

DRAFT FOR REVIEW AND COMMENT – JULY 16, 2006

July 16, 2006

Mr. Gary W. Johnson
Granite Construction, Inc.
38000 Monroe Street
Indio, CA 92203

Subject: Air Emissions: Liberty Quarry vs. Other Area Land Uses

Dear Mr. Johnson:

This draft letter report presents the results of an analysis of the total and net air emissions of the proposed Liberty Quarry project located on the Riverside County and San Diego County line. Granite Construction asked that we use acceptable methods to calculate emissions from other land use types in the area in order to provide a relative comparison to other projects or developments. This report presents the calculated air emissions from the ultimate build out of the Red Hawk and De Luz communities located in Southwestern Riverside County as well as other typical developments, such as a regional shopping mall, a large discount store, and a home improvement store. Emissions of criteria pollutants associated with these developments were calculated using the California Air Resources Board URBEMIS planning emissions model.

SUMMARY

The communities of Red Hawk and De Luz are located in southwestern Riverside County. Currently, these communities are not fully built out, but the communities could ultimately be built out to at least several thousand dwellings (see page 5 for more detail). When the dwellings are occupied, normal residential activities such as driving to and from work, school, church, and shopping centers cause emissions of pollutants that have the potential to affect local air quality. The California Air Resources Board (CARB) has developed an emissions model, termed URBEMIS, to estimate emissions of pollutants associated with communities. The URBEMIS model is widely used throughout California for planning purposes when assessing environmental impacts of communities and other developments as part of the California Environmental Quality Act (CEQA) process. The model allows the user to select community specific information, e.g., number of dwellings, size of the development, location of the development, etc. in order to yield a community-specific emission estimate. The URBEMIS model is also used to assess emissions from other typical developments such as a shopping mall, etc. When the model is used to assess impacts from these other types of developments (e.g., a new shopping mall), the user inputs the size and location of the development.

Table 1 on the following page shows the emissions associated with the Liberty Quarry.

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Table 1
Liberty Quarry Emissions (tons/year)
 (Based on 5 mmtpy Aggregate Production at Liberty Quarry in 2020)

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|------------------|---|--|--|---|--|--|--|---|
| | Liberty Quarry On-Site Activity Emissions | Net Liberty Quarry On-Site Activity Emissions Accounting for Stationary Source Offsets | Riverside County Freeway Truck Transport Emissions Analyzed As Additional Truck Travel | Net Riverside County Freeway Truck Transport Emissions Accounting for Quarry Displacing Existing Trucks | Riverside County Off-Freeway Truck Transport Emissions Analyzed As Additional Truck Travel | San Diego County Freeway and Off-Freeway Truck Transport Emissions Analyzed As Additional Truck Travel | Net Total Liberty Quarry Emissions <u>Not</u> Accounting for Stationary Source Offsets (Columns 2 + 5 + 6 + 7) | Net Total Liberty Quarry Emissions Accounting for Stationary Source Offsets (Columns 3 + 5 + 6 + 7) |
| ROG | 32.3 | -4.8 | 0.3 | -4.2 | 0.3 | 2.0 | 30.4 | -6.7 |
| CO | 74.9 | 37.2 | 1.8 | -22.5 | 1.8 | 9.8 | 64.0 | 26.3 |
| NO _x | 37.9 | 15.7 | 4.6 | -56.5 | 4.6 | 22.2 | 8.2 | -14.0 |
| PM ₁₀ | 15.0 | 3.7 | 0.9 | -9.7 | 0.9 | 3.0 | 9.2 | -2.1 |

Note: Emission constituents are listed in the first column. Liberty Quarry emission quantities in the second column include emissions from all on-site activities including on-site electrical generators, fugitive dust, and highway vehicles on site. Net on-site emissions in Column 3 account for stationary source emission offsets that will be required to be obtained by the SCAQMD. Column 4 emissions are for freeway transport of product in Riverside County (30% of trucks from Quarry). Column 5 reflects the fact that the Quarry actually reduces freeway traffic in Riverside County by locating the source closer to the market. Column 6 emissions are for off-freeway transport of product in Riverside County, analyzed as if the transport is all additional trucks; but in fact the transport displaces existing trucks, so there are no new emissions. Column 7 emissions are for freeway and off-freeway truck transport in San Diego County; but in fact the transport displaces existing trucks, so there are no new emissions. Column 8 provides the net total project emissions, but conservatively assuming that the San Diego freeway and off-freeway truck traffic and the Riverside County off-freeway traffic are additional trucks and not accounting for stationary source offsets that will be required by SCAQMD. Column 9 provides the net total project emissions, conservatively assuming that the San Diego freeway and off-freeway truck traffic and the Riverside County off-freeway traffic are additional trucks, and accounting for offsets. All particulate emissions include re-entrained dust, including different silt loadings for freeway and off-freeway roads. The Liberty Quarry emission estimates are current as of July 16, 2006, but are subject to change as the operational design of the quarry is refined.

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Emissions associated with the communities compared to emissions associated with the proposed Liberty Quarry are shown in Table 2. It was assumed that the communities would not be fully built out until calendar year 2020. This is consistent with the assumption that Liberty Quarry will not reach full scale operations until at least 2020.

