



Technical Memorandum

To: Jim Morrissey, City Planner

From: Eliza Laws, Senior Environmental Analyst
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Date: September 28, 2021

Re: Air Quality/Greenhouse Gas Analysis for the Towne Center Specific Plan, City of Canyon Lake

The following air quality assessment was prepared to evaluate whether the expected criteria air pollutant emissions generated as a result of construction and operation of the proposed Project would cause exceedances of the South Coast Air Quality Management District's (SCAQMD) thresholds for air quality in the Project area. The greenhouse gas (GHG) assessment was prepared to evaluate whether the expected criteria GHG emissions generated as a result of construction and operation of the proposed Project would exceed the SCAQMD draft screening significance thresholds. This assessment was conducted within the context of the California Environmental Quality Act (CEQA, California Public Resources Code Sections 21000 *et seq.*). The methodology follows the *CEQA Air Quality Handbook* prepared by the SCAQMD for quantification of emissions and evaluation of potential impacts to air resources. As recommended by SCAQMD staff, the **California Emissions Estimator Model**[®] version 2020.4.0 (CalEEMod) was used to quantify Project-related emissions.

The SCAQMD is responsible for bringing the air quality in the areas of its jurisdiction into conformity with the federal and state air quality standards and develops and updates clean air plans, such as the regional Air Quality Management Plan (AQMP), which contain guidelines intended to support efforts to develop rules and regulations, establish permitting requirements, inspect emission sources, and enforce such measures through educational programs or fines, when necessary.

The proposed Project is located within the South Coast Air Basin (the Basin), which is under the jurisdiction of the SCAQMD. The Basin consists of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino counties. Regional and local air quality within the Basin is affected by topography, atmospheric inversions, and dominant onshore flows. Topographic features such as the San Gabriel, San Bernardino, and San Jacinto Mountains form natural horizontal barriers to the dispersion of air contaminants.

The Towne Center Specific Plan (TCSP or proposed Project) site is located south of Railroad Canyon Road the City of Canyon Lake, Riverside County. The TCSP is a specific plan for the existing Towne Center, a 19.6-acre site that is comprised of commercial/retail mixed-uses. The TCSP would provide the basic framework, design, and implementing guidelines to allow for the re-development of the site with mixed-use residential. The TCSP is anticipated to remove 79,700 square feet (sf) of existing retail uses and add 31,000 sf of retail space, which equates to a net reduction of 48,700 sf of retail space. The TCSP is assumed to add 103,000 sf of office space, 188 multi-family units, and the potential for future subsurface parking as well as circulation and pedestrian enhancements throughout the TCSP site.

▪ **Regional Significance Thresholds**

The thresholds contained in the *SCAQMD CEQA Air Quality Handbook*¹ (SCAQMD 1993) and posted in a supplemental table as mass daily thresholds on SCAQMD's website² are considered regional thresholds and are shown in **Table 1 – SCAQMD CEQA Daily Regional Significance Thresholds**, below. These regional thresholds were developed for criteria pollutants based on the SCAQMD's treatment of a major stationary source.

The criteria pollutants analyzed are briefly described below:

