24.12 CHAPTER 12 - AIR QUALITY

Section 12.1.1, DEIR/EIS page 12-1, FEIR/EIS page 12-1: Revisions based on public comment

12.1.1 Climate and Topography

The primary factors that determine air quality are the locations of air pollutant sources and the amount of pollutants emitted from those sources. Meteorological and topographical conditions are also important—atmospheric conditions, such as wind speed, wind direction, and air temperature gradients, interact with the physical features of the landscape to determine the movement and dispersal of air pollutants.

In winter, the meteorology of the LTAB is typified by large amounts of precipitation from Pacific storms that fall mainly as snow, accompanied by below freezing temperatures, winds, cloudiness, and lake and valley fog. Winter days can be cool and brilliantly clear between storms. Thermal inversions are a dominant feature of winter weather within the LTAB. In summer, days are often mild and sunny, with high temperatures in the upper 70s and low 80s (degrees Fahrenheit), with southern flows of moisture bringing an occasional thunderstorm.

During winter, thermal inversions trap pollutants near the ground, leading to high winter concentrations of carbon monoxide (CO) in the more congested and populated areas of the basin. South Lake Tahoe is particularly prone to elevated levels of CO during thermal inversions due to the high traffic volumes and number of residential wood stoves and fireplaces in the area. Please refer to Appendix B of the TMPO RTP. No exceedances of the 8-hour have occurred since 1992. Also please note that traffic volumes have decreased significantly at the project area and throughout the Region over the past eight years (Mobility 2030 p 14-17). During the late summer, Lake Tahoe is prone to increased ozone (O_3) as a result of traffic-volumes, high temperatures, and solar radiation. Local sources of O_3 ~~ozone~~ include mobile vehicles and stationary equipment. S~~s~~ome out-of-basin transport of ~~ozone (~~O_3~~)~~ from the west also occurs, but the California Air Resources Board (ARB) has not yet officially recognized this as a transport route.[1] Given the decrease in traffic volumes over the last seven years and that O_3~~ozone~~ is increasing it certainly appears that transport into the Lake Tahoe Region is a ~~significant~~ contributing factor to background O_3~~ozone~~ concentrations.

Section 12.1.2, DEIR/EIS page 12-5, FEIR/EIS page 12-6: Revisions based on public comment

Existing Criteria Pollutant Concentrations

Existing air quality conditions are characterized by criteria pollutant monitoring data collected in the region. Monitoring stations are not located in the immediate Project vicinity. The closest monitoring station is the Truckee Monitoring Station on 10046 Donner Pass Road, Truckee, CA 96161, located 21 miles north of the Project in the Mountain Counties Air Basin. The next closest stations are the Echo Summit Monitoring Station (21200 US 50, Little Norway, CA 95721); the South Lake Tahoe-Airport Monitoring Station (1901 Airport Road, South Lake Tahoe, CA 96150); and the South Lake Tahoe-Sandy Way Monitoring Station (3337 Sandy Way, South Lake Tahoe, CA 96150). These stations are located approximately 30, 35, and 24 miles to the south, respectively.

Table 12-2 summarizes air quality data from the Truckee, Echo Summit, and the two South Lake Tahoe monitoring stations from 2006 to 2008 for which complete data is available. The table indicates that the Truckee monitoring station~~s in the vicinity of the Project have~~has experienced ~~occasional~~ two violations of ~~the~~ 1-hour O_3, while the Echo Summit and South Lake Tahoe monitoring stations have experienced no violations. ~~and All~~Air quality measurements recorded at the ~~three~~ stations ~~have~~ violated the 8-hour state and federal O_3 standards~~ during the three year monitoring period~~. The Echo Summit station has also violated the federal~~,~~ PM_{10}, and $PM_{2.5}$ ambient air quality standards~~,~~, while the South Lake Tahoe Station~~s have~~ has only experienced violations of the state PM_{10} standard~~during the 3 year monitoring period~~. While the information presented in Table 12-2 is sparse and recorded from monitoring stations as far as 35 miles from the Project site, that data is presented to provide a general representation of existing air quality conditions within the LTAB.

Local monitoring data (see Table 12-2) is used to designate areas as nonattainment, maintenance, attainment, or unclassified for the NAAQS and CAAQS. The four designations are further defined as follows:

- Nonattainment—assigned to areas where monitored pollutant concentrations consistently violate the standard in question;
- Maintenance—assigned to areas where monitored pollutant concentrations exceeded the standard in question in the past, but are no longer in violation of that standard;
- Attainment—assigned to areas where pollutant concentrations meet the standard in question over a designated period of time; and
- Unclassified—assigned to areas were data are insufficient to determine whether a pollutant is violating the standard in question.

Table 12-3 shows the federal and State attainment status for Placer County. The EPA has classified the western portion of Placer County, excluding the ~~Lake~~LTAB, as a ~~serious~~ severe nonattainment area for the federal 8-hour O_3 standard~~, while the Lake Tahoe area is designated as an attainment area~~. For the federal CO standard, the EPA has classified the Lake Tahoe North Shore portion of the county as a~~n unclassified~~ moderate maintenance area. The EPA has classified Placer County as an unclassified/attainment area for the federal PM_{10} standard and a nonattainment area for the federal $PM_{2.5}$ standard (EPA ~~2009a~~2011). The ARB has classified ~~the LTAB portion of~~ Placer County, including the LTAB, as a~~n~~ nonattainment area for the State O_3 and PM_{10} standards. For the State~~,~~ $PM_{2.5}$, and CO standards, the ARB has designated the LTAB as an attainment area. ~~ARB has designated the LTAB a nonattainment area for the State PM_{10} standard~~ (ARB ~~2009b~~2010). ~~(Please also refer to page 66 of the RTP Mobility 2030 Conformity Analysis)~~.

Section 12.1.3, DEIR/EIS page 12-10, FEIR/EIS page 12-11: Revisions based on public comment

Table 12-3

Federal and State Attainment Status for Placer County and the LTAB (unless otherwise noted)

Pollutant	State Status	Federal Status
8-Hour O_3	Nonattainment ~~for the western portion of Placer County, attainment for LTAB portion~~	~~Serious~~ Severe nonattainment for the western portion of Placer County, attainment for LTAB portion [1]
PM_{10}	Nonattainment	Attainment/unclassified
$PM_{2.5}$	~~Unclassified/a~~Attainment	Nonattainment
CO	Unclassified~~/~~ for the western portion of Placer County, attainment for LTAB portion	~~Unclassified m~~Moderate maintenance ~~area~~ for the ~~(~~North Lake Tahoe Shore~~)~~

[1] Nonattainment designation applies to "all portions of the county **except** that portion of Placer County within the drainage area naturally tributary to Lake Tahoe including said Lake, plus that area in the vicinity of the head of the Truckee River

Sources: EPA ~~2009a~~2011; ARB ~~2009b~~2010b.

Sections 12.3 to 12.6, DEIR/EIS pages 12-19 through 12-54, FEIR/EIS pages 12-21 to 12-73: Revisions based on public comment and addition of Alternative 1A

12.3 EVALUATION CRITERIA WITH POINTS OF SIGNIFICANCE

For the purposes of this analysis, the thresholds summarized in Table 12-7 will be used to determine whether implementation of the Project would result in a significant air quality impact. These thresholds were identified by the PCAPCD and the TRPA.

Table 12-7

Thresholds of Significance

Evaluation Criteria	As Measured By	Agency Requirements		Point of Significance[2]
		PCAPCD	TRPA	
Impact AQ-1: Will the Project Generate Construction Emissions in Excess of Applicable Standards?	Increases in pollutant emissions	Greater than 82 lbs./day of ROG, NO_X, SO_X, and PM_{10}[1]. Greater than 550 lbs./day of CO.	Greater than 0 increases above State, federal, and TRPA Air Quality Standards.	82 pounds per day of ROG, NO_X, SO_X, and PM_{10} and greater than 550 lbs./day of CO[3] .
Impact AQ-2: Will the Project Generate Operational Emissions or VMTs in Excess of Applicable	Total Operational: Increases in pollutant emissions;	Greater than 82 lbs./day of ROG, NO_X, SO_X, and PM_{10}. Greater than 550	An increase of VMTs or emissions of PM, CO, or O_3 precursors.	Total Operational: 82 pounds per day of ROG, NO_X, SO_X, and PM_{10} and greater than 550 lbs./day of CO[3]

Evaluation Criteria	As Measured By	Agency Requirements		Point of Significance[2]
		PCAPCD	TRPA	
Standards?	VMT: Increase in VMT;	lbs./day of CO.	For stationary source emissions: NO_X: 24.2 lbs./day PM_{10}: 22.0 lbs./day VOCs: 125.7 lbs./day SO_X: 13.2 lbs./day CO: 220.5 lbs./day	VMT: Increase in VMT[4]
	Stationary Sources: Peak 24-hour period emissions for NO_X, PM_{10}, VOCs, SO_X, CO.			Stationary Sources: NO_X: 24.2 lbs./day PM_{10}: 22.0 lbs./day VOCs: 125.7 lbs./day SO_X: 13.2 lbs./day CO: 220.5 lbs./day[4]
Impact AQ-3: Will the Project Exposure of Sensitive Receptors to Substantial Pollutant Concentrations?	Increase in CO and DPM concentrations.	Exceedance of CO NAAQS and CAAQS. No quantitative threshold for DPM.	Greater than 0 increase in CO concentrations. No quantitative threshold for DPM.	Greater than 0 increase in CO concentrations[4] Qualitative assessment of DPM emissions, construction schedule, and nature of sensitive receptors.
Impact AQ-4: Will the Project Conflict with or Obstruction of Implementation of the Applicable Air Quality Plan?	Number or conflicts.	Greater than 0 conflicts.		Greater than 0 conflicts[4]
Impact AQ-5: Will the Project Generate Objectionable Odors?	Creation of new odor sources.	Record of greater than one complaint call in a one-year period or greater than ten odor complaints in a 90 day period.		Same agency requirements.
Cumulative Impact	Increases in pollutant emissions.	Greater than 10 lbs./day of ROG or NO_X.	NA	Greater than 10 lbs./day of ROG or NO_X[3]

Notes:

lbs./day = pounds per day.

[1] The PCAPCD has not established a significance threshold for $PM_{2.5}$. However, because $PM_{2.5}$ is a subset of PM_{10}, the 82 pound per day threshold can used as a proxy for significance evaluation of $PM_{2.5}$.

[2] Although based on slightly different metrics, PCAPCD and TRPA standards have been adopted to ensure the same level of air quality protection. The standard most appropriate for assessing air quality impacts relative to the modeling performed below has been selected to evaluate significance.

[3] Based on PCAPCD standard

[4] Based on TRPA standard

In 2010, the California Supreme Court clarified that "[n]either CEQA nor the CEQA Guidelines mandates a uniform, inflexible rule for determination of the existing conditions baseline. Rather, an agency enjoys the discretion to decide, in the first instance, exactly how the existing physical conditions without the project can most realistically be measured, subject to review, as with all CEQA factual determinations, for support by substantial evidence." The Court limited this flexibility by further stating that "[a]n approach using hypothetical allowable conditions as the baseline results in 'illusory' comparisons that 'can only mislead the public as to the reality of the impacts and subvert full consideration of the actual environmental impacts, a result at direct odds with CEQA's intent." (*Communities for a Better Environment v. South Coast Air Quality Management District* (2010) 48 Cal.4th 310.)

Past practice in traffic impact analysis undertaken to help determine the significance of a project's air quality impact has often relied upon a "future no-project" scenario as its CEQA baseline. The project's impact is derived from the difference between "future with-project" and "future no-project" scenarios. This approach has been used in the past because it offers a means of comparing with- and without-project scenarios that share common assumptions for future growth and improvements. It may not, however, conform to the *Communities for a Better Environment* decision. In fact, that approach was invalidated in late 2010 in the Sixth District Court of Appeal's decision in *Sunnyvale West Neighborhood Assn. v. City of Sunnyvale* (2010) Cal.App.4th .

In recognition of the *Communities for a Better Environment* and *Sunnyvale West* decisions, this EIR uses the baseline year of 2008 to evaluate impacts on air quality under CEQA. Specifically, data on existing traffic levels and emissions sources have been used to quantify criteria emissions generated by the ~~proposed p~~Project, assuming it was constructed in 2008. The estimated emissions are compared to emissions under existing conditions without the ~~p~~Project to determine the significance of the ~~p~~Project's air quality impact. This approach complies with the intent of the *Communities for a Better Environment* by providing a significance determination based on the change from existing conditions.

Determining the significance of an impact by comparing anticipated ~~p~~Project conditions to existing conditions is a relatively straightforward analysis for most impacts. However, the air quality impact of a project that will not be operational for years is not easily compared to existing conditions. By the time the Project is operational in 2021 there will be new infrastructure and background growth in the region unrelated to the ~~p~~Project that will impact area roads. Likewise, adopted and proposed state regulations will improve vehicle efficiency and reduce the carbon content of heating and transportation fuels. The 2008 conditions modeled for the Project and used as the basis for the air quality analysis do not include ~~reasonable~~ assumptions about new infrastructure, background growth, and future emission factors. As a result, although this analysis provides a comparison between existing conditions and existing conditions with the Project in place, the resultant significance determination will likely overstate the extent of change in air quality conditions that is a direct result of the Project.

Note that the existing conditions analysis is intended to satisfy the *Communities for a Better Environment* and *Sunnyvale West* decisions for the CEQA determination and does not affect the TRPA analysis, which is based on the National Environmental Policy Act (NEPA)[1]. The significance of the impacts under buildout conditions in comparison to the future ~~n~~No P~~p~~roject scenario is disclosed alongside the existing conditions analysis to satisfy both CEQA and TRPA requirements, respectively.

[1] The NEPA lead agency has the discretion to select the evaluation year, which for the Project, is the time of completion (i.e., build-out year or future year).

12.4 ENVIRONMENTAL IMPACTS AND RECOMMENDED MITIGATION

This section describes the Project's effects on air quality. The No Project (Alternative 2) represents the existing land use configuration, which would remain unchanged. There would be no net increase in air pollutant emissions associated with construction or operation under No Project (Alternative 2). The following discussion focuses on the Proposed Project (~~Alternative 1~~Alternative 1/1A) and ~~Alternatives 1A, 3,~~Alternatives 3, 4, 5, and 6. The Proposed Project (~~Alternative 1~~Alternative 1/1A) and Alternatives~~ 1A and~~ 3 do not differ with regard to traffic volumes~~ or~~. Additionally, the Project and Alternative 3 contain identical land-use patterns; ~~Alternative 1~~Alternative 1/1A is similar to the Project, but includes four fewer residential condominiums~~ (Harned pers. comm. (A))~~. Where appropriate, ~~they~~ the Project ~~and~~ (Alternative 1/~~s~~ 1A) and 3 are therefore analyzed as a single unit and will be referred to as Proposed Project (~~Alternative 1~~Alternative 1/1A) and Alternative ~~s 1A/~~3.[2]

12.4.1 Construction (Short-Term) Impacts

Construction activities may result in the degradation of short-term air quality due to the release of PM_{10}, $PM_{2.5}$, CO, NO_X, and ROG. Such emissions would result from earthmoving and use of heavy equipment, as well as land clearing, ground excavation, cut-and-fill operations, and roadway construction. Emissions can vary substantially from day to day, depending on the level of activity, the specific operations, and the prevailing weather.