Table 2
Community Emissions Compared to Liberty Quarry Emissions (tons/year)
 (Based on the URBEMIS for Year 2020 and 5 mmtpy Aggregate Production at Liberty Quarry in 2020)

| | Net Total Liberty Quarry Emissions <u>Not</u> Accounting for Stationary Source Offsets | Net Total Liberty Quarry Emissions Accounting for Stationary Source Offsets | Red Hawk 3,215 dwellings | De Luz 2,106 dwellings |
|------------------|---|--|---------------------------------|-------------------------------|
| ROG | 30.4 | -6.7 | 132.9 | 89.1 |
| CO | 64.0 | 26.3 | 314.1 | 234.5 |
| NO _x | 8.2 | -14.0 | 30.6 | 22.3 |
| PM ₁₀ | 9.2 | -2.1 | 68.8 | 51.6 |

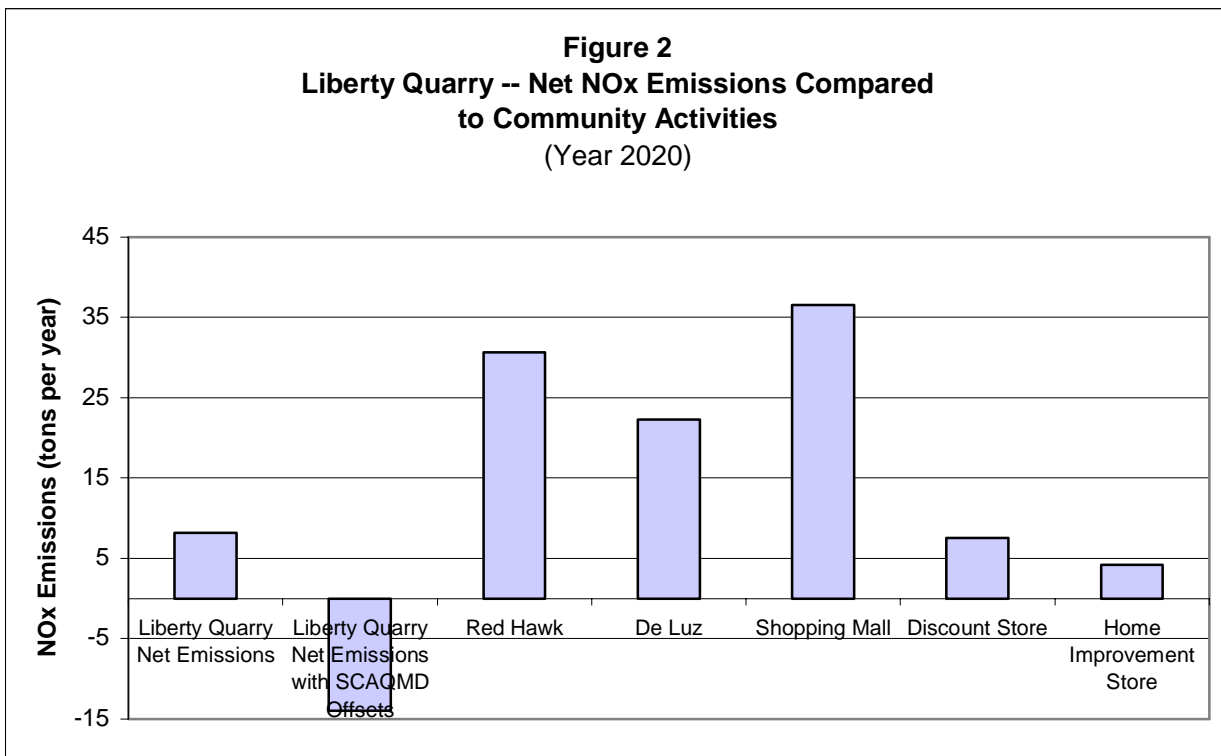
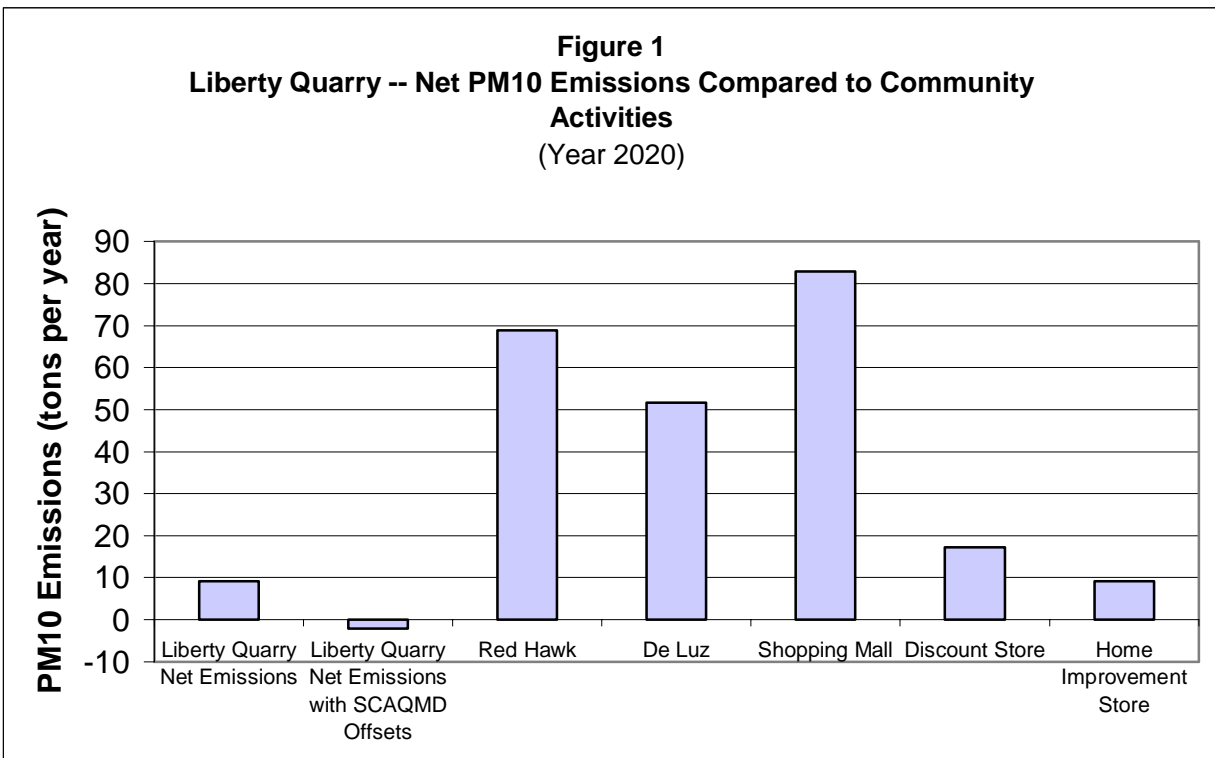
Emissions associated with other typical developments compared to the Liberty Quarry are shown in Table 3, again based on the year 2020. Figures 1 and 2 on the following page compares the particulate and nitrogen oxide emissions from Tables 1, 2, and 3.