- **Reactive Organic Gases/Volatile Organic Compounds (ROG/VOC)** - It should be noted that there are no state or federal ambient air quality standards for VOCs because they are not classified as criteria pollutants. VOCs are regulated; however, a reduction in VOC emissions reduces certain chemical reactions, which contribute to the formation of ozone. VOCs are also transformed into organic aerosols in the atmosphere, contributing to higher PM-10 and lower visibility levels. Although health-based standards have not been established for VOCs, health effects can occur from exposures to high concentrations of VOC because of interference with oxygen uptake. In general, ambient VOC concentrations in the atmosphere, even at low concentrations, are suspected to cause coughing, sneezing, headaches, weakness, laryngitis, and bronchitis. Some hydrocarbon components classified as VOC emissions are thought or known to be hazardous. Benzene, for example, is a hydrocarbon component of VOC emissions that is known to be a human carcinogen.³
- **Oxides of Nitrogen (NO_x)** – Those that are important in air pollution are nitric oxide (NO) and nitrogen dioxide (NO₂). NO is a colorless, odorless gas formed by a combination of nitrogen and oxygen when combustion takes place under high temperatures and pressures. NO₂ is a reddish-brown gas formed by the combination of NO with oxygen. Combustion in motor vehicle engines, power plants, refineries and other industrial operations, as well as ships, railroads, and aircraft are the primary sources of NO_x. NO₂ at atmospheric concentrations is a potential irritant that can cause coughing in healthy people; can alter respiratory responsiveness and pulmonary functions in people with preexisting respiratory illness; and potentially lead to increased levels of respiratory illness in children.⁴
- **Carbon Monoxide (CO)** – A colorless, odorless toxic gas produced by incomplete combustion of carbon-containing substances. Concentrations of CO are generally higher during the winter months when meteorological conditions favor the build-up of primary pollutants.⁵ Automobiles are the major source of CO in the Basin, although various industrial processes also emit CO through incomplete combustion of fuels. In high concentrations, CO can cause serious health problems in humans by limiting the red blood cells' ability to carry oxygen.⁶
- **Sulfur dioxide (SO₂)/oxides of sulfur (SO_x)** – A colorless, pungent gas formed primarily by the combustion of sulfur-containing fossil fuels. SO₂ can result in temporary breathing impairment in asthmatic children and adults engaged in active outdoor activities. When combined with particulate matter, SO₂ can cause symptoms such as shortness of breath and wheezing; and, with long-term exposure, it can lead to the exacerbation of existing cardiovascular disease and respiratory illnesses. Although SO₂ concentrations have been reduced to levels well below state

¹ South Coast Air Quality Management District, *CEQA Air Quality Handbook*, November 1993. (Available at SCAQMD.)

² <http://www.aqmd.gov/docs/default-source/ceqa/handbook/scaqmd-air-quality-significance-thresholds.pdf?sfvrsn=2>

³ South Coast Air Quality Management District, *Guidance Document for Addressing Air Quality Issues in General Plans and Local Planning*, May 6, 2005. (Available at <http://www.aqmd.gov/docs/default-source/planning/air-quality-guidance/complete-guidance-document.pdf>, accessed September 2021.)

⁴ U.S. Environmental Protection Agency, *Criteria Air Pollutants*. (Available at <https://www.epa.gov/criteria-air-pollutants>, accessed September 2021.)

⁵ *Ibid.*

⁶ South Coast Air Quality Management District, *CEQA Air Quality Handbook*, November 1993. (Available at SCAQMD.)

and federal standards, further reductions in SO₂ emissions are needed because SO₂ is a precursor to sulfate and particulate matter less than 10 microns in diameter.⁷

- **Atmospheric Particulate Matter (PM-10, PM-2.5)** – Made up of fine solid and liquid particles, such as soot, dust, aerosols, fumes, and mists. PM-10 consists of particulate matter that is 10 microns or less in diameter, and PM-2.5 consists of particulate matter of 2.5 microns or less in size. Both PM-10 and PM-2.5 can be inhaled into the deepest part of the lung, attributing to health effects. The presence of these fine particles by themselves cause lung damage and interfere with the body’s ability to clear its respiratory tract. Said particles can also act as a carrier of other toxic substances.⁸

Table 1 – SCAQMD CEQA Daily Regional Significance Thresholds

Emission Threshold	Units	VOC	NO _x	CO	SO _x	PM-10	PM-2.5
Construction	lbs/day	75	100	550	150	150	55
Operation	lbs/day	55	55	550	150	150	55

Air quality impacts can be described in a short- and long-term perspective. Short-term impacts occur during site grading and Project construction and consist of fugitive dust and other particulate matter, as well as exhaust emissions generated by construction-related vehicles. Long-term air quality impacts occur once the Project is in operation.

