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M E M O

Date: June 19, 2025

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SUBJECT: 838 Azure Street Project, Sunnyvale, CA –
Air Quality Analysis Update
I&R Job# 25-078

Illingworth & Rodkin, Inc. (I&R) completed the Air Quality and Greenhouse Gas Assessment[1] for the 838 Azure Street & 842 Sunnyvale/Saratoga Road General Plan Amendment in Sunnyvale, California in April 2016. The original 2016 project proposed to redevelop the site with a total of four single-family dwelling units, but the project has not yet been developed. An update to the project proposes to construct four single-family homes. The City of Sunnyvale has requested I&R to provide an air quality memo confirming whether the conclusions and mitigation measures from the original 2016 air quality report are still applicable today. This memo addresses the City's request.

Project Emissions

The original 2016 air quality analysis found that due to the size of the project (four single-family homes) construction exhaust and operational criteria air pollutant emissions would be below the Air District's significant thresholds. This is because the project was (and still is) below the Bay Area Air District's Air Quality Guidelines screening level sizes. To ensure the project would not have any significant impacts from construction fugitive dust emissions (PM_{10} and $PM_{2.5}$), the Air District's basic best management practices (BMPs) to control dust and exhaust during construction are required to be implemented. The 2025 project, which would also be four single-family homes, would be required to implement the current Air District's basic BMPs, because

[1] Illingworth & Rodkin, Inc., *838 Azure Street & 842 Sunnyvale/Saratoga Road General Plan Amendment Air Quality and Greenhouse Gas Assessment*, April 19, 2016.

they are required under the City's Land Use & Transportation Element (LUTE) DEIR Mitigation Measures 3.5.3. These basic construction BMP measures include:

LUTE DEIR MM 3.5.3: **Include Air District basic BMPs to control dust and exhaust during construction.**

During any construction period ground disturbance, the applicant shall ensure that the project contractor implement measures to control dust and exhaust. Implementation of the measures recommended by the Air District and listed below would reduce the air quality impacts associated with grading and new construction to a less-than-significant level.

1. All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.

2. All haul trucks transporting soil, sand, or other loose material off-site shall be covered.

3. All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.

4. All vehicle speeds on unpaved roads shall be limited to 15 miles per hour (mph).

5. All roadways, driveways, and sidewalks to be paved shall be completed as soon as practicable. Building pads shall be laid as soon as practicable after grading unless seeding or soil binders are used.

6. All excavation, grading, and/or demolition activities shall be suspended when average wind speeds exceed 20 mph.

7. All trucks and equipment, including their tires, shall be washed off prior to leaving the site.

8. Unpaved roads providing access to site located 100 feet of further from a paved road shall be treated with a 6- to 12-inch layer of compacted layer of wood chips, mulch, or gravel.

9. Publicly visible signs shall be posted with the telephone number and name of the person to contact at the lead agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District's General Air Pollution Complaints number shall be visible to ensure compliance with applicable regulations.

Project Health Risk Impacts

The original 2016 air quality analysis found that due to the small project size, flat and mostly vacant site, and negligible site improvement / grading which would require minimal heavy-duty construction equipment use, the health risk impacts from project construction were not anticipated to exceed Air District significance thresholds. An "Avoidance Measure" was identified to ensure this finding as follows:

> *All diesel-powered construction equipment larger than 50 hp and operating on site for more than two days continuously shall meet U.S. EPA particulate matter emissions standards for Tier 2 engines or equivalent. Equipment retrofitted with CARB Level 3 Verified Diesel Emissions Control Strategy (VDECS) would exceed this standard.*

Diesel-powered construction equipment meeting U.S. EPA engine Tier 4 requirements would surpass the effectiveness of the *Avoidance Measure* shown above. This EPA standard was required on all new construction equipment sold beginning on or before 2012. Therefore, construction equipment used on this project would likely meet or surpass this requirement. To ensure that this avoidance measure is met, the Project could commit to using construction equipment that is model year 2012 or newer. In that case, equipment would meet U.S. EPA Tier 4 engine standards and the health risk impacts from project construction would continue to be less-than-significant.

Exposure of New Sensitive Uses to Unhealthy Air Pollutant Concentrations

Finally, the original 2016 air quality analysis found that annual $PM_{2.5}$ concentrations from immediately adjacent to Sunnyvale-Saratoga Road would exceed the thresholds recommended by the Air District for new sensitive receptors. These thresholds would be exceeded within 60 feet of the edge of roadway. The 2016 air quality assessment recommended that any dwelling units within 60 feet of Sunnyvale-Saratoga Road should install an air filtration system with a Minimum Efficiency Reporting Value (MERV) 13 standard or higher. As part of implementing this measure, the property documents should require an ongoing maintenance plan for the building's HVAC air filtration system be developed.

The 2025 project would now be required to meet this measure through the building code, as the 2022 Building Energy Efficiency Standards now require installing air filtration systems with a MERV13 standard for all residential and non-residential land uses[2]. Additionally, this is required under the City's LUTE DEIR Mitigation Measures 3.5.6. By ensuring the dwelling units adjacent to Sunnyvale-Saratoga Road have ventilation systems equipped with MERV13 air filtration, the annual $PM_{2.5}$ concentrations from Sunnyvale-Saratoga Road at the project site would be below significant health risk thresholds recommended by the Air District.

2 California Energy Commission, *2022 Building Energy Efficiency Standards for Residential and Nonresidential Buildings*, August 2022. Web: https://www.energy.ca.gov/sites/default/files/2022-12/CEC-400-2022-010_CMF.pdf

838 AZURE STREET & 842 SUNNYVALE/SARATOGA ROAD GENERAL PLAN AMENDMENT AIR QUALITY AND GHG ASSESSMENT

SUNNYVALE, CALIFORNIA

April 19, 2016

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Introduction

This report presents the results of the community health risk and greenhouse gas (GHG) emissions assessments completed for a residential project to be located at 838 Azure Street and 842 Sunnyvale-Saratoga Road. The project proposes to redevelop the two parcels that each contains one single-family residential dwelling with a total of four single-family dwelling units. This project would intensify the existing land uses. The primary air quality concern is the proximity of new dwelling units to Sunnyvale-Saratoga Road and increased emissions of GHGs. The City's concerns are as follows:

"Air Quality/Greenhouse Gas Study - scope should include documenting existing air quality conditions and associated cancer risks, whether recognized thresholds will be exceeded, whether site is suitable for proposed use/density, how residential use/density affects GHG emissions, etc."

Two impacts with respect to health risk were evaluated: (1) impacts to new sensitive receptors that will be introduced as part of the project and (2) impacts to existing sensitive receptors from project construction activities. In addition, this report evaluated GHG impacts from project construction and from direct and indirect operational emissions of GHGs. This analysis was conducted following guidance provided by the Bay Area Air Quality Management District (BAAQMD).[1]

Setting

The project is located in the northern portion of the Santa Clara County, which is in the San Francisco Bay Area Air Basin. Ambient air quality standards have been established at both the State and federal level. The Bay Area meets all ambient air quality standards with the exception of ground-level ozone, respirable particulate matter (PM_{10}), and fine particulate matter ($PM_{2.5}$).

High ozone levels are caused by the cumulative emissions of reactive organic gases (ROG) and nitrogen oxides (NOx). These precursor pollutants react under certain meteorological conditions to form high ozone levels. Controlling the emissions of these precursor pollutants is the focus of the Bay Area's attempts to reduce ozone levels. The highest ozone levels in the Bay Area occur in the eastern and southern inland valleys that are downwind of air pollutant sources. High ozone levels aggravate respiratory and cardiovascular diseases, reduced lung function, and increase coughing and chest discomfort.

Particulate matter is another problematic air pollutant of the Bay Area. Particulate matter is assessed and measured in terms of respirable particulate matter, or particles that have a diameter of 10 micrometers or less (PM_{10}), and fine particulate matter, where particles have a diameter of 2.5 micrometers or less ($PM_{2.5}$). Elevated concentrations of PM_{10} and $PM_{2.5}$ are the result of both region-wide (or cumulative) emissions and localized emissions. High particulate matter levels aggravate respiratory and cardiovascular diseases, reduce lung function, increase mortality (e.g., lung cancer), and result in reduced lung function growth in children.

[1] BAAQMD, 2011. *BAAQMD CEQA Air Quality Guidelines*. May.

Toxic air contaminants (TACs) are a broad class of compounds known to cause morbidity or mortality (usually because they cause cancer) and include, but are not limited to, the criteria air pollutants. TACs are found in ambient air, especially in urban areas, and are caused by industry, agriculture, fuel combustion, and commercial operations (e.g., dry cleaners). TACs are typically found in low concentrations, even near their source (e.g., diesel particulate matter near a freeway). Because chronic exposure can result in adverse health effects, TACs are regulated at the regional, State, and federal level.

Diesel exhaust is the predominant TAC in urban air and is estimated to represent about three-quarters of the cancer risk from TACs (based on the Bay Area average). According to the California Air Resources Board (CARB), diesel exhaust is a complex mixture of gases, vapors, and fine particles. This complexity makes the evaluation of health effects of diesel exhaust a complex scientific issue. Some of the chemicals in diesel exhaust, such as benzene and formaldehyde, have been previously identified as TACs by the CARB, and are listed as carcinogens either under the state's Proposition 65 or under the Federal Hazardous Air Pollutants programs.

CARB has adopted and implemented a number of regulations for stationary and mobile sources to reduce emissions of diesel particulate matter (DPM).[2] Several of these regulatory programs affect medium- and heavy-duty diesel trucks that represent the bulk of DPM emissions from California highways. These regulations include the solid waste collection vehicle (SWCV) rule, in-use public and utility fleets, and the heavy-duty diesel truck and bus regulations. In 2008, CARB approved a new regulation to reduce emissions of DPM and nitrogen oxides from existing on-road heavy-duty diesel fueled vehicles.[3] The regulation requires affected vehicles to meet specific performance requirements between 2014 and 2023, with all affected diesel vehicles required to have 2010 model-year engines or equivalent by 2023. These requirements are phased in over the compliance period depending on the model year of the vehicle.

The BAAQMD is the regional agency tasked with managing air quality in the region. At the State level, CARB (a part of the California Environmental Protection Agency (EPA)) oversees regional air district activities and regulates air quality at the State level. The BAAQMD has recently published *California Environmental Quality Act (CEQA) Air Quality Guidelines* that are used in this assessment to evaluate air quality impacts of projects.[4]

Significance Thresholds

In June 2010, BAAQMD adopted thresholds of significance to assist in the review of projects under CEQA. These Thresholds were designed to establish the level at which BAAQMD believed air pollution emissions would cause significant environmental impacts under CEQA and were posted on BAAQMD's website and included in the Air District's updated CEQA Guidelines (updated May 2011). The significance thresholds identified by BAAQMD and used in this analysis are summarized in Table 1.