Table 3
Development Emissions Compared to Liberty Quarry Emissions (tons/year)
 (Based on the URBEMIS for Year 2020 and 5 mmtpy Aggregate Production at Liberty Quarry in 2020)

| | Net Total Liberty Quarry Emissions <u>Not</u> Accounting for Stationary Source Offsets | Net Total Liberty Quarry Emissions Accounting for Stationary Source Offsets | Emissions from 1.25 million square foot shopping mall | Emissions from a large (200,000 square foot) Discount Store | Emissions from a large (200,000 square foot) Home Improvement Store |
|------------------|---|--|--|--|--|
| ROG | 30.4 | -6.7 | 29.0 | 5.8 | 3.4 |
| CO | 64.0 | 26.3 | 312.9 | 65.3 | 34.9 |
| NO _x | 8.2 | -14.0 | 36.5 | 7.5 | 4.2 |
| PM ₁₀ | 9.2 | -2.1 | 82.9 | 17.3 | 9.2 |

Note: Emissions from the mall, discount store, and home improvement store based on 365 days per year.

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METHODOLOGY

Emissions associated with the communities were estimated with the URBEMIS model (Version 8.7.0 released April 29, 2005). All of the default parameter settings established by the CARB in the URBEMIS model were used. Three of the user required inputs are total acreage of the development and the number and type of dwellings in the development. The acreage and number of dwellings for the communities are shown in Table 4. The other two inputs are the air district within which the development is located, and whether the development is rural or urban. Both communities are located in Riverside County which is part of the South Coast Air Quality Management District (SCAQMD) and both were considered to be rural.

**Table 4
COMMUNITY BUILD OUT PARAMETERS**

| Community | Total Acreage at Build Out | Number of Dwellings (Lots) at Full Build Out | Average Lot Size Per Dwelling (Acreage divided by Number of Dwellings) |
|------------------|-----------------------------------|---|---|
| Red Hawk | 1,341 | 3,215 | 0.2 |
| De Luz | 21,060 | 2,106 | 10 |

For single developments such as a shopping mall, the URBEMIS input parameters are the development size and location. As indicated in Table 2, the shopping mall was assumed to be a 1.25 million square foot mall, the discount store and home improvement store were assumed to be 200,000 square feet.

The data for the Red Hawk development were obtained from the City of Temecula. For Red Hawk, the GIS Department provided the total acreage of the development and the number of parcels. It was assumed that there would be one dwelling per parcel (i.e., the number of lots equals the number of parcels) and that each dwelling would be a single family home. In the URBEMIS model, the most important parameter is the number of dwellings, not the total acreage.

The De Luz information was obtained from the County of Riverside General Plan, Southwest Area Plan, Rancho California Area Zoning District. The Plan indicated that the community of De Luz consists of approximately 2,106 lots on parcels ranging in size from 5 to 20 acres. Currently (in 2006), approximately 457 lots are developed (according to the Riverside County GIS database). For purposes of the URBEMIS model, it was assumed that future build out would occur with one lot (dwelling, single family) per parcel, and the average lot size would be 10 acres, resulting in a development size of 21,060 acres.

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As indicated, the number and type of dwellings, acreage and location of the development were input to URBEMIS. All of the other default parameters in the emissions model were used. Attachments 1 and 2 list the URBEMIS settings for the communities. URBEMIS emissions in terms of tons per day for the communities were based on 365 days operation per year.

A sensitivity analysis was performed to evaluate the effect of changing some of the default parameters in the URBEMIS model. For example, the URBEMIS model assumes that there is a typical amount of landscaping associated with each dwelling and that some of the landscaping equipment (e.g., lawn mowers, weed trimmers) would use gasoline-fueled engines. Recognizing the rural nature of the communities, an URBEMIS run was made assuming zero landscaping activities. This assumption reduced the particulate emissions by only 0.03%.

The URBEMIS default assumes that there would be 35% wood stoves, 10% wood fireplaces, and 55% natural gas fireplaces. A sensitivity analysis was run assuming no wood stoves, and the emissions were reduced by about 5 to 15%. To be conservative (i.e., underestimate emissions from the communities), the URBEMIS model was run assuming no wood stoves, 90% natural gas fueled fireplaces, and 10% wood fueled fireplaces. These are the results (i.e., no woodstoves) that are presented in the tables.

Another sensitivity analysis was run using a different silt loading for the paved roads associated with the communities. Although the URBEMIS model assumes a silt loading of 0.1 gram per meter squared (g/m^2), the SCAQMD Guidelines for preparing CEQA analyses state that the silt loading for local streets is 1.36 g/m^2 (0.04 ounces per square yard) and the silt loading for major collector roads is 0.41 g/m^2 (0.012 ounces per square yard). Particulate emissions (re-entrained dust) from paved roads are directly related to the amount of silt available on the roads. An URBEMIS run was made using a silt loading of 0.41 g/m^2 and the particulate emissions for the communities doubled (109% increase). If a run would have been made at the silt loading specified by SCAQMD for local streets, the particulate emissions associated with the communities would be much greater (on the order of 4 times as much).