The Project will be required to comply with existing SCAQMD rules for the reduction of fugitive dust emissions. SCAQMD Rule 403 establishes these procedures. Compliance with this rule is achieved through application of standard best management practices in construction and operation activities, including but not limited to application of water or chemical stabilizers to disturbed soils, managing haul road dust by application of water, covering haul vehicles, restricting vehicle speeds on unpaved roads to 15 mph, sweeping loose dirt from paved site access roadways, cessation of construction activity when winds exceed 25 mph and establishing a permanent, stabilizing ground cover on finished sites. In addition, projects that disturb 50 or more acres or more of soil or move 5,000 cubic yards of materials per day are required to submit a Fugitive Dust Control Plan or a Large Operation Notification Form to SCAQMD. Based on the size of this Project’s disturbance area (approximately 19.6 acres), a Fugitive Dust Control Plan or a Large Operation Notification Form will not be required.

Short-Term Analysis

Short-term emissions from Project construction were evaluated using the CalEEMod version 2020.4.0 program. Because the Project is a Specific Plan, timing of construction by future developers is unknown. However, to provide a conservative analysis the estimated construction period for the proposed Project was based on CalEEMod default of approximately 16 months and is assumed to begin no sooner than September 2022. The default parameters within CalEEMod were used and these default values reflect a worst-case scenario, which means that Project emissions are expected to be equal to or less than the estimated emissions. In addition to the default values used, assumptions relevant to model inputs for short-term construction emission estimates used are:

- Construction is assumed to begin no earlier than September 2022. To provide a conservative analysis, the Project is assumed to be developed in one phase. The estimated schedule is shown below:

⁷ U.S. Environmental Protection Agency, *Criteria Air Pollutants*. (Available at <https://www.epa.gov/criteria-air-pollutants>, accessed February 2021.)

⁸ South Coast Air Quality Management District, *CEQA Air Quality Handbook*, November 1993. (Available at SCAQMD.)

Construction Activity	Start Date	End Date	Total Working Days
Demolition	September 1, 2022	September 28, 2022	20
Grading	September 29, 2022	November 9, 2022	30
Building Construction	November 10, 2022	January 3, 2024	300
Architectural Coatings	January 10, 2023	January 31, 2024	277
Paving	January 4, 2024	January 31, 2024	20

- The off-road equipment to be used for each activity is shown below and represents program defaults, with the following exceptions. The default equipment list for the building construction and architectural coating activities was doubled to provide a more conservative analysis. Two additional excavators were added to the grading phase to account for potential subsurface parking. Each piece of equipment is assumed to operate 8 hours per day:

Construction Activity	Off-Road Equipment	Unit Amount
Demolition	Concrete/Industrial Saws	1
	Excavators	3
	Rubber Tired Dozers	2
Grading	Excavators	4
	Graders	1
	Rubber Tired Dozers	1
	Scrapers	2
	Tractors/Loaders/Backhoes	2
Building Construction	Cranes	2
	Forklifts	6
	Generator Sets	2
	Tractors/Loaders/Backhoes	6
	Welder	2
Paving	Pavers	2
	Paving Equipment	2
	Rollers	2
Architectural Coatings	Air Compressors	2

- To evaluate Project compliance with SCAQMD Rule 403 for fugitive dust control, the Project utilized the mitigation option of watering the Project site three times daily which achieves a control efficiency of 61 percent for PM-10 and PM-2.5 emissions. Two (2) one-way vendor trips per day were added to the demolition, grading, and paving activity to account for water truck trips.
- Approximately 79,700 sf of existing retail uses will be demolished.
- Because the Specific Plan allows for the construction of potential subsurface parking, assumptions for excavation and soil export were developed. During grading activities, it is assumed that approximately 3,000 cubic yards (cy) of soil would be exported daily. This results in a total of approximately 90,000 cy of soil export. The export site is currently unknown. Therefore, the CalEEMod default was utilized which assumes a hauling trip length of 20 miles per trip. Based on the CalEEMod default truck capacity of 16 cubic yards, approximately 188 truckloads of soil would be exported daily.
- No off-site infrastructure improvements are proposed.

The results of this analysis are summarized below.