As shown in Table 12-7, the PCAPCD and TRPA have separate thresholds for the evaluation of air quality impacts from construction activities. The discussion below evaluates emissions in accordance with the metrics required by each agency's threshold. The finding of significance is based on PCAPCD's thresholds, and is discussed in a summary section at the conclusion of the impact. However, note that because PCAPCD's thresholds have been implemented to ensure that the CAAQS are met, they are also an appropriate proxy in determining if the proposed project is in compliance with TRPA standards, as PCAPCD and TRPA standards are roughly equivalent.

Impact: **AQ-1. Will the Project Generate Construction Emissions in Excess of Applicable Standards?**

Analysis: *No Impact; No Project (Alternative 2)*

The No Project (Alternative 2) will not include any changes to the existing HMR site or structures. Therefore, No Project (Alternative 2) will have no construction emissions.

Mitigation: No mitigation is required.

Analysis: *Significant Impact; Proposed Project (~~Alternative 1~~Alternative 1/1A) and Alternatives 3, 5, and 6*

[2] Note that because ~~Alternative 1~~Alternative 1A includes four fewer residential condominiums than the Project (Alternative 1), emissions generated by this ~~Alternative 1~~Alternative 1A may be slightly lower than those estimated using land use assumptions for the Project (Alternative 1). The analysis contained herein for ~~Alternative 1~~Alternative 1A~~A~~ should therefore be considered conservative.

PCAPCD Requirements

Construction emissions of ROG, NO_X, CO, $PM_{10,}$ and $PM_{2.5,}$ were estimated using the URBEMIS2007 (version 9.2.4) model. To estimate construction emissions, URBEMIS2007 analyzes the type of construction equipment used and the duration of the construction period associated with construction of each of the land uses. Land use assumptions are presented in Table 12-8 and are based on information presented in Chapter 3 and provided by JMA Ventures, LLC (Tirman pers. comm. (A)). A detailed inventory of construction equipment was not provided. Therefore, equipment inventories, load factors, and horsepower (Hp) were based on default values generated by URBEMIS2007 for the specified land uses. Appendix M summarizes the equipment assumptions used in the modeling.

Construction of the Proposed Project (~~Alternative 1~~Alternative 1/1A) and ~~Alternatives 1A, 3,~~Alternatives 3, 5, and 6 will occur in four phases over a ten-year period (2011 through 2020[3]) (Tirman pers. comm. (A)). The number of residential dwellings and square feet of nonresidential facilities under construction varies by year. The Mid-Mountain Base area and the North Base area will be completed during Phase 1a and Phase 1b/c, while South Base area construction will occur during Phases 2a and 2b. Appendix N summarizes the construction schedule and land-use assumptions used in the modeling. Complete URBEMIS2007 model outputs are provided in Appendix O.

Site grading and excavation is anticipated to occur throughout construction of the Proposed Project (~~Alternative 1~~Alternative 1/1A) and ~~Alternatives 3,~~Alternatives 3, 5, and 6. A portion of the excavated soil will bed trucked to a disposal facility in Truckee, while the remaining material will be stored onsite and used as additional fill as necessary. To ensure a conservative analysis, emissions were quantified assuming ~~all~~ excavated material will be hauled to Truckee, which is approximately 22 miles from HMR. The number of truck loads required ~~for each~~by Alternative was calculated by dividing the net cut amount by a haul truck capacity of 20 cubic yards. It was assumed that ~~all~~ haul truck trips would occur during the same ~~within the~~ phase ~~in which~~as soil grading ~~occurs~~ (e.g., cut material extracted during Phase 1a will be hauled from the Project site before Phase 1b begins). Please prefer to Appendix N for specific haul trucking assumptions.

Tables 12-9 through 12-~~13~~ 14 present construction emissions. Exceedences of the PCAPCD thresholds are identified with ~~red~~**bold underline** text. As shown in these tables, implementation of the Proposed Project (~~Alternative 1~~Alternative 1/1A) and Alternatives ~~3,~~ ~~1A,~~ 5~~,~~ and 6 will generate a significant amount of PM_{10} ~~and $PM_{2.5}$~~during the first year of Phase 1a. Alternative 3 will generate a significant amount of both PM_{10} and $PM_{2.5}$ during Phase 1a.

[3] The schedule has been revised since the original construction modeling was completed for the Project. It is anticipated that construction will now occur between 2013 and 2022. All phase durations and equipment assumptions used in the modeling are unaffected by the new schedule. Because equipment and vehicle emissions rates are expected to lessen in the future due to regulatory requirements and improvements in engine efficiency, the emissions modeling conducted for the Project represents a conservative analysis.

Table 12-8

Land Use Assumptions

Land Use[1]	URBEMIS Entry[2]	Proposed Project (Alternatives 1/1A) and Alternative ~~s 1A/~~3	No Project (Alternative 2)	Alternative 4	Alternative 5	Alternative 6
Hotel[3]						
Rooms	Hotel	75 rooms	0	0	75 rooms	50 rooms
Condo/Hotel[4]	Hotel	60 units	0	0	0	25 units
Penthouse Condo	Townhouse/Condo	30 units	0	0	0	0
Residential Condos	Townhouse/Condo	135 units[5]	0	0	225 units	195 units
Townhomes	Townhouse/Condo	16 units	0	0	0	0
Fractional Condos	Townhouse/~~Condo~~[5]Condo[6]	20 units	0	0	0	0
Workforce Housing	Apartment (low rise)	13 units	0	0	12 units	12 units
Commercial	Strip Mall	25,000 square feet	0	1 lot[7~~6~~]	25,000 square feet	25,000 square feet
Standalone Skier Parking Space	Parking	~~400 spaces (~~1.00 acre[8]~~)~~	0	0	~~400 spaces (~~0.70 acre~~)~~	~~400 spaces (~~0.70 acre~~)~~
Residential Lots	Residential Lots	0	0	16 lots (225,000 square feet disturbed)	16 lots (24,000 square feet disturbed)	14 (21,000 square feet disturbed)
Skier Services	General Office Building	32,000 square feet	0	0	32,000 square feet	22,000 square feet
Maintenance	General Office Building	15,000 square feet	0	0	15,000 square feet	15,000 square feet
Day Lodge	Racquetball/Health	15,000 square feet	0	0	15,000 square feet	15,000 square feet
Gondola terminal	Racquetball/Health	18,000 square feet	0	0	18,000 square feet	18,000 square feet
Water Tanks	Water Tank	2 (56,000 square feet disturbed)	0	0	2 (56,000 square feet disturbed)	2 (56,000 square feet disturbed)

Notes:

[1] Land use totals represent north, south, and mid-mountain uses combined.

[2] URBEMIS classifications are for modeling purposes only.

[3] Assumed accessory uses include meeting space (3,005 square feet); fitness center/spa (10,590 square feet); restaurant (1,800 square feet); and a bar (1,260 square feet).

[4] Includes 40 units – 20 with lock-offs that allow the units to be used as two units.

[5] A total of 131 condominiums were assumed for construction modeling for ~~Alternative 1~~Alternative 1/1A.

[6~~5~~] Classified as "Timeshare" for mobile source modeling (below).

[7~~6~~] Assumed one commercial building would occupy the 15,000 square foot lot. No grading of the site would occur as the lot would be sold as is (currently a paved parking lot).

[8] An acreage of 1.05 was assumed for construction modeling for ~~Alternative 1~~Alternative 1/1A to accommodate an additional 11 spaces.

Table 12-9

Construction Emissions from Proposed Project (Alternative 1) (pounds per day)[1,2]

		ROG	NO_X	CO	PM_{10}	$PM_{2.5}$	SO_2
Phase 1a							
2011	Site Grading	3.292.89	29.6623.54	15.621 3.60	**159.36** 159.10	34.283 4.06	0.010.00
	Building Construction	5.374.97	27.8121.68	48.4946.47	1.731.47	1.491.27	0.040.03
	PCAPCD Standard	82	82	550	82	N/A[3]	82
Exceed Threshold?		No	No	No	**Yes**	No	No
2012	Building Construction	4.964.59	25.7220.26	45.4143.57	1.581.35	1.351.16	0.040.03
	PCAPCD Standard	82	82	550	82	N/A[3]	82
Exceed Threshold?		No	No	No	No	No	No
2013	Building Construction	4.554.21	23.6118.79	42.4040.75	1.441.10	1.221.05	0.040.03
	Paving	3.433.09	21.3616.54	15.1413.49	1.571.36	1.411.24	0.010.00
	Exterior Coatings	66.7966.45	4.890.07	2.741.09	0.220.01	0.170.00	0.010.00
	~~Total~~[2]Total[4]	74.7774	49.8635	60.2855	3.232	2.802	0.060
	PCAPCD Standard	82	82	550	82	N/A[3]	82
Exceed Threshold?		No	No	No	No	No	No
Phase 1b and 1c							
2014	Site Grading	2.462.46	19.2119.16	12.0612.04	12.2912.29	3.203.20	0.000.00
	Building Construction	1.151.15	7.777.72	10.3910.37	0.430.43	0.380.38	0.100.10
	PCAPCD Standard	82	82	550	82	N/A[3]	82
Exceed Threshold?		No	No	No	No	No	No
2015	Building Construction	1.061.06	6.946.89	9.829.80	0.410.41	0.360.36	0.010.01
	PCAPCD Standard	82	82	550	82	N/A[3]	82
Exceed Threshold?		No	No	No	No	No	No
2016	Building Construction	0.980.98	6.356.31	9.319.30	0.350.35	0.300.30	0.010.01
	Paving	1.5.01.50	8.648.60	8.638.62	0.650.65	0.590.59	0.000.00
	Exterior Coatings	14.3514.35	0.050.01	0.190.18	0.000.00	0.000.00	0.000.00
	~~Total~~[2]Total[4]	16.8317	15.0415	18.1318	1.001	0.891	0.010
	PCAPCD Standard	82	82	550	82	N/A[3]	82
Exceed Threshold?		No	No	No	No	No	No

		ROG	NO_X	CO	PM_{10}	$PM_{2.5}$	SO_2
Phase 2a							
2017	Site Grading	2.13~~2.06~~	15.56~~14.75~~	11.11~~0.81~~	44.6~~44.56~~	9.82~~9.79~~	0.00~~0.00~~
	Building Construction	0.96~~0.89~~	6.44~~5.63~~	8.78~~8.48~~	0.35~~0.31~~	0.30~~0.27~~	0.01~~0.01~~
	PCAPCD Standard	82	82	550	82	N/A[3]	82
Exceed Threshold?		No	No	No	No	No	No
2018	Building Construction	0.88~~0.82~~	5.78~~5.06~~	8.35~~8.07~~	0.30~~0.27~~	0.26~~0.23~~	0.01~~0.01~~
	Paving	1.38~~1.32~~	8.22~~7.50~~	8.51~~8.23~~	0.57~~0.54~~	0.52~~0.49~~	0.00~~0.00~~
	Exterior Coatings	13.31~~3.25~~	0.73~~0.01~~	0.42~~0.14~~	0.03~~0.00~~	0.03~~0.00~~	0.00~~0.00~~
	~~Total~~[2]Total[4]	15.57~~5~~	14.73~~3~~	17.28~~6~~	0.90~~1~~	0.81~~1~~	0.01~~0~~
	PCAPCD Standard	82	82	550	82	N/A[3]	82
Exceed Threshold?		No	No	No	No	No	No
Phase 2b							
2019	Site Grading	1.82~~1.79~~	12.62~~2.29~~	10.32~~0.19~~	29.29~~9.27~~	6.51~~6.50~~	0.00~~0.00~~
	Building Construction	1.84~~1.81~~	9.97~~9.64~~	13.49~~3.36~~	0.53~~0.51~~	0.46~~0.45~~	0.01~~0.01~~
	PCAPCD Standard	82	82	550	82	N/A[3]	82
Exceed Threshold?		No	No	No	No	No	No
2020	Building Construction	1.66~~1.63~~	9.27~~8.97~~	12.93~~2.81~~	0.47~~0.45~~	0.41~~0.40~~	0.01~~0.01~~
	Paving	1.6~~1.57~~	9.27~~8.97~~	10.22~~0.10~~	0.66~~0.64~~	0.59~~0.58~~	0.00~~0.00~~
	Exterior Coatings	16.68~~6.65~~	0.31~~0.01~~	0.27~~0.15~~	0.02~~0.00~~	0.01~~0.00~~	0.00~~0.00~~
	~~Total~~[2]Total[4]	19.94~~0~~	18.85~~8~~	23.42~~3~~	1.15~~1~~	1.01~~1~~	0.01~~0~~
	PCAPCD Standard	82	82	550	82	N/A[3]	82
Exceed Threshold?		No	No	No	No	No	No

Sources: URBEMIS2007, Tirman pers. comm. (A) and (B).

Notes:

[1] The schedule has been revised since the original construction modeling was completed for the Project. It is anticipated that construction will now occur between 2013 and 2022. P~~All p~~hase durations and equipment assumptions used in the modeling are unaffected by the new schedule. Because equipment and vehicle emissions rates are expected to lessen in the future due to regulatory requirements and improvements in engine efficiency, the emissions modeling presented above represents a conservative analysis.

~~1~~[2] Please refer to Appendix N for a detailed construction schedule.

~~2 Total represents emission during which building construction, paving, and exterior coatings occur concurrently.~~

[3] The PCAPCD has not established a significance threshold for $PM_{2.5}$. However, because $PM_{2.5}$ is a subset of PM_{10}, the 82 pound per day threshold can be used as a proxy for the significance evaluation of $PM_{2.5}$.

[4] Total represents emission during which building construction, paving, and exterior coatings occur concurrently.