Accordingly, since some of the URBEMIS parameter changes slightly decreased emissions associated with the communities (such as the number of wood fueled fireplaces), but others (such as the silt loading) increased emissions by a far greater amount; for this emissions comparison, it was decided to use the entire suite of default parameters in the URBEMIS model (except for the zero wood stove assumption). URBEMIS default parameters for the other developments were also used, and are shown in Attachments 3 through 5.

There are several sets of emissions associated with Liberty Quarry presented in the preceding tables. The first set of emissions from Liberty Quarry include all of the on-site

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activities (including highway vehicles such as product transport trucks that come on site to pick-up aggregate, concrete, or asphalt for delivery to market and highway vehicles that come on-site to deliver asphalt oil, cement, fuel oil, etc.) and fugitive dust emissions. The emissions are estimated assuming full production (5 million tons per year of aggregate) by the year 2020 and are the current emission calculations as of July 16, 2006. However, Granite Construction Company continues to refine the operational design of the quarry to decrease the total emissions to the maximum extent feasible, and the emission estimates may change before a final operational design is chosen.

Table 1 also shows emissions including highway vehicle travel on local freeways and off-freeway roads leading to market (assuming distance to market ranges from 5 to 35 miles from the quarry, an average of 20 miles one way). However, the proposed quarry will not cause additional freeway and off-freeway travel emissions. This is because the vehicles that transport material from the quarry to market are the same vehicles that already travel the freeway and off-freeway roads transporting aggregate materials to the same market that will be served by Liberty Quarry (i.e., no new vehicles are added as the result of the Quarry, the vehicles associated with the Quarry replace vehicles that are currently traveling from other quarries located much further from market). Furthermore, according to a report by Urban Crossroads Inc. (April 12, 2006), not only will Liberty Quarry not add new transport vehicles, it will actually reduce the amount of freeway miles traveled by aggregate product transport trucks traveling on Interstate 15 in Riverside County by over 16.5 million truck-miles per year. Accordingly, there is a reduction in tailpipe and fugitive emissions from the ultimate development of Liberty Quarry, and this reduction has been shown.

Truck travel tailpipe, brake, and tire wear emissions were calculated with the EMFAC2002 model (Version 2.2, April 23, 2003) set for heavy heavy duty diesel truck (HHDDT) travel in Riverside and San Diego Counties. The EMFAC burden mode was run with all default settings except that only diesel-fueled HHDDT vehicles were selected. For Riverside County, it was assumed that one-half the travel to market was freeway and one-half was non-freeway roads. Entrained fugitive dust emissions were calculated with the CARB Entrained Paved Road Dust methodology dated July 1997. The CARB methodology uses the USEPA emission equation for paved road entrained dust emissions and county/road-specific silt loadings and vehicle weights. For both San Diego and Riverside County, it was assumed that one-half the travel would be on the freeway and the other half on major and/or collector roads.

Table 1 also reflects the fact that the SCAQMD will likely require Granite to offset non-fugitive emissions from the aggregate, concrete, asphalt, and electrical generator plants. When emission offsets are required, Granite will be required to purchase emission reduction credits in an amount 20% greater than the potential emissions. This reduction in emissions has been accounted for in Table 1.

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CONCLUSION

According to the URBEMIS model that is used in California to estimate emissions associated with community developments, pollutant emissions associated with the rural communities of Red Hawk and De Luz that will contain approximately 2,000 to 3,000 dwellings when fully developed are significantly greater than the net emissions associated with the proposed Liberty Quarry (when accounting for required stationary source offsets). In fact, when accounting for required stationary source offsets, the net emissions from the Liberty Quarry activities, including highway truck travel are negative (i.e., net air quality benefit) for all except carbon monoxide (CO). The community emissions of CO are more than 10 times greater than the net Liberty Quarry emissions.

The community emissions are on the order of 3 to 8 times greater than the total Liberty Quarry emissions, even when not accounting for offsets. For example, particulate (PM₁₀) emissions associated with the community of Red Hawk, which is planned to include at least 3,215 dwellings, are nearly 8 times greater than the particulate emissions associated with activities at the proposed quarry (not including required offsets).

The air emissions from developments such as a mall, discount store, and home improvement store are comparable to the total emissions associated with the Quarry (not including required offsets), and much greater than the net emissions from the Liberty Quarry project .

We are prepared to finalize this report after getting feedback from you and others involved. If you would like for us to meet with you or others to go over the report in detail, please let us know.

Sincerely,
KLEINFELDER, INC.



Russell E. Erbes, CCM
Senior Principal

Cc: Mr. Martin Derus, Lilburn Corporation

- Attachment 1: URBEMIS Parameters for the Community of Red Hawk
- Attachment 2: URBEMIS Parameters for the Community of De Luz
- Attachment 3: URBEMIS Parameters for a Shopping Mall
- Attachment 4: URBEMIS Parameters for a Discount Store
- Attachment 5: URBEMIS Parameters for a Home Improvement Store

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ATTACHMENT 1 URBEMIS PARAMETERS FOR THE COMMUNITY OF RED HAWK

- **Model Version:** 8.7.0 (released April 29, 2005)
- **Based On Air District Specific Default File:** South Coast Air Basin (Los Angeles area)
- **Location:** Rural
- **Project Emission Sources:** Area and Operational

Land Use Source Emissions Calculations for Future Development (3,215 homes)