Table 2 – Estimated Unmitigated Maximum Daily Construction Emissions

Activity	Peak Daily Emissions (lb/day)					
	VOC	NO _x	CO	SO ₂	PM-10	PM-2.5
SCAQMD Daily Construction Thresholds	75	100	550	150	150	55
Demolition – 2022	2.76	28.29	21.74	0.05	3.31	1.55
Grading – 2022	5.32	93.07	47.33	0.29	12.96	5.52
Building Construction – 2022	5.37	40.14	52.24	0.12	6.99	3.10
Building Construction – 2023	4.91	36.12	50.57	0.12	6.71	2.85
Building Construction – 2024	4.60	33.99	49.45	0.12	6.53	2.67
Architectural Coatings – 2023	10.03	3.66	7.68	0.02	0.19	0.42
Architectural Coatings – 2024	9.99	3.41	7.49	0.02	1.04	0.40
Paving – 2024	2.37	9.63	15.17	0.02	0.65	0.48
Maximum¹	14.94	93.07	58.25	0.29	12.96	5.52
Exceeds Threshold?	No	No	No	No	No	No

Note: ¹ Maximum emissions are the greater of either demolition, grading, or building construction in 2022 alone, or the sum of building construction and architectural coating in 2023, or the sum of building construction and architectural coating in 2024, or architectural coating and paving in 2024 because these activities overlap. Maximum emissions are rounded and shown in bold.

As shown in the table above, the emissions from construction of the Project are below the SCAQMD daily construction thresholds for all the criteria pollutants.

Long-Term Analysis

Long-term emissions are evaluated at build-out of a project. Because the Project is a Specific Plan, build-out by future developers is unknown. However, to provide a conservative analysis the Project is assumed to be fully re-developed by 2027. Mobile source emissions refer to on-road motor vehicle emissions generated from the Project's traffic and based on the Project-specific vehicle miles traveled (VMT) analysis.⁹ The VMT analysis calculated the daily VMT for the Project to be 21,429 (VMT Analysis, Table A) and this was used to estimate an average trip length for each of the Project's trips that are estimated by CalEEMod. The Project's average trip length is approximately 6.71 miles.

Area source emissions from the Project include stationary combustion emissions of natural gas used for space and water heating (shown in a separate row as energy), yard and landscape maintenance, and consumer use of solvents and personal care products. CalEEMod computes area source emissions based upon default factors and land use assumptions and were utilized with the exception of fireplaces, which were assumed to be absent from the Project. CalEEMod defaults include the 2019 Title 24 energy efficiency standards. Separate emissions were computed for both the summer and winter.

⁹ Translutions Inc., *Canyon Lake Towne Center – VMT Analysis*, August 18, 2021.

Table 3 – Estimated Unmitigated Daily Project Operation Emissions (Summer)

Source	Peak Daily Emissions (lb/day) ¹					
	VOC	NO _x	CO	SO ₂	PM-10	PM-2.5
SCAQMD Daily Thresholds	55	55	550	150	150	55
Area	7.72	0.18	15.52	0.00	0.09	0.09
Energy	0.09	0.80	0.39	0.01	0.06	0.06
Mobile	8.36	9.14	70.38	0.16	17.93	4.86
Total	16.17	10.12	86.29	0.17	18.08	5.01
Exceeds Threshold?	No	No	No	No	No	No

Note: Emissions reported as zero are rounded and not necessarily equal to zero.

Table 4 – Estimated Unmitigated Daily Project Operation Emissions (Winter)

Source	Peak Daily Emissions (lb/day) ¹					
	VOC	NO _x	CO	SO ₂	PM-10	PM-2.5
SCAQMD Daily Thresholds	55	55	550	150	150	55
Area	7.72	0.18	15.52	0.00	0.09	0.09
Energy	0.09	0.80	0.39	0.01	0.06	0.06
Mobile	6.94	9.72	63.51	0.15	17.93	4.86
Total	14.75	10.70	79.42	0.16	18.08	5.01
Exceeds Threshold?	No	No	No	No	No	No

Note: Emissions reported as zero are rounded and not necessarily equal to zero.

Evaluation of the data presented on the above tables indicates that criteria pollutant emissions from operation of this Project will not exceed the SCAQMD regional daily thresholds during summer or winter.

