00       | 2902       |

**1.2 Other Project Characteristics**

|                                 |                                  |                                 |       |                                  |       |
|---------------------------------|----------------------------------|---------------------------------|-------|----------------------------------|-------|
| <b>Urbanization</b>             | Urban                            | <b>Wind Speed (m/s)</b>         | 2.2   | <b>Precipitation Freq (Days)</b> | 63    |
| <b>Climate Zone</b>             | 4                                |                                 |       | <b>Operational Year</b>          | 2031  |
| <b>Utility Company</b>          | Pacific Gas and Electric Company |                                 |       |                                  |       |
| <b>CO2 Intensity (lb/MW hr)</b> | 203.98                           | <b>CH4 Intensity (lb/MW hr)</b> | 0.033 | <b>N2O Intensity (lb/MW hr)</b>  | 0.004 |

**1.3 User Entered Comments & Non-Default Data**

Project Characteristics -

Land Use - CalEEMod Note 1

Construction Phase - Operation Only

Vehicle Trips - CalEEMod Note 2

Woodstoves - CalEEMod Note 3

| Table Name           | Column Name | Default Value | New Value |
|----------------------|-------------|---------------|-----------|
| tblConstructionPhase | NumDays     | 300.00        | 0.00      |

### EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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## Pleasanton Housing Element Update 2031 - Alameda County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

|                             |                    |        |        |
|-----------------------------|--------------------|--------|--------|
| tblVehicleTrips             | HW_TL              | 10.80  | 7.70   |
| tblVehicleTrips             | HW_TL              | 10.80  | 10.37  |
| tblVehicleTrips             | HW_TL              | 10.80  | 8.69   |
| tblVehicleTrips             | HW_TL              | 10.80  | 8.73   |
| tblVehicleTrips             | HW_TTP             | 31.00  | 100.00 |
| tblVehicleTrips             | HW_TTP             | 31.00  | 100.00 |
| tblVehicleTrips             | HW_TTP             | 31.00  | 100.00 |
| tblVehicleTrips             | HW_TTP             | 31.00  | 100.00 |
| tblVehicleTrips             | PB_TP              | 3.00   | 0.00   |
| tblVehicleTrips             | PB_TP              | 3.00   | 0.00   |
| tblVehicleTrips             | PB_TP              | 3.00   | 0.00   |
| tblVehicleTrips             | PB_TP              | 3.00   | 0.00   |
| tblVehicleTrips             | PR_TP              | 86.00  | 100.00 |
| tblVehicleTrips             | PR_TP              | 86.00  | 100.00 |
| tblVehicleTrips             | PR_TP              | 86.00  | 100.00 |
| tblVehicleTrips             | PR_TP              | 86.00  | 100.00 |
| tblWoodstoves               | NumberCatalytic    | 117.16 | 0.00   |
| tblWoodstoves               | NumberCatalytic    | 6.12   | 0.00   |
| tblWoodstoves               | NumberCatalytic    | 12.58  | 0.00   |
| tblWoodstoves               | NumberCatalytic    | 36.04  | 0.00   |
| tblWoodstoves               | NumberNoncatalytic | 117.16 | 0.00   |
| tblWoodstoves               | NumberNoncatalytic | 6.12   | 0.00   |
| tblWoodstoves               | NumberNoncatalytic | 12.58  | 0.00   |
| tblWoodstoves               | NumberNoncatalytic | 36.04  | 0.00   |
| tblWoodstoves               | WoodstoveDayYear   | 14.12  | 0.00   |
| tblWoodstoves               | WoodstoveDayYear   | 14.12  | 0.00   |
| tblWoodstoves               | WoodstoveDayYear   | 14.12  | 0.00   |
| tblWoodstoves<br>Appendix C |                    |        |        |

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**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

|               |                   |        |      |
|---------------|-------------------|--------|------|
| tblWoodstoves | WoodstoveDayYear  | 21.06  | 0.00 |
| tblWoodstoves | WoodstoveWoodMass | 582.40 | 0.00 |
| tblWoodstoves | WoodstoveWoodMass | 582.40 | 0.00 |
| tblWoodstoves | WoodstoveWoodMass | 582.40 | 0.00 |
| tblWoodstoves | WoodstoveWoodMass | 956.80 | 0.00 |

**2.0 Emissions Summary****2.1 Overall Construction****Unmitigated Construction**

|         | ROG     | NOx    | CO     | SO2    | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4    | N2O    | CO2e   |
|---------|---------|--------|--------|--------|---------------|--------------|------------|----------------|---------------|-------------|----------|-----------|-----------|--------|--------|--------|
| Year    | tons/yr |        |        |        |               |              |            |                |               |             | MT/yr    |           |           |        |        |        |
| 2022    | 0.0000  | 0.0000 | 0.0000 | 0.0000 | 0.0000        | 0.0000       | 0.0000     | 0.0000         | 0.0000        | 0.0000      | 0.0000   | 0.0000    | 0.0000    | 0.0000 | 0.0000 | 0.0000 |
| Maximum | 0.0000  | 0.0000 | 0.0000 | 0.0000 | 0.0000        | 0.0000       | 0.0000     | 0.0000         | 0.0000        | 0.0000      | 0.0000   | 0.0000    | 0.0000    | 0.0000 | 0.0000 | 0.0000 |

**Mitigated Construction**

|      | ROG     | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|------|---------|-----|----|-----|---------------|--------------|------------|----------------|---------------|-------------|----------|-----------|-----------|-----|-----|------|
| Year | tons/yr |     |    |     |               |              |            |                |               |             | MT/yr    |           |           |     |     |      |