- **Land Use:** Single family housing
- **Unit Amount:** 3,215
- **Unit Type:** dwelling units
- **Trip Rate:** 9.87 per day (default, based on input acreage)
- **Primary Trip Percentage:** 85 (default)
- **Diverted Trip Percentage:** 10 (default)
- **Pass-By Trip Percentage:** 5 (default)
- **Acreage:** 1,341

Area Emission Sources

- **Natural Gas Usage Rates:**
 - Single Family: 6665.0 ft³/unit/mo
 - Multifamily: 4011.5 ft³/unit/mo
 - Industrial: 241,611 ft³/industry/mo
 - Hotel/Motel: 4.8 ft³/ft²/mo
 - Retail Shopping: 2.9 ft³/ft²/mo
 - Office 2.0 ft³/ft²/mo
 - 60% Residential using NG / 100% Nonresidential using NG
 - Resid EF (lb/mmcf): ROG (7.26), NO_x (94), CO(40), SO_x(0.001), PM₁₀(0.18)
 - Nonres EF (lb/mmcf): ROG (7.26), NO_x(100), CO(84), SO_x(0.001), PM₁₀(0.18)
- **Hearth Fuel Combustion** (Table of EF's for each of these, not listed below):
 - 0% Wood Stoves
 - 10% Wood Fireplaces
 - 90% Natural Gas Fireplaces
 - 0% Without
- **Landscape Fuel Combustion**
 - 180 Summer Days
 - Year: 2020
- **Consumer Product Emissions:**
 - 0.0171 lb ROG per person
 - 2.861 Persons per Residential Unit
- **Architectural Coating Emissions:**
 - Residential & Nonresidential: 0.0185 ROG lb/ft² surf area
 - Residential & Nonresidential: 1 mil paint thickness
 - Residential: Conversion Factor 2.7
 - Nonresidential: Conversion Factor 2.0
 - Residential & Nonresidential: 10% surface area repainted each year
- **Energy Efficiency Mitigation:** None selected
- **Landscape Mitigation Measures:** None selected

Operational Emission Sources

- **Vehicle Fleet %:**
 - 54.4% - Light Auto

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- 15.3% - Light Truck (<3750 lb)
- 16.4% - Light Truck (3751-5750 lb)
- 7.3% - Med Truck (5751-8500 lb)
- 1.1% - Lt-Heavy Truck (8501-10,000 lb)
- 0.3% - Lt-Heavy Truck (10,001-14,000 lb)
- 1.0% - Med-Heavy Truck (14,001-33,000 lb)
- 0.8% - Heavy-Heavy Truck (33,001-60,000 lb)
- 0.0% - Line Haul Vehicle (>60,000 lb)
- 0.2% - Urban Bus
- 1.6% - Motorcycle
- 0.1% - School Bus
- 1.5% - Motor Home
- **Target Year:** 2020
- **Trip Characteristics:**
 - (20 trip %) Home-based work – 35 mph, urban 11.5 mile, rural 11.5 mile
 - (37 trip %) Home-based shop – 40 mph, urban 4.87 mile, rural 4.87 mile
 - (43 trip %) Home-based other – 40 mph, urban 6.02 mile, rural, 6.02 mile
 - Commercial-based commute – 40 mph, urban 10.3 mile, rural 10.3 mile
 - Commercial-based non-work – 40 mph, urban 5.5 mile, rural 5.5 mile
 - Commercial-based customer – 40 mph, urban 5.5 mile, rural 5.5 mile
 - (No commercial trip percentages)
- **Temperature Data:** Summer (90 deg F), Winter (50 deg F) (defaults)
- **Variable Starts:** Table of values by trip type and time since engine stopped
- **Road Dust:** 100% Paved Roads (defaults)
 - $sL = 0.1 \text{ g/m}^2$
 - Avg. vehicle weight = 2.2 megagrams
- **Pass-by Trips:** Not Checked (either on or off)
- **Double Counting Correction:** Not Checked
- **Operational Mitigation Measures:** Several Options, but none checked

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ATTACHMENT 2 URBEMIS PARAMETERS FOR THE COMMUNITY OF DE LUZ

- **Model Version:** 8.7.0 (released April 29, 2005)
- **Based On Air District Specific Default File:** South Coast Air Basin (Los Angeles area)
- **Location:** Rural
- **Project Emission Sources:** Area and Operational

Land Use Source Emissions Calculations for Future Development (2,106 homes)

- **Land Use:** Single family housing
- **Unit Amount:** 2,106
- **Unit Type:** dwelling units
- **Trip Rate:** 11.55 per day (default, changes based on input acreage)
- **Primary Trip Percentage:** 85 (default)
- **Diverted Trip Percentage:** 10 (default)
- **Pass-By Trip Percentage:** 5 (default)
- **Worker Trip:** 2 (default)
- **Acreage:** 21,060 (Assumed value, 10 acre/lot, based on average lot size of 5 to 20 acres)

Area Emission Sources

- **Natural Gas Usage Rates:**
 - Single Family: 6665.0 ft³/unit/mo
 - Multifamily: 4011.5 ft³/unit/mo
 - Industrial: 241,611 ft³/industry/mo
 - Hotel/Motel: 4.8 ft³/ft²/mo
 - Retail Shopping: 2.9 ft³/ft²/mo
 - Office 2.0 ft³/ft²/mo
 - 60% Residential using NG / 100% Nonresidential using NG
 - Resid EF (lb/mmcf): ROG (7.26), NO_x (94), CO(40), SO_x(0.001), PM10(0.18)
 - Nonres EF (lb/mmcf): ROG (7.26), NO_x(100), CO(84), SO_x(0.001), PM10(0.18)
- **Hearth Fuel Combustion** (Table of EF's for each of these, not listed below):
 - 0% Wood Stoves
 - 10% Wood Fireplaces
 - 90% Natural Gas Fireplaces
 - 0% Without
- **Landscape Fuel Combustion**
 - 180 Summer Days
 - Year: 2020
- **Consumer Product Emissions:**
 - 0.0171 lb ROG per person
 - 2.861 Persons per Residential Unit
- **Architectural Coating Emissions:**
 - Residential & Nonresidential: 0.0185 ROG lb/ft² surf area
 - Residential & Nonresidential: 1 mil paint thickness
 - Residential: Conversion Factor 2.7
 - Nonresidential: Conversion Factor 2.0
 - Residential & Nonresidential: 10% surface area repainted each year
- **Energy Efficiency Mitigation:** None selected
- **Landscape Mitigation Measures:** None selected