[2] DPM is identified by California as a toxic air contaminant due to the potential to cause cancer.
[3] Available online: http://www.arb.ca.gov/msprog/onrdiesel/onrdiesel.htm. Accessed: September 20, 2013.
[4] BAAQMD, 2011, op. cit.

Table 1. Applicable Air Quality Significance Thresholds

Pollutant	Construction Thresholds	Operational Thresholds	
	Average Daily Emissions (lbs./day)	Average Daily Emissions (lbs./day)	Annual Average Emissions (tons/year)
Criteria Air Pollutants			
ROG	54	54	10
NO_x	54	54	10
PM_{10}	82	82	15
$PM_{2.5}$	54	54	10
CO	Not Applicable	9.0 ppm (8-hour) or 20.0 ppm (1-hour)	
Fugitive Dust	Construction Dust Ordinance or other Best Management Practices	Not Applicable	
Single-Source Contribution - Health Risks and Hazards for New Sources or New Receptors			
Excess Cancer Risk	> 10.0 per one million		
Hazard Index	> 1.0		
Annual Average $PM_{2.5}$	> 0.3 µg/m^3		
Cumulative Health Risks and Hazards for Sensitive Receptors			
Excess Cancer Risk	> 100.0 per one million		
Chronic Hazard Index	> 10.0		
Annual Average $PM_{2.5}$	> 0.8 µg/m^3		
Note: ROG = reactive organic gases, NOx = nitrogen oxides, PM_{10} = course particulate matter or particulates with an aerodynamic diameter of 10 micrometers (µm) or less, $PM_{2.5}$ = fine particulate matter or particulates with an aerodynamic diameter of 2.5µm or less.			

BAAQMD's adoption of significance thresholds contained in the 2011 CEQA Air Quality Guidelines was called into question by an order issued March 5, 2012, in California Building Industry Association (CBIA) v. BAAQMD (Alameda Superior Court Case No. RGI0548693). The order requires BAAQMD to set aside its approval of the thresholds until it has conducted environmental review under CEQA. The ruling made in the case concerned the environmental impacts of adopting the thresholds and how the thresholds would indirectly affect land use development patterns. In August 2013, the Appellate Court struck down the lower court's order to set aside the thresholds. However, the California Supreme Court accepted a portion of CBIA's petition to review the appellate court's decision to uphold BAAQMD's adoption of the thresholds. The specific portion of the argument considered was whether CEQA requires consideration of the effects of the environment on a project (as contrasted to the effects of a proposed project on the environment). On December 17, 2015, the California Supreme Court ruled that CEQA generally does not require an analysis of the effects of existing environmental conditions (e.g., air quality) on a project unless the project would exacerbate those conditions somehow through its construction and/or operation. The City's General Plan, however, includes policies to improve air quality including Policy EM-11.3 which requires all new development to utilize site planning to protect citizens from unnecessary exposure to air pollutants. Therefore,

the significance thresholds (including those that address impacts to the project from the existing environment) contained in the 2011 CEQA Air Quality Guidelines were applied to this project.

Impacts and Mitigation Measures

Impact 1: Conflict with or obstruct implementation of the applicable air quality plan? ***No impact.***

The most recent clean air plan is the *Bay Area 2010 Clean Air Plan* that was adopted by BAAQMD in September 2010. The proposed project would not conflict with the latest Clean Air planning efforts since the project would have emissions well below the BAAQMD thresholds (see Impact 2), and development would be consistent with residential development in the area. The project, at four single-family residential dwelling units, is too small to exceed any of the significance thresholds for project-related emissions and, thus, it is not required to incorporate project-specific transportation control measures listed in the latest Clean Air Plan. Exposure to TACs is addressed later in this report.

Impact 2: Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable State or federal ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)? ***Less than significant with construction-period dust control measures.***

The Bay Area is considered a non-attainment area for ground-level ozone and $PM_{2.5}$ under both the Federal Clean Air Act and the California Clean Air Act. The area is also considered non-attainment for PM_{10} under the California Clean Air Act, but not the federal act. The area has attained both State and federal ambient air quality standards for carbon monoxide. As part of an effort to attain and maintain ambient air quality standards for ozone and PM_{10}, the BAAQMD has established thresholds of significance for these air pollutants and their precursors. These thresholds are for ozone precursor pollutants (ROG and NOx), PM_{10}, and $PM_{2.5}$ apply to both construction period and operational period impacts.

Due to the project size, construction exhaust and operational period emissions would be less than significant. In their 2011 update to the CEQA Air Quality Guidelines, BAAQMD identified the size of land use projects that could result in significant air pollutant emissions. For construction exhaust impacts, the single-family residential size was identified at 114 dwelling units. For operational impacts, the project size was identified at 325 units. Since the project proposes four single-family dwelling units, it is concluded that emissions would be below the BAAQMD significance thresholds for both construction exhaust and operational emissions.

However, construction activities, particularly during site preparation and grading, would temporarily generate fugitive dust in the form of PM_{10} and $PM_{2.5}$. Sources of fugitive dust would include disturbed soils at the construction site and trucks carrying uncovered loads of soils. Unless properly controlled, vehicles leaving the site would deposit mud on local streets, which could be an additional source of airborne dust after it dries. Fugitive dust emissions would vary from day to day, depending on the nature and magnitude of construction activity and local

weather conditions. Fugitive dust emissions would also depend on soil moisture, silt content of soil, wind speed, and the amount of equipment operating. Larger dust particles would settle near the source, while fine particles would be dispersed over greater distances from the construction site. The BAAQMD CEQA Air Quality Guidelines consider these impacts to be less than significant if best management practices are employed to reduce these emissions. *Implementation of appropriate measures to control construction emissions would reduce this impact to a level of less than significant.*

Basic measures to control dust and exhaust during construction.

During any construction period ground disturbance, the applicant shall ensure that the project contractor implement measures to control dust and exhaust. Implementation of the measures recommended by BAAQMD and listed below would reduce the air quality impacts associated with grading and new construction to a less than significant level. The contractor shall implement the following best management practices that are required of all projects:

1. All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.

2. All haul trucks transporting soil, sand, or other loose material off-site shall be covered.

3. All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.

4. All vehicle speeds on unpaved roads shall be limited to 15 miles per hour (mph).

5. All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.

6. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.

7. All construction equipment shall be maintained and properly tuned in accordance with manufacturer’s specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.

8. Post a publicly visible sign with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District’s phone number shall also be visible to ensure compliance with applicable regulations.

Impact 3: Violate any air quality standard or contribute substantially to an existing or projected air quality violation? ***Less than significant.***

As discussed under Impact 2, the project would have emissions less than the BAAQMD screening size for evaluating impacts related to ozone and particulate matter. Therefore, the project would not contribute substantially to existing or projected violations of those standards. Carbon monoxide emissions from traffic generated by the project would be the pollutant of greatest concern at the local level. Congested intersections with a large volume of traffic have the greatest potential to cause high-localized concentrations of carbon monoxide. Air pollutant monitoring data indicate that carbon monoxide levels have been at healthy levels (i.e., below State and federal standards) in the Bay Area since the early 1990s. As a result, the region has been designated as attainment for the standard. The highest measured level over any 8-hour averaging period during the last three years in the Bay Area is less than 3.0 parts per million (ppm), compared to the ambient air quality standard of 9.0 ppm. Intersections affected by the project would have traffic volumes less than the BAAQMD screening criteria and, thus, would not cause a violation of an ambient air quality standard or have a considerable contribution to cumulative violations of these standards.[5]

Impact 4: Expose sensitive receptors to substantial pollutant concentrations? ***Less-than-significant appropriate design measures.***

Project impacts related to increased health risk can occur either by introducing a new sensitive receptor, such as a residential use, in proximity to an existing source of TACs or by introducing a new source of TACs with the potential to adversely affect existing sensitive receptors in the project vicinity. The BAAQMD recommends using a 1,000-foot screening radius around a project site for purposes of identifying community health risk from siting a new sensitive receptor or a new source of TACs.

In addition, during excavation, grading and some building construction activities, substantial amounts of dust could be generated. Most of the dust would result during grading activities. The amount of dust generated would be highly variable and would be dependent on the size of the area disturbed at any given time, amount of activity, soil conditions and meteorological conditions. To address fugitive dust emissions that lead to elevated PM_{10} and $PM_{2.5}$ levels near construction sites the BAAQMD CEQA Air Quality Guidelines identify best control measures. If included in construction projects, these impacts will be considered less than significant.

Project Operation

A review of the area indicates that the proposed project would place new residences in close proximity to Sunnyvale-Saratoga Road. This is considered a high-volume local roadway, which has over 10,000 average daily trips (ADT) per day. The area surrounding the project site is primarily residential and does not include any stationary sources permitted by BAAQMD. Sunnyvale-Saratoga Road is the only TAC source affecting the project site.

[5] For a land-use project type, the BAAQMD CEQA Air Quality Guidelines state that a proposed project would result in a less than significant impact to localized carbon monoxide concentrations if the project would not increase traffic at affected intersections with more than 44,000 vehicles per hour.

Screening Analysis

Traffic on high volume roadways are a source of TAC emissions that may adversely affect sensitive receptors that reside in close proximity. For roadways, the BAAQMD has developed a *Roadway Screening Analysis Calculator* to assess whether roadways with traffic volumes of over 10,000 vehicles per day may have a potentially significant effect on a proposed project. The screening calculator is based on simple worst-case modeling for either north-south or east-west roadway segments in Santa Clara County.