Table 12-10

Construction Emissions from Alternative 1A (pounds per day)-[1,2]

		ROG	NO_X	CO	PM_{10}	$PM_{2.5}$	SO_2
Phase 1a							
2011	Site Grading	3.13	27.24	14.82	**159.46**	34.23	0.01
	Building Construction	5.22	25.48	47.9	1.63	1.41	0.04
	PCAPCD Standard	82	82	550	82	N/A[3]	82
Exceed Threshold?		No	No	No	**Yes**	No	No
2012	Building Construction	4.82	23.63	44.88	1.49	1.29	0.04
	PCAPCD Standard	82	82	550	82	N/A[3]	82
Exceed Threshold?		No	No	No	No	No	No
2013	Building Construction	4.42	21.77	41.93	1.36	1.16	0.04
	Paving	3.3	19.45	14.49	1.49	1.34	0.01
	Exterior Coatings	66.9	2.98	2.10	0.14	0.10	0.01
	Total[4]	74.62	44.20	58.52	2.99	2.60	0.06
	PCAPCD Standard	82	82	550	82	N/A[3]	82
Exceed Threshold?		No	No	No	No	No	No
Phase 1b and 1c							
2014	Site Grading	2.46	19.2	12.05	12.29	3.20	0.00
	Building Construction	1.15	7.76	10.38	0.43	0.38	0.10
	PCAPCD Standard	82	82	550	82	N/A[3]	82
Exceed Threshold?		No	No	No	No	No	No
2015	Building Construction	1.06	6.92	9.81	0.41	0.36	0.01
	PCAPCD Standard	82	82	550	82	N/A[3]	82
Exceed Threshold?		No	No	No	No	No	No
2016	Building Construction	0.98	6.34	9.31	0.35	0.30	0.01
	Paving	1.50	8.63	8.63	0.65	0.59	0.00
	Exterior Coatings	14.35	0.04	0.19	0.00	0.00	0.00
	Total[4]	16.83	15.01	18.13	1.00	0.89	0.01
	PCAPCD Standard	82	82	550	82	N/A[3]	82
Exceed Threshold?		No	No	No	No	No	No
Phase 2a							
2017	Site Grading	2.10	15.29	11.01	48.95	10.72	0.00
	Building Construction	0.93	6.17	8.68	0.34	0.29	0.01
	PCAPCD Standard	82	82	550	82	N/A[3]	82
Exceed Threshold?		No	No	No	No	No	No
2018	Building Construction	0.86	5.54	8.26	0.29	0.25	0.01
	Paving	1.36	7.98	8.42	0.56	0.51	0.00
	Exterior Coatings	13.29	0.49	0.33	0.02	0.02	0.00
	Total[4]	15.51	14.01	17.01	0.87	0.78	0.01

		ROG	NO_X	CO	PM_{10}	$PM_{2.5}$	SO_2
	PCAPCD Standard	82	82	550	82	N/A[3]	82
Exceed Threshold?		No	No	No	No	No	No
Phase 2b							
2019	Site Grading	1.81	12.47	10.26	27.29	6.09	0.00
	Building Construction	0.81	4.83	8.42	0.26	0.22	0.01
	PCAPCD Standard	82	82	550	82	N/A[3]	82
Exceed Threshold?		No	No	No	No	No	No
2020	Building Construction	0.74	4.36	8.01	0.23	0.19	0.01
	Paving	1.18	6.75	7.96	0.46	0.42	0.00
	Exterior Coatings	15.63	0.17	0.21	0.01	0.01	0.00
	Total[4]	20	19.6	23.72	1.18	1.04	0.01
	PCAPCD Standard	82	82	550	82	N/A[3]	82
Exceed Threshold?		No	No	No	No	No	No

Sources: URBEMIS2007, Tirman pers. comm. (A) and (B).

Notes:

[1] The schedule has been revised since the original construction modeling was completed for the Project. It is anticipated that construction will now occur between 2013 and 2022. P~~All p~~hase durations and equipment assumptions used in the modeling are unaffected by the new schedule. Because equipment and vehicle emissions rates are expected to lessen in the future due to regulatory requirements and improvements in engine efficiency, the emissions modeling presented above represents a conservative analysis.

[2] Please refer to Appendix N for a detailed construction schedule.

[3] The PCAPCD has not established a significance threshold for $PM_{2.5}$. However, because $PM_{2.5}$ is a subset of PM_{10}, the 82 pound per day threshold can be used as a proxy for the significance evaluation of $PM_{2.5}$.

[4] Total represents emission during which building construction, paving, and exterior coatings occur concurrently.

Table 12-11

Construction Emissions from Alternative 3 (pounds per day)[1,2]

		ROG	NO_X	CO	PM_{10}	$PM_{2.5}$	SO_2
Phase 1a							
2011	Site Grading	4.012~~.89~~	40.762~~3.54~~	19.313~~.60~~	**426.16** ~~425.43~~	**90.318** ~~9.69~~	0.02~~0.00~~
	Building Construction	6.094~~.97~~	38.921~~.68~~	52.174~~6.47~~	2.201~~.47~~	1.891~~.27~~	0.05~~0.03~~
	PCAPCD Standard	82	82	550	82	N/A[3]	82
Exceed Threshold?		No	No	No	**Yes**	**Yes**	No
2012	Building Construction	5.624~~.59~~	35.632~~0.26~~	48.744~~3.57~~	2.011~~.35~~	1.681~~.16~~	0.05~~0.03~~
	PCAPCD Standard	82	82	550	82	N/A[3]	82
Exceed Threshold?		No	No	No	No	No	No
2013	Building Construction	5.154~~.21~~	32.351~~8.79~~	45.394~~0.75~~	1.691~~.10~~	1.511~~.05~~	0.05~~0.03~~
	Paving	4.033~~.09~~	30.101~~6.54~~	18.131~~3.49~~	1.951~~.36~~	1.701~~.24~~	0.02~~0.00~~

		ROG	NO_X	CO	PM_{10}	$PM_{2.5}$	SO_2
	Exterior Coatings	67.396 6.45	13.630. 07	5.731. 09	0.600.0 1	0.460. 00	0.020.0 0
	~~Total[2]~~Total[4]	76.577 4	76.083 5	69.255 5	4.242	3.672	0.090
	PCAPCD Standard	82	82	550	82	N/A[3]	82
Exceed Threshold?		No	No	No	No	No	No
Phase 1b and 1c							
2014	Site Grading	2.472. 46	19.251 9.16	12.071 2.04	12.531 2.53	3.253. 25	0.000.0 0
	Building Construction	1.161. 15	7.817.7 2	10.410 .37	0.430.4 3	0.380. 38	0.010.0 1
	PCAPCD Standard	82	82	550	82	N/A[3]	82
Exceed Threshold?		No	No	No	No	No	No
2015	Building Construction	1.071. 06	6.976.8 9	9.839. 80	0.410.4 1	0.360. 36	0.100.1 0
	PCAPCD Standard	82	82	550	82	N/A[3]	82
Exceed Threshold?		No	No	No	No	No	No
2016	Building Construction	0.990. 98	6.386.3 1	9.329. 30	0.350.3 5	0.300. 30	0.010.0 1
	Paving	1.511. 50	8.678.6 0	8.648. 62	0.650.6 5	0.590. 59	0.000.0 0
	Exterior Coatings	14.361 4.35	0.080.0 1	0.200. 18	0.000.0 0	0.000. 00	0.000.0 0
	Total[42]	16.861 7	15.131 5	18.161 8	1.001	0.891	0.010
	PCAPCD Standard	82	82	550	82	N/A[3]	82
Exceed Threshold?		No	No	No	No	No	No
Phase 2a							
2017	Site Grading	2.182. 06	16.261 4.75	11.381 0.81	54.185 4.11	11.841 1.78	0.000.0 0
	Building Construction	1.010. 89	7.145.6 3	9.058. 48	0.380.3 1	0.330. 27	0.010.0 1
	PCAPCD Standard	82	82	550	82	N/A[3]	82
Exceed Threshold?		No	No	No	No	No	No
2018	Building Construction	0.930. 82	6.45.06	8.598. 07	0.340.2 7	0.280. 23	0.010.0 1
	Paving	1.431. 32	8.847.5 0	8.758. 23	0.610.5 4	0.540. 49	0.000.0 0
	Exterior Coatings	13.361 3.25	1.350.0 1	0.660. 14	0.070.0 0	0.050. 00	0.000.0 0
	Total[42]	15.721 5	16.591 3	18.001 6	1.021	0.871	0.010
	PCAPCD Standard	82	82	550	82	N/A[3]	82
Exceed Threshold?		No	No	No	No	No	No

		ROG	NO_X	CO	PM_{10}	$PM_{2.5}$	SO_2
Phase 2b							
2019	Site Grading	1.841.79	12.912.29	10.4310.19	34.1434.11	7.037.01	0.000.00
	Building Construction	1.861.81	10.259.64	13.6013.36	0.540.51	0.470.45	0.010.01
	PCAPCD Standard	82	82	550	82	N/A[3]	82
Exceed Threshold?		No	No	No	No	No	No
2020	Building Construction	1.681.63	9.528.97	13.0312.81	0.480.45	0.420.40	0.010.01
	Paving	1.621.57	9.528.97	10.3210.10	0.670.64	0.600.58	0.000.00
	Exterior Coatings	16.7116.65	0.560.01	0.370.15	0.030.00	0.020.00	0.000.00
	Total[4][2]	2020	19.618	23.7223	1.181	1.041	0.010
	PCAPCD Standard	82	82	550	82	N/A[3]	82
Exceed Threshold?		No	No	No	No	No	No

Sources: URBEMIS2007, Tirman pers. comm. (A) and (B).

Notes:

[1] The schedule has been revised since the original construction modeling was completed for the Project. It is anticipated that construction will now occur between 2013 and 2022. P~~All p~~hase durations and equipment assumptions used in the modeling are unaffected by the new schedule. Because equipment and vehicle emissions rates are expected to lessen in the future due to regulatory requirements and improvements in engine efficiency, the emissions modeling presented above represents a conservative analysis.

[4][2] Please refer to Appendix N for a detailed construction schedule.

[2] ~~Total represents emission during which building construction, paving, and exterior coatings occur concurrently.~~

[3] The PCAPCD has not established a significance threshold for $PM_{2.5}$. However, because $PM_{2.5}$ is a subset of PM_{10}, the 82 pound per day threshold can be used as a proxy for the significance evaluation of $PM_{2.5}$.

[4] Total represents emission during which building construction, paving, and exterior coatings occur concurrently.

Table 12-12

Construction Emissions from Alternative 4 (pounds per day)[1,2]

		ROG	NO_X	CO	PM_{10}	$PM_{2.5}$	SO_2
Phase 1a							
2011	Site Grading	2.89	23.54	13.60	27.18	6.51	0.00
	PCAPCD Standard	82	82	550	82	N/A[3]	82
Exceed Threshold?		No	No	No	No	No	No

Sources: URBEMIS2007; Tirman pers. comm. (C).

Note:

[1] The schedule has been revised since the original construction modeling was completed for the Project. It is anticipated that construction will now occur in 2013. All phase durations and equipment assumptions used in the modeling are unaffected by the new schedule. Because equipment and vehicle emissions rates are expected to lessen in the future due to regulatory requirements and improvements in engine efficiency, the emissions modeling presented above represents a conservative analysis.

[2] Please refer to Appendix N for detailed construction dates.

[3] The PCAPCD has not established a significance threshold for $PM_{2.5}$. However, because $PM_{2.5}$ is a subset of PM_{10}, the 82 pound per day threshold can be used as a proxy for the significance evaluation of $PM_{2.5}$.

Table 12-13

Construction Emissions from Alternative 5 (pounds per day)[1,2]

		ROG	NO_X	CO	PM_{10}	$PM_{2.5}$	SO_2
Phase 1a							
2011	Site Grading	3.82.89	37.552 3.54	18.231 3.60	**350.82** 350.23	74.487 3.98	0.020.0 0
	Building Construction	5.484.57	33.971 9.96	42.253 7.62	1.971.38	1.711.2 1	0.040.0 2
	PCAPCD Standard	82	82	550	82	N/A[3]	82
Exceed Threshold?		No	No	No	**Yes**	No	No
2012	Building Construction	5.054.21	31.218 .70	39.563 5.36	1.791.26	1.551.1 0	0.040.0 2
	PCAPCD Standard	82	82	550	82	N/A[3]	82
Exceed Threshold?		No	No	No	No	No	No
2013	Building Construction	4.643.87	28.411 7.39	36.953 3.17	1.631.15	1.391.0 0	0.040.0 2
	Paving	3.432.66	25.521 4.50	15.771 1.99	1.671.19	1.481.0 9	0.020.0 0
	Exterior Coatings	51.125 0.35	11.070 .05	4.610.8 3	0.480.00	0.390.0 0	0.020.0 0
	Total[42]	59.195 7	65.003 2	57.334 6	3.782	3.262	0.080
	PCAPCD Standard	82	82	550	82	N/A[3]	82

		ROG	NO_X	CO	PM_{10}	$PM_{2.5}$	SO_2
Exceed Threshold?		No	No	No	No	No	No
Phase 1b and 1c							
2014	Site Grading	2.472.46	19.241 9.16	12.071 2.04	38.813 8.81	8.748.74	0.000.00
	Building Construction	3.73.69	17.181 7.10	33.923 3.89	1.091.09	0.930.93	0.020.02
	PCAPCD Standard	82	82	550	82	N/A[3]	82
Exceed Threshold?		No	No	No	No	No	No
2015	Building Construction	3.373.36	15.771 5.70	31.731.67	1.011.01	0.860.86	0.020.02
	PCAPCD Standard	82	82	550	82	N/A[3]	82
Exceed Threshold?		No	No	No	No	No	No
2016	Building Construction	3.053.05	14.511 4.45	29.682 9.66	0.910.91	0.770.77	0.020.02
	Paving	2.592.59	13.613 .54	12.481 2.46	1.061.06	0.960.96	0.000.00
	Exterior Coatings	57.645 7.64	0.100.04	0.760.74	0.010.01	0.000.00	0.000.00
	Total[42]	63.286 3	28.212 8	42.924 3	1.982	1.732	0.020
	PCAPCD Standard	82	82	550	82	N/A[3]	82
Exceed Threshold?		No	No	No	No	No	No
Phase 2a							
2017	Site Grading	2.062.06	14.751 4.75	10.811 0.81	3.883.88	1.291.29	0.000.00
	Building Construction	0.720.72	4.984.98	4.354.35	0.260.26	0.240.24	0.000.00
	PCAPCD Standard	82	82	550	82	N/A[3]	82
Exceed Threshold?		No	No	No	No	No	No
2018	Building Construction	0.660.66	4.484.48	4.294.29	0.220.22	0.200.2	0.000.00
	Paving	1.221.22	7.397.39	8.188.18	0.540.54	0.490.49	0.000.00
	Exterior Coatings	0.450.45	0.000.00	0.000.00	0.000.00	0.000.00	0.000.00
	Total[42]	2.332	11.871 2	12.471 2	0.761	0.691	0.000
	PCAPCD Standard	82	82	550	82	N/A[3]	82
Exceed Threshold?		No	No	No	No	No	No
Phase 2b[53]							
2019	Site Grading	1.791.79	12.291 2.29	10.191 0.19	3.353.35	1.091.09	0.000.00
	PCAPCD Standard	82	82	550	82	N/A[3]	82
Exceed Threshold?		No	No	No	No	No	No

	ROG	NO_X	CO	PM_{10}	$PM_{2.5}$	SO_2

Sources: URBEMIS2007, Tirman pers. comm. (A) and (B).