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Operational Emission Sources

- **Vehicle Fleet %:**

- 54.4% - Light Auto
- 15.3% - Light Truck (<3750 lb)
- 16.4% - Light Truck (3751-5750 lb)
- 7.3% - Med Truck (5751-8500 lb)
- 1.1% - Lt-Heavy Truck (8501-10,000 lb)
- 0.3% - Lt-Heavy Truck (10,001-14,000 lb)
- 1.0% - Med-Heavy Truck (14,001-33,000 lb)
- 0.8% - Heavy-Heavy Truck (33,001-60,000 lb)
- 0.0% - Line Haul Vehicle (>60,000 lb)
- 0.2% - Urban Bus
- 1.6% - Motorcycle
- 0.1% - School Bus
- 1.5% - Motor Home

- **Target Year:** 2020

- **Trip Characteristics:**

- (20 trip %) Home-based work – 35 mph, urban 11.5 mile, rural 11.5 mile
- (37 trip %) Home-based shop – 40 mph, urban 4.87 mile, rural 4.87 mile
- (43 trip %) Home-based other – 40 mph, urban 6.02 mile, rural, 6.02 mile
- Commercial-based commute – 40 mph, urban 10.3 mile, rural 10.3 mile
- Commercial-based non-work – 40 mph, urban 5.5 mile, rural 5.5 mile
- Commercial-based customer – 40 mph, urban 5.5 mile, rural 5.5 mile
- (No commercial trip percentages)

- **Temperature Data:** Summer (90 deg F), Winter (50 deg F) (defaults)

- **Variable Starts:** Table of values by trip type and time since engine stopped

- **Road Dust:** 100% Paved Roads (defaults)

- $sL = 0.1 \text{ g/m}^2$
- Avg. vehicle weight = 2.2 megagrams

- **Pass-by Trips:** Not Checked (either on or off)

- **Double Counting Correction:** Not Checked

Operational Mitigation Measures: Several Options, but none checked

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**ATTACHMENT 3
URBEMIS PARAMETERS FOR A SHOPPING MALL**

- **Model Version:** 8.7.0 (released April 29, 2005)
- **Based On Air District Specific Default File:** South Coast Air Basin (Los Angeles area)
- **Location:** Urban
- **Project Emission Sources:** Area and Operational

- **Land Use:** Regional Shopping Center
- **Unit Amount:** 1,250
- **Unit Type:** 1000 sq. ft.
- **Trip Rate:** 42.94 per day (default)
- **Primary Trip Percentage:** 55 (default)
- **Diverted Trip Percentage:** 35 (default)
- **Pass-By Trip Percentage:** 10 (default)
- **Worker Trip:** 2 (default)

Area Emission Sources

- **Natural Gas Usage Rates:**
 - Single Family: 6665.0 ft³/unit/mo
 - Multifamily: 4011.5 ft³/unit/mo
 - Industrial: 241,611 ft³/industry/mo
 - Hotel/Motel: 4.8 ft³/ft²/mo
 - Retail Shopping: 2.9 ft³/ft²/mo
 - Office 2.0 ft³/ft²/mo
 - 60% Residential using NG / 100% Nonresidential using NG
 - Resid EF (lb/mmcf): ROG (7.26), NO_x (94), CO(40), SO_x(0.001), PM₁₀(0.18)
 - Nonres EF (lb/mmcf): ROG (7.26), NO_x(100), CO(84), SO_x(0.001), PM₁₀(0.18)
- **Hearth Fuel Combustion** (Table of EF's for each of these, not listed below):
 - 35% Wood Stoves
 - 10% Wood Fireplaces
 - 55% Natural Gas Fireplaces
 - 0% Without
- **Landscape Fuel Combustion**
 - 180 Summer Days
 - Year 2020
- **Consumer Product Emissions:**
 - 0.0171 lb ROG per person
 - 2.861 Persons per Residential Unit
- **Architectural Coating Emissions:**
 - Residential & Nonresidential: 0.0185 ROG lb/ft² surf area
 - Residential & Nonresidential: 1 mil paint thickness
 - Residential: Conversion Factor 2.7
 - Nonresidential: Conversion Factor 2.0
 - Residential & Nonresidential: 10% surface area repainted each year
- **Energy Efficiency Mitigation:** None selected
- **Landscape Mitigation Measures:** None selected

Operational Emission Sources

- **Vehicle Fleet %:**
 - 54.4% - Light Auto (0.4% non-catalyst, 99.4% catalyst, 0.2% diesel)