Two adjustments were made to the cancer risk predictions made by this calculator: (1) adjustment for latest vehicle emissions rates and (2) adjustment of cancer risk to reflect new Office of Environmental Health Hazard Assessment (OEHHA) guidance described above. The BAAQMD calculator uses older EMFAC2011 emission rates for the year 2014. Overall, emission rates will decrease by the time the project is constructed and occupied. The project is not likely to be occupied prior to 2018. In addition, a new version of the emission factor model, EMFAC2014, is available. This version predicts much lower emission rates than EMFAC2011 and the rates for 2018 are lower than the rates for 2014. Using a fleet mix typical of local roadways operating at 30 mph, EMFAC2014 predicts diesel $PM_{2.5}$ aggregate emission rates in 2018 that are 46 percent of EMFAC2011 rates for 2014.[6] Total organic gases (TOG) for gasoline-powered vehicle rates are 56 percent of EMFAC2011 year 2014 rates. An adjustment factor of 0.5 was applied to the *Roadway Screening Analysis Calculator* results. The adjusted predicted cancer risk was then adjusted using a factor of 1.3744 to account for new OEHHA guidance (see discussion above regarding cancer risk calculation methodology). This factor was provided by BAAQMD for use with their CEQA screening tools that are used to predict cancer risk.[7]

This screening calculator provides screening estimates of excess lifetime cancer risk, annual $PM_{2.5}$ concentration, and hazard index (HI) based on the county, roadway orientation, traffic volume, and distance from the roadway.[8] The latest City traffic counts, taken in April 2015, indicate the portion of Sunnyvale-Saratoga Road just south has 40,059 vehicles during the weekdays and 28,770 vehicles on the weekend. The seven-day week daily average is 36,834 vehicles.[9] The edge of the project site is about 20 feet from the edge of the through vehicle traffic lanes, so conceivably, dwelling units with sensitive receptors could be placed 30 feet from traffic. Saratoga-Sunnyvale Road runs north-south, so the calculator was used to predict levels on the east side of the roadway. The screening community risk levels are reported in Table 2. Since screening levels exceeded the threshold, refined modeling was conducted. Results of that modeling are also reported in Table 2. A description of the refine modeling is provided below.

[6] Comprised mostly of light- and medium-duty vehicles.
[7] Email from Virginia Lau, BAAQMD to Bill Popenuck, Illingworth & Rodkin, Inc, dated November 15, 2015.
[8] BAAQMD CEQA Tools http://www.baaqmd.gov/plans-and-climate/california-environmental-quality-act-ceqa/ceqa-tools (March 11, 2016)
[9] Phone conversation with Carol Shariat, TE - Principal Transportation Engineer, Sunnyvale and James Reyff, Illingworth & Rodkin, Inc. April 12, 2016

Table 2. Screening TAC Roadway Impacts at 30 feet from Sunnyvale-Saratoga Road

Scenario	**Lifetime Cancer Risk** (per million)	**Annual $PM_{2.5}$ Concentration** ($\mu g/m^3$)	**Hazard Index** (Concentration/REL)
Screening Calculator at 30 feet East	21.0	0.73	<0.03
Refined Modeling with Maximum Impact Reported	5.2	**0.58**	<0.01
Threshold[10]	>10.0 / million	>0.3 $\mu g/m^3$	1.0 Conc./REL
Significant ?	No	**Yes**	No

Note: North-south roadway in Santa Clara County with ADT of 36,834 vehicles and setback of 30 feet.

Refined Roadway Modeling of Sunnyvale-Saratoga Road

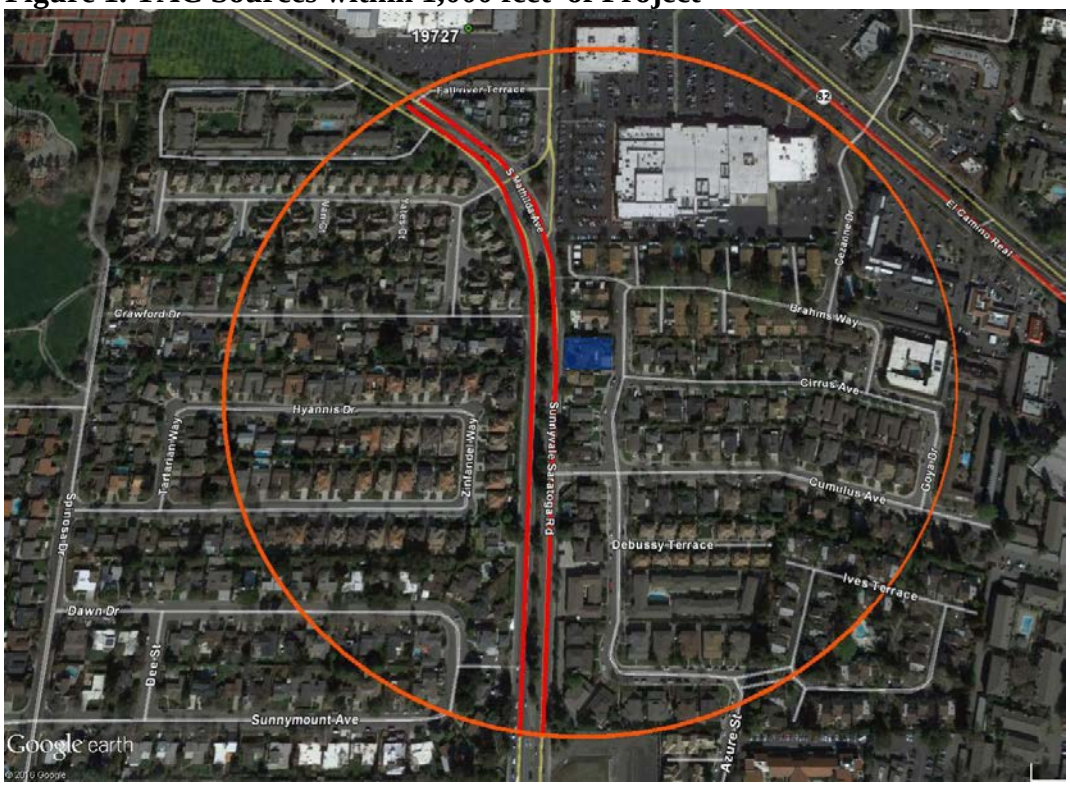
Since screening computations indicate increases in excess cancer risk at the project dwelling units closest to Sunnyvale-Saratoga Road that would exceed thresholds, refined modeling was conducted. Refined modeling tends to predict lower and more accurate results, because project specific information is used in the modeling. This includes roadway orientation with respect to receptors (i.e., where dwelling units would be located with respect to traffic), emission estimates (i.e., based on traffic speeds and traffic mix), and meteorological conditions near the project.

Traffic Emissions Modeling

DPM, organic TACs, and $PM_{2.5}$ emissions for traffic on Sunnyvale-Saratoga Road were computed using CARB's recent EMFAC2014 emission factor model and the traffic mix developed from the ADT counts provided on the City's website for the segment of Sunnyvale-Saratoga Road Mathilda Avenue and E. Remington Drive (see Figure 1). EMFAC2014 is the most recent version of the CARB motor vehicle emission factor model. DPM emissions are projected to decrease in the future and are reflected in the EMFAC2014 emissions data.

[10] BAAQMD. 2011. CEQA Air Quality Guidelines. May.

Figure 1. TAC Sources within 1,000 feet of Project



Residential occupation of the project was assumed to begin in 2018 or thereafter. In order to estimate TAC and $PM_{2.5}$ emissions for calculating increased cancer risks to new residents from traffic on Sunnyvale-Saratoga Road over a 30 year exposure period (2018 – 2047), year 2020 emissions were conservatively assumed as being representative of future conditions. The EMFAC2014 model was used to develop vehicle emission factors for the year 2020 using the calculated mix of cars and trucks. This roadway carries primarily cars and light-duty trucks. A truck mix of 3 percent was assumed (2 percent delivery type and 1 percent heavy-duty), based on previous traffic counts performed by *Illingworth & Rodkin, Inc.* during the update of Sunnyvale's Land Use and Transportation Elements. Default EMFAC2014 vehicle model fleet age distributions for Santa Clara County were assumed in calculating the emissions. Traffic volumes were assumed to increase one percent per year. Average hourly traffic distributions for Santa Clara County roadways were developed using the EMFAC model,[11] which were then applied to the site-specific ADT volumes to obtain estimated hourly traffic volumes and emissions for Sunnyvale-Saratoga Road. An average free flow speed of 35 mph was used based on traffic information for Sunnyvale-Saratoga Road, based on the posted speed limit of 40 mph.

Emissions of TOG from gasoline-powered vehicles were also calculated using the EMFAC2014 model. These TOG emissions were then used in modeling the organic TACs (i.e., TACs associated with motor vehicle from TOG exhaust emissions and evaporative TOG emissions).

[11] The Burden output from EMFAC2007, CARB's previous version of the EMFAC model, was used for this since the current web-based version of EMFAC2011 does not include Burden type output with hour by hour traffic volume information.

TOG emissions from exhaust and for running evaporative loses from gasoline vehicles were calculated using EMFAC2014 default model values for Santa Clara County along with the traffic volumes and vehicle mixes for Sunnyvale-Saratoga Road.

$PM_{2.5}$ emissions for vehicles traveling on Sunnyvale-Saratoga Road were modeled using the same basic modeling approach that was used for assessing TAC impacts. All $PM_{2.5}$ emissions from all vehicles were used, rather than just the $PM_{2.5}$ fraction from diesel powered vehicles, because all vehicle types (i.e., gasoline and diesel powered) produce $PM_{2.5}$. Additionally, $PM_{2.5}$ emissions from vehicle tire and brake wear and from re-entrained roadway dust were included in these emissions. The assessment involved, first, calculating $PM_{2.5}$ emission rates from traffic traveling on the roadway. These emissions were calculated using the EMFAC2014 model and traffic volumes and were calculated in the same manner as discussed for the TAC modeling. $PM_{2.5}$ re-entrained dust emissions from vehicles traffic were calculated using CARB emission calculation procedures.[12]

Dispersion Modeling

Dispersion modeling of DPM and organic TAC emissions was conducted using the Cal3qhcr Model, which is recommended by the BAAQMD for this type of analysis.[13] North and southbound traffic on Sunnyvale-Saratoga Road within about 1,000 feet of the project site were evaluated with the model. A five-year set of hourly meteorological data (1991-95) for San Jose International Airport that was obtained from BAAQMD was used in the modeling. Other inputs to the model included road geometry, hourly traffic volumes, and emission factors. The modeling included a grid of receptors spaced across the site every 6 meters (19.7 feet), so that exposure within the site could be evaluated. Receptor heights of 1.5 meters (5 feet) were used, which is representative of the ground level receptor exposure and where concentrations are typically highest. Figure 1, above, shows the project site area, roadway segments modeled and residential receptor locations used in the modeling.

Computed Cancer Risk

The maximum increased lifetime cancer risks for new residents at the project site from traffic on Sunnyvale-Saratoga Road were calculated using modeled TAC concentrations and the methods and exposure parameters described in Attachment 1. The maximum increased cancer risk from traffic on Sunnyvale-Saratoga Road at the project site was computed as 5.2 in one million. This was modeled at a receptor closest to the roadway. The cancer risks at the project site are below the BAAQMD's threshold of greater than 10 in one million excess cancer cases per million. Cancer risks from traffic at other receptors on the site would be lower than the maximum risk; therefore, it can be concluded that traffic on Sunnyvale-Saratoga Road does not pose a significant cancer risk.