■ Localized Significance Threshold Analysis

Background

As part of the SCAQMD’s environmental justice program, attention has been focused on localized effects of air quality. Staff at SCAQMD has developed localized significance threshold (LST) methodology¹⁰ that can be used by public agencies to determine whether or not a project may generate significant adverse localized air quality impacts (both short- and long-term) to sensitive receptors. SCAQMD considers a sensitive receptor to be a location where a sensitive individual could remain for 24 hours, such as residences, hospitals, or convalescent facilities. LSTs represent the maximum emissions from a project that will not cause or contribute to an exceedance of the state ambient air quality standard, and are developed based on the ambient concentrations of that pollutant for each source receptor area (SRA). The Project site is located within SRA 25.

Short-Term Analysis

According to the LST methodology, only on-site emissions need to be analyzed. Emissions associated with vendor and worker trips are mobile source emissions that occur off site. The emissions analyzed under the LST methodology are NO₂, CO, PM-10, and PM-2.5. SCAQMD has provided LST lookup tables¹¹ to allow users to readily determine if the daily emissions for proposed construction or operational activities could result in significant localized air quality impacts for projects five acres or

¹⁰ South Coast Air Quality Management District, *Final Localized Significance Threshold Methodology*, Revised July 2008. (Available at <http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/localized-significance-thresholds>, accessed September 2021.)

¹¹ *Ibid.*

smaller. The LST methodology and tables can be used as a screening tool to determine if dispersion modeling would be necessary.

The SCAQMD’s Fact Sheet for Applying CalEEMod to Localized Significance Thresholds is used to determine the maximum site acreage that is actively disturbed based on the construction equipment fleet and equipment hours as estimated in CalEEMod.¹² Based on this SCAQMD guidance and the Project’s equipment list during grading (above), the Project will disturb approximately four acres per day during the grading phase. Therefore, the LST for the four-acre site was used.

The LST are estimated using the maximum daily disturbed area (in acres) and the distance of the Project to the nearest sensitive receptors (in meters). The closest sensitive receptors are residential properties located to the north, across Railroad Canyon Road, approximately 105 feet (32 meters) from the Project site. The closest receptor distance on the LST look-up tables is 25 meters. Therefore, a receptor distance of 25 meters (85 feet) was used to ensure a conservative analysis. The results are summarized below.

Table 5 –LST Results for Unmitigated Daily Construction Emissions

Pollutant	Peak Daily Emissions (lb/day)			
	NO _x	CO	PM-10	PM-2.5
LST for 4-acres at 25 meters¹	325	1,677	11	7
Demolition – 2022	25.72	20.59	2.78	1.39
Grading – 2022	42.40	35.55	5.54	3.11
Building Construction – 2022	33.53	34.88	1.73	1.62
Building Construction – 2023	30.88	34.62	1.50	1.41
Building Construction – 2024	28.85	34.45	1.31	1.23
Architectural Coatings – 2023	3.47	4.83	0.19	0.19
Architectural Coatings – 2024	3.25	4.83	0.16	0.16
Paving – 2024	9.52	14.63	0.47	0.43
Maximum²	42.40	39.45	5.54	3.11
Exceeds Threshold?	No	No	No	No

Note: ¹ LST for 4-acre site predicted using Appendix K of SCAQMD LST Methodology

² Maximum emissions are the greater of either demolition, grading, or building construction in 2022 alone, or the sum of building construction and architectural coating in 2023, or the sum of building construction and architectural coating in 2024, or architectural coating and paving in 2024 because these activities overlap. Maximum emissions are rounded and shown in bold.

Emissions from construction of the Project will be below the LST established by SCAQMD for the Project.

Long-Term Analysis

This Project involves the construction of a mixed-use commercial and residential development. According to SCAQMD LST methodology, LSTs would apply to the operational phase of a project, if the project includes stationary sources, or attracts mobile sources that may spend long periods queuing and idling at the site; such as warehouse/transfer facilities. The proposed Project does not include such uses. Therefore, due to the lack of stationary source emissions or on-site mobile equipment, no long-term LST analysis is needed.

¹² <http://www.aqmd.gov/docs/default-source/ceqa/handbook/localized-significance-thresholds/caleemod-guidance.pdf?sfvrsn=2>

CO Hot Spots Analysis

A carbon monoxide (CO) “hot spot” is a localized concentration of CO that is above the state or federal 1-hour or 8-hour ambient air quality standards (AAQS). Localized high levels of CO are associated with traffic congestion and idling or slow-moving vehicles.