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- 15.3% - Light Truck (<3750 lb) (0.7, 98, 1.3)
- 16.4% - Light Truck (3751-5750 lb) (0.6, 98.8, 0.6)
- 7.3% - Med Truck (5751-8500 lb) (0.0, 98.6, 1.4)
- 1.1% - Lt-Heavy Truck (8501-10,000 lb) (0.0, 81.8, 18.2)
- 0.3% - Lt-Heavy Truck (10,001-14,000 lb) (0.0, 66.7, 33.3)
- 1.0% - Med-Heavy Truck (14,001-33,000 lb) (0.0, 20.0, 80.0)
- 0.8% - Heavy-Heavy Truck (33,001-60,000 lb) (0.0, 0.0, 100.0)
- 0.0% - Line Haul Vehicle (>60,000 lb) (0.0, 0.0, 100.0)
- 0.2% - Urban Bus (0.0, 50.0, 50.0)
- 1.6% - Motorcycle (50.0, 50.0, 0.0)
- 0.1% - School Bus (0.0, 0.0, 100.0)
- **Target Year:** 2020
- **Trip Characteristics:**
 - (20 trip %) Home-based work – 35 mph, urban 11.5 mile, rural 11.5 mile
 - (37 trip %) Home-based shop – 40 mph, urban 4.87 mile, rural 4.87 mile
 - (43 trip %) Home-based other – 40 mph, urban 6.02 mile, rural, 6.02 mile
 - Commercial-based commute – 40 mph, urban 10.3 mile, rural 10.3 mile
 - Commercial-based non-work – 40 mph, urban 5.5 mile, rural 5.5 mile
 - Commercial-based customer – 40 mph, urban 5.5 mile, rural 5.5 mile
 - (No commercial trip percentages)
- **Temperature Data:** Summer (90 deg F), Winter (50 deg F) (defaults)
- **Variable Starts:** Table of values by trip type and time since engine stopped
- **Road Dust:** 100% Paved Roads (defaults)
 - $sL = 0.1 \text{ g/m}^2$
 - Avg. vehicle weight = 2.2 megagrams
- **Pass-by Trips:** Not Checked (either on or off)
- **Double Counting Correction:** Not Checked
- **Operational Mitigation Measures:** Several Options, but none checked

**ATTACHMENT 4
URBEMIS PARAMETERS FOR A DISCOUNT STORE**

- **Model Version:** 8.7.0 (released April 29, 2005)
- **Based On Air District Specific Default File:** South Coast Air Basin (Los Angeles area)
- **Location:** Urban
- **Project Emission Sources:** Area and Operational

- **Land Use:** Free Standing Discount Store
- **Unit Amount:** 200
- **Unit Type:** 1000 sq. ft.
- **Trip Rate:** 56.02 per day (default)
- **Primary Trip Percentage:** 45 (default)
- **Diverted Trip Percentage:** 45 (default)
- **Pass-By Trip Percentage:** 10 (default)
- **Worker Trip:** 2 (default)

Area Emission Sources

- **Natural Gas Usage Rates:**
 - Single Family: 6665.0 ft³/unit/mo
 - Multifamily: 4011.5 ft³/unit/mo
 - Industrial: 241,611 ft³/industry/mo
 - Hotel/Motel: 4.8 ft³/ft²/mo
 - Retail Shopping: 2.9 ft³/ft²/mo
 - Office 2.0 ft³/ft²/mo
 - 60% Residential using NG / 100% Nonresidential using NG
 - Resid EF (lb/mmcf): ROG (7.26), NO_x (94), CO(40), SO_x(0.001), PM10(0.18)
 - Nonres EF (lb/mmcf): ROG (7.26), NO_x(100), CO(84), SO_x(0.001), PM10(0.18)
- **Hearth Fuel Combustion** (Table of EF's for each of these, not listed below):
 - 35% Wood Stoves
 - 10% Wood Fireplaces
 - 55% Natural Gas Fireplaces
 - 0% Without
- **Landscape Fuel Combustion**
 - 180 Summer Days
 - Year 2020
- **Consumer Product Emissions:**
 - 0.0171 lb ROG per person
 - 2.861 Persons per Residential Unit
- **Architectural Coating Emissions:**
 - Residential & Nonresidential: 0.0185 ROG lb/ft² surf area
 - Residential & Nonresidential: 1 mil paint thickness
 - Residential: Conversion Factor 2.7
 - Nonresidential: Conversion Factor 2.0
 - Residential & Nonresidential: 10% surface area repainted each year
- **Energy Efficiency Mitigation:** None selected
- **Landscape Mitigation Measures:** None selected

Operational Emission Sources

- **Vehicle Fleet %:**
 - 54.4% - Light Auto (0.4% non-catalyst, 99.4% catalyst, 0.2% diesel)

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- 15.3% - Light Truck (<3750 lb) (0.7, 98, 1.3)
- 16.4% - Light Truck (3751-5750 lb) (0.6, 98.8, 0.6)
- 7.3% - Med Truck (5751-8500 lb) (0.0, 98.6, 1.4)
- 1.1% - Lt-Heavy Truck (8501-10,000 lb) (0.0, 81.8, 18.2)
- 0.3% - Lt-Heavy Truck (10,001-14,000 lb) (0.0, 66.7, 33.3)
- 1.0% - Med-Heavy Truck (14,001-33,000 lb) (0.0, 20.0, 80.0)
- 0.8% - Heavy-Heavy Truck (33,001-60,000 lb) (0.0, 0.0, 100.0)
- 0.0% - Line Haul Vehicle (>60,000 lb) (0.0, 0.0, 100.0)
- 0.2% - Urban Bus (0.0, 50.0, 50.0)
- 1.6% - Motorcycle (50.0, 50.0, 0.0)
- 0.1% - School Bus (0.0, 0.0, 100.0)
- **Target Year:** 2020
- **Trip Characteristics:**
 - (20 trip %) Home-based work – 35 mph, urban 11.5 mile, rural 11.5 mile
 - (37 trip %) Home-based shop – 40 mph, urban 4.87 mile, rural 4.87 mile
 - (43 trip %) Home-based other – 40 mph, urban 6.02 mile, rural, 6.02 mile
 - Commercial-based commute – 40 mph, urban 10.3 mile, rural 10.3 mile
 - Commercial-based non-work – 40 mph, urban 5.5 mile, rural 5.5 mile
 - Commercial-based customer – 40 mph, urban 5.5 mile, rural 5.5 mile
 - (No commercial trip percentages)
- **Temperature Data:** Summer (90 deg F), Winter (50 deg F) (defaults)
- **Variable Starts:** Table of values by trip type and time since engine stopped
- **Road Dust:** 100% Paved Roads (defaults)
 - $sL = 0.1 \text{ g/m}^2$
 - Avg. vehicle weight = 2.2 megagrams
- **Pass-by Trips:** Not Checked (either on or off)
- **Double Counting Correction:** Not Checked
- **Operational Mitigation Measures:** Several Options, but none checked