## Pleasanton Housing Element Update 2031 - Alameda County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

|         |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 2022    | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Maximum | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

|                   | ROG  | NOx  | CO   | SO2  | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4  | N2O  | CO2e |
|-------------------|------|------|------|------|---------------|--------------|------------|----------------|---------------|-------------|----------|----------|-----------|------|------|------|
| Percent Reduction | 0.00 | 0.00 | 0.00 | 0.00 | 0.00          | 0.00         | 0.00       | 0.00           | 0.00          | 0.00        | 0.00     | 0.00     | 0.00      | 0.00 | 0.00 | 0.00 |

| Quarter | Start Date | End Date | Maximum Unmitigated ROG + NOX (tons/quarter) | Maximum Mitigated ROG + NOX (tons/quarter) |
|---------|------------|----------|----------------------------------------------|--------------------------------------------|
|         |            | Highest  |                                              |                                            |

**2.2 Overall Operational****Unmitigated Operational**

|          | ROG     | NOx     | CO       | SO2         | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2   | NBio- CO2   | Total CO2   | CH4     | N2O         | CO2e        |
|----------|---------|---------|----------|-------------|---------------|--------------|------------|----------------|---------------|-------------|------------|-------------|-------------|---------|-------------|-------------|
| Category | tons/yr |         |          |             |               |              |            |                |               |             | MT/yr      |             |             |         |             |             |
| Area     | 40.5075 | 0.7910  | 57.0349  | 3.8700e-003 |               | 0.3277       | 0.3277     |                | 0.3277        | 0.3277      | 0.0000     | 248.6440    | 248.6440    | 0.0919  | 2.8500e-003 | 251.7897    |
| Energy   | 0.5134  | 4.3876  | 1.8671   | 0.0280      |               | 0.3547       | 0.3547     |                | 0.3547        | 0.3547      | 0.0000     | 8,327.0211  | 8,327.0211  | 0.6225  | 0.1568      | 8,389.3112  |
| Mobile   | 20.3268 | 27.6748 | 207.1467 | 0.4859      | 61.5913       | 0.3206       | 61.9119    | 16.4573        | 0.2996        | 16.7569     | 0.0000     | 44,946.8933 | 44,946.8933 | 2.5372  | 2.2541      | 45,682.0407 |
| Waste    |         |         |          |             |               | 0.0000       | 0.0000     |                | 0.0000        | 0.0000      | 881.7156   | 0.0000      | 881.7156    | 52.1079 | 0.0000      | 2,184.4131  |
| Water    |         |         |          |             |               | 0.0000       | 0.0000     |                | 0.0000        | 0.0000      | 159.0378   | 353.3137    | 512.3515    | 16.3919 | 0.3926      | 1,039.1508  |
| Total    | 61.3477 | 32.8533 | 266.0487 | 0.5178      | 61.5913       | 1.0030       | 62.5943    | 16.4573        | 0.9820        | 17.4393     | 1,040.7534 | 53,875.8720 | 54,916.6255 | 71.7514 | 2.8064      | 57,546.7054 |

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**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****Mitigated Operational**

|              | ROG            | NOx            | CO              | SO2           | Fugitive PM10  | Exhaust PM10  | PM10 Total     | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total    | Bio- CO2          | NBio- CO2          | Total CO2          | CH4            | N2O           | CO2e               |
|--------------|----------------|----------------|-----------------|---------------|----------------|---------------|----------------|----------------|---------------|----------------|-------------------|--------------------|--------------------|----------------|---------------|--------------------|
| Category     | tons/yr        |                |                 |               |                |               |                |                |               |                | MT/yr             |                    |                    |                |               |                    |
| Area         | 40.5075        | 0.7910         | 57.0349         | 3.8700e-003   |                | 0.3277        | 0.3277         |                | 0.3277        | 0.3277         | 0.0000            | 248.6440           | 248.6440           | 0.0919         | 2.8500e-003   | 251.7897           |
| Energy       | 0.5134         | 4.3876         | 1.8671          | 0.0280        |                | 0.3547        | 0.3547         |                | 0.3547        | 0.3547         | 0.0000            | 8,327.0211         | 8,327.0211         | 0.6225         | 0.1568        | 8,389.3112         |
| Mobile       | 20.3268        | 27.6748        | 207.1467        | 0.4859        | 61.5913        | 0.3206        | 61.9119        | 16.4573        | 0.2996        | 16.7569        | 0.0000            | 44,946.8933        | 44,946.8933        | 2.5372         | 2.2541        | 45,682.0407        |
| Waste        |                |                |                 |               |                | 0.0000        | 0.0000         |                | 0.0000        | 0.0000         | 881.7156          | 0.0000             | 881.7156           | 52.1079        | 0.0000        | 2,184.4131         |
| Water        |                |                |                 |               |                | 0.0000        | 0.0000         |                | 0.0000        | 0.0000         | 159.0378          | 353.3137           | 512.3515           | 16.3919        | 0.3926        | 1,039.1508         |
| <b>Total</b> | <b>61.3477</b> | <b>32.8533</b> | <b>266.0487</b> | <b>0.5178</b> | <b>61.5913</b> | <b>1.0030</b> | <b>62.5943</b> | <b>16.4573</b> | <b>0.9820</b> | <b>17.4393</b> | <b>1,040.7534</b> | <b>53,875.8720</b> | <b>54,916.6255</b> | <b>71.7514</b> | <b>2.8064</b> | <b>57,546.7054</b> |

|                          | ROG         | NOx         | CO          | SO2         | Fugitive PM10 | Exhaust PM10 | PM10 Total  | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2    | NBio-CO2    | Total CO2   | CH4         | N2O         | CO2e        |
|--------------------------|-------------|-------------|-------------|-------------|---------------|--------------|-------------|----------------|---------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| <b>Percent Reduction</b> | <b>0.00</b> | <b>0.00</b> | <b>0.00</b> | <b>0.00</b> | <b>0.00</b>   | <b>0.00</b>  | <b>0.00</b> | <b>0.00</b>    | <b>0.00</b>   | <b>0.00</b> | <b>0.00</b> | <b>0.00</b> | <b>0.00</b> | <b>0.00</b> | <b>0.00</b> | <b>0.00</b> |

**3.0 Construction Detail****Construction Phase**

| Phase Number | Phase Name | Phase Type | Start Date | End Date | Num Days Week | Num Days | Phase Description |
|--------------|------------|------------|------------|----------|---------------|----------|-------------------|
|              | Appendix C |            |            |          |               |          |                   |