Notes:

[1] The schedule has been revised since the original construction modeling was completed for the Project. It is anticipated that construction will now occur between 2013 and 2022. P~~All p~~hase durations and equipment assumptions used in the modeling are unaffected by the new schedule. Because equipment and vehicle emissions rates are expected to lessen in the future due to regulatory requirements and improvements in engine efficiency, the emissions modeling presented above represents a conservative analysis.

[2~~1~~] Please refer to Appendix N for a detailed construction schedule.

[3] The PCAPCD has not established a significance threshold for $PM_{2.5}$. However, because $PM_{2.5}$ is a subset of PM_{10}, the 82 pound per day threshold can be used as a proxy for the significance evaluation of $PM_{2.5}$.

[4] Total represents emission during which building construction, paving, and exterior coatings occur concurrently.

[4~~5~~] Phase involves only grading of roadways leading to the 8 residential lots. No exterior coatings or paving was assumed.

Table 12-14

Construction Emissions from Alternative 6 (pounds per day)[1,2]

		ROG	NO_X	CO	PM_{10}	$PM_{2.5}$	SO_2
Phase 1a							
2011	Site Grading	3.74~~2.89~~	36.59~~23.54~~	17.92~~13.60~~	**349.58** ~~349.03~~	74.2~~73.73~~	0.02~~0.00~~
	Building Construction	5.37~~4.52~~	32.87~~19.82~~	40.81~~36.49~~	1.92~~1.37~~	1.67~~1.20~~	0.04~~0.02~~
	PCAPCD Threshold	82	82	550	82	N/A[3]	82
Exceed Threshold?		No	No	No	**Yes**	No	No
2012	Building Construction	4.95~~4.17~~	30.21~~18.57~~	38.24~~34.32~~	1.76~~1.26~~	1.52~~1.10~~	0.04~~0.02~~
	PCAPCD Threshold	82	82	550	82	N/A[3]	82
Exceed Threshold?		No	No	No	No	No	No
2013	Building Construction	4.54~~3.83~~	27.55~~17.28~~	35.72~~32.20~~	1.58~~1.14~~	1.36~~0.99~~	0.04~~0.02~~
	Paving	3.36~~2.65~~	24.74~~14.47~~	15.5~~11.98~~	1.63~~1.19~~	1.46~~1.09~~	0.02~~0.00~~
	Exterior Coatings	48.83~~48.12~~	10.32~~.05~~	4.31~~0.79~~	0.44~~0.00~~	0.37~~0.00~~	0.02~~0.00~~
	Total[4~~2~~]	56.73~~55~~	62.61~~32~~	55.53~~45~~	3.65~~2~~	3.19~~2~~	0.08~~0~~
	PCAPCD Threshold	82	82	550	82	N/A[3]	82
Exceed Threshold?		No	No	No	No	No	No
Phase 1b and 1c							
2014	Site Grading	2.47~~2.46~~	19.24~~9.16~~	12.07~~12.04~~	26.21~~26.21~~	6.11~~6.11~~	00.00
	Building Construction	3.32~~3.31~~	15.71~~15.63~~	25.39~~25.36~~	0.99~~0.99~~	0.87~~0.87~~	0.02~~0.02~~
	PCAPCD Threshold	82	82	550	82	N/A[3]	82
Exceed Threshold?		No	No	No	No	No	No
2015	Building Construction	3.03~~3.02~~	14.47~~14.40~~	23.85~~23.83~~	0.92~~0.92~~	0.81~~0.81~~	0.02~~0.02~~

		ROG	NO_X	CO	PM_{10}	$PM_{2.5}$	SO_2
	PCAPCD Threshold	82	82	550	82	N/A[3]	82
Exceed Threshold?		No	No	No	No	No	No
2016	Building Construction	2.752.74	13.3513.29	22.4722.45	0.830.83	0.720.72	0.020.02
	Paving	2.182.17	11.8811.82	11.0811.06	0.920.92	0.840.84	0.00
	Exterior Coatings	37.1637.15	0.090.03	0.50.48	0.00	0.00	0.00
	Total[42]	42.0942	25.3225	34.0534	1.752	1.562	0.020
	PCAPCD Threshold	82	82	550	82	N/A[3]	82
Exceed Threshold?		No	No	No	No	No	No
Phase 2a							
2017	Site Grading	2.062.06	14.7514.75	10.8110.81	3.883.88	1.291.29	0.00
	Building Construction	0.720.72	4.984.98	4.354.35	0.260.26	0.240.24	0.00
	PCAPCD Threshold	82	82	550	82	N/A[3]	82
Exceed Threshold?		No	No	No	No	No	No
2018	Building Construction	0.660.66	4.484.48	4.294.29	0.220.22	0.20.2	00
	Paving	1.221.22	7.397.39	8.188.18	0.540.54	0.490.49	0.00
	Exterior Coatings	0.450.45	0.00	0.00	0.00	0.00	0.00
	Total[42]	2.332	11.8712	12.4712	0.761	0.691	00
	PCAPCD Threshold	82	82	550	82	N/A[3]	82
Exceed Threshold?		No	No	No	No	No	No
Phase 2b							
2019	Site Grading	1.821.79	12.6112.29	10.3210.19	22.6322.61	5.125.11	0.00
	Building Construction	0.790.76	4.864.54	7.727.59	0.260.24	0.210.20	0.010.01
	PCAPCD Threshold	82	82	550	82	N/A[3]	82
Exceed Threshold?		No	No	No	No	No	No
2020	Building Construction	0.730.70	4.384.10	7.377.25	0.220.21	0.190.18	0.010.01
	Paving	1.181.15	6.856.57	87.88	0.460.45	0.420.41	0.00
	Exterior Coatings	12.8412.81	0.290.01	0.230.11	0.010.00	0.010.00	0.00
	Total[42]	14.7515	11.5211	15.6115	0.691	0.621	0.010
	PCAPCD Threshold	82	82	550	82	N/A[3]	82

	ROG	NO_X	CO	PM_{10}	$PM_{2.5}$	SO_2
Exceed Threshold?	No	No	No	No	No	No

Sources: URBEMIS2007, Tirman pers. comm. (A) and (B).

Notes:

[1] The schedule has been revised since the original construction modeling was completed for the Project. It is anticipated that construction will now occur between 2013 and 2022. P~~All p~~hase durations and equipment assumptions used in the modeling are unaffected by the new schedule. Because equipment and vehicle emissions rates are expected to lessen in the future due to regulatory requirements and improvements in engine efficiency, the emissions modeling presented above represents a conservative analysis.

~~2~~ Please refer to Appendix N for a detailed construction schedule.

~~2 Total represents emission during which building construction, paving, and exterior coatings occur concurrently.~~

[3] The PCAPCD has not established a significance threshold for $PM_{2.5}$. However, because $PM_{2.5}$ is a subset of PM_{10}, the 82 pound per day threshold can be used as a proxy for the significance evaluation of $PM_{2.5}$.

[4] Total represents emission during which building construction, paving, and exterior coatings occur concurrently.

TRPA Requirements

The TRPA considers any increase in criteria pollutants above State, federal, and TRPA air quality standards to be significant. These standards are concentration values at particular locations rather than mass emissions from Project construction (Table 12-9 through Table 12-1~~4~~3). Dispersion modeling to estimate pollutant concentrations is beyond the scope of this document; as such analysis would require specific details, such as specific construction schedule, location of operating construction equipment, and location of exposed sensitive receptors, that are currently unknown. However, the mass emissions presented in Table 12-9 through Table 12-~~13~~ 14 are an appropriate proxy for determining if the Project complies with TRPA thresholds. Based on Table 12-9, increases in ROG, NO_X, CO, PM_{10}, and $PM_{2.5}$ are expected during all phases, with the greatest increases occurring during Phase 1a. Pollutant concentrations have the potential to exceed NAAQS, CAAQS, and TRPA standards on days requiring substantial construction equipment and activity. Because specific construction details are currently unknown, it is not possible to determine the number of days in which ambient air quality standards may be exceeded. Based on the mass emissions presented in Table 12-9, it can be inferred that Phase 1a would result in the most frequent and severe exceedences. However, these exceedences will be short-term as pollutant concentrations will dissipate once construction is completed.

Summary: The point of significance for construction emissions is the PCAPCD's thresholds of 82 pounds per day of ROG, NO_X, SO_X, and PM_{10} and 550 pounds per day of CO. Because these thresholds have been implemented to ensure that the CAAQS are met, they are also an appropriate proxy in determining if ~~the~~ a proposed action is in compliance with TRPA standards. As shown in Tables 12-~~9~~9 through~~, 12-10, 12-12, and~~ 12-1~~4~~3, the Proposed Project (~~Alternative 1~~Alternative 1/1A) and Alternatives 3, 5, and 6 would result in PM_{10} emissions in excess of PCAPCD's threshold of 82 pounds per day. Likewise, Alternative 3 will generate $PM_{2.5}$ emissions in excess of 82 pounds per day.[4] This is a significant impact. To reduce construction emissions, the PCAPCD recommends implementation of Mitigation Measures AQ-1.

[4] The PCAPCD has not established a significance threshold for $PM_{2.5}$. However, because $PM_{2.5}$ is a subset of PM_{10}, the 82 pound per day threshold can be used as a proxy for the significance evaluation of $PM_{2.5}$.

Mitigation: **Mitigation Measure AQ-1: Implement PCAPCD Best Management Practices (BMPs) to reduce pollutant emissions during construction.**

The Project Applicant shall implement the following recommended mitigation measures, which were provided by the PCAPCD. These measures shall be implemented prior to and during the construction phase. In addition, construction of the Project is required to comply with PCAPCD rules and regulations (see section 12-2).

- **Dust Control Plan:** The applicant shall submit a Construction Emission/Dust Control Plan to the PCAPCD. This plan must address the minimum Administrative Requirements found in PCAPCD Rule 228, Fugitive Dust, Sections 300 and 400. The applicant shall not break ground prior to receiving PCAPCD approval of the Construction Emission/Dust Control Plan.
- **Equipment Inventory:** The Project Applicant shall submit a comprehensive inventory (i.e. make, model, year, emission rating) of heavy-duty off-road equipment (50 horsepower of greater) that will be used an aggregate of 40 or more hours for construction.
- **Enforcement Plan:** An enforcement plan shall be established and submitted to the PCAPCD for review, to evaluate weekly project-related on-and-off- road heavy-duty vehicle engine emission opacities, using standards as defined in California Code of Regulations, Title 13, Sections 2180 - 2194.
- **Compliance with Rule 202:** Construction equipment exhaust emissions shall not exceed District Rule 202, Visible Emission limitations.
- **Compliance with Rule 228:** Grading operations shall be suspended if fugitive dust exceeds PCAPCD Rule 228 (Fugitive Dust) limitations. Water shall be applied to control dust, as required by the rule, to prevent dust impacts off-site. Operational water truck(s) shall be on-site, at all times, to control fugitive dust. Construction vehicles leaving the site shall be cleaned to prevent dust, silt, mud, and dirt from being released or tracked off-site.
- **Pre-Construction Meeting**: If required by the Department of Engineering and Surveying and/or the Department of Public Works, the contractor shall have a pre-construction meeting for grading activities. The contractor shall invite the PCAPCD to the pre-construction meeting in order to discuss the construction emission/dust control plan with employees and/or contractors.
- **Maintenance of Public Thoroughfares:** The Project Applicant shall keep adjacent public thoroughfares clean of silt, dirt, mud, and debris, and shall "wet broom" the streets if silt, dirt, mud or debris is carried over to adjacent public thoroughfares. Dry mechanical sweeping is prohibited.
- **Traffic Limits**: Traffic speeds on unpaved surfaces shall be limited to 15 miles per hour or less.
- **Wind Restrictions:** Grading operations shall be suspended when wind speeds (including instantaneous gusts) exceed 25 miles per hour and dust is impacting adjacent properties.
- **Idling Restrictions:** Idling time shall be limited to a maximum of five minutes for diesel-powered equipment.

- **Open Burning Restrictions:** No open burning of removed vegetation shall be allowed during construction. Removed vegetative material shall be either chipped on-site or taken to an appropriate disposal site.
- **Ultra-Low Diesel Fuel:** ARB ultra low diesel fuel shall be used for diesel–powered equipment and low sulfur fuel shall be utilized for stationary equipment.
- **Clean Power Sources:** Existing power sources (e.g., power poles) or clean fuel generators shall be used rather than temporary diesel power generators.
- **Compliance with PCAPCD Permit Regulations**: On-site stationary equipment which is classified as 50 horsepower or greater shall either obtain a State issued portable equipment permit or a PCAPCD issued portable equipment permit. Pursuant to PCAPCD Rule 501, General Permit Requirements, the Project may need a permit from the PCAPCD prior to construction. In general, any engine greater than 50 brake horsepower or any boiler with heat greater than 1,000,000 Btu per hour requires a PCAPCD permit.
- **Compliance with NESHAPs**: The demolition or remodeling of any structure may be subject to the National Emission Standard for Hazardous Air Pollutants (NESHAPs) for Asbestos. This may require that a structure to be demolished be inspected for the presence of asbestos by a certified asbestos inspector, and that asbestos materials are removed prior to demolition.
- **Traffic Plans:** If a Traffic Plan is required the PCAPCD shall be provided receive a copy for review. PCAPCD recommendations within the plan may include, but not be limited to: use of public transportation and satellite parking areas with a shuttle service.
- **Landscaping Plan:** The applicant shall provide a landscaping plan for review and approval by the Design/Site Review Committee. As required by the PCAPCD, landscaping shall include native drought-resistant species (plants, trees and bushes) and no more than 25% lawn area to reduce the demand for irrigation and gas powered landscape maintenance equipment. The Project Applicant shall include irrigation systems which efficiently utilize water (e.g., prohibit systems that apply water to non-vegetated surfaces and systems which create runoff), use applicant shall install water-efficient irrigation systems and devices, such as soil moisture-based irrigation controls, rain "shut off" valves, and other devices as reviewed and approved by the Design Site Review Committee.
- **Limit Daily Construction Activities:** Daily soil disturbance activities shall be limited to 15 acres per day.