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ATTACHMENT 5 URBEMIS PARAMETERS FOR A HOME IMPROVEMENT STORE

- **Model Version:** 8.7.0 (released April 29, 2005)
- **Based On Air District Specific Default File:** South Coast Air Basin (Los Angeles area)
- **Location:** Urban
- **Project Emission Sources:** Area and Operational

- **Land Use:** Free Standing Home Improvement Store
- **Unit Amount:** 200
- **Unit Type:** 1000 sq. ft.
- **Trip Rate:** 29.8 per day (default)
- **Primary Trip Percentage:** 45 (default)
- **Diverted Trip Percentage:** 40 (default)
- **Pass-By Trip Percentage:** 15 (default)
- **Worker Trip:** 2 (default)

Area Emission Sources

- **Natural Gas Usage Rates:**
 - Single Family: 6665.0 ft³/unit/mo
 - Multifamily: 4011.5 ft³/unit/mo
 - Industrial: 241,611 ft³/industry/mo
 - Hotel/Motel: 4.8 ft³/ft²/mo
 - Retail Shopping: 2.9 ft³/ft²/mo
 - Office 2.0 ft³/ft²/mo
 - 60% Residential using NG / 100% Nonresidential using NG
 - Resid EF (lb/mmcf): ROG (7.26), NO_x (94), CO(40), SO_x(0.001), PM₁₀(0.18)
 - Nonres EF (lb/mmcf): ROG (7.26), NO_x(100), CO(84), SO_x(0.001), PM₁₀(0.18)
- **Hearth Fuel Combustion** (Table of EF's for each of these, not listed below):
 - 35% Wood Stoves
 - 10% Wood Fireplaces
 - 55% Natural Gas Fireplaces
 - 0% Without
- **Landscape Fuel Combustion**
 - 180 Summer Days
 - Year 2020
- **Consumer Product Emissions:**
 - 0.0171 lb ROG per person
 - 2.861 Persons per Residential Unit
- **Architectural Coating Emissions:**
 - Residential & Nonresidential: 0.0185 ROG lb/ft² surf area
 - Residential & Nonresidential: 1 mil paint thickness
 - Residential: Conversion Factor 2.7
 - Nonresidential: Conversion Factor 2.0
 - Residential & Nonresidential: 10% surface area repainted each year
- **Energy Efficiency Mitigation:** None selected
- **Landscape Mitigation Measures:** None selected

Operational Emission Sources

- **Vehicle Fleet %:**
 - 54.4% - Light Auto (0.4% non-catalyst, 99.4% catalyst, 0.2% diesel)
 - 15.3% - Light Truck (<3750 lb) (0.7, 98, 1.3)

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- 16.4% - Light Truck (3751-5750 lb) (0.6, 98.8, 0.6)
- 7.3% - Med Truck (5751-8500 lb) (0.0, 98.6, 1.4)
- 1.1% - Lt-Heavy Truck (8501-10,000 lb) (0.0, 81.8, 18.2)
- 0.3% - Lt-Heavy Truck (10,001-14,000 lb) (0.0, 66.7, 33.3)
- 1.0% - Med-Heavy Truck (14,001-33,000 lb) (0.0, 20.0, 80.0)
- 0.8% - Heavy-Heavy Truck (33,001-60,000 lb) (0.0, 0.0, 100.0)
- 0.0% - Line Haul Vehicle (>60,000 lb) (0.0, 0.0, 100.0)
- 0.2% - Urban Bus (0.0, 50.0, 50.0)
- 1.6% - Motorcycle (50.0, 50.0, 0.0)
- 0.1% - School Bus (0.0, 0.0, 100.0)
- **Target Year:** 2020
- **Trip Characteristics:**
 - (20 trip %) Home-based work – 35 mph, urban 11.5 mile, rural 11.5 mile
 - (37 trip %) Home-based shop – 40 mph, urban 4.87 mile, rural 4.87 mile
 - (43 trip %) Home-based other – 40 mph, urban 6.02 mile, rural, 6.02 mile
 - Commercial-based commute – 40 mph, urban 10.3 mile, rural 10.3 mile
 - Commercial-based non-work – 40 mph, urban 5.5 mile, rural 5.5 mile
 - Commercial-based customer – 40 mph, urban 5.5 mile, rural 5.5 mile
 - (No commercial trip percentages)
- **Temperature Data:** Summer (90 deg F), Winter (50 deg F) (defaults)
- **Variable Starts:** Table of values by trip type and time since engine stopped
- **Road Dust:** 100% Paved Roads (defaults)
 - $sL = 0.1 \text{ g/m}^2$
 - Avg. vehicle weight = 2.2 megagrams
- **Pass-by Trips:** Not Checked (either on or off)
- **Double Counting Correction:** Not Checked
- **Operational Mitigation Measures:** Several Options, but none checked