Based on the information presented below, a CO “hot spot” analysis is not needed to determine whether the addition of Project related traffic will contribute to an exceedance of either the state or federal AAQS for CO emissions in the Project area.

The analysis prepared for CO attainment in the South Coast Air Basin by the SCAQMD can be used to assist in evaluating the potential for CO exceedances in the South Coast Air Basin. CO attainment was thoroughly analyzed as part of the SCAQMD’s 2003 Air Quality Management Plan (2003 AQMP)¹³ and the Revised 1992 Federal Attainment Plan for Carbon Monoxide (1992 CO Plan).¹⁴ As discussed in the 1992 CO Plan, peak carbon monoxide concentrations in the South Coast Air Basin are due to unusual meteorological and topographical conditions, and not due to the impact of particular intersections (2003 AQMP Appendix V, p. V-4-32). Considering the region’s unique meteorological conditions and the increasingly stringent CO emissions standards, CO modeling was performed as part of the 1992 CO Plan and subsequent plan updates and air quality management plans.

In the 1992 CO Plan, a CO hot spot analysis was conducted for four busy intersections in Los Angeles at the peak morning and afternoon time periods. The intersections evaluated included: Long Beach Blvd. and Imperial Highway (Lynwood); Wilshire Blvd. and Veteran Ave. (Westwood); Sunset Blvd. and Highland Ave. (Hollywood); and La Cienega Blvd. and Century Blvd. (Inglewood). These analyses did not predict a violation of CO standards. The busiest intersection evaluated in the 1992 CO Plan and subsequent 2003 AQMP was that at Wilshire Blvd. and Veteran Ave., which has a daily traffic volume of approximately 100,000 vehicles per day (2003 AQMP Appendix V, Table 4-7). The Los Angeles County Metropolitan Transportation Authority (MTA)¹⁵ evaluated the Level of Service (LOS) in the vicinity of the Wilshire Blvd./Veteran Ave. intersection and found it to be level E at peak morning traffic and Level F at peak afternoon traffic (MTA, Exhibit 2-5 and 2-6). The hot spot analysis was conducted at intersections subject to extremes in vehicle volumes and vehicle congestion, and did not predict any violation of CO standards. Traffic counts on Railroad Canyon Road in 2019 in the vicinity of the Project site were approximately 34,000 daily trips. Considering a two percent growth rate per year and that Project-related traffic would result in an increase of approximately 3,200 daily trips, the daily traffic volume would be approximately 38,500, which is a much lower volume the traffic volumes studied by SCAQMD. Therefore, it can reasonably be concluded that Project-related traffic would not have daily traffic volumes exceeding those at the intersections modeled in the 2003 AQMP, nor would there be any reason unique to the meteorology to conclude that intersections affected by the Project would yield higher CO concentrations if modeled in detail. Thus, the Project would not result in CO hot spots.

■ Greenhouse Gas Analysis

Greenhouse gases (GHG) are not presented in lbs/day like criteria pollutants; they are typically evaluated on an annual basis using the metric system. Additionally, unlike the criteria pollutants, GHG do not have adopted significance thresholds associated with them at this time. Several agencies, at various levels, have proposed draft GHG significance thresholds for use in CEQA documents. SCAQMD has been working on GHG thresholds for development projects. The most recent draft proposal was in September

¹³ SCAQMD, *2003 Air Quality Management Plan, August 1, 2003*. (Available at <http://www.aqmd.gov/home/air-quality/clean-air-plans/air-quality-mgt-plan/2003-aqmp>, accessed September 2021.)

¹⁴ SCAQMD, *Revision to the 1992 Carbon Monoxide Attainment Plan*, September 1994. (Available at SCAQMD.)

¹⁵ Metropolitan Transportation Authority, *2004 Congestion Management Plan for Los Angeles County*, Adopted July 22, 2004. (Available at http://media.metro.net/projects_studies/cmp/images/2004_cmp.pdf, accessed September 2021.)