After Mitigation: *Less than Significant Impact, ~~Alternative 1~~Alternative 1/1A (Proposed Project)~~—~~; Significant and Unavoidable Impact*; *Alternatives~~-~~ 3, 5, and 6*

PCAPCD staff indicates that compliance with Mitigation Measures AQ-1 can reduce construction PM_{10} and $PM_{2.5}$ emissions by 50%. For the Proposed Project (Alternative 1/1A)~~-~~, implementation of Mitigation Measure AQ-1 will reduce PM_{10} emissions to 79.~~55~~ 68 pounds per day and 79.73 pounds per day, respectively. Mitigated emissions for ~~both Alternatives~~the Proposed Project (Alternative 1/1A) are~~,~~ ~~which is~~ below the PCAPCD's significance threshold of 82. This impact is considered less than significant.

For Alternatives 3, 5, and 6, ~~depending on the alternative selected,~~ Mitigation Measure AQ-1 ~~equates to an approximate reduction of~~would reduce PM_{10} emissions by ~~150 – 215~~174 to 213 pounds per day ~~in of~~and $PM_{2.5}$~~10~~ ~~and~~ emissions by ~~37~~ 37 to~~-~~ 45 pounds per day ~~in of $PM_{2.5}$~~ during Phase 1a.[5] Implementation of Mitigation Measure AQ-1 will therefore reduce $PM_{2.5}$ emissions below 82 pounds per day for Alternative 3. However, short-term project emissions of PM_{10} will still exceed PCAPCD's significance threshold for ~~all~~ Alternatives 3, 5, and 6. This impact is therefore significant and unavoidable.

Analysis: *Less Than Significant Impact; Alternative 4*

As documented in Table 12-~~11~~12, Alternative 4 will not exceed ~~PCQPCD~~ PCAPCD significance thresholds for construction emissions. Therefore, this impact is considered to be less than significant.

Mitigation: No mitigation is required.

12.4.2 Operational (Long-Term) Impacts

Project operation will generate long-term emissions of ROG, NO_X, PM_{10}, $PM_{2.5}$, and CO from mobile, stationary, and area sources. Mobile sources include increased vehicle traffic (VMTs, ADTs) associated with the Project and water taxis. Stationary and area sources include natural gas combustion, consumer products, landscaping equipment, the application of architectural coatings, and the diesel back-up generators for the chairlifts.

To comply with the *Sunnyvale West* decision, ~~This~~ this section analyzes operational emissions under existing (2008) conditions. Criteria pollutant emissions were quantified assuming the Project would be fully operational in 2008. As discussed above, utilizing the baseline year to determine air quality impacts will likely overstate the extent of change in air quality conditions because the analysis does not consider infrastructure and air quality regulations that will likely reduce future emissions. Nevertheless, the significance determination for air quality impacts under CEQA is based on the existing conditions analysis, pursuant to the *Sunnyvale West* decision.

Consistent with TRPA requirements, this section ~~also~~ provides an evaluation of operational emissions generated by the Project under future year (2021) conditions.[6] ~~per guidance from the PCAPCD (Chang pers. comm. (A)).~~ It was assumed that operational emissions would begin once a building is fully operational and continue each subsequent year. Building completion dates were based on the construction schedule summarized in Appendix N. Operational emissions from each year during the construction process are presented in Appendix S. The evaluation of future year emissions represents a more likely estimation of air quality impacts from the Project because it considers land uses and air quality regulations that will be in place when the Project is actually constructed. ~~To ensure a conservative analysis, the discussion below presents emissions at buildout and occupancy of the Project.~~

[5] ~~Note that implementation of Mitigation Measure AQ-1, specifically idling restrictions and traffic plans, will also contribute to reductions of ozone precursors and CO.~~

[6] The construction schedule has been revised since the original operational modeling was completed for the Project. It is anticipated that construction will ~~now~~ be finished 2022 and the build-out year changed to 2023. A~~ll~~ ~~a~~ssumptions used in the modeling are unaffected by the new schedule. Because vehicle emissions rates are expected to lessen in the future due to regulatory requirements and improvements in engine efficiency, the emissions modeling conducted for the Project under future-year conditions represents a conservative analysis.

As shown in Table 12-7, the PCAPCD and TRPA have separate thresholds for the evaluation of air quality impacts from operational activities. The discussion below evaluates emissions in accordance with the metrics required by each agency's threshold.

Impact: **AQ-2. Will the Project Generate Operational Emissions or Vehicle Miles Traveled (VMT) in Excess of Applicable Standards?**

Analysis: *No Impact; No Project (Alternative 2)*

No Project (Alternative 2) will not induce any changes to the existing land uses, densities, or roadway network. Emissions associated with existing operations at HMR, including natural gas consumption for No Project (Alternative 2) of 11,000 therms per year provided by JMA Ventures, LLC (Tirman pers. comm. (D)), would remain unchanged. Therefore, No Project (Alternative 2) will not result in any impacts. No further analysis is required.

Mitigation: No mitigation is required.

Analysis: *Significant Impact; Proposed Project (~~Alternative 1~~Alternative 1/1A) and ~~Alternatives 1A, 3,~~Alternatives 3, 4, 5, and 6*

PCAPCD Requirement

Mobile Source Emissions

Primary mobile sources are those emissions associated with vehicle trips and include employee, delivery, and maintenance activities. Off-road vehicles, such as the two water taxis, are also considered sources of mobile emissions. Operational emissions from these sources are O_3 precursors (ROG and NO_X), CO, PM_{10}, $PM_{2.5}$, and CO_2 emitted as exhaust. Please refer to Chapter 19 for a discussion of global climate change and Project-related greenhouse gas emissions. (See conformity analysis RTP: Mobility 2030).

Trip generation information used in the analysis is based on data provided by the traffic engineers, Fehr & Peers (Harned pers. comm. (A) and (B)). Fehr & Peers provided daily trip rates for each land use (residential, commercial, etc.). To provide a conservative analysis, Fehr & Peers produced two trip rates for lodging activities—one rate accounts for 50% of the lodging guests arriving at the resort on Friday during the PM peak hour, while the other rate accounts for the remaining 50% of the guests arriving over a period from the late afternoon to evening (Fehr & Peers 2009). Daily trip rates were adjusted to account for internal trips completed by guests already at HMR and alternative modes of transportation. Data for the adjustment calculations were provided by Fehr & Peers (Harned pers. comm. (B)). Appendix P contains the trip generation rates used in the modeling.

Fehr & Peers provided daily VMTs for the winter and summer seasons. The traffic data indicated that there are currently no regular uses at the Project site during summer. The Lake Tahoe Music Festival holds a maximum of two concerns per summer at HMR. Since this event only occurs twice per summer, it was not included in analysis by Fehr & Peers and existing summer VMT was therefore assumed to be zero (Fehr & Peers 2009; Harned pers. comm. (A)). Consequently, the Project would result in increased trips and mobile emissions during the summer season.

During the winter ski season, existing VMT is currently higher than the VMT estimated with the Proposed Project (~~Alternative 1~~Alternative 1/1A) and ~~Alternatives 1A, 3,~~Alternatives 3, 5, and 6 (Harned pers. comm. (A)). This is because the residential units and hotel rooms would result in internalization between Project uses, reducing the external trips generated as compared to existing conditions. The existing site does not have internal capture of trips because day skiers must arrive at the beginning of each day and leave the site at the end of each day.

Table 12-~~14~~ 15 summarizes VMT provided by Fehr & Peers. Note that the summer VMT estimate for Alternative 5 does not include trips associated with the 12 workforce housing units. These units were added to the design concept following the originally modeling completed by Fehr & Peers. Addition of these 12 units is not expected to substantially increase summer ~~or winter~~ VMT above values presented in Table 12-~~14~~15.

Table 12-15

Daily VMT Generated at Buildout [1]

Alternative	Summer	Winter
Proposed Project (~~Alternative 1~~Alternative 1/1A) and Alternatives~~ 1A/~~ 3	8,431	12,096~~9,541~~
No Project (Alternative 2)	0	13,328
Alternative 4	2,362	2,362
Alternative 5[2~~1~~]	7,045	11,458~~8,114~~
Alternative 6	6,796	11,156~~7,899~~

Source: Harned pers. comm. (A).

[1] VMT includes trips associated with Project shuttles and dial-a-rides.

[2] Summer VMT estimate does not include trips associated with the 12 workforce housing units, which were added to the Alternative after the VMT modeling was completed. However, according to the Transportation Chapter, the addition of 12 affordable housing units would have a negligible effect on daily trips (increase of approximately 25) and VMT.

Operational emissions were ~~modeled~~ quantified ~~at~~ using the buildout VMT presented in Table 12-15 for both the existing (2008) and future year (2021) conditions~~ (2021) based on consultation with PCAPCD staff (Chang pers. comm. (B)).~~ ~~using T~~the URBEMIS2007 (version 9.2.4) model and the traffic assumptions listed Appendix P were used to model ~~the~~ emissions. URBEMIS2007 estimates mobile source emissions and vehicular emissions typically associated with the specified land uses. URBEMIS utilizes ARB's EMFAC2007 (version 2.3) emission rate program to produce emissions estimates for transportation. Based on discussion with the traffic engineers, it was assumed that no external trips would be generated by skier services, maintenance facilities, water tanks, or the day lodge as these facilities are meant to serve skiers, residents, and guests already at HMR. Additional trips resulting from skier drop-off and parking during winter and from the miniature golf course during summer were included in the analysis. This information was then used to run the URBEMIS2007 model. Model outputs generated by URBEMIS2007 are provided in Appendix O. For further information regarding the methodology used to estimate trip generation, please see Chapter 11 - Transportation and Circulation.

Information provided by JMA Ventures, LLC indicates that two hybrid-diesel water taxis will be operated under Proposed Project (~~Alternative 1~~Alternative 1/1A) and ~~Alternatives 1A, 3,~~Alternatives 3, 5, and 6. ~~It is anticipated that one taxi will be begin service in 2014 and the second taxi will begin service in 2019.~~ These taxis will have a capacity of up to 25 people and will operate Monday through Sunday from 9:00 AM to 8:00 PM, May 15th to September 15th (Tirman pers. comm. (A)). Water taxis of the proposed capacity typically have 150 to 350 horsepower engines, with most vessels utilizing twin diesel engines. For the purposes of this analysis, it was assumed that each water taxi would have twin 225 horsepower diesel engines.

The ARB's OFFROAD model was used to estimate emissions from a conventional diesel powered pleasure craft. OFFROAD can be used to calculate emissions based on technology types, seasonal conditions, regulations, and activity assumptions. Emissions were generated for a diesel inboard engine pleasure craft (maximum 250 horsepower) operating in the Lake Tahoe portion of Placer County in the summer season (May through September).

The following equation was used to calculate emission factors for each criteria pollutant based on the OFFROAD emissions outputs. The resulting emission factors were then multiplied by the horsepower-hour for the water taxi (12 hours X 450 horsepower).

Emission factor = (tons/day) X (1/population) X (2,000 pounds/ton) X (1/horsepower) X (load factor).
Where:
Tons/day = OFFROAD output for each criteria pollutant in tons per day;
Population = OFFROAD output for population;
Horsepower = 250 horsepower (maximum horsepower calculated by OFFROAD);
Load factor= 0.35 (OFFROAD default).

Hybrid water craft can have 3~~7~~0 to 80% fuel savings compared to typical diesel engines (Alcatraz Cruises 2011; World Water Taxi 2011; Schneider Electric 2011; ABB AS 2003; Hybrid-Marine Ltd 2007). It was therefore assumed that the hybrid water taxis would burn an average of 58~~70~~% less fuel than a diesel vessel, resulting in ~~70~~58% fewer emissions. Emission estimates calculated using the above equation were therefore multiplied by ~~30~~42% to account for a ~~70~~58% reduction in emissions. Emissions calculations are presented in Appendix Q. Implementation of the Project may also increase use of recreational watercraft, such as jet skis and boats. Because use of these crafts is driven by several external factors (e.g. population, pricing, season), it is currently unknown by what factor watercraft usage will increase as a result of the Project. Consequently, this report does not quantity potential emissions associated with recreational watercraft because such analysis would be speculative. However, based on the emissions associated with the hybrid water taxi (Tables 12-1~~7~~6 through 12-~~19~~26), potential emissions generated by these watercraft are likely to be small and not result in exceedences of the PCAPCD or TRPA thresholds.

Area Source Emissions

At the Project site, area sources include emissions from residential natural gas combustion for heating; landscaping activities; consumer products (i.e. household cleaners, personal care products); periodic paint emissions from facility maintenance; and back-up diesel generators for the chairlifts. As discussed in the project description, the two wood stoves currently operating at HMR would be removed under the Proposed Project (~~Alternative 1~~Alternative 1/1A) and ~~Alternatives 1A, 3,~~Alternatives 3, 5, and 6. Emissions from these area sources were estimated for existing (2008) and future year~~buildout conditions~~ (2021) ~~based on consultation with PCAPCD staff (Chang pers. comm. (B))~~ using a variety of methods are described in this section.

Beaudin Ganze Inc. analyzed natural gas consumption from the Proposed Project (~~Alternative 1~~Alternative 1/1A) at buildout to be approximately 1,604,000 therms per year (Beaudin Ganze 2007). Given the similar land uses, it was assumed that ~~Alternatives 1A, 3,~~Alternatives 3, 5, and 6 would have a similar consumption rate (Tirman pers. comm. (B)).[7]

Emissions from natural gas consumption was calculated using URBEMIS2007 default emission factors and land use assumptions summarized in the Beaudin Ganze energy report (Beaudin Ganze 2007). The URBEMIS2007 emission factors for NO_X and CO are categorized into residential and non-residential land uses. To calculate a weighted emission factor for NO_X and CO, assumptions provided by Beaudin Ganze regarding the number and square footage of each dwelling unit and hotel room were scaled to match the land use assumptions presented in Table 12-8. The default URBEMIS2007 natural gas usage rates for each land use type were then used to calculate percentage of natural gas consumption for each land use. These values were then used to calculate the weighted emission factor for NO_X and CO, which was multiplied by the anticipated natural gas consumption estimates summarized above. Emission factors for other criteria pollutants are not categorized by land use and a weighted value did not therefore need to be calculated.

Criteria pollutant emissions from landscaping activities, consumer products, and architectural coatings were estimated using URBEMIS2007 and the land-use assumptions summarized in Table 12-8. Complete URBEMIS2007 outputs are provided in Appendix O.

Emissions from the five back-up diesel generators for the chairlifts were estimated using URBEMIS2007 and information provided by JMA Ventures, LLC (Tirman pers. comm. (E)). The URBEMIS2007 technical appendix provides default emission factors by engine horsepower. Table 12-16~~5~~ lists the horsepower of the generators and the corresponding URBEMIS2007 emission factors for existing and future years.

[7] Note that additional gas and/or propane may be used by outdoor barbeque grills operating at Project- area residences and hotels. Because the number and use of these grills is driven by several external factors (e.g., population, season), it is currently unknown by what factor grill usage will increase as a result of the Project. Consequently, this analysis does not quantity potential emissions associated with outdoor barbecue grills because such analysis would be speculative.