## Pleasanton Housing Element Update 2031 - Alameda County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

|   |            |            |           |           |   |   |
|---|------------|------------|-----------|-----------|---|---|
| 1 | Demolition | Demolition | 8/25/2022 | 8/24/2022 | 5 | 0 |
|---|------------|------------|-----------|-----------|---|---|

**Acres of Grading (Site Preparation Phase): 0****Acres of Grading (Grading Phase): 0****Acres of Paving: 0****Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating****OffRoad Equipment**

| Phase Name | Offroad Equipment Type   | Amount | Usage Hours | Horse Power | Load Factor |
|------------|--------------------------|--------|-------------|-------------|-------------|
| Demolition | Concrete/Industrial Saws | 1      | 8.00        | 81          | 0.73        |
| Demolition | Excavators               | 3      | 8.00        | 158         | 0.38        |
| Demolition | Rubber Tired Dozers      | 2      | 8.00        | 247         | 0.40        |

**Trips and VMT**

| Phase Name | Offroad Equipment Count | Worker Trip Number | Vendor Trip Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
|------------|-------------------------|--------------------|--------------------|---------------------|--------------------|--------------------|---------------------|----------------------|----------------------|-----------------------|
| Demolition | 6                       | 15.00              | 0.00               | 0.00                | 10.80              | 7.30               | 20.00               | LD_Mix               | HDT_Mix              | HHDT                  |

**3.1 Mitigation Measures Construction****3.2 Demolition - 2022****Unmitigated Construction On-Site**

|          | ROG        | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|----------|------------|-----|----|-----|---------------|--------------|------------|----------------|---------------|-------------|----------|-----------|-----------|-----|-----|------|
| Category | tons/yr    |     |    |     |               |              |            |                |               |             | MT/yr    |           |           |     |     |      |
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**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

|              |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |
|--------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Off-Road     | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        |
| <b>Total</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> |

**Unmitigated Construction Off-Site**

|              | ROG           | NOx           | CO            | SO2           | Fugitive PM10 | Exhaust PM10  | PM10 Total    | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total   | Bio- CO2      | NBio- CO2     | Total CO2     | CH4           | N2O           | CO2e          |
|--------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|----------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Category     | tons/yr       |               |               |               |               |               |               |                |               |               | MT/yr         |               |               |               |               |               |
| Hauling      | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000         | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        |
| Vendor       | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000         | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        |
| Worker       | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000         | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        |
| <b>Total</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b>  | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> |

**Mitigated Construction On-Site**

|          | ROG     | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|----------|---------|-----|----|-----|---------------|--------------|------------|----------------|---------------|-------------|----------|-----------|-----------|-----|-----|------|
| Category | tons/yr |     |    |     |               |              |            |                |               |             | MT/yr    |           |           |     |     |      |

## Pleasanton Housing Element Update 2031 - Alameda County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

|              |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |
|--------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Off-Road     | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        |
| <b>Total</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> |

**Mitigated Construction Off-Site**

|              | ROG           | NOx           | CO            | SO2           | Fugitive PM10 | Exhaust PM10  | PM10 Total    | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total   | Bio- CO2      | NBio- CO2     | Total CO2     | CH4           | N2O           | CO2e          |
|--------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|----------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Category     | tons/yr       |               |               |               |               |               |               |                |               |               | MT/yr         |               |               |               |               |               |
| Hauling      | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000         | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        |
| Vendor       | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000         | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        |
| Worker       | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000         | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        |
| <b>Total</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b>  | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> |

**4.0 Operational Detail - Mobile****4.1 Mitigation Measures Mobile**

## Pleasanton Housing Element Update 2031 - Alameda County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

|             | ROG     | NOx     | CO       | SO2    | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2   | Total CO2   | CH4    | N2O    | CO2e        |
|-------------|---------|---------|----------|--------|---------------|--------------|------------|----------------|---------------|-------------|----------|-------------|-------------|--------|--------|-------------|
| Category    | tons/yr |         |          |        |               |              |            |                |               |             | MT/yr    |             |             |        |        |             |
| Mitigated   | 20.3268 | 27.6748 | 207.1467 | 0.4859 | 61.5913       | 0.3206       | 61.9119    | 16.4573        | 0.2996        | 16.7569     | 0.0000   | 44,946.8933 | 44,946.8933 | 2.5372 | 2.2541 | 45,682.0407 |
| Unmitigated | 20.3268 | 27.6748 | 207.1467 | 0.4859 | 61.5913       | 0.3206       | 61.9119    | 16.4573        | 0.2996        | 16.7569     | 0.0000   | 44,946.8933 | 44,946.8933 | 2.5372 | 2.2541 | 45,682.0407 |

**4.2 Trip Summary Information**

| Land Use              | Average Daily Trip Rate |           |           | Unmitigated | Mitigated   |
|-----------------------|-------------------------|-----------|-----------|-------------|-------------|
|                       | Weekday                 | Saturday  | Sunday    | Annual VMT  | Annual VMT  |
| Apartments Low Rise   | 42,880.56               | 47,684.12 | 36788.24  | 119,669,614 | 119,669,614 |
| Apartments Mid Rise   | 1,664.64                | 1,502.46  | 1251.54   | 5,973,269   | 5,973,269   |
| Condo/Townhouse       | 4,604.28                | 5,120.06  | 3950.12   | 14,501,543  | 14,501,543  |
| Single Family Housing | 8,505.44                | 8,595.54  | 7703.55   | 26,704,783  | 26,704,783  |
| Total                 | 57,654.92               | 62,902.18 | 49,693.45 | 166,849,209 | 166,849,209 |