2010¹⁶ and included significance thresholds for residential, commercial, and mixed-use projects at 3,500, 1,400, and 3,000 metric tonnes per year of carbon dioxide equivalents (MTCO₂E/yr), respectively. Alternatively, a lead agency has the option to use 3,000 MTCO₂E/yr as a threshold for all non-industrial projects. Although both options are recommended by SCAQMD, a lead agency is advised to use only one option and to use it consistently. As such, this threshold is utilized herein to determine if emissions of GHG from this Project will be significant. The SCAQMD significance thresholds also evaluate construction emissions by amortizing them over an expected project life of 30 years.

Short-Term Analysis

Construction-Related Emissions

The CalEEMod model calculates GHG emissions from fuel usage by construction equipment and construction-related activities, like construction worker trips, for the Project. The CalEEMod estimate does not analyze emissions from construction-related electricity or natural gas. Construction-related electricity and natural gas emissions vary based on the amount of electric power used during construction and other unknown factors which make them too speculative to quantify. The CalEEMod output results for construction-related GHG emissions present the GHG emissions estimates for the Project for CO₂, methane (CH₄), nitrous oxide (N₂O), and CO₂E.¹⁷

Table 6 – Project Construction Equipment GHG Emissions

Year	Metric Tons per year (MT/yr)			
	Total CO ₂	Total CH ₄	Total N ₂ O	Total CO ₂ E
2022	652.67	0.07	0.06	671.97
2023	1,512.30	0.18	0.05	1,532.80
2024	51.96	0.01	0.00	52.43
Total	2,216.93	0.26	0.11	2,257.20
			Amortized	75.24

Evaluation of the table above indicates that an estimated 2,257.20 MTCO₂E will occur from Project construction equipment over the course of the estimated construction period. The draft SCAQMD GHG threshold Guidance document released in October 2008¹⁸ recommends that construction emissions be amortized for a project lifetime of 30 years to ensure that GHG reduction measures address construction GHG emissions as part of the operational reduction strategies. Therefore, the total GHG emissions from Project construction were amortized and are included in **Table 8**, below.

Long-Term Analysis

Area Source Emissions

CalEEMod estimates the GHG emissions associated with area sources which include landscape equipment emissions, architectural coating, consumer products, and hearths (fireplaces). Landscape equipment servicing the Project site create CO₂ resulting from fuel combustion based on the Project's land uses. Consumer products consist of consumer use of solvents and personal care products and architectural coatings consist of an average building square footage to be repainted each year. CalEEMod defaults were utilized with the exception of fireplaces, which were assumed to be absent from the Project. **Table 8** summarizes the Project's area source emissions, which were reported as zero.

¹⁶ [http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-\(ghg\)-ceqa-significance-thresholds/year-2008-2009/ghg-meeting-15/ghg-meeting-15-main-presentation.pdf?sfvrsn=2](http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/year-2008-2009/ghg-meeting-15/ghg-meeting-15-main-presentation.pdf?sfvrsn=2)

¹⁷ CO₂E is the sum of CO₂ emissions estimated plus the sum of CH₄ and N₂O emissions estimated multiplied by their respective global warming potential (GWP).

¹⁸ [http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-\(ghg\)-ceqa-significance-thresholds/year-2008-2009/ghg-meeting-6/ghg-meeting-6-guidance-document-discussion.pdf?sfvrsn=2](http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/year-2008-2009/ghg-meeting-6/ghg-meeting-6-guidance-document-discussion.pdf?sfvrsn=2)

Energy-Related Emissions

CalEEMod estimates the GHG emissions associated with building electricity and natural gas usage (non-hearth) for each land use type. Electricity and natural gas used in buildings is typically generated at an off-site power plant which indirectly generates GHG emissions. The default energy usage values used in CalEEMod are based on the CEC sponsored California Commercial End Use Survey and Residential Appliance Saturation Survey studies and reflect 2019 Title 24 improvements (CalEEMod User's Guide, Appendix A). The following table summarizes the GHG emissions estimates reported by CalEEMod for the Project based on the assumptions described previously.