Table 12-16

Horsepower and Emission Factors (grams/horsepower-hour) for Diesel Generators

Chairlift	Horsepower	ROG		NO_X		CO		SO_X		PM	
		2008	2021	2008	2021	2008	2021	2008	2021	2008	2021
Ellis	300	0.365~~0.350~~	0.147	4.491 ~~4.316~~	1.493	1.111 ~~1.391~~	0.760	0.005 ~~0.004~~	0.005	0.137 ~~0.135~~	0.043
Quail	130	0.835~~0.572~~	0.270	5.331 ~~5.563~~	2.351	2.771 ~~2.796~~	2.504	0.005 ~~0.005~~	0.005	0.412 ~~0.234~~	0.133
Quad (2)	99	0.835~~0.879~~	0.270	5.331 ~~2.796~~	2.351	2.771 ~~5.563~~	2.504	0.005 ~~0.005~~	0.005	0.412 ~~0.425~~	0.133
	400	0.328~~0.350~~	0.140	4.113 ~~4.316~~	1.346	1.287 ~~1.391~~	0.745	0.004 ~~0.004~~	0.004	0.127 ~~0.135~~	0.041
Madden	150	0.545~~0.572~~	0.198	4.782 ~~4.999~~	1.763	2.230 ~~2.241~~	2.170	0.005 ~~0.005~~	0.005	0.227 ~~0.234~~	0.078

Sources: Tirman pers. comm. (E); Jones & Stokes 2007.

Based on the information listed in Table 12-~~10~~16, the following equation was used to calculate emissions of criteria pollutants. It was assumed that each generator would operate for no more than 48 hours per year (Tirman pers. comm. (E)). Emission calculations are presented in Appendix R.

Pounds/day = (emission factor) X (engine horsepower) X (hours/day) X (load factor) X (conversion factor)
Where:
Emission factor = URBEMIS2007 default emission factor from Table 12-16~~0~~;
Engine horsepower = Generator horsepower listed in Table 12-16~~0~~;
Hours/day = 0.0054; 48 hours per year/ 8,760 hours per year;
Load factor = 0.740; URBEMIS2007 default for generator sets;
Conversion factor = 0.0022; conversion from grams to pounds.

Summary of Mobile and Area Source Emissions (Total Operational)

Tables 12-~~16~~ 17 through Table 12-~~19~~ 21 ~~present~~ summarize total operational emissions assuming the project would be fully operational in 2008~~.~~. Tables 12-22 through 12-26 summarize operational emissions for the build-out year (2021).

Note that because the summer VMT estimates for Alternative 5 do not include trips associated with the 12 workforce housing units, mobile emissions under Alternative 5 will be slightly higher than those presented in Tables 12-20~~18~~ and 12-25. Total daily trips associated with these additional units are expected to be minimal (e.g., approximately 25) and will not result in a substantial increase in emissions.

Table 12-17

Operational Emissions (2008) from the Proposed Project (~~Alternative 1~~Alternative 1/1A) and Alternatives~~ 1A/~~3 (pounds per day) [1]

Source	ROG	NOX	CO	PM_{10}	$PM_{2.5}$	SO2
Mobile						
Traffic (Winter)	31.13	42.60	337.78	20.97	4.15	0.10
Traffic (Summer)	22.92	19.70	198.05	14.64	2.89	0.08
Hybrid Water Taxi[2]	0.95	3.24	1.43	0.08	0.07	0.00
Area						
Natural Gas	30.94	25.89	41.27	0.77	0.77	0.00
Landscape[3]	0.83	0.11	9.97	0.03	0.03	0.00
Consumer Product	10.47	0.00	0.00	0.00	0.00	0.00
Exterior Coatings	2.45	0.00	0.00	0.00	0.00	0.00
Diesel Generator[4]	0.01	0.06	0.03	0.00	0.00	0.00
Total for the Proposed Project (~~Alternative 1~~Alternative 1/1A) and Alternative 3 (Winter)[5]	76	72	381	22	5	0.10
Total for the Proposed Project (~~Alternative 1~~Alternative 1/1A) and Alternative 3 (Summer)[6]	69	49	251	16	4	0.08
Total for No Project (Alternative 2) (Winter)[7]	36	50	383	24	6	0
Total for No Project (Alternative 2) (Summer)[7]	1	3	6	0	0	0
Comparison to No Project (Alternative 2) (Winter)	(+40)	(+22)	(-2)	(-3)	(-1)	(0)
Comparison to No Project (Alternative 2) (Summer)	(+68)	(+46)	(+244)	(+16)	(+4)	(0)
PCAPCD Standard	82	82	550	82	N/A[8]	82
Exceed Standard?	No	No	No	No	No	No

Sources: Harned pers. comm. (A) and (B); Tirman pers. comm. (A) through (E); Jones & Stokes 2007; Beaudin Ganze 2007; URBEMIS2007; and OFFROAD2007.

Notes:

[1] Note that because ~~Alternative 1~~Alternative 1A includes four fewer residential condominiums than the Project (Alternative 1), emissions generated by ~~this Alternative 1~~Alternative 1A may be slightly lower than those estimated using land use assumptions for the Project (alternative 1). The analysis contained above for ~~Alternative 1~~Alternative 1A should therefore be considered conservative.

[2] Assumes the use of two hybrid 225 horsepower diesel water taxis operating for 12 hours per day.

[3] Emissions would only occur during the summer season.

[4] Assumes the use of five diesel backup generators operating for 0.054 hours per day.

[5] Winter emissions (i.e., winter traffic, natural gas, consumer products, exterior coatings, and diesel generators).

[6] Summer emissions (i.e., summer traffic, hybrid water taxi, natural gas, landscape, consumer products, and exterior coatings).

[7] Emissions represent those from current HMR operations in the year 2008. Implementation of the Project (Alternative 1/1A) would eliminate emissions generated by No Project (Alternative 2). See table 12-18 for a detailed breakdown of No Project (Alternative 2) emissions.

[8] The PCAPCD has not established a significance threshold for $PM_{2.5}$. However, because $PM_{2.5}$ is a subset of PM_{10}, the 82 pound per day threshold can be used as a proxy for the significance evaluation of $PM_{2.5}$.

Table 12-18

Operational Emissions (2008) from the No Project (Alternative 2) (pounds per day)

Source	ROG	NOX	CO	PM_{10}	$PM_{2.5}$	SO2
Mobile						
Traffic (Winter)	34.66	47.35	373.33	23.31	4.60	0.12
Traffic (Summer)	0.00	0.00	0.00	0.00	0.00	0.00
Area						
Natural Gas	0.21	2.46	2.92	0.01	0.01	0.00
Landscape[1]	0.71	0.13	6.40	1.04	1.01	0.02
Consumer Product	0.28	0.04	3.32	0.01	0.01	0.00
Exterior Coatings	0.00	0.00	0.00	0.00	0.00	0.00
Diesel Generator[2]	0.15	0.00	0.00	0.00	0.00	0.00
Total for the No Project (Alternative 2) (Winter) [3]	36	50	383	24	6	0
Total for the No Project (Alternative 2) (Summer) [4]	1	3	6	0	0	0
PCAPCD Standard	82	82	550	82	N/A[5]	82
Exceed Standard? [6]	N/A	N/A	N/A	N/A	N/A	N/A

Sources: Harned pers. comm. (A) and (B); Tirman pers. comm. (A) through (E); Jones & Stokes 2007; Beaudin Ganze 2007; URBEMIS2007; and OFFROAD2007.

Notes:

1 Emissions would only occur during the summer season.

2 Assumes the use of five diesel backup generators operating for 0.054 hours per day.

3 Winter emissions (i.e., winter traffic, natural gas, consumer products, exterior coatings, and diesel generators).

4 Summer emissions (i.e., summer traffic, natural gas, landscape, consumer products, and exterior coatings).

5 The PCAPCD has not established a significance threshold for $PM_{2.5}$. However, because $PM_{2.5}$ is a subset of PM_{10}, the 82 pound per day threshold can be used as a proxy for the significance evaluation of $PM_{2.5}$.

6 Comparison to the PCAPCD thresholds is not required for the No Project Alternative.

Table 12-19

Operational Emissions (2008) from Alternative 4 (pounds per day)[1, 2]

Source	ROG	NO_X	CO	PM_{10}	$PM_{2.5}$	SO_2
Mobile						
Traffic (Winter)	6.34	8.42	67.94	4.07	0.81	0.02
Traffic (Summer)	5.37	5.62	56.09	4.07	0.81	0.02
Area						
Natural Gas	0.26	0.16	0.34	0.01	0.01	0.00
Landscape[3]	0.42	0.04	4.09	0.01	0.01	0.00
Consumer Product	0.78	0.00	0.00	0.00	0.00	0.00
Exterior Coatings	0.40	0.00	0.00	0.00	0.00	0.00
Total for Alternative 4 (Winter)[4]	8	9	68	4	1	0
Total for Alternatives 4 (Summer)[5]	7	6	61	4	1	0
Total for No Project (Alternative 2) (Winter)[6]	36	50	383	24	6	0
Total for No Project (Alternative 2) (Summer)[6]	1	3	6	0	0	0
Comparison to No Project (Alternative 2) (Winter)	(-28)	(-41)	(-314)	(-20)	(-5)	(0)
Comparison to No Project (Alternative 2) (Summer)	(+7)	(+3)	(+54)	(+4)	(+1)	(+0)
PCAPCD Standard	82	82	550	82	N/A[7]	82
Exceed Standard?	No	No	No	No	No	No

Sources: Harned pers. comm. (A) and (B); Tirman pers. comm. (A) through (E); EIA 2009a and 2009b; URBEMIS2007.

Notes:

1 No water taxis or backup diesel generates were assumed to operate

2 Assumes the full buildout of 16 single family homes and one general commercial building.

3 Emissions would only occur during the summer season.

4 Winter emissions (i.e., winter traffic, natural gas, consumer products, exterior coatings, and diesel generator).

5 Summer emissions (i.e., summer traffic, natural gas, landscape, consumer products, and exterior coatings).

6 Emissions from current operations in the year 2008. Implementation of the Project (Alternative 1/1A) would eliminate emissions generated by No Project (Alternative 2). See table 12-18 for a detailed breakdown of No Project (Alternative 2) emissions.

7 The PCAPCD has not established a significance threshold for $PM_{2.5}$. However, because $PM_{2.5}$ is a subset of PM_{10}, the 82 pound per day threshold can be used as a proxy for the significance evaluation of $PM_{2.5}$.

Table 12-20

Operational Emissions (2008) from Alternative 5 (pounds per day)

Source	ROG	NO_X	CO	PM_{10}	$PM_{2.5}$	SO_2
Mobile						
Traffic (Winter)[1]	30.33	40.85	328.68	19.88	3.95	0.11
Traffic (Summer) [1]	20.08	16.82	171.97	12.25	2.42	0.06
Hybrid Water Taxi[2]	0.95	3.24	1.43	0.08	0.07	0.00
Area						
Natural Gas	30.94	23.41	40.93	0.77	0.77	0.00
Landscape[3]	0.97	0.12	10.74	0.03	0.03	0.00
Consumer Product	12.38	0.00	0.00	0.00	0.00	0.00
Exterior Coatings	2.65	0.00	0.00	0.00	0.00	0.00
Diesel Generator[4]	0.01	0.06	0.03	0.00	0.00	0.00
Total for Alternative 5 (Winter)[5]	77	68	371	21	5	0
Total for Alternative 5 (Summer)[6]	68	44	225	13	3	0
Total for No Project (Alternative 2) (Winter)[7]	36	50	383	24	6	0
Total for No Project (Alternative 2) (Summer)[7]	1	3	6	0	0	0
Comparison to No Project (Alternative 2) (Winter)	(+42)	(+18)	(-12)	(-4)	(-1)	(0)
Comparison to No Project (Alternative 2) (Summer)	(+67)	(+41)	(+219)	(+13)	(+3)	(0)
PCAPCD Standard	82	82	550	82	N/A[8]	82
Exceed Standard?	No	No	No	No	No	No

Sources: Harned pers. comm. (A) and (B); Tirman pers. comm. (A) through (E); Jones & Stokes 2007; Beaudin Ganze 2007; URBEMIS2007; and OFFROAD2007.

Notes:

1 Emissions do not include those associated with the 12 workforce housing units.

2 Assumes the use of two hybrid 225 horsepower diesel water taxis operating for 12 hours per day.

3 Emissions would only occur during the summer season.

4 Assumes the use of five diesel backup generators operating for 0.054 hours per day.

5 Winter emissions (i.e., winter traffic, natural gas, consumer products, exterior coatings, and diesel generator).

6 Summer emissions (i.e., summer traffic, hybrid water taxi, natural gas, landscape, consumer products, exterior coatings, and diesel generator).

7 Emissions from current operations in the year 2008. Implementation of the Project (Alternative 1/1A) would eliminate ~~all~~ emissions generated by No Project (Alternative 2). See table 12-18 for a detailed breakdown of No Project (Alternative 2) emissions.

8 The PCAPCD has not established a significance threshold for $PM_{2.5}$. However, because $PM_{2.5}$ is a subset of PM_{10}, the 82 pound per day threshold can be used as a proxy for the significance evaluation of $PM_{2.5}$.

Table 12-21

Operational Emissions (2008) from Alternative 6 (pounds per day)

Alternative 6	ROG	NO_X	CO	PM_{10}	$PM_{2.5}$	SO_2
Mobile						
Traffic (Winter)	29.48	39.71	318.87	19.37	3.82	0.11
Traffic (Summer)	19.17	16.19	165.08	11.81	2.33	0.06
Hybrid Water Taxi[1]	0.95	3.24	1.43	0.08	0.07	0.00
Area						
Natural Gas	30.94	24.06	41.02	0.77	0.77	0.00
Landscape[2]	0.81	0.10	8.98	0.03	0.03	0.00
Consumer Product	10.22	0.00	0.00	0.00	0.00	0.00
Exterior Coatings	2.28	0.00	0.00	0.00	0.00	0.00
Diesel Generator[3]	0.01	0.06	0.03	0.00	0.00	0.00
Total for Alternative 6 (Winter)[4]	74	67	361	20	5	0.11
Total for Alternative 6 (Summer)[5]	64	44	217	13	3	0.06
Total for No Project (Alternative 2) (Winter)[6]	36	50	383	24	6	0
Total for No Project (Alternative 2) (Summer)[6]	1	3	6	0	0	0
Comparison to No Project (Alternative 2) (Winter)	(+38)	(+17)	(-21)	(-4)	(-1)	(0)
Comparison to No Project (Alternative 2) (Summer)	(+64)	(+41)	(+210)	(+13)	(+3)	(0)
PCAPCD Threshold	82	82	550	82	N/A[7]	82
Exceed Threshold?	No	No	No	No	No	No

Sources: Harned pers. comm. (A) and (B); Tirman pers. comm. (A) through (E); Jones & Stokes 2007; Beaudin Ganze 2007; URBEMIS2007; and OFFROAD2007.