**4.3 Trip Type Information**

| Land Use              | Miles      |            |             | Trip %     |            |             | Trip Purpose % |          |         |
|-----------------------|------------|------------|-------------|------------|------------|-------------|----------------|----------|---------|
|                       | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C-W | H-S or C-C | H-O or C-NW | Primary        | Diverted | Pass-by |
| Apartments Low Rise   | 7.70       | 4.80       | 5.70        | 100.00     | 0.00       | 0.00        | 100            | 0        | 0       |
| Apartments Mid Rise   | 10.37      | 4.80       | 5.70        | 100.00     | 0.00       | 0.00        | 100            | 0        | 0       |
| Condo/Townhouse       | 8.69       | 4.80       | 5.70        | 100.00     | 0.00       | 0.00        | 100            | 0        | 0       |
| Single Family Housing | 8.73       | 4.80       | 5.70        | 100.00     | 0.00       | 0.00        | 100            | 0        | 0       |

**4.4 Fleet Mix**

Appendix C

## Pleasanton Housing Element Update 2031 - Alameda County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

| Land Use              | LDA      | LDT1     | LDT2     | MDV      | LHD1     | LHD2     | MHD      | HHD      | OBUS     | UBUS     | MCY      | SBUS     | MH       |
|-----------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Apartments Low Rise   | 0.573366 | 0.056449 | 0.176062 | 0.112002 | 0.020296 | 0.005414 | 0.015314 | 0.013069 | 0.000771 | 0.000504 | 0.024056 | 0.000367 | 0.002329 |
| Apartments Mid Rise   | 0.573366 | 0.056449 | 0.176062 | 0.112002 | 0.020296 | 0.005414 | 0.015314 | 0.013069 | 0.000771 | 0.000504 | 0.024056 | 0.000367 | 0.002329 |
| Condo/Townhouse       | 0.573366 | 0.056449 | 0.176062 | 0.112002 | 0.020296 | 0.005414 | 0.015314 | 0.013069 | 0.000771 | 0.000504 | 0.024056 | 0.000367 | 0.002329 |
| Single Family Housing | 0.573366 | 0.056449 | 0.176062 | 0.112002 | 0.020296 | 0.005414 | 0.015314 | 0.013069 | 0.000771 | 0.000504 | 0.024056 | 0.000367 | 0.002329 |

**5.0 Energy Detail**

Historical Energy Use: N

**5.1 Mitigation Measures Energy**

|                         | ROG     | NOx    | CO     | SO2    | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2  | Total CO2  | CH4    | N2O    | CO2e       |
|-------------------------|---------|--------|--------|--------|---------------|--------------|------------|----------------|---------------|-------------|----------|------------|------------|--------|--------|------------|
| Category                | tons/yr |        |        |        |               |              |            |                |               |             | MT/yr    |            |            |        |        |            |
| Electricity Mitigated   |         |        |        |        |               | 0.0000       | 0.0000     |                | 0.0000        | 0.0000      | 0.0000   | 3,245.7286 | 3,245.7286 | 0.5251 | 0.0637 | 3,277.8231 |
| Electricity Unmitigated |         |        |        |        |               | 0.0000       | 0.0000     |                | 0.0000        | 0.0000      | 0.0000   | 3,245.7286 | 3,245.7286 | 0.5251 | 0.0637 | 3,277.8231 |
| NaturalGas Mitigated    | 0.5134  | 4.3876 | 1.8671 | 0.0280 |               | 0.3547       | 0.3547     |                | 0.3547        | 0.3547      | 0.0000   | 5,081.2925 | 5,081.2925 | 0.0974 | 0.0932 | 5,111.4880 |
| NaturalGas Unmitigated  | 0.5134  | 4.3876 | 1.8671 | 0.0280 |               | 0.3547       | 0.3547     |                | 0.3547        | 0.3547      | 0.0000   | 5,081.2925 | 5,081.2925 | 0.0974 | 0.0932 | 5,111.4880 |

**5.2 Energy by Land Use - NaturalGas****Unmitigated** Appendix C

## Pleasanton Housing Element Update 2031 - Alameda County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

|                       | Natural Gas Use | ROG           | NOx           | CO            | SO2           | Fugitive PM10 | Exhaust PM10  | PM10 Total    | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total   | Bio- CO2      | NBio- CO2         | Total CO2         | CH4           | N2O           | CO2e              |
|-----------------------|-----------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|----------------|---------------|---------------|---------------|-------------------|-------------------|---------------|---------------|-------------------|
| Land Use              | kBTU/yr         | tons/yr       |               |               |               |               |               |               |                |               |               | MT/yr         |                   |                   |               |               |                   |
| Apartments Low Rise   | 5.78055e+07     | 0.3117        | 2.6636        | 1.1334        | 0.0170        |               | 0.2154        | 0.2154        |                | 0.2154        | 0.2154        | 0.0000        | 3,084.7224        | 3,084.7224        | 0.0591        | 0.0566        | 3,103.0533        |
| Apartments Mid Rise   | 2.56479e+06     | 0.0138        | 0.1182        | 0.0503        | 7.5000e-004   |               | 9.5600e-003   | 9.5600e-003   |                | 9.5600e-003   | 9.5600e-003   | 0.0000        | 136.8672          | 136.8672          | 2.6200e-003   | 2.5100e-003   | 137.6805          |
| Condo/Townhouse       | 1.08563e+07     | 0.0585        | 0.5002        | 0.2129        | 3.1900e-003   |               | 0.0405        | 0.0405        |                | 0.0405        | 0.0405        | 0.0000        | 579.3336          | 579.3336          | 0.0111        | 0.0106        | 582.7763          |
| Single Family Housing | 2.39932e+07     | 0.1294        | 1.1056        | 0.4705        | 7.0600e-003   |               | 0.0894        | 0.0894        |                | 0.0894        | 0.0894        | 0.0000        | 1,280.3694        | 1,280.3694        | 0.0245        | 0.0235        | 1,287.9780        |
| <b>Total</b>          |                 | <b>0.5135</b> | <b>4.3876</b> | <b>1.8671</b> | <b>0.0280</b> |               | <b>0.3548</b> | <b>0.3548</b> |                | <b>0.3548</b> | <b>0.3548</b> | <b>0.0000</b> | <b>5,081.2924</b> | <b>5,081.2924</b> | <b>0.0974</b> | <b>0.0932</b> | <b>5,111.4880</b> |