[12] CARB, 2014. *Miscellaneous Process Methodology 7.9, Entrained Road Travel, Paved Road Dust*. Revised and updated, April 2014.
[13] BAAQMD, 2012. *Recommended Methods for Screening and Modeling Local Risks and Hazards*. May 2012.

$PM_{2.5}$ Concentrations from Modeled Roadways

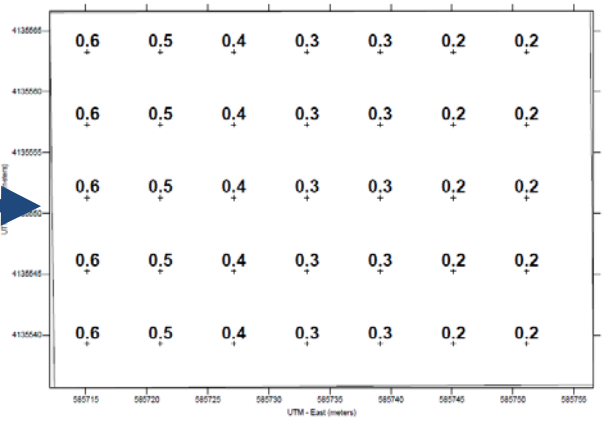
The model predicted a maximum annual $PM_{2.5}$ concentration from Sunnyvale-Saratoga Road traffic of 0.58 micrograms per cubic meter ($\mu g/m^3$), which would occur at the same residential receptor that had the maximum cancer risk. The range of $PM_{2.5}$ exposures at the project site is illustrated in Figure 2, where exposures of 0.4 $\mu g/m^3$ or greater would be considered significant, as they would exceed the $PM_{2.5}$ threshold of greater than 0.3 $\mu g/m^3$.

Conclusion

Any portion of the site developed with residential dwelling units that are within 60 feet of the site boundary with Sunnyvale-Saratoga Road would be exposed to annual $PM_{2.5}$ concentrations greater than 0.3 $\mu g/m^3$. Figure 2 illustrates this exposure. Measures to reduce the $PM_{2.5}$-exposure to future sensitive receptors, such as residents, are described below.

Figure 2. Portion of Project Site with Significant $PM_{2.5}$ Exposure

Red area indicates portion that has significant $PM_{2.5}$ concentrations.



Annual $PM_{2.5}$ concentrations in $\mu g/m^3$, where significant levels occur above 0.3 $\mu g/m^3$.

Measures to Reduce On-Site $PM_{2.5}$ Exposure

Include the following design features to reduce community health risk from the nearby highway:

1. Design the site to set residential dwelling units away from Sunnyvale-Saratoga Road.

2. To the greatest degree possible, plant vegetation along the site boundary with Sunnyvale-Saratoga Road. This barrier would include trees and shrubs that provide a vegetative barrier.

3. Install air filtration at units within 60 feet of the western site boundary with Sunnyvale-Saratoga Road. Air filtration devices shall be rated MERV13 or higher. To ensure

adequate health protection to sensitive receptors, a ventilation system is proposed to meet the following minimal design standards:

- A MERV13 or higher rating;
- At least one air exchange(s) per hour of fresh outside filtered air; and
- At least four air exchange(s) per hour recirculation.

4. As part of implementing this measure, an ongoing maintenance plan for the building's HVAC air filtration system will be developed. Recognizing that emissions from air pollution sources are decreasing, the maintenance period will last as long as significant annual $PM_{2.5}$ exposures are predicted. Subsequent studies could be conducted by an air quality expert approved by the City to identify the ongoing need for the filtered ventilation systems as future information becomes available.

5. Ensure that the lease agreement and other property documents, (1) require cleaning, maintenance, and monitoring of the affected units for air flow leaks; (2) include assurance that new owners and tenants are provided information on the ventilation system; and (3) include provisions that fees associated with owning or leasing a unit(s) in the building include funds for cleaning, maintenance, monitoring, and replacements of the filters, as needed.

BAAQMD recommends that projects with potentially significant community risk install and maintain air filtration systems of fresh air supply. These systems should be installed on either an individual unit-by-unit basis, with individual air intake and exhaust ducts ventilating each unit separately, or through a centralized building ventilation system. The ventilation system should be certified to achieve certain effectiveness.

The U.S. EPA reports particle size removal efficiency for filters rated MERV13 of 90 percent for particles in the size range of 1 to 3 µm and less than 75 percent for particles 0.3 to 1 µm (see American Society of Heating, Refrigerating and Air Conditioning Engineers). Studies conducted by the South Coast Air Quality Management District indicate that MERV13 filters could achieve reductions of about 60 percent for ultra-fine particles and about 35 percent for black carbon. In 2012, CARB compiled a synthesis of the status of research to reduce exposure to nearby traffic air pollution. Because mechanical ventilation has not been used in residential buildings until recently, there has been limited assessment of its impact on entry of particles and other pollutants into homes. CARB-reviewed studies of homes and schools have shown that high-efficiency filtration in mechanical ventilation systems can be effective in reducing levels of incoming outdoor particles.

A properly installed and operated ventilation system with MERV13 air filters may reduce $PM_{2.5}$ concentrations from DPM mobile and stationary sources by approximately 60 percent indoors when compared to outdoors. Increased $PM_{2.5}$ exposures for MERV13 filtration was calculated assuming a combination of outdoor and indoor exposure. For use of MERV13 filtration systems, without the additional use of sealed, inoperable widows, no balconies, or other methods, three hours of outdoor exposure to ambient DPM concentrations, and 21 hours of indoor exposure to filtered air was assumed. In this case, the effective control efficiency using a MERV13 filtration system is 53 percent. Residential uses on site, with dwelling units that either are set back 60 feet

from the boundary with Sunnyvale-Saratoga Road or equipped with ventilation systems that have sufficient filtrations would have exposures below the significance levels. This analysis assumes a combination of indoor and outdoor exposures.

Construction Impacts

Construction equipment and associated heavy-duty truck traffic generates diesel exhaust, which is a known TAC. The project would eventually involve the demolition of the existing residential structures and construction of new residential dwelling units. Given that the site is flat and would require little in the way of site improvements that require grading, the use of heavy-duty construction equipment would be greatly limited. For this reason, we would conclude that significant health risk impacts, such as increased cancer risk greater than 10 per million or annual $PM_{2.5}$ concentrations greater than 0.3 $\mu g/m^3$ are not anticipated if the following avoidance measure is included:

1. All diesel-powered construction equipment larger than 50 hp and operating on site for more than two days continuously shall meet U.S. EPA particulate matter emissions standards for Tier 2 engines or equivalent. Equipment retrofitted with CARB Level 3 Verified Diesel Emissions Control Strategy (VDECS) would exceed this standard.

Impact 5: Create objectionable odors affecting a substantial number of people? ***Less than significant.***

The project would generate localized emissions of diesel exhaust during construction equipment operation and truck activity. These emissions may be noticeable from time to time by adjacent residences. However, they would be localized and are not likely to adversely affect people off site by resulting in confirmed odor complaints. The project would not include any sources of significant odors that would cause complaints from surrounding uses. This would be a less than significant impact.

Impact 6: Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment? ***Less than significant.***

The BAAQMD May 2011 CEQA Guidelines included GHG emissions-based significance thresholds, as described above. The project size, four single-family dwelling units, does not exceed the screening size, of 56 dwelling units, listed in the 2011 BAAQMD CEQA Air Quality Guidelines as having less than significant GHG emissions. Therefore, a refined analysis that includes modeling of GHG emissions from the project was not necessary to conclude that the GHG emissions associated with this project would be less than significant.

Impact 7: Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases? ***Less than significant.***

The project would be subject to new requirements under rule making developed at the State and local level, including the City's Climate Action Plan, regarding GHG emissions and would be subject to local policies that may affect emissions of GHGs.

Attachment 1: Sunnyvale-Saratoga Road Dispersion Modeling and Community Risk Methodology and Calculations

Cancer Risk Methodology

A health risk assessment (HRA) for exposure to TACs requires the application of a risk characterization model to the results from the air dispersion model to estimate potential health risk at each sensitive receptor location. The State of California OEHHA and CARB develop recommended methods for conducting health risk assessments. The most recent OEHHA risk assessment guidelines were published in February of 2015.[14] These guidelines incorporate substantial changes designed to provide for enhanced protection of children, as required by State law, compared to previous published risk assessment guidelines. CARB has provided additional guidance on implementing OEHHA's recommended methods.[15] This health risk assessment used the recent 2015 OEHHA risk assessment guidelines and CARB guidance. While the OEHHA guidelines use substantially more conservative assumptions than the current BAAQMD guidelines, BAAQMD has not formally adopted recommended procedures for applying the newest OEHHA guidelines. BAAQMD is in the process of developing new guidance and has developed proposed HRA Guidelines as part of the proposed amendments to Regulation 2, Rule 5: New Source Review of Toxic Air Contaminants.[16] Exposure parameters from the OEHHA guidelines and newly proposed BAAQMD HRA Guidelines were used in this evaluation.

Potential increased cancer risk from inhalation of TACs are calculated based on the TAC concentration over the period of exposure, inhalation dose, the TAC cancer potency factor, and an age sensitivity factor to reflect the greater sensitivity of infants and children to cancer causing TACs. The inhalation dose depends on a person's breathing rate, exposure time and frequency of exposure, and the exposure duration. These parameters vary depending on the age, or age range, of the persons being exposed and whether the exposure is considered to occur at a residential location or other sensitive receptor location.

The current OEHHA guidance recommends that cancer risk be calculated by age groups to account for different breathing rates and sensitivity to TACs. Specifically, they recommend evaluating risks for the third trimester of pregnancy to age zero, ages zero to less than two (infant exposure), ages two to less than 16 (child exposure), ages 16 to 70 (adult exposure). Age sensitivity factors (ASFs) associated with the different types of exposure are an ASF of 10 for the third trimester and infant exposures, an ASF of 3 for a child exposure, and an ASF of 1 for an adult exposure. Also associated with each exposure type are different breathing rates, expressed as liters per kilogram of body weight per day (L/kg-day). As recommended by the BAAQMD, 95th percentile breathing rates are used for the third trimester and infant exposures, and 80th percentile breathing rates for child and adult exposures. Additionally, CARB and the BAAQMD

[14] OEHHA, 2015. *Air Toxics Hot Spots Program Risk Assessment Guidelines, The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments*. Office of Environmental Health Hazard Assessment. February.
[15] CARB, 2015. *Risk Management Guidance for Stationary Sources of Air Toxics*. July 23.
[16] BAAQMD, 2016. *Workshop Report. Proposed Amendments to Air District Regulation 2, Rule 5: New Source Review of Toxic Air Contaminants. Appendix C. Proposed Air District HRA Guidelines*. January 2016.

recommend the use of a residential exposure duration of 30 years for sources with long-term emissions (e.g., roadways).