Notes:

1 Assumes the use of two hybrid 225 horsepower diesel water taxis operating for 12 hours per day.

2 Emissions would only occur during the summer season.

3 Assumes the use of five diesel backup generators operating for 0.054 hours per day.

4 Winter emissions (i.e., winter traffic, natural gas, consumer products, exterior coatings, and diesel generator).

5 Summer emissions (i.e., summer traffic, hybrid water taxi, natural gas, landscape, consumer products, and exterior coatings).

6 Emissions from current operations in the year 2008. Implementation of the Project (Alternative 1/1A) would eliminate emissions generated by No Project (Alternative 2). See table 12-18 for a detailed breakdown of No Project (Alternative 2) emissions.

7 The PCAPCD has not established a significance threshold for $PM_{2.5}$. However, because $PM_{2.5}$ is a subset of PM_{10}, the 82 pound per day threshold can be used as a proxy for the significance evaluation of $PM_{2.5}$.

Table 12-22

Operational Emissions (2021) from the Proposed Project (~~Alternative 1~~Alternative 1/1A) and Alternatives ~~1A/~~ 3 (pounds per day)[1,2]

Source	ROG	NOX	CO	PM_{10}	$PM_{2.5}$	SO2
Mobile						
Traffic (Winter)	12.35~~9.69~~	15.42~~12.15~~	118.24~~93.38~~	20.77~~16.36~~	3.96~~3.11~~	0.10~~0.07~~
Traffic (Summer)	10.70	7.17	71.82	14.51	2.77	0.08
Hybrid Water Taxi[3~~1~~]	0.96~~0.68~~	3.28~~1.03~~	1.44~~2.35~~	0.09~~0.06~~	0.08~~0.06~~	0.00~~0.00~~
Area						
Natural Gas	30.94	25.89	41.27	0.77	0.77	0.00
Landscape[4~~2~~]	0.74	0.12	9.27	0.03	0.03	0.00
Consumer Product	10.47	0.00	0.00	0.00	0.00	0.00
Exterior Coatings	2.45	0.00	0.00	0.00	0.00	0.00
Diesel Generator[5~~3~~]	0.00~~0.01~~	0.02~~0.06~~	0.02~~0.04~~	0.00	0.00	0.00
Total for the Proposed Project (~~Alternative 1~~Alternative 1/1A) and Alternative 3 (Winter)[6~~4~~]	57~~54~~	45~~39~~	161~~137~~	22~~17~~	5~~4~~	0~~0.07~~
Total for the Proposed Project (~~Alternative 1~~Alternative 1/1A) and Alternative 3 (Summer)[7~~5~~]	56	36~~4~~	~~125~~124	15	4	~~0.08~~0
Total for No Project (Alternative 2) (Winter)[8~~6~~]	15~~8~~	20~~11~~	140~~75~~	24~~13~~	5~~3~~	0~~0~~
Total for No Project (Alternative 2) (Summer)[8~~6~~]	1	3	6	0	0	0
Comparison to No Project (Alternative 2) (Winter)	(+46~~42~~)	(+28~~25~~)	(+62~~21~~)	(~~+5~~-2)	(~~+1~~-1)	(0)
Comparison to No Project (Alternative 2) (Summer)	(+56~~5~~)	(+~~32~~34)	(+~~119~~1 18)	(+15)	(+4)	(0)
PCAPCD Standard	82	82	550	82	N/A[9~~7~~]	82
Exceed Standard?	No	No	No	No	No	No

Sources: Harned pers. comm. (A) and (B); Tirman pers. comm. (A) through (E); Jones & Stokes 2007; Beaudin Ganze 2007; URBEMIS2007; and OFFROAD2007.

Notes:

[1] Note that because ~~Alternative 1~~Alternative 1A includes four fewer residential condominiumss than the Project (Alternative 1), emissions generated by ~~this Alternative 1~~Alternative 1A may be slightly lower than those estimated using land use assumptions for the Project (Alternative 1). The analysis contained above for ~~Alternative 1~~Alternative 1A should therefore be considered conservative.

[2] The construction schedule has been revised since the original operational modeling was completed for the Project (Alternative 1/1A). It is anticipated that construction will now be finished 2022 and the build-out year changed to 2023. A~~ll a~~ssumptions used in the modeling are unaffected by the new schedule. Because vehicle emissions rates are expected to lessen in the future due to regulatory requirements and improvements in engine efficiency, the emissions modeling conducted for the future-year condition represents a conservative analysis.

[3~~1~~] Assumes the use of two hybrid 225 horsepower diesel water taxis operating for 12 hours per day.

[4~~2~~] Emissions would only occur during the summer season.

[5~~3~~] Assumes the use of five diesel backup generators operating for 0.054 hours per day.

[6~~4~~] Winter emissions (i.e., winter traffic, natural gas, consumer products, exterior coatings, and diesel generators).

[7~~5~~] Summer emissions (i.e., summer traffic, hybrid water taxi, natural gas, landscape, consumer products, and exterior coatings).

[86] Emissions represent those from current HMR operations in the year 2021. Implementation of the Project would eliminate emissions generated by No Project (Alternative 2). See table 12-23 for a detailed breakdown of No Project (Alternative 2) emissions.

[97] The PCAPCD has not established a significance threshold for $PM_{2.5}$. However, because $PM_{2.5}$ is a subset of PM_{10}, the 82 pound per day threshold can be used as a proxy for the significance evaluation of $PM_{2.5}$.

Table 12-23

Operational Emissions (2021) from the No Project (Alternative 2) (pounds per day)[1]

Source	ROG	NOX	CO	PM_{10}	$PM_{2.5}$	SO2
Mobile						
Traffic (Winter)	13.67	17.15	130.49	23.07	4.39	0.12
Traffic (Summer)	0.00	0.00	0.00	0.00	0.00	0.00
Area						
Natural Gas	0.21	2.46	2.92	0.01	0.01	0.00
Landscape[2]	0.71	0.13	6.40	1.04	1.01	0.02
Consumer Product	0.25	0.04	3.09	0.01	0.01	0.00
Exterior Coatings	0.00	0.00	0.00	0.00	0.00	0.00
Diesel Generator[3]	0.15	0.00	0.00	0.00	0.00	0.00
Total for the No Project (Alternative 2) (Winter) [4]	15	20	140	24	5	0
Total for the No Project (Alternative 2) (Summer) [5]	1	3	6	0	0	0
PCAPCD Standard	82	82	550	82	N/A[6]	82
Exceed Standard? [7]	N/A	N/A	N/A	N/A	N/A	N/A

Sources: Harned pers. comm. (A) and (B); Tirman pers. comm. (A) through (E); Jones & Stokes 2007; Beaudin Ganze 2007; URBEMIS2007; and OFFROAD2007.

Notes:

[1] The construction schedule has been revised since the original operational modeling was completed for the Proje (Alternative 1/1A). It is anticipated that construction will now be finished 2022 and the build-out year changed to 202 All assumptions used in the modeling are unaffected by the new schedule. Because vehicle emissions rates are expected t lessen in the future due to regulatory requirements and improvements in engine efficiency, the emissions modelin conducted for the future-year condition represents a conservative analysis.

[2] Emissions would only occur during the summer season.

[3] Assumes the use of five diesel backup generators operating for 0.054 hours per day.

[4] Winter emissions (i.e., winter traffic, natural gas, consumer products, exterior coatings, and diesel generators).

[5] Summer emissions (i.e., summer traffic, natural gas, landscape, consumer products, and exterior coatings).

[6] The PCAPCD has not established a significance threshold for $PM_{2.5}$. However, because $PM_{2.5}$ is a subset of PM_{10}, the 8 pound per day threshold can be used as a proxy for the significance evaluation of $PM_{2.5}$.

[7] Comparison to the PCAPCD thresholds is not required for the No Project Alternative.

Table 12-24

Operational Emissions (2021) from Alternative 4 (pounds per day)[1, 2, 3]

Source	ROG	NO_X	CO	PM_{10}	$PM_{2.5}$	SO_2
Mobile						
Traffic (Winter)	2.53	3.07	23.99	4.03	0.77	0.02
Traffic (Summer)	2.37	2.06	20.40	4.03	0.77	0.02
Area						
Natural Gas	0.26	0.16	0.34	0.01	0.01	0.00
Landscape[43]	0.37	0.05	3.80	0.01	0.01	0.00
Consumer Product	0.78	0.00	0.00	0.00	0.00	0.00
Exterior Coatings	0.40	0.00	0.00	0.00	0.00	0.00
Total for Alternative 4 (Winter)[54]	4	3	24	4	0.781	0.020
Total for Alternatives 4 (Summer)[65]	4	2	25	4	0.791	0.020
Total for No Project (Alternative 2) (Winter)[76]	158	2011	14075	2413	53	00
Total for No Project (Alternative 2) (Summer)[76]	11	33	66	00	00	00
Comparison to No Project (Alternative 2) (Winter)	(-3.9411)	(-8.0017)	(-50.27116)	(-8.5520)	(-2.445)	(-0.060)
Comparison to No Project (Alternative 2) (Summer)	(+3.564)	((0-0.29)	(+18.4919)	(+4.03)	(+0.771)	(+0.020)
PCAPCD Standard	82	82	550	82	N/A[87]	82
Exceed Standard?	No	No	No	No	No	No

Sources: Harned pers. comm. (A) and (B); Tirman pers. comm. (A) through (E); EIA 2009a and 2009b; URBEMIS2007.

Notes:

1 No water taxis or backup diesel generates were assumed to operate

2 Assumes the full buildout of 16 single family homes and one general commercial building.

3 The construction schedule has been revised since the original operational modeling was completed for the Project (Alternative 1/1A). It is anticipated that construction will now be finished 2022 and the build-out year changed to 2023. All assumptions used in the modeling are unaffected by the new schedule. Because vehicle emissions rates are expected to lessen in the future due to regulatory requirements and improvements in engine efficiency, the emissions modeling conducted for the future-year condition represents a conservative analysis.

43 Emissions would only occur during the summer season.

54 Winter emissions (i.e., winter traffic, natural gas, consumer products, exterior coatings, and diesel generator).

65 Summer emissions (i.e., summer traffic, natural gas, landscape, consumer products, and exterior coatings).

76 Emissions from current operations in the year 2021. Implementation of the Project (Alternative 1/1A) would eliminate emissions generated by No Project (Alternative 2). See table 12-23 for a detailed breakdown of No Project (Alternative 2) emissions.

87 The PCAPCD has not established a significance threshold for $PM_{2.5}$. However, because $PM_{2.5}$ is a subset of PM_{10}, the 82 pound per day threshold can be used as a proxy for the significance evaluation of $PM_{2.5}$.

Table 12-25

Operational Emissions (2021) from Alternative 5 (pounds per day)[1]

Source	ROG	NO_X	CO	PM_{10}	$PM_{2.5}$	SO_2
Mobile						
Traffic (Winter)[2]	12.06~~8.54~~	14.84~~10.60~~	115.80~~8 3.12~~	19.68~~1 4.02~~	3.74~~2.6 9~~	0.10~~0.0 8~~
Traffic (Summer) [2]	9.38	6.17	62.88	12.11	2.31	0.06
Hybrid Water Taxi[3]	0.96~~0.6 8~~	3.28~~1.0 3~~	1.44~~2.3 5~~	0.09~~0.0 6~~	0.08~~0.0 6~~	0.00~~0.0 0~~
Area						
Natural Gas	30.94	23.41	40.93	0.77	0.77	0.00
Landscape[4]	0.87	0.13	9.99	0.04	0.04	0.00
Consumer Product	12.38~~9~~	0.00	0.00	0.00	0.00	0.00
Exterior Coatings	2.65	0.00	0.00	0.00	0.00	0.00
Diesel Generator[5]	0.00~~1~~	0.~~06~~02	0.~~04~~02	0.00	0.00	0.00
Total for Alternative 5 (Winter)[6]	59~~55~~	42~~35~~	158~~126~~	21~~15~~	5~~4~~	0~~0.08~~
Total for Alternative 5 (Summer)[7]	57	~~31~~33	~~116~~115	13	3	~~0.06~~0
Total for No Project (Alternative 2) (Winter)[8]	15~~8~~	20~~11~~	140~~75~~	24~~13~~	5~~3~~	0~~0~~
Total for No Project (Alternative 2) (Summer)[8]	1~~1~~	3~~3~~	6~~6~~	0~~0~~	0~~0~~	0~~0~~
Comparison to No Project (Alternative 2) (Winter)	(+~~47~~44)	(+~~24~~22)	(+~~52~~18)	(~~+2~~-4)	(~~0~~-1)	(0)
Comparison to No Project (Alternative 2) (Summer)	(+5~~7~~6)	(+~~28~~30)	(+~~110~~1 09)	(+13)	(+3)	(0)
PCAPCD Standard	82	82	550	82	N/A[9]	82
Exceed Standard?	No	No	No	No	No	No

Sources: Harned pers. comm. (A) and (B); Tirman pers. comm. (A) through (E); Jones & Stokes 2007; Beaudin Ganze 2007; URBEMIS2007; and OFFROAD2007.

Notes:

[1] The construction schedule has been revised since the original operational modeling was completed for the Project (Alternative 1/1A). It is anticipated that construction will now be finished 2022 and the build-out year changed to 2023. A~~ll a~~ssumptions used in the modeling are unaffected by the new schedule. Because vehicle emissions rates are expected to lessen in the future due to regulatory requirements and improvements in engine efficiency, the emissions modeling conducted for the future-year condition represents a conservative analysis.

[2] Emissions do not include those associated with the 12 workforce housing units.

[3] Assumes the use of two hybrid 225 horsepower diesel water taxis operating for 12 hours per day.

[4] Emissions would only occur during the summer season.

[5] Assumes the use of five diesel backup generators operating for 0.054 hours per day.

[6] Winter emissions (i.e., winter traffic, natural gas, consumer products, exterior coatings, and diesel generator).

[7] Summer emissions (i.e., summer traffic, hybrid water taxi, natural gas, landscape, consumer products, exterior coatings, and diesel generator).

[8] Emissions from current operations in the year 2021. Implementation of the Project (Alternative 1/1A) would eliminate all emissions generated by No Project (Alternative 2). See table 12-23 for a detailed breakdown of No Project (Alternative 2) emissions.

[9] The PCAPCD has not established a significance threshold for $PM_{2.5}$. However, because $PM_{2.5}$ is a subset of PM_{10}, the 82 pound per day threshold can be used as a proxy for the significance evaluation of $PM_{2.5}$.