**Mitigated**

|                       | Natural Gas Use | ROG     | NOx    | CO     | SO2         | Fugitive PM10 | Exhaust PM10 | PM10 Total  | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2  | Total CO2  | CH4         | N2O         | CO2e       |
|-----------------------|-----------------|---------|--------|--------|-------------|---------------|--------------|-------------|----------------|---------------|-------------|----------|------------|------------|-------------|-------------|------------|
| Land Use              | kBTU/yr         | tons/yr |        |        |             |               |              |             |                |               |             | MT/yr    |            |            |             |             |            |
| Apartments Low Rise   | 5.78055e+07     | 0.3117  | 2.6636 | 1.1334 | 0.0170      |               | 0.2154       | 0.2154      |                | 0.2154        | 0.2154      | 0.0000   | 3,084.7224 | 3,084.7224 | 0.0591      | 0.0566      | 3,103.0533 |
| Apartments Mid Rise   | 2.56479e+06     | 0.0138  | 0.1182 | 0.0503 | 7.5000e-004 |               | 9.5600e-003  | 9.5600e-003 |                | 9.5600e-003   | 9.5600e-003 | 0.0000   | 136.8672   | 136.8672   | 2.6200e-003 | 2.5100e-003 | 137.6805   |
| Condo/Townhouse       | 1.08563e+07     | 0.0585  | 0.5002 | 0.2129 | 3.1900e-003 |               | 0.0405       | 0.0405      |                | 0.0405        | 0.0405      | 0.0000   | 579.3336   | 579.3336   | 0.0111      | 0.0106      | 582.7763   |
| Single Family Housing | 2.39932e+07     | 0.1294  | 1.1056 | 0.4705 | 7.0600e-003 |               | 0.0894       | 0.0894      |                | 0.0894        | 0.0894      | 0.0000   | 1,280.3694 | 1,280.3694 | 0.0245      | 0.0235      | 1,287.9780 |

## Pleasanton Housing Element Update 2031 - Alameda County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

|       |  |        |        |        |        |  |        |        |  |        |        |        |            |            |        |        |            |
|-------|--|--------|--------|--------|--------|--|--------|--------|--|--------|--------|--------|------------|------------|--------|--------|------------|
| Total |  | 0.5135 | 4.3876 | 1.8671 | 0.0280 |  | 0.3548 | 0.3548 |  | 0.3548 | 0.3548 | 0.0000 | 5,081.2924 | 5,081.2924 | 0.0974 | 0.0932 | 5,111.4880 |
|-------|--|--------|--------|--------|--------|--|--------|--------|--|--------|--------|--------|------------|------------|--------|--------|------------|

**5.3 Energy by Land Use - Electricity****Unmitigated**

|                       | Electricity Use | Total CO2         | CH4           | N2O           | CO2e              |
|-----------------------|-----------------|-------------------|---------------|---------------|-------------------|
| Land Use              | kWh/yr          | MT/yr             |               |               |                   |
| Apartments Low Rise   | 2.37894e+07     | 2,201.0847        | 0.3561        | 0.0432        | 2,222.8495        |
| Apartments Mid Rise   | 1.18313e+06     | 109.4674          | 0.0177        | 2.1500e-003   | 110.5499          |
| Condo/Townhouse       | 3.04969e+06     | 282.1686          | 0.0457        | 5.5300e-003   | 284.9588          |
| Single Family Housing | 7.05773e+06     | 653.0079          | 0.1056        | 0.0128        | 659.4650          |
| <b>Total</b>          |                 | <b>3,245.7286</b> | <b>0.5251</b> | <b>0.0637</b> | <b>3,277.8231</b> |

**Mitigated**

|          | Electricity Use | Total CO2 | CH4 | N2O | CO2e |
|----------|-----------------|-----------|-----|-----|------|
| Land Use | kWh/yr          | MT/yr     |     |     |      |
| Appendix |                 |           |     |     |      |

## Pleasanton Housing Element Update 2031 - Alameda County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

|                       |             |                   |               |               |                   |
|-----------------------|-------------|-------------------|---------------|---------------|-------------------|
| Apartments Low Rise   | 2.37894e+07 | 2,201.0847        | 0.3561        | 0.0432        | 2,222.8495        |
| Apartments Mid Rise   | 1.18313e+06 | 109.4674          | 0.0177        | 2.1500e-003   | 110.5499          |
| Condo/Townhouse       | 3.04969e+06 | 282.1686          | 0.0457        | 5.5300e-003   | 284.9588          |
| Single Family Housing | 7.05773e+06 | 653.0079          | 0.1056        | 0.0128        | 659.4650          |
| <b>Total</b>          |             | <b>3,245.7286</b> | <b>0.5251</b> | <b>0.0637</b> | <b>3,277.8231</b> |

**6.0 Area Detail****6.1 Mitigation Measures Area**

|             | ROG     | NOx    | CO      | SO2         | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4    | N2O         | CO2e     |
|-------------|---------|--------|---------|-------------|---------------|--------------|------------|----------------|---------------|-------------|----------|-----------|-----------|--------|-------------|----------|
| Category    | tons/yr |        |         |             |               |              |            |                |               |             | MT/yr    |           |           |        |             |          |
| Mitigated   | 40.5075 | 0.7910 | 57.0349 | 3.8700e-003 |               | 0.3277       | 0.3277     |                | 0.3277        | 0.3277      | 0.0000   | 248.6440  | 248.6440  | 0.0919 | 2.8500e-003 | 251.7897 |
| Unmitigated | 40.5075 | 0.7910 | 57.0349 | 3.8700e-003 |               | 0.3277       | 0.3277     |                | 0.3277        | 0.3277      | 0.0000   | 248.6440  | 248.6440  | 0.0919 | 2.8500e-003 | 251.7897 |