Under previous OEHHA and BAAQMD HRA guidance, residential receptors are assumed to be at their home 24 hours a day, or 100% of the time. In the 2015 Risk Assessment Guidance, OEHHA includes adjustments to exposure duration to account for the fraction of time at home (FAH), which can be less than 100% of the time, based on updated population and activity statistics. The FAH factors are age-specific and are: 0.85 for third trimester of pregnancy to less than 2 years old, 0.72 for ages 2 to < 16 years, and 0.73 for ages 16 to 70 years. BAAQMD recommends using these FAH factors for residential exposures.

Functionally, cancer risk is calculated using the following parameters and formulas;

Cancer Risk (per million) = $CPF \times Inhalation\ Dose \times ASF \times ED/AT \times FAH \times 10^{6}$

Where:

CPF = Cancer potency factor $(mg/kg\text{-}day)^{-1}$
ASF = Age sensitivity factor for specified age group
ED = Exposure duration (years)
AT = Averaging time for lifetime cancer risk (years)
FAH = Fraction of time spent at home (unitless)

Inhalation Dose = $C_{air} \times DBR \times A \times (EF/365) \times 10^{-6}$

Where:

C_{air} = concentration in air $(\mu g/m^3)$
DBR = daily breathing rate (L/kg body weight-day)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
10^{-6} = Conversion factor

The health risk parameters used in this evaluation are summarized in Table A-1.

Table A-1. Health Risk Parameters Used for Cancer Risk Calculations

Parameter	*Exposure Type* / *Age Range*	Infant		Child	Adult
		3rd Trimester	0<2	2 < 16	16 - 30
DPM Cancer Potency Factor $(mg/kg\text{-}day)^{-1}$		1.10E+00	1.10E+00	1.10E+00	1.10E+00
Daily Breathing Rate (L/kg-day)*		361	1,090	572	261
Inhalation Absorption Factor		1	1	1	1
Averaging Time (years)		70	70	70	70
Exposure Duration (years)		0.25	2	14	14
Exposure Frequency (days/year)		350	350	350	350
Age Sensitivity Factor		10	10	3	1
Fraction of Time at Home		0.85 – 1.0	0.72 – 1.0	0.72 – 1.0	0.73

* 95th percentile breathing rates for 3rd trimester and infants and 80th percentile for children and adults

Non-Cancer Hazards

Potential non-cancer health hazards from TAC exposure are expressed in terms of a hazard index (HI), which is the ratio of the TAC concentration to a reference exposure level (REL). OEHHA has defined acceptable concentration levels for contaminants that pose non-cancer health hazards. TAC concentrations below the REL are not expected to cause adverse health impacts, even for sensitive individuals. The total HI is calculated as the sum of the HIs for each TAC evaluated and the total HI is compared to the BAAQMD significance thresholds to determine whether a significant non-cancer health impact from a project would occur.

Typically, for projects involving construction or for residential projects locating near roadways with substantial TAC emissions, the primary TAC of concern with non-cancer health effects is DPM. For DPM, the chronic inhalation REL is 5 $\mu g/m^3$.

Annual $PM_{2.5}$ Concentrations

While not a TAC, $PM_{2.5}$ has been identified by the BAAQMD as a pollutant with potential non-cancer health effects that should be included when evaluating potential community health impacts under CEQA. The thresholds of significance for $PM_{2.5}$ (project level and cumulative) are in terms of an increase in the annual average concentration. When considering $PM_{2.5}$ impacts, the contribution from all sources of $PM_{2.5}$ emissions should be included. For projects involving construction, $PM_{2.5}$ impacts should include those from construction equipment and vehicle exhaust in addition to fugitive dust impacts from construction activities. For projects with potential impacts from nearby local roadways, the $PM_{2.5}$ impacts should include those from vehicle exhaust emissions, $PM_{2.5}$ generated from vehicle tire and brake wear, and fugitive emissions from re-suspended dust on the roads.

Modeled Roadway Links and Receptors

Azure Development, Sunnyvale, CA
Sunnyvale-Saratoga Road
DPM Modeling - Roadway Links, Traffic Volumes, and DPM Emissions
Year = 2020

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Width (ft)	Link Width (m)	Release Height (m)	Diesel ADT	Average Speed (mph)	Average Vehicles per Hour
NB-Saratoga	Northbound Sunnyvale-Saratoga Rd	N	3	686	56	17.0	3.4	366	40	15
SB-Saratoga	Southbound Sunnyvale-Saratoga Rd	S	3	672	56	17.0	3.4	366	40	15

2020 Hourly Diesel Traffic Volumes Per Direction and DPM Emissions - NB-Saratoga

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	2.45%	9	0.0234	9	7.21%	26	0.0173	17	6.52%	24	0.0170
2	1.74%	6	0.0203	10	4.30%	16	0.0248	18	5.43%	20	0.0139
3	2.01%	7	0.0190	11	7.10%	26	0.0174	19	4.83%	18	0.0132
4	1.98%	7	0.0260	12	7.44%	27	0.0178	20	3.89%	14	0.0111
5	1.37%	5	0.0234	13	6.90%	25	0.0175	21	1.89%	7	0.0237
6	1.91%	7	0.0269	14	6.93%	25	0.0174	22	2.48%	9	0.0249
7	3.48%	13	0.0266	15	6.33%	23	0.0167	23	1.48%	5	0.0232
8	6.13%	22	0.0164	16	5.65%	21	0.0154	24	0.55%	2	0.0224
								Total		366	

2020 Hourly Diesel Traffic Volumes Per Direction and DPM Emissions - SB-Saratoga

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	2.45%	9	0.0234	9	7.21%	26	0.0173	17	6.52%	24	0.0170
2	1.74%	6	0.0203	10	4.30%	16	0.0248	18	5.43%	20	0.0139
3	2.01%	7	0.0190	11	7.10%	26	0.0174	19	4.83%	18	0.0132
4	1.98%	7	0.0260	12	7.44%	27	0.0178	20	3.89%	14	0.0111
5	1.37%	5	0.0234	13	6.90%	25	0.0175	21	1.89%	7	0.0237
6	1.91%	7	0.0269	14	6.93%	25	0.0174	22	2.48%	9	0.0249
7	3.48%	13	0.0266	15	6.33%	23	0.0167	23	1.48%	5	0.0232
8	6.13%	22	0.0164	16	5.65%	21	0.0154	24	0.55%	2	0.0224
								Total		366	

Azure Development, Sunnyvale, CA
PM2.5 & TOG Modeling - Roadway Links, Traffic Volumes, and PM2.5 Emissions
Year = 2020

Group Link	Description	Direction	No. Lanes	Link Length (m)	Link Width (ft)	Link Width (m)	Release Height (m)	ADT	Average Speed (mph)
NB-Saratoga	Northbound Sunnyvale-Saratoga Rd	N	3	686	56	17.0	1.3	19,356	40
SB-Saratoga	Southbound Sunnyvale-Saratoga Rd	S	3	672	56	17.0	1.3	19,356	40

2020 Hourly Traffic Volumes Per Direction and PM2.5 Emissions - NB-Saratoga

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.08%	210	0.0209	9	7.07%	1369	0.0198	17	7.39%	1431	0.0196
2	0.36%	70	0.0217	10	4.26%	825	0.0203	18	8.30%	1607	0.0195
3	0.30%	57	0.0223	11	4.60%	890	0.0200	19	5.81%	1124	0.0195
4	0.18%	35	0.0291	12	5.84%	1131	0.0199	20	4.37%	846	0.0194
5	0.45%	87	0.0214	13	6.17%	1195	0.0198	21	3.29%	637	0.0197
6	0.81%	158	0.0220	14	6.03%	1167	0.0198	22	3.31%	640	0.0198
7	3.77%	729	0.0201	15	7.08%	1371	0.0196	23	2.47%	479	0.0197
8	7.91%	1532	0.0195	16	7.23%	1400	0.0195	24	1.90%	367	0.0194
								Total		19,356	

2020 Hourly Traffic Volumes Per Direction and PM2.5 Emissions - SB-Saratoga

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.08%	210	0.0209	9	7.07%	1369	0.0198	17	7.39%	1431	0.0196
2	0.36%	70	0.0217	10	4.26%	825	0.0203	18	8.30%	1607	0.0195
3	0.30%	57	0.0223	11	4.60%	890	0.0200	19	5.81%	1124	0.0195
4	0.18%	35	0.0291	12	5.84%	1131	0.0199	20	4.37%	846	0.0194
5	0.45%	87	0.0214	13	6.17%	1195	0.0198	21	3.29%	637	0.0197
6	0.81%	158	0.0220	14	6.03%	1167	0.0198	22	3.31%	640	0.0198
7	3.77%	729	0.0201	15	7.08%	1371	0.0196	23	2.47%	479	0.0197
8	7.91%	1532	0.0195	16	7.23%	1400	0.0195	24	1.90%	367	0.0194
								Total		19,356	

Azure Development, Sunnyvale, CA
Sunnyvale-Saratoga Road
Entrained PM2.5 Road Dust Modeling - Roadway Links, Traffic Volumes, and PM2.5 Emissions
Year = 2020

Group Link	Description	Direction	No. Lanes	Link Length (m)	Link Width (ft)	Link Width (m)	Release Height (m)	ADT	Average Speed (mph)	Average Vehicles per Hour
NB-Saratoga	Northbound Sunnyvale-Saratoga Rd	N	3	686	56	17.0	1.3	19,356	40	807
SB-Saratoga	Southbound Sunnyvale-Saratoga Rd	S	3	672	56	17.0	1.3	19,356	40	807

2020 Hourly Traffic Volumes Per Direction and Road Dust PM2.5 Emissions - NB-Saratoga

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.08%	210	0.0153	9	7.07%	1369	0.0153	17	7.39%	1431	0.0153
2	0.36%	70	0.0153	10	4.26%	825	0.0153	18	8.30%	1607	0.0153
3	0.30%	57	0.0153	11	4.60%	890	0.0153	19	5.81%	1124	0.0153
4	0.18%	35	0.0153	12	5.84%	1131	0.0153	20	4.37%	846	0.0153
5	0.45%	87	0.0153	13	6.17%	1195	0.0153	21	3.29%	637	0.0153
6	0.81%	158	0.0153	14	6.03%	1167	0.0153	22	3.31%	640	0.0153
7	3.77%	729	0.0153	15	7.08%	1371	0.0153	23	2.47%	479	0.0153
8	7.91%	1532	0.0153	16	7.23%	1400	0.0153	24	1.90%	367	0.0153
								Total		19,356	