Table 7 – Energy-Related GHG Emissions

Source	Metric Tons per year (MT/yr)			
	CO ₂	CH ₄	N ₂ O	Total CO ₂ E
Electricity	451.84	0.04	0.00	454.17
Natural Gas	166.78	0.00	0.00	167.77
Total	618.62	0.04	0.00	621.94

Note: Emissions reported as zero are rounded and not necessarily equal to zero.

Mobile Source Emissions

CalEEMod estimates the annual GHG emissions from Project-related vehicle usage based on trip generation data contained in defaults or in the VMT project-specific analysis. The trip generation rate and fleet mix were based on CalEEMod's defaults. As stated above, the trip length data was calculated using CalEEMod default trip rates and Project-specific daily VMT. **Table 8** shows the mobile source emissions from the Project.

Solid Waste Emissions

CalEEMod also calculates the GHG emissions associated with the disposal of solid waste into landfills based on default data contained within the model for waste disposal rates, composition, and the characteristics of landfills throughout the state. A large percentage of this waste will be diverted from landfills by a variety of means, such as reducing the amount of waste generated, recycling, and/or composting. The remainder of the waste not diverted will be disposed of at a landfill. This analysis assumes a solid waste diversion from the landfills consistent with the most recent data provided by the state, 37 percent.¹⁹ The waste diversion rate was evaluated in the model by selecting the mitigation option for solid waste and **Table 8** shows the solid waste emissions from the Project utilizing this waste reduction rate.

Water-Related Energy Usage

Electricity is also indirectly used in water supply, treatment, and distribution, as well as wastewater treatment in Southern California and plays a large role in GHG production.

There are three processes necessary to supply potable water to urban users (i.e., residential, commercial, and industrial): (1) supply and conveyance of the water from the source; (2) treatment of the water to potable standards; and (3) distribution of the water to individual users. After use, the wastewater is treated and either reused as reclaimed/recycled water or returned to the environment. CalEEMod calculates the GHG emissions from these processes based on default emissions factors and water/wastewater generation rates for a project's location. Default values were used for electricity intensity factor associated with the supply and conveyance of water from its source which assumes that the water is being imported from Northern California. Total water demand was calculated using the Elsinore Valley Municipal Water District's (EVMWD) mixed use water demand rate.²⁰ The percentage of indoor water versus outdoor water was derived from CalEEMod defaults for the proposed land uses. **Table 8** shows the GHG emissions from water-related energy usage for the Project.

¹⁹ CalRecycle, *California's 2019 Per Capita Disposal Rate Estimate*, webpage. Available at: <https://www.calrecycle.ca.gov/lqcentral/goalmeasure/disposalrate/mostrecent>, accessed September 2021.

²⁰ Elsinore Valley Municipal Water District, *2020 Urban Water Management Plan*. Available at <https://www.evmwd.com/home/showdocument?id=2363>, accessed September 2021.

Total Project GHG Emissions

As shown on **Table 8 – Total Project-Related GHG Emissions**, using all the emissions quantified above, the total GHG emissions generated from the Project is approximately 2,967.12 MTCO₂E/yr which includes construction-related emissions amortized over a typical project life of 30 years.

Table 8 – Total Project-Related GHG Emissions

Source	Metric Tons per year (MT/yr)			
	CO ₂	CH ₄	N ₂ O	Total CO ₂ E
Amortized Construction	--	--	--	75.24
Area	3.17	0.00	0.00	3.25
Energy	618.62	0.04	0.00	621.94
Mobile	2,113.14	0.12	0.11	2,148.75
Solid Waste	27.47	1.62	0.00	68.06
Water	39.09	0.33	0.01	49.88
Total	2,801.49	2.11	0.12	2,967.12

Note: Emissions reported as zero are rounded and not necessarily equal to zero.

The total GHG emissions from the Project do not exceed the SCAQMD interim threshold of level of 3,000 MTCO₂E/yr for non-industrial projects.

■ Conclusion

The conclusion of this analysis indicates that construction of the proposed Project will not exceed criteria pollutant thresholds established by SCAQMD on a regional or localized level without mitigation required. Additionally, the Project will not contribute to creation of a CO hotspot. The Project's GHG emissions will not exceed the SCAQMD interim threshold of 3,000 MTCO₂E/yr. Should you have any questions, please contact me at (951) 686-1070.