**6.2 Area by SubCategory****Unmitigated**

## Pleasanton Housing Element Update 2031 - Alameda County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

|                       | ROG            | NOx           | CO             | SO2                | Fugitive PM10 | Exhaust PM10  | PM10 Total    | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total   | Bio- CO2      | NBio- CO2       | Total CO2       | CH4           | N2O                | CO2e            |
|-----------------------|----------------|---------------|----------------|--------------------|---------------|---------------|---------------|----------------|---------------|---------------|---------------|-----------------|-----------------|---------------|--------------------|-----------------|
| SubCategory           | tons/yr        |               |                |                    |               |               |               |                |               |               | MT/yr         |                 |                 |               |                    |                 |
| Architectural Coating | 5.9235         |               |                |                    |               | 0.0000        | 0.0000        |                | 0.0000        | 0.0000        | 0.0000        | 0.0000          | 0.0000          | 0.0000        | 0.0000             | 0.0000          |
| Consumer Products     | 32.8640        |               |                |                    |               | 0.0000        | 0.0000        |                | 0.0000        | 0.0000        | 0.0000        | 0.0000          | 0.0000          | 0.0000        | 0.0000             | 0.0000          |
| Hearth                | 0.0157         | 0.1341        | 0.0571         | 8.6000e-004        |               | 0.0108        | 0.0108        |                | 0.0108        | 0.0108        | 0.0000        | 155.3251        | 155.3251        | 2.9800e-003   | 2.8500e-003        | 156.2481        |
| Landscaping           | 1.7043         | 0.6569        | 56.9779        | 3.0200e-003        |               | 0.3168        | 0.3168        |                | 0.3168        | 0.3168        | 0.0000        | 93.3189         | 93.3189         | 0.0889        | 0.0000             | 95.5417         |
| <b>Total</b>          | <b>40.5075</b> | <b>0.7910</b> | <b>57.0349</b> | <b>3.8800e-003</b> |               | <b>0.3277</b> | <b>0.3277</b> |                | <b>0.3277</b> | <b>0.3277</b> | <b>0.0000</b> | <b>248.6440</b> | <b>248.6440</b> | <b>0.0919</b> | <b>2.8500e-003</b> | <b>251.7898</b> |

**Mitigated**

|                       | ROG     | NOx    | CO      | SO2         | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4         | N2O         | CO2e     |
|-----------------------|---------|--------|---------|-------------|---------------|--------------|------------|----------------|---------------|-------------|----------|-----------|-----------|-------------|-------------|----------|
| SubCategory           | tons/yr |        |         |             |               |              |            |                |               |             | MT/yr    |           |           |             |             |          |
| Architectural Coating | 5.9235  |        |         |             |               | 0.0000       | 0.0000     |                | 0.0000        | 0.0000      | 0.0000   | 0.0000    | 0.0000    | 0.0000      | 0.0000      | 0.0000   |
| Consumer Products     | 32.8640 |        |         |             |               | 0.0000       | 0.0000     |                | 0.0000        | 0.0000      | 0.0000   | 0.0000    | 0.0000    | 0.0000      | 0.0000      | 0.0000   |
| Hearth                | 0.0157  | 0.1341 | 0.0571  | 8.6000e-004 |               | 0.0108       | 0.0108     |                | 0.0108        | 0.0108      | 0.0000   | 155.3251  | 155.3251  | 2.9800e-003 | 2.8500e-003 | 156.2481 |
| Landscaping           | 1.7043  | 0.6569 | 56.9779 | 3.0200e-003 |               | 0.3168       | 0.3168     |                | 0.3168        | 0.3168      | 0.0000   | 93.3189   | 93.3189   | 0.0889      | 0.0000      | 95.5417  |

## Pleasanton Housing Element Update 2031 - Alameda County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

|       |         |        |         |             |  |        |        |  |        |        |        |          |          |        |             |          |
|-------|---------|--------|---------|-------------|--|--------|--------|--|--------|--------|--------|----------|----------|--------|-------------|----------|
| Total | 40.5075 | 0.7910 | 57.0349 | 3.8800e-003 |  | 0.3277 | 0.3277 |  | 0.3277 | 0.3277 | 0.0000 | 248.6440 | 248.6440 | 0.0919 | 2.8500e-003 | 251.7898 |
|-------|---------|--------|---------|-------------|--|--------|--------|--|--------|--------|--------|----------|----------|--------|-------------|----------|

**7.0 Water Detail****7.1 Mitigation Measures Water**

|             | Total CO2 | CH4     | N2O    | CO2e       |
|-------------|-----------|---------|--------|------------|
| Category    | MT/yr     |         |        |            |
| Mitigated   | 512.3515  | 16.3919 | 0.3926 | 1,039.1508 |
| Unmitigated | 512.3515  | 16.3919 | 0.3926 | 1,039.1508 |

**7.2 Water by Land Use****Unmitigated**

|                    | Indoor/Outdoor Use | Total CO2 | CH4     | N2O    | CO2e     |
|--------------------|--------------------|-----------|---------|--------|----------|
| Land Use           | Mgal               | MT/yr     |         |        |          |
| Apartment Low Rise | 381.672 / 240.619  | 390.0903  | 12.4803 | 0.2989 | 791.1808 |

## Pleasanton Housing Element Update 2031 - Alameda County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

|                       |                   |                 |                |               |                   |
|-----------------------|-------------------|-----------------|----------------|---------------|-------------------|
| Apartments Mid Rise   | 19.9371 / 12.5691 | 20.3769         | 0.6519         | 0.0156        | 41.3283           |
| Condo/Townhouse       | 40.9819 / 25.8364 | 41.8858         | 1.3401         | 0.0321        | 84.9527           |
| Single Family Housing | 58.7038 / 37.0089 | 59.9985         | 1.9196         | 0.0460        | 121.6890          |
| <b>Total</b>          |                   | <b>512.3515</b> | <b>16.3919</b> | <b>0.3926</b> | <b>1,039.1508</b> |