2020 Hourly Traffic Volumes Per Direction and Road Dust PM2.5 Emissions - SB-Saratoga

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.08%	210	0.0153	9	7.07%	1369	0.0153	17	7.39%	1431	0.0153
2	0.36%	70	0.0153	10	4.26%	825	0.0153	18	8.30%	1607	0.0153
3	0.30%	57	0.0153	11	4.60%	890	0.0153	19	5.81%	1124	0.0153
4	0.18%	35	0.0153	12	5.84%	1131	0.0153	20	4.37%	846	0.0153
5	0.45%	87	0.0153	13	6.17%	1195	0.0153	21	3.29%	637	0.0153
6	0.81%	158	0.0153	14	6.03%	1167	0.0153	22	3.31%	640	0.0153
7	3.77%	729	0.0153	15	7.08%	1371	0.0153	23	2.47%	479	0.0153
8	7.91%	1532	0.0153	16	7.23%	1400	0.0153	24	1.90%	367	0.0153
								Total		19,356	

Azure Development, Sunnyvale, CA
Sunnyvale-Saratoga Road Traffic Data and PM2.5 & TOG Emission Factors - 40 mph

Analysis Year = ***2020***

Vehicle Type	2015 Caltrans Number Vehicles (veh/day)	2020 Number Vehicles (veh/day)	2020 Percent Diesel	Number Diesel Vehicles (veh/day)	Vehicle Speed (mph)	Emission Factors: Diesel Vehicles DPM (g/VMT)	Emission Factors: All Vehicles Total PM2.5 (g/VMT)	Emission Factors: All Vehicles Exhaust PM2.5 (g/VMT)	Emission Factors: Gas Vehicles Exhaust TOG (g/VMT)	Emission Factors: Gas Vehicles Running TOG (g/VMT)
LDA	25,895	27,216	1.06%	289	40	0.0092	0.0191	0.0014	0.0146	0.044
LDT	9,834	10,335	0.17%	18	40	0.0125	0.0192	0.0014	0.0228	0.096
MDT	737	774	9.92%	77	40	0.0143	0.0230	0.0023	0.0462	0.185
HDT	368	387	90.12%	349	40	0.0269	0.0739	0.0240	0.1197	0.110
Total	36,834	38,713	-	733	40	-	-	-	-	-
Mix Avg Emission Factor						**0.01826**	**0.01978**	**0.00164**	**0.01754**	**0.06067**
Increase From 2015		1.05								
Vehicles/Direction		19,356		366						
Avg Vehicles/Hour/Direction		**807**		**15**						

Traffic Data Year = ***2015***

	Total	Total Truck	Truck by Axle: 2	3	4	5
Sunnyvale-Saratoga	36,834	1,105	737	123	123	123
			66.67%	11.11%	11.11%	11.11%
Percent of Total Vehicles		3.00%	2.00%	0.33%	0.33%	0.33%

Traffic Increase per Year (%) = ***1.00%***

Azure Development, Sunnyvale, CA
Sunnyvale-Saratoga Road Traffic Data and Entrained PM2.5 Road Dust Emission Factors

$E_{2.5} = [k(sL)^{0.91} \times (W)^{1.02} \times (1-P/4N) \times 453.59$

where:

$E_{2.5}$ = $PM_{2.5}$ emission factor (g/VMT)

k = particle size multiplier (g/VMT) [$k_{PM2.5} = k_{PM10} \times (0.0686/0.4572) = 1.0 \times 0.15 = 0.15$ g/VMT][a]

sL = roadway specific silt loading (g/m^2)

W = average weight of vehicles on road (Bay Area default = 2.4 tons)[a]

P = number of days with at least 0.01 inch of precipitation in the annual averaging period

N = number of days in the annual averaging period (default = 365)

Notes: [a] CARB 2014, Miscellaneous Process Methodology 7.9, Entrained Road Travel, Paved Road Dust (Revised and updated, April 2014)

Road Type	Silt Loading (g/m^2)	Average Weight (tons)	County	No. Days ppt > 0.01"	$PM_{2.5}$ Emission Factor (g/VMT)
Major	0.032	2.4	Santa Clara	64	0.01528

SFBAAB[a]

Road Type	Silt Loading (g/m^2)
Collector	0.032
Freeway	0.02
Local	0.32
Major	0.032

SFBAAB[a]

County	>0.01 inch precipitation
Alameda	61
Contra Costa	60
Marin	66
Napa	68
San Francisco	67
San Mateo	60
Santa Clara	64
Solano	54
Sonoma	69

Azure Development, Sunnyvale, CA - Sunnyvale-Saratoga Road DPM, PM2.5 & TOG TACs
CAL3QHCR Risk Modeling Parameters and Maximum Concentrations

Receptor Information

Number of Receptors	35
Receptor Heights =	1.5 meters
Receptor distances =	6 meter grid spacing

Meteorological Conditions

BAAQMD San Jose Arpt Hourly Met Dat	1968-1972
Land Use Classification	urban
Wind speed =	variable
Wind direction =	variable

MEI Maximum Concentrations - Receptor Height = 1.5 m

Meteorological Data Year	DPM Concentration ($\mu g/m^3$)	Gas Veh Exhaust TOG Concentration ($\mu g/m^3$)	Gas Veh Evaporative TOG Concentration ($\mu g/m^3$)
	2020	**2020**	**2020**
1991	0.0050	0.2939	1.0139
1992	0.0048	0.2825	0.9745
1993	0.0050	0.2892	0.9974
1994	0.0053	0.3068	1.0581
1995	0.0049	0.2818	0.9721
Average	**0.0050**	**0.2908**	**1.0032**
Maximum	**0.0053**	**0.3068**	**1.0581**

PM2.5 Concentrations

Meteorological Data Year	Maximum Total PM2.5 Concentration (µg/m3)	Maximum Road Dust PM2.5 Concentration (µg/m3)	Maximum Vehicle PM2.5 Concentration (µg/m3)
	2020	**2020**	**2020**
1991	0.5854	0.2552	0.3303
1992	0.5627	0.2453	0.3174
1993	0.5759	0.2511	0.3249
1994	0.6110	0.2663	0.3447
1995	0.5612	0.2446	0.3167
Average	**0.58**	**0.25**	**0.33**
Maximum	**0.61**	**0.27**	**0.34**

Azure Development, Sunnyvale, CA - Sunnyvale-Saratoga Road Cancer Risks
On-Site Receptors - 1.5 meter Receptor Heights

Cancer Risk Calculation Method

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E6

Where: CPF = Cancer potency factor $(mg/kg\text{-}day)^{-1}$

ASF = Age sensitivity factor for specified age group

ED = Exposure duration (years)

AT = Averaging time for lifetime cancer risk (years)

FAH = Fraction of time spent at home (unitless)

Inhalation Dose = C_{air} x DBR x A x (EF/365) x 10^{-6}

Where: C_{air} = concentration in air ($\mu g/m^3$)

DBR = daily breathing rate (L/kg body weight-day)

A = Inhalation absorption factor

EF = Exposure frequency (days/year)

10^{-6} = Conversion factor

Values

Cancer Potency Factors $(mg/kg\text{-}day)^{-1}$

TAC	CPF
DPM	1.10E+00
Vehicle TOG Exhaust	6.28E-03
Vehicle TOG Evaporative	3.70E-04

	Infant/Child			Adult
Age --> Parameter	3rd Trimester	0 - <2	2 - <16	16 - 30
ASF	10	10	3	1
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
ED =	0.25	2	14	14
AT =	70	70	70	70
FAH =	1.00	1.00	1.00	0.73

* 95th percentile breathing rates for infants and 80th percentile for children and adults

Road Traffic Cancer Risk by Year - Maximum Impact Receptor Location

				Maximum - Exposure Information				Cancer Risk (per million)			
					Annual Conc (ug/m3)						
Exposure Year	Year	Exposure Duration (years)	Age	Age Sensitivity Factor	DPM	TOG Exhaust	TOG Evaporative	DPM	TOG Exhaust	TOG Evaporative	Total
0	2019	0.25	-0.25 - 0*	10	0.0050	0.0000	0.0000	0.07	0.000	0.000	0.07
1	2019	1	1	10	0.0050	0.2908	1.0032	0.82	0.273	0.055	1.15
2	2020	1	2	10	0.0050	0.2908	1.0032	0.82	0.273	0.055	1.15
3	2021	1	3	3	0.0050	0.2908	1.0032	0.13	0.043	0.009	0.18
4	2022	1	4	3	0.0050	0.2908	1.0032	0.13	0.043	0.009	0.18
5	2023	1	5	3	0.0050	0.2908	1.0032	0.13	0.043	0.009	0.18
6	2024	1	6	3	0.0050	0.2908	1.0032	0.13	0.043	0.009	0.18
7	2025	1	7	3	0.0050	0.2908	1.0032	0.13	0.043	0.009	0.181
8	2026	1	8	3	0.0050	0.2908	1.0032	0.13	0.043	0.009	0.181
9	2027	1	9	3	0.0050	0.2908	1.0032	0.13	0.043	0.009	0.181
10	2028	1	10	3	0.0050	0.2908	1.0032	0.13	0.043	0.009	0.181
11	2029	1	11	3	0.0050	0.2908	1.0032	0.13	0.043	0.009	0.181
12	2030	1	12	3	0.0050	0.2908	1.0032	0.13	0.043	0.009	0.181
13	2031	1	13	3	0.0050	0.2908	1.0032	0.13	0.043	0.009	0.181
14	2032	1	14	3	0.0050	0.2908	1.0032	0.13	0.043	0.009	0.181
15	2033	1	15	3	0.0050	0.2908	1.0032	0.13	0.043	0.009	0.181
16	2034	1	16	3	0.0050	0.2908	1.0032	0.13	0.043	0.009	0.181
17	2035	1	17	1	0.0050	0.2908	1.0032	0.01	0.005	0.001	0.020
18	2036	1	18	1	0.0050	0.2908	1.0032	0.01	0.005	0.001	0.020
19	2037	1	19	1	0.0050	0.2908	1.0032	0.01	0.005	0.001	0.020
20	2038	1	20	1	0.0050	0.2908	1.0032	0.01	0.005	0.001	0.020
21	2039	1	21	1	0.0050	0.2908	1.0032	0.01	0.005	0.001	0.020
22	2040	1	22	1	0.0050	0.2908	1.0032	0.01	0.005	0.001	0.020
23	2041	1	23	1	0.0050	0.2908	1.0032	0.01	0.005	0.001	0.020
24	2042	1	24	1	0.0050	0.2908	1.0032	0.01	0.005	0.001	0.020
25	2043	1	25	1	0.0050	0.2908	1.0032	0.01	0.005	0.001	0.020
26	2044	1	26	1	0.0050	0.2908	1.0032	0.01	0.005	0.001	0.020
27	2045	1	27	1	0.0050	0.2908	1.0032	0.01	0.005	0.001	0.020
28	2046	1	28	1	0.0050	0.2908	1.0032	0.01	0.005	0.001	0.020
29	2047	1	29	1	0.0050	0.2908	1.0032	0.01	0.005	0.001	0.020
30	2048	1	30	1	0.0050	0.2908	1.0032	0.01	0.005	0.001	0.020
Total Increased Cancer Risk								**3.7**	**1.2**	**0.2**	**5.2**