**Mitigated**

|                       | Indoor/Outdoor Use | Total CO2       | CH4            | N2O           | CO2e              |
|-----------------------|--------------------|-----------------|----------------|---------------|-------------------|
| Land Use              | Mgal               | MT/yr           |                |               |                   |
| Apartments Low Rise   | 381.672 / 240.619  | 390.0903        | 12.4803        | 0.2989        | 791.1808          |
| Apartments Mid Rise   | 19.9371 / 12.5691  | 20.3769         | 0.6519         | 0.0156        | 41.3283           |
| Condo/Townhouse       | 40.9819 / 25.8364  | 41.8858         | 1.3401         | 0.0321        | 84.9527           |
| Single Family Housing | 58.7038 / 37.0089  | 59.9985         | 1.9196         | 0.0460        | 121.6890          |
| <b>Total</b>          |                    | <b>512.3515</b> | <b>16.3919</b> | <b>0.3926</b> | <b>1,039.1508</b> |

**8.0 Waste Detail****8.1 Mitigation Measures Waste**

## Pleasanton Housing Element Update 2031 - Alameda County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****Category/Year**

|             | Total CO2 | CH4     | N2O    | CO2e       |
|-------------|-----------|---------|--------|------------|
|             | MT/yr     |         |        |            |
| Mitigated   | 881.7156  | 52.1079 | 0.0000 | 2,184.4131 |
| Unmitigated | 881.7156  | 52.1079 | 0.0000 | 2,184.4131 |

**8.2 Waste by Land Use****Unmitigated**

|                       | Waste Disposed | Total CO2       | CH4            | N2O           | CO2e              |
|-----------------------|----------------|-----------------|----------------|---------------|-------------------|
| Land Use              | tons           | MT/yr           |                |               |                   |
| Apartments Low Rise   | 2694.68        | 546.9957        | 32.3265        | 0.0000        | 1,355.1587        |
| Apartments Mid Rise   | 140.76         | 28.5730         | 1.6886         | 0.0000        | 70.7884           |
| Condo/Townhouse       | 289.34         | 58.7334         | 3.4710         | 0.0000        | 145.5095          |
| Single Family Housing | 1218.84        | 247.4135        | 14.6217        | 0.0000        | 612.9565          |
| <b>Total</b>          |                | <b>881.7156</b> | <b>52.1079</b> | <b>0.0000</b> | <b>2,184.4131</b> |

## Pleasanton Housing Element Update 2031 - Alameda County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****Mitigated**

|                       | Waste Disposed | Total CO2       | CH4            | N2O           | CO2e              |
|-----------------------|----------------|-----------------|----------------|---------------|-------------------|
| Land Use              | tons           | MT/yr           |                |               |                   |
| Apartments Low Rise   | 2694.68        | 546.9957        | 32.3265        | 0.0000        | 1,355.1587        |
| Apartments Mid Rise   | 140.76         | 28.5730         | 1.6886         | 0.0000        | 70.7884           |
| Condo/Townhouse       | 289.34         | 58.7334         | 3.4710         | 0.0000        | 145.5095          |
| Single Family Housing | 1218.84        | 247.4135        | 14.6217        | 0.0000        | 612.9565          |
| <b>Total</b>          |                | <b>881.7156</b> | <b>52.1079</b> | <b>0.0000</b> | <b>2,184.4131</b> |

**9.0 Operational Offroad**

| Equipment Type | Number | Hours/Day | Days/Year | Horse Power | Load Factor | Fuel Type |
|----------------|--------|-----------|-----------|-------------|-------------|-----------|
|----------------|--------|-----------|-----------|-------------|-------------|-----------|

**10.0 Stationary Equipment****Fire Pumps and Emergency Generators**

| Equipment Type | Number | Hours/Day | Hours/Year | Horse Power | Load Factor | Fuel Type |
|----------------|--------|-----------|------------|-------------|-------------|-----------|
|----------------|--------|-----------|------------|-------------|-------------|-----------|

**Boilers**

| Equipment Type<br>Appendix C | Number | Heat Input/Day | Heat Input/Year | Boiler Rating | Fuel Type |
|------------------------------|--------|----------------|-----------------|---------------|-----------|
|------------------------------|--------|----------------|-----------------|---------------|-----------|

Pleasanton Housing Element Update 2031 - Alameda County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

User Defined Equipment

| Equipment Type | Number |
|----------------|--------|
|----------------|--------|

11.0 Vegetation

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## Project Operational Energy Consumption

### Proposed Operation Fuel Calculation

California Air Resource Board (ARB). 2022. EMFAC2021 Web Database. Website: <https://arb.ca.gov/emfac/emissions-inventory/>

Source: EMFAC2021 (v1.0.2) Emissions Inventory

Region Type: County

Region: Alameda

Calendar Year: 2031

Season: Annual

Vehicle Classification: EMFAC2007 Categories

Units: miles/day for CVMT and EVMT, trips/day for Trips, kWh/day for Energy Consumption, tons/day for Emissions, 1000 gallons/day for Fuel Consumption