* Third trimester of pregnancy

Total PM by Model Year and Receptor
Azure Development, Sunnyvale-Saratoga Road Traffic
Ground Floor Receptors

										MERV-13 at 52.5% Ave Control				MERV-16 at 74.4% A	
								Total PM2.5 Concentration		PM Control Factor =		0.475		PM Control Factor =	
	UTM - X	UTM - Y	Total PM2.5 Concentration x 1,000 (ug/m3)					(ug/m3)							
Receptor	(m)	(m)	1991	1992	1993	1994	1995	Average	Maximum						
1	585715.12	4135539.25	585.44	562.71	575.94	610.99	561.23	0.5793	0.6110		0.29022				0.15641
2	585715.12	4135545.25	582.94	560.04	573.4	608.37	558.7	0.5767	0.6084		0.28898				0.15574
3	585715.12	4135551.25	581.44	558.23	571.64	606.74	556.96	0.5750	0.6067		0.28820				0.15533
4	585715.12	4135557.25	580.68	557.06	570.46	605.87	555.81	0.5740	0.6059		0.28779				0.15510
5	585715.12	4135563.25	579.1	555.16	568.59	604.2	553.96	0.5722	0.6042		0.28700				0.15468
6	585721.12	4135539.25	449.1	428.97	439.38	468	428.56	0.4428	0.4680		0.22230				0.11981
7	585721.12	4135545.25	447.32	427.09	437.63	466.14	426.77	0.4410	0.4661		0.22142				0.11933
8	585721.12	4135551.25	445.7	425.33	435.95	464.4	425.05	0.4393	0.4644		0.22059				0.11889
9	585721.12	4135557.25	444.43	423.84	434.47	462.98	423.55	0.4379	0.4630		0.21992				0.11852
10	585721.12	4135563.25	432.97	413	423.9	451.06	412.96	0.4268	0.4511		0.21425				0.11547
11	585727.12	4135539.25	367.13	349.46	358.19	382.56	349.48	0.3614	0.3826		0.18172				0.09794
12	585727.12	4135545.25	365.53	347.81	356.64	380.87	347.89	0.3597	0.3809		0.18091				0.09750
13	585727.12	4135551.25	363.47	345.74	354.65	378.67	345.86	0.3577	0.3787		0.17987				0.09694
14	585727.12	4135557.25	361.52	343.73	352.67	376.52	343.83	0.3557	0.3765		0.17885				0.09639
15	585727.12	4135563.25	358.91	341.14	350.1	373.72	341.24	0.3530	0.3737		0.17752				0.09567
16	585733.12	4135539.25	311.09	295.38	302.86	324.12	295.56	0.3058	0.3241		0.15396				0.08297
17	585733.12	4135545.25	309.51	293.8	301.36	322.43	294.01	0.3042	0.3224		0.15315				0.08254
18	585733.12	4135551.25	307.24	291.6	299.22	320.01	291.85	0.3020	0.3200		0.15200				0.08192
19	585733.12	4135557.25	304.88	289.31	296.97	317.47	289.54	0.2996	0.3175		0.15080				0.08127
20	585733.12	4135563.25	302.06	286.58	294.29	314.47	286.82	0.2968	0.3145		0.14937				0.08050
21	585739.12	4135539.25	269.54	255.42	261.98	280.69	255.68	0.2647	0.2807		0.13333				0.07186
22	585739.12	4135545.25	267.95	253.87	260.48	278.99	254.14	0.2631	0.2790		0.13252				0.07142
23	585739.12	4135551.25	265.68	251.74	258.39	276.61	252.03	0.2609	0.2766		0.13139				0.07081
24	585739.12	4135557.25	263.16	249.34	256.05	273.92	249.64	0.2584	0.2739		0.13011				0.07012
25	585739.12	4135563.25	260.31	246.64	253.4	270.9	246.95	0.2556	0.2709		0.12868				0.06935
26	585745.12	4135539.25	237.11	224.33	230.17	246.76	224.62	0.2326	0.2468		0.11721				0.06317
27	585745.12	4135545.25	235.49	222.79	228.66	245.04	223.08	0.2310	0.2450		0.11639				0.06273
28	585745.12	4135551.25	233.38	220.83	226.74	242.83	221.13	0.2290	0.2428		0.11534				0.06216
29	585745.12	4135557.25	230.81	218.43	224.39	240.12	218.75	0.2265	0.2401		0.11406				0.06147
30	585745.12	4135563.25	229.77	217.74	224.09	239.15	218.06	0.2258	0.2392		0.11360				0.06122
31	585751.12	4135539.25	210.91	199.31	204.55	219.34	199.6	0.2067	0.2193		0.10419				0.05615
32	585751.12	4135545.25	209.27	197.76	203.04	217.6	198.06	0.2051	0.2176		0.10336				0.05571
33	585751.12	4135551.25	207.3	195.94	201.25	215.53	196.23	0.2033	0.2155		0.10238				0.05518
34	585751.12	4135557.25	204.82	193.65	199.01	212.92	193.96	0.2009	0.2129		0.10114				0.05451
35	585751.12	4135563.25	202.06	191.09	196.5	210	191.41	0.1982	0.2100		0.09975				0.05376
							Minimum	**0.198**	**0.210**		**0.100**				**0.054**
							Maximum	**0.579**	**0.611**		**0.290**				**0.156**

Attachment 2: CAP Consistency Analysis

September 30, 2014

Approach to Climate Action Plan CEQA Streamlining

Summary

Attached is the Sunnyvale Climate Action Plan (CAP) Checklist to facilitate project-level streamlining from the Sunnyvale's adopted CAP. The intent of the checklist is to provide a consistent approach for streamlining the analysis of greenhouse gas emissions under the California Environmental Quality Act (CEQA).The Checklist allows City staff to determine: 1) project consistency with CAP forecasts, and 2) the project's incorporation of applicable strategies and measures from the CAP as binding and enforceable components of the project.

In summary, the checklist provides criteria to determine consistency with the CAP. Projects that are ineligible for CAP streamlining would be required to analyze project-level GHG emissions, consistent with the City's current practice by submitting a consultant–prepared GHG impact analysis. Minimum recommended content that should be included in environmental analysis is outlined.

The checklist includes the following sections:

- **Consistency with CAP Forecasts:** Identifies that non-stationary source projects consistent with the General Plan and Zoning Code are consistent with CAP forecasts. This section provides additional criteria for projects triggering a General Plan amendment or rezone. Large, stationary source emitters regulated by the Bay Area Air Quality Management District were not included in the CAP forecast and excluded from the streamlining process.

- **Mandatory CAP Standards:** Identifies the minimum mandatory standards applicable to residential and nonresidential development for streamlining. For now the Near-Term measures and action items from the Sunnyvale CAP have been included.

- **Recommended Environmental Analysis Content:** Brief list of recommended content for environmental analysis, when necessary, that allows a project means to reduce its GHG emissions while allowing an applicant to choose which items to use to obtain compliance with the GHG reduction goals of the CAP.

The draft Sunnyvale CEQA Initial Study Supplemental Checklist for Private Development is presented as Attachment 1.

Summary

This checklist identifies the minimum criteria a project must demonstrate to use the City's CAP for purposes of streamlining the analysis of greenhouse gas emissions under CEQA. Minimum criteria outlined below includes: 1) consistency with CAP forecasts, and 2) incorporation of applicable Near-Term (prior to 2016) strategies and measures from the CAP as binding and enforceable components of the project.

Section 1: Consistency with CAP Forecasts

The CAP's achievement of the 15% reduction below 2008 target is based on growth assumptions in the City's General Plan and regional growth forecasts. For eligibility to streamline from the CAP for purposes of an environmental analysis, projects must demonstrate consistency with CAP forecast assumptions using the criteria listed below. As appropriate, these criteria should be cited as evidence in any subsequent environmental document.

1A. Does the project include large stationary emissions sources that would be regulated by the Air District?

☐ Yes ☒ No

*If **no**, then the project may be eligible to claim consistency with growth assumptions that were used for CAP modeling. Skip to question **1C** to determine consistency with CAP forecasts.*

If *yes, the project may trigger additional changes to the physical environment that were not considered in the CAP and would otherwise by regulated by the Bay Area Air Quality Management District. Complete **1B**.*

1B. If this project is a stationary source emitter as outlined under 1A, does it also include any of the following emissions sources?

Residential uses	☐ Yes	☐ No
Commercial uses	☐ Yes	☐ No

*If **no**, the project does not include any emissions sources that were assumed in CAP growth forecasts. Therefore, the project may trigger additional changes to the physical environment that were not considered in the CAP. CAP measures may be used to mitigate GHG emissions, but project-level analysis of GHG emissions using the California Emissions Estimator Model (CALEEMod) or another method must be prepared by a qualified air quality consultant.*
*If **yes**, the project may include emissions sources mitigated by the CAP. Therefore, any sources identified in 1B may be eligible to claim consistency with the CAP. All stationary sources regulated by the Bay Area Air Quality Management District shall be analyzed separately. Other sources that were analyzed in the CAP may still qualify for streamlining, should the project demonstrate consistency with the CAP as outlined in **1C** and following sections below.*

1C. Does the project trigger an amendment to or adoption of any of the following planning documents?

General Plan	☒ Yes	☒ No
Specific Plan	☐ Yes	☒ No
Precise Plan for El Camino Real	☐ Yes	☒ No

Please describe any amendments or adoption of new specific plans or special planning areas, as applicable:

The project would increase the density from two dwelling units to 4. However, the emissions would be negligible.

*If **no**, then the project is eligible to claim consistency with growth assumptions that were used for CAP forecasts.*

*If **yes**, the project would trigger an amendment to or adoption of one or more of the documents list above, complete **1D** below.*

1D. If the project triggers an amendment to the General Plan, specific plans, and/or special planning areas, complete the following table:

	Existing & Proposed Project			Proposed Project's Net Effect on Citywide Forecasts		
	Existing or Allowed Under Existing Zoning (A)	**Proposed Project (B)**	**Net Change from Existing Zoning (C=B-A)**	**2020 CAP Forecast(D)**	**Proposed Project's Net Effect on Citywide 2020 Forecast (E = D+C)**	**Would Net Effect of Project Exceed the Citywide 2020 CAP Forecast?**
Population				145,020		
Jobs				89,750		
Households / Dwelling Units	2	4	2	59,660	59,662	No

Please describe any assumptions used to calculate existing, allowed, or proposed conditions:

Note that the project would result in an increase in GHG emissions by less than 40 metric tons per year, which is well below the BAAQMD bright-line threshold of 1,100 metric tons for individual projects. Therefore, the project increase in emissions is considered negligible or less than significant.