VMT = Vehicle Miles Traveled

FE = Fuel Economy

### *Calculations*

| VehClass | Mdlyr     | Speed     | Fuel     | Population  | VMT        | Fuel Consumption | FE          | VMT*FE      |
|----------|-----------|-----------|----------|-------------|------------|------------------|-------------|-------------|
| HHDT     | Aggregate | Aggregate | Gasoline | 5.166999664 | 521.827243 | 0.130554252      | 3.997014523 | 2085.751068 |
| HHDT     | Aggregate | Aggregate | Diesel   | 15560.5609  | 1889786.76 | 282.060319       | 6.699938376 | 12661454.8  |
| LDA      | Aggregate | Aggregate | Gasoline | 538112.745  | 19810999.6 | 578.734076       | 34.23161073 | 678162426.7 |
| LDA      | Aggregate | Aggregate | Diesel   | 1037.953388 | 28149.6812 | 0.602545642      | 46.71792344 | 1315094.65  |
| LDT1     | Aggregate | Aggregate | Gasoline | 43418.32128 | 1463351.28 | 51.50980421      | 28.4091796  | 41572609.31 |
| LDT1     | Aggregate | Aggregate | Diesel   | 0.234481754 | 10.4989433 | 0.000358042      | 29.32323929 | 307.863027  |
| LDT2     | Aggregate | Aggregate | Gasoline | 274906.6422 | 10526604.4 | 374.2027         | 28.13075475 | 296121326.1 |
| LDT2     | Aggregate | Aggregate | Diesel   | 998.8005845 | 38856.4574 | 1.048293518      | 37.06639095 | 1440268.64  |
| LHDT1    | Aggregate | Aggregate | Gasoline | 18238.12217 | 689617.176 | 65.30751404      | 10.55953799 | 7282038.767 |
| LHDT1    | Aggregate | Aggregate | Diesel   | 9963.526381 | 391723.7   | 23.92383374      | 16.37378456 | 6413999.465 |
| LHDT2    | Aggregate | Aggregate | Gasoline | 2413.967428 | 86559.9774 | 9.347807443      | 9.259923029 | 801538.7282 |
| LHDT2    | Aggregate | Aggregate | Diesel   | 4624.679263 | 178574.032 | 12.83099107      | 13.91739975 | 2485286.188 |
| MCY      | Aggregate | Aggregate | Gasoline | 27082.28916 | 157449.047 | 3.705448356      | 42.49122685 | 6690203.16  |
| MDV      | Aggregate | Aggregate | Gasoline | 150302.1397 | 5659680.49 | 242.3296047      | 23.35529946 | 132183532.6 |
| MDV      | Aggregate | Aggregate | Diesel   | 1922.134447 | 70011.603  | 2.508623875      | 27.90836989 | 1953909.713 |
| MH       | Aggregate | Aggregate | Gasoline | 1574.296097 | 16920.2304 | 3.826265487      | 4.422126604 | 74823.40102 |
| MH       | Aggregate | Aggregate | Diesel   | 812.6112096 | 8456.34096 | 0.903559596      | 9.358918879 | 79142.20902 |
| MHDT     | Aggregate | Aggregate | Gasoline | 1385.618943 | 71852.0172 | 14.22346376      | 5.051653974 | 362971.5283 |
| MHDT     | Aggregate | Aggregate | Diesel   | 14687.71387 | 572410.87  | 65.38321599      | 8.754706566 | 5011289.205 |
| OBUS     | Aggregate | Aggregate | Gasoline | 453.0853917 | 18623.8773 | 3.694025237      | 5.041621555 | 93894.54104 |
| OBUS     | Aggregate | Aggregate | Diesel   | 419.7826803 | 28176.5621 | 3.696375371      | 7.622754541 | 214783.017  |
| SBUS     | Aggregate | Aggregate | Gasoline | 106.8156328 | 5748.84843 | 0.541729197      | 10.61203358 | 61006.97257 |
| SBUS     | Aggregate | Aggregate | Diesel   | 406.7200669 | 9022.00539 | 1.094864168      | 8.240296516 | 74343.99957 |
| UBUS     | Aggregate | Aggregate | Gasoline | 257.0380267 | 21150.057  | 2.217730877      | 9.536800533 | 201703.875  |
| UBUS     | Aggregate | Aggregate | Diesel   | 458.7779392 | 45027.6464 | 5.098095702      | 8.832248166 | 397695.3474 |

### **Vehicles**

**Sum of VMT\*FE 1,195,657,737**

**Total VMT 41,789,285**

**Weighted Average FE 28.61 miles/gallon**

**Total VMT**

Source: AQ/GHG Appendix, CalEEMod Output

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**4.2 Trip Summary Information**

| Land Use              | Average Daily Trip Rate |           |           | Unmitigated | Mitigated   |
|-----------------------|-------------------------|-----------|-----------|-------------|-------------|
|                       | Weekday                 | Saturday  | Sunday    | Annual VMT  | Annual VMT  |
| Apartments Low Rise   | 42,880.56               | 47,684.12 | 36788.24  | 119,669,614 | 119,669,614 |
| Apartments Mid Rise   | 1,664.64                | 1,502.46  | 1251.54   | 5,973,269   | 5,973,269   |
| Condo/Townhouse       | 4,604.28                | 5,120.06  | 3950.12   | 14,501,543  | 14,501,543  |
| Single Family Housing | 8,505.44                | 8,595.54  | 7703.55   | 26,704,783  | 26,704,783  |
| Total                 | 57,654.92               | 62,902.18 | 49,693.45 | 166,849,209 | 166,849,209 |

|           |             |             |                  |
|-----------|-------------|-------------|------------------|
|           | Annual VMT  | Fuel        |                  |
|           | (miles)     | Consumption |                  |
| Total VMT | 166,849,209 | 5,831,526   | gallons per year |

### **Operation Natural Gas Use**

Source: AQ/GHG Appendix, CalEEMod Output

Pleasanton Housing Element Update 2031 - Alameda County, Annual

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kBTU/yr = kilo-British Thermal Units/year

|                       | Natural Gas Use           |
|-----------------------|---------------------------|
| Apartments Low Rise   | 57,805,500                |
| Apartments Mid Rise   | 2,564,790                 |
| Condo/Townhouse       | 10,856,300                |
| Single Family Housing | 23,993,200                |
| <b>Total</b>          | <b>95,219,790 kBTU/yr</b> |

### **Operation Electricity Use**

Source: AQ/GHG Appendix, CalEEMod Output

Pleasanton Housing Element Update 2031 - Alameda County, Annual

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#### *Project Electricity Use*

kWh/yr = kilowatt hours per year

| Land Use              | Electricity Use<br>(kWh/yr) |
|-----------------------|-----------------------------|
| Apartments Low Rise   | 23,789,400                  |
| Apartments Mid Rise   | 1,183,130                   |
| Condo/Townhouse       | 3,049,690                   |
| Single Family Housing | 7,057,730                   |
| Total                 | <b>35,079,950 kWh/yr</b>    |