*If **no for all indicators above**, then the project may be eligible to claim consistency with CAP growth assumptions. The project's assumed residents, employees, and households would not create a net increase on community-wide growth assumed in the CAP. The CAP uses these community-wide growth indicators to forecast community-wide emissions from residential energy use, nonresidential energy use, water-related emissions, and waste. Because the CAP uses these comparable indicators to forecast non-transportation related emissions, and the project would not exceed the CAP's assumed 2020 residents, employees, and dwelling units, the project's non-transportation emissions are therefore consistent with CAP growth assumptions and captured within the CAP's emissions forecast. Complete **1E** below.*

*If **yes to one or more indicators above**, the proposed project's net effect on citywide 2020 forecasts would exceed the 2020 CAP forecast assumptions. Therefore, the project may trigger additional emissions not assumed in CAP growth forecasts. Any projects that exceed the 2020 forecasts may still rely on the CAP for identification of measures and standards for mitigation. However, since such projects exceed the assumptions of the CAP forecast, it is recommended that the project demonstrate anticipated project-level GHG emissions estimates using CALEEMod or another tool. (estimates prepared by consultant). **Note - Project below BAAQMD CEQA Air Quality Guidelines screening size for GHG emissions analysis.***

1E. If the project is consistent with CAP growth forecasts as identified in 1D above, provide the following information.

Would the project have a potentially significant impact after mitigation on any of the following standards of significance identified in the State CEQA Guidelines, Appendix G?

a) Conflict with an applicable plan, program, or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☐ Yes	☒ No
b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	☐ Yes	☒ No
c) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	☐ Yes	☒ No

*If **yes to one or more standards above**, the proposed project's net effect on citywide 2020 forecasts is inconsistent with plans, programs, or policies that informed the assumptions for the 2020 transportation forecast. Therefore, the project is inconsistent with transportation emissions forecasts and is not eligible to claim consistency with the CAP for purposes of GHG emissions and impacts on climate change.*

*If **no for all standards above**, then the project is consistent with the plans, programs, policies, or ordinances that informed the travel demand model for the 2020 transportation forecast of the CAP. Therefore, the project is consistent with CAP growth assumptions for transportation emissions in the CAP and is eligible to claim consistency with CAP transportation forecasts.*

Section 2: Consistency with CAP Measures

The CAP provides measures that achieve a 15% reduction below 2008 emissions levels by 2020. Each of the measures contains a bulleted list of action items/project standards that help projects achieve that goal. Projects that wish to demonstrate consistency with the CAP must demonstrate consistency with all applicable measures and action items/project standards from the CAP. Consistency with all applicable measures should be cited as evidence to support tiering from the CAP.

2A. Using the action items/project standards identified on the following pages, identify all measures and action items/project standards that are applicable to the project. Identify applicability and project compliance with each action item/project standard.

If a project demonstrates all applicable mandatory standards, the project is eligible to claim consistency with CAP measures and is eligible for CAP streamlining.

If a project does not integrate all applicable mandatory standards, the project is ineligible to claim consistency with CAP measures and is not eligible for CAP streamlining.

Additional voluntary measures may also be recommended. Projects inconsistent with growth forecasts should consider integrating all feasible voluntary and mandatory CAP measures.

Standards for Climate Action Plan Consistency/Private Development

(Includes Near-Term Action Items and Action Items Already Implemented by the City)

Applicable? (Yes or No)	Measure	Action Item/Project Standard	Describe whether standards are applicable and how the project demonstrates consistency with applicable standards
No	OS-2	Provide availability and access to outdoor space for recreation or social purposes, including access to public open spaces on privately owned property such as retail shopping centers	Not applicable
Maybe	OS-3.1	Continue to implement the City's Tree Preservation requirements.	The project would be subject to City requirements

Yes	EC-2.2	Continue to require energy-efficient siting of buildings. Buildings should be oriented and landscape material should be selected to provide maximum energy efficiency for the buildings	The project would be subject to City requirements
Maybe	WC-2.3	Require new open space and street trees to be drought-tolerant	The project would be subject to City requirements
No	LW-2.1	Require multi-family homes to participate in the City's Multi-family Recycling Program	Not applicable
No	LW-2.2	Select materials to be targeted for diversion methods, services or technologies based on the results of the Zero Waste Strategic Plan	Not applicable - applies to solid waste contractor
No	CA-1.7	Actively promote the use of alternative modes of transportation as safe modes of travel. When applicable, promote viable programs sponsored by 511.org, the BAAQMD and other recognized agencies on the City's website and publications	Not applicable
No	CTO-1.1	Incorporate the provisions of AB 1358, the California Complete Streets Act of 2008, into roadway design, construction and maintenance activities	Not applicable
No	CTO-1.2	Implement the street space allocation policy (RTC 8-085, April 28, 2009) in coordination with road reconstruction or resurfacing projects to provide road configurations that accommodate all travel modes.	Not applicable
Maybe	CTO-1.3	Require new development to provide cross-parcel access and linkages from the	The project would be subject to City Requirements if applicable

		development entrance to the public sidewalk system, transit stops, nearby employment and shopping centers, schools, parks and other parcels for ease of pedestrian and cyclist access	
Maybe	CTO-1.4	Improve pedestrian safety and comfort through design elements such as landscaped medians, pedestrian-level amenities, sidewalk improvements and compliance with ADA design standards, particularly for areas serving high volumes of traffic.	The project would be subject to City Requirements if applicable
No	CTO-1.5	Improve bicycle facilities and perceptions of comfort through pavement marking/coloring, physical separation, specialized signs and markings and other design elements.	Not applicable
Maybe	CTO-1.6	Require sidewalks to be a minimum of 6 feet wide in order to allow side-by-side walking at identified locations that currently serve high pedestrian traffic volumes or locations planned to serve high volumes of pedestrian traffic.	The project would be subject to City Requirements if sidewalk improvements are made
No	CTO-2.1	Require public areas and new development to provide bicycle parking consistent with the VTA Bicycle Technical Guidelines, as amended.	Not applicable
No	CTO-3.1	Continue sponsoring projects to provide transit rider amenities at bus stops and rail stations.	Not applicable
No	CTO-4.1	Require existing and future major employers to utilize a variety of transportation demand management	Not applicable

		measures such as flexible work schedules, telecommuting, guaranteed rides home, low or no cost transit passes, parking "cash-out" incentives and other programs that provide employees with alternatives to single-occupant commutes.	
Yes	EP-2.3	Prevent buildings and additions from shading more than 10% of roofs of other structures.	The project would be subject to City requirements
No	EP-2.3	Continue to allow and encourage solar facilities above paved parking areas.	Not applicable
Yes	OR-1.3	In project review, encourage the replacement of high-maintenance landscapes (like grass turf) with native vegetation to reduce the need for gas-powered lawn and garden equipment.	The project would be subject to City requirements
Yes	OR-2.1	Idling times will be minimized either by shutting equipment off when not in use or reducing the maximum idling time to five minutes (as required by the California toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]) or less. Clear signage will be provided at all access points to remind construction workers of idling restrictions.	See Mitigation Measure AQ-1
Yes	OR-2.2	Construction equipment must be maintained per manufacturer's specifications	See Mitigation Measure AQ-1
Yes	OR-2.3	Planning and Building staff will work with project applicants from construction equipment by selecting one	The project would be subject to City Requirements, as applicable

		of the following measures, at a minimum, as appropriate to the construction project: a. Substitute electrified or hybrid equipment for diesel and gasoline powered equipment where practical b. Use alternatively fueled construction equipment on-site, where feasible, such as compressed natural gas (CNG), liquefied natural gas (LNG), propane or biodiesel. c. Avoid the use of on-site generators by connecting to grid electricity or utilizing solar-powered equipment. d. Limit heavy-duty equipment idling time to a period of three minutes or less, exceeding CARB regulation minimum requirements of five minutes.	

Section 3: Minimum Recommended Content for Environmental Analysis

Projects demonstrating consistency with the CAP should use the following table as a guide for preparation of environmental analysis. As appropriate, information on the preceding pages should be used to support the analysis:

	Greenhouse gas analysis topic	Minimum recommended content
1	Existing Settings	General - GHG emissions and effects of global climate change
2	Existing Settings	State - statewide inventory and forecasts
3	Existing Settings	Local - Summary of CAP inventory and forecasts
4	Regulatory Framework	Federal - Brief overview of context
5	Regulatory Framework	State - CEQA Guidelines Section 15183.5 Tiering and Streamlining Analysis of GHGs - Summary of the streamlining provisions and whether they apply to the project, focusing on project components that aren't otherwise covered by streamlining
6	Regulatory Framework	State - regulations quantified and addressed in the CAP, including EO-S-3-05, AB 32, Climate Change Scoping Plan, Renewable Portfolios Standard (Senate Bill 1078, Governor's Order S-14-08, and California Renewable Portfolio Standards), Sustainable Communities Strategy, and California Building Energy Efficiency Standards
7	Regulatory Framework	Local – Bay Area Air Quality Management District
8	Regulatory Framework	Local - CAP, brief summary
9	Standards of Significance	CEQA Guidelines, Appendix G Standards
10	Standards of Significance	CEQA Guidelines Section 15183.5 Tiering and Streamlining Analysis of GHGs
11	Standards of Significance	CAP and supplemental EIR guidance
12	Impacts	Identify findings of CAP supplemental EIR
13	Impacts	Finding: Provide findings of significance, streamlining by focusing on findings of CAP supplemental EIR.

	Greenhouse gas analysis topic	Minimum recommended content
14	Impacts	Projects that are consistent with CAP forecasts and measures should demonstrate the following: -Consistency with assumptions of CAP forecast, using tables and information from this guide -Incorporation of all applicable CAP measures as mitigations or as part of the project description -CAP finding that all such measures, on a citywide basis, lead to a less than significant impact
15	Impacts	Projects that are inconsistent with either CAP forecasts or CAP measures are not eligible for streamlining. While such projects may still incorporate elements identified above, they should also incorporate project-level GHG emissions modeling. ***Note that project would have insignificant GHG emissions since it is below the BAAQMD CEQA Guidelines Screening Threshold for evaluating GHG emissions***