Table 12-26

Operational Emissions (2021) from Alternative 6 (pounds per day)[1]

Alternative 6	ROG	NO_X	CO	PM_{10}	$PM_{2.5}$	SO_2
Mobile						
Traffic (Winter)	11.758.32	14.4210.23	112.168 0.24	19.171 3.57	3.662.5 9	0.090.0 7
Traffic (Summer)	8.94	5.92	60.31	11.68	2.24	0.06
Hybrid Water Taxi[2]	0.960.6 8	3.281.0 3	1.442.3 5	0.090.0 6	0.080.0 6	0.000.0 0
Area						
Natural Gas	30.94	24.06	41.02	0.77	0.77	0.00
Landscape[3]	0.73	0.11	8.35	0.03	0.03	0.00
Consumer Product	10.22	0.00	0.00	0.00	0.00	0.00
Exterior Coatings	2.28	0.00	0.00	0.00	0.00	0.00
Diesel Generator[4]	0.000.0 1	0.020.0 6	0.020.0 4	0.00	0.00	0.00
Total for Alternative 6 (Winter)[5]	5652	4235	155124	2014	43	00.07
Total for Alternative 6 (Summer)[6]	54	3133	112111	13	3	0.060
Total for No Project (Alternative 2) (Winter)[7]	158	2011	14075	2413	53	00
Total for No Project (Alternative 2) (Summer)[7]	11	33	66	00	00	00
Comparison to No Project (Alternative 2) (Winter)	(+415)	(+2224)	(+1549)	(-4+2)	(0-1)	(0)
Comparison to No Project (Alternative 2) (Summer)	(+53)	(+2931)	(+1061 05)	(+13)	(+3)	(0)
PCAPCD Threshold	82	82	550	82	N/A[8]	82
Exceed Threshold?	No	No	No	No	No	No

Sources: Harned pers. comm. (A) and (B); Tirman pers. comm. (A) through (E); Jones & Stokes 2007; Beaudin Ganze 2007; URBEMIS2007; and OFFROAD2007.

Notes:

[1] The construction schedule has been revised since the original operational modeling was completed for the Project (Alternative 1/1A). It is anticipated that construction will now be finished 2022 and the build-out year changed to 2023. All assumptions used in the modeling are unaffected by the new schedule. Because vehicle emissions rates are expected to lessen in the future due to regulatory requirements and improvements in engine efficiency, the emissions modeling conducted for the future-year condition represents a conservative analysis.

[2] Assumes the use of two hybrid 225 horsepower diesel water taxis operating for 12 hours per day.

[3] Emissions would only occur during the summer season.

[4] Assumes the use of five diesel backup generators operating for 0.054 hours per day.

[5] Winter emissions (i.e., winter traffic, natural gas, consumer products, exterior coatings, and diesel generator).

[6] Summer emissions (i.e., summer traffic, hybrid water taxi, natural gas, landscape, consumer products, and exterior coatings).

[7] Emissions from current operations in the year 2021. Implementation of the Project (Alternative 1/1A) would eliminate emissions generated by No Project (Alternative 2). See table 12-23 for a detailed breakdown of No Project (Alternative 2) emissions.

[8] The PCAPCD has not established a significance threshold for $PM_{2.5}$. However, because $PM_{2.5}$ is a subset of PM_{10}, the 82 pound per day threshold can be used as a proxy for the significance evaluation of $PM_{2.5}$.

Based on Tables 12-1~~7~~6 through 12-~~19~~26, the Proposed Project (~~Alternative 1~~Alternative 1/1A) and ~~Alternatives 1A, 3,~~Alternatives 3, 5, and 6 will result in an increase of most criteria pollutants under both existing (2008) and build-out (2021) years. However,~~,~~ ~~but~~ the emissions increases will not exceed PCAPCD thresholds. Operational emissions associated with Alternative 4 are expected to decrease relative to baseline conditions during the winter season. Emissions increases in the summer season will not exceed the PCAPCD thresholds.

TRPA Vehicle Miles Traveled Requirement

Project-related VMTs was provided by Fehr & Peers (Harned pers. comm. (B)), and presented in Chapter 11 – Transportation, Parking, and Circulation. Summer and winter traffic volumes are different due to seasonal land uses and tourist attractions. Existing VMT during the summer season is currently zero, while existing winter volumes are higher than those expected for the Proposed Project (~~Alternative 1~~Alternative 1/1A) and ~~Alternatives 1A, 3,~~Alternatives 3, 5, and 6 (see Table 12-~~14~~15). Consequently, Project implementation would result in an increase of VMT during the summer season only. To calculate new VMT, summer and winter volumes were each compared to existing VMT for the respective season. The season changes in VMT were then added to calculate total new VMT.

Table 12-~~20~~ 27 shows the VMT results compared to No Project (Alternative 2). The Proposed Project (~~Alternative 1~~Alternative 1/1A) and Alternatives ~~1A/~~3, 5, and 6 will generate ~~4,464~~7,199, ~~1,831~~5,176, and ~~1,367~~4,624 new VMT compared to No Project (Alternative 2), respectively. Note that the VMT estimate for Alternative 5 does not include trips associated with the 12 workforce housing units. These units were added to the design concept following the originally modeling completed by Fehr & Peers. Addition of these 12 units is not expected to substantially increase summer or winter VMT relative to what is presented in Table 12-~~20~~27.

Table 12-27

VMT Analysis of the Proposed Project (~~Alternative 1~~Alternative 1/1A) and Alternatives

Alternative	Summer Season VMT	Comparison to No Project (Alternative 2)	Winter Season VMT	Comparison to No Project (Alternative 2)	Total VMT Change
Proposed Project (Alternative 1/1A) and Alternative~~s~~ ~~1A/~~3[1]	8,431	(+8,431)	12,096 ~~9,541~~	(-1,232~~3,787~~)	(+7,199 ~~4,644~~)
No Project (Alternative 2)	0	(0)	13,328	(0)	(0)
Alternative 4	2,362	(+2,362)	2,362	(-10,966)	(-8,604)
Alternative 5[2]	7,045	(+7,045)	11,458 ~~8,114~~	(-1,869 ~~5,214~~)	(+5,176) ~~(+1,831)~~
Alternative 6	6,796	(+6,796)	11,156 ~~7,899~~	(-2,172 ~~5,429~~)	(+4,624) ~~(+1,367)~~

Source: Harned pers. comm. (B).

[1] Note that because ~~Alternative 1~~Alternative 1A includes four fewer residential condominiums than the Project (Alternative 1), VMT generated by this ~~Alternative 1~~Alternative 1A may be slightly lower than those estimated using land use assumptions for the Project (Alternative 1). The analysis contained above for ~~Alternative 1~~Alternative 1A should therefore be considered conservative.

~~1~~[2] VMT estimate does not include trips associated with the 12 workforce housing units.

TRPA Stationary Source Requirement (see Table 12-6)

TRPA *Code of Ordinances* Section 91.3 establishes daily emission limits for stationary sources (please see Table 12-6). Stationary sources associated with the Project include natural gas combustion. URBEMIS does not include natural gas emission factors for 2021. Consequently, Table 12-28 presents stationary source emissions under both existing (2008) and build-out (2021) conditions. It is likely that improvements in technology and more stringent regulations will reduce future natural gas emissions below those shown in Table 12-28.

-As shown in Table 12-~~21~~28, daily stationary source emissions of NO_X under the Proposed Project (~~Alternative 1~~Alternative 1/1A) and Alternative~~s 1A/~~ 3 would exceed TRPA thresholds. North Base area and South Base area facilities will be constructed using U.S. Green Building LEED standards. These standards will improve energy efficiency, reducing the need for natural gas combustion for space heating. According to the U.S. Green Building Council (USGBC), green buildings can reduce energy consumption by 24-50% (USGBC 2009). ~~Thus, these~~Using the USGBC's lower bound of ~~Project~~potential energy reductions (24%), LEED-~~-~~design features will ~~effectively~~ reduce NO_X emissions from stationary sources under the Proposed Project (~~Alternative 1~~Alternative 1/1A) and Alternative~~s 1A/~~ 3 to 19.7 pounds per day. Thus, Project emissions will not exceed the TRPA's stationary source standards.

Table 12-28

Stationary Source Emissions (pounds per day) under both Existing (2008) and Build-Out Year (2021) Conditions

Scenario	ROG	NO_X	CO	PM_{10}	SO_2
Proposed Project (~~Alternative 1~~Alternative 1/1A) and Alternative~~s 1A/~~ 3[1,2]	30.9	25.9	41.3	0.8~~7~~	0.0
Alternative 4[2]	0.3	0.2	0.3	0.0	0.0
Alternative 5[2]	30.9	23.4	40.9	0.8~~7~~	0.0
Alternative 6[2]	30.9	24.1	41.0	0.8~~7~~	0.0
TRPA Standard	**125.7**	**24.2**	**220.5**	**22**	**13.2**

Sources: TRPA 2009; EIA 2009a and 2009b; Jones & Stokes 2007; Beaudin Ganze 2007; Tirman pers. comm. (A), (B), and (C); and URBEMIS2007.

Note:

1 Note that because ~~Alternative 1~~Alternative 1A includes four fewer residential condominiums than the Project (Alternative 1), emissions generated by ~~this Alternative 1~~Alternative 1A may be slightly lower than those estimated using land use assumptions for the Project (Alternative 1). The analysis contained above for ~~Alternative 1~~Alternative 1A should therefore be considered conservative.

[1] Emissions are from natural gas combustion and are not based on LEED standards.

Summary: The point of significance for total operational emissions is PCAPCD's mass emissions thresholds. The TRPA's threshold of any increase in VMT and exceedences of the stationary source standards outlined in TRPA *Code of Ordinances* Section 91.3 are used to evaluate VMT and stationary sources, respectively.

As shown in Tables 12-~~16~~ 17 through 12-~~19~~26, implementation of the Proposed Project (~~Alternative 1~~Alternative 1/1A) and Alternatives ~~1A/~~3, 4, 5, and 6 would not generate emissions in excess of PCAPCD's mass emissions thresholds. However, all alternatives except Alternative 4 would result in VMT increases compared to ~~baseline conditions~~the No Project Alternative (Alternative 2) (Tables 12-~~20~~18 and 12-23). Likewise, although stationary source emissions are not expected to exceed the standards outlined in the TRPA code, there is potential for future owners, operators, and residents to install wood-burning appliances that would generate substantial PM_{10} emissions. This is considered a significant impact. Implementation of Mitigation Measure AQ-2a will reduce VMT related effects to less than significant and is required for the Proposed Project (~~Alternative 1~~Alternative 1/1A) and Alternatives ~~1A/~~3, 5, and 6. Implementation of Mitigation Measures AQ-2b is required for all Alternatives and will ensure the TRPA stationary source standards are not violated.

Mitigation: **Mitigation Measure AQ-2a: Contribute to the TRPA Traffic and Air Quality Mitigation Program.**

The Project Applicant shall pay the appropriate air quality mitigation fee in accordance with Chapter 93—Traffic and Air Quality Mitigation Program of the TRPA *Code of Ordinances*. The TRPA adopted this program as a means of generating the revenue necessary to address air quality impacts associated with VMT. By contributing to TRPA's Mitigation Program, the Project effectively mitigates air quality emissions through VMT reductions achieved through Mitigation Program, as VMT reductions typically result in reductions of air pollutant emissions. Specific regional and local VMT reduction strategies that may benefit from the mitigation include, but are not limited to:

- Expansion of existing transit facilities;
- Addition of bicycle lanes;
- Transportation Systems Management measures such as bicycle facilities, pedestrian facilities, and use of alternative fuels in fleet vehicles; and
- Provision of connectivity between multi-use paths for bicycles and pedestrians.

Mitigation: **Mitigation Measure AQ-2b: Prohibit Installation of Wood-Burning Appliances.**

There are no new wood-burning appliances included in the Proposed Project (~~Alternative 1~~Alternative 1/1A) or Alternatives ~~1A/~~3, 4, 5, or 6. There is potential, however, for future owners, operators, and residents to install wood-burning appliances. However, no new wood burning appliances defined in District Rule 225 Wood-Burning Appliances shall be allowed in any residential or non-residential structures within the boundaries of the project. A standard note indicating this restriction shall be included on all building plans approved in association with this project.

After Mitigation: *Less than Significant Impact; Proposed Project (~~Alternative 1~~Alternative 1/1A) and ~~Alts~~ Alternatives ~~1A,~~ 3, 4, 5, and 6*

Implementation of mitigation measure AQ-2a will reduce impacts associated with the Proposed Project (~~Alternative 1~~Alternative 1/1A) and ~~Alternatives 1A, 3,~~Alternatives 3, 5, and 6 to a less than significant level by providing the necessary funding to offset the project's contribution to long-term criteria pollutant emissions resulting from increased traffic.

Implementation of mitigation measure AQ-2b will reduce potential impacts associated with the future owners, operators, or residents installing wood-burning appliances under the Proposed Project (~~Alternative 1~~Alternative 1/1A) and ~~Alternatives 1A, 3,~~Alternatives 3, 4, 5, and 6 to a less than significant level.

Impact: AQ-3. Will the Project Expose Sensitive Receptors to Substantial Pollutant Concentrations?

Analysis: *Less than Significant Impact; Proposed Project (~~Alternative 1~~Alternative 1/1A) and ~~Alts~~ Alternatives ~~1A,~~ 2, 3, 4, 5, and 6*

PCAPCD Requirement

On-Road Carbon Monoxide

Localized increases in CO concentrations from vehicle congestion at intersections affected by development were modeled using the Caltrans CALINE4 line source dispersion model (Benson 1989). CALINE4 is a Gaussian dispersion model specifically designed to evaluate air quality impacts of roadway projects. Each roadway segment analyzed in the model is treated as a sequence of "links." CALINE4 uses worst-case meteorological data to predict a concentration that would never be exceeded, thus producing a conservative estimate of a project's potential effects. CO emissions and temperature are inversely related, so a winter low temperature and the highest peak-hour traffic counts were modeled to estimate the worst-case CO concentrations for the action.

Traffic volumes and operating conditions used in the modeling were obtained from the traffic analysis prepared by Fehr & Peers (Harned pers. comm. (D); Harned pers. comm. (E)). Ambient CO concentrations near the roadway for existing (2008) and future year (2030) Project conditions were modeled using CALINE4. The PM peak-hour traffic was modeled as the traffic data indicated that LOS and delays would be worse in the PM peak-hour than in the AM peak hour. The data included traffic volumes in the surrounding area, so traffic is highest during the summer season (Harned pers. comm. (C); Harned pers. comm. (D)). Consequently, the summer traffic volumes were modeled along with winter temperatures to represent a worst-case scenario (see section "CALINE4"). CO modeling was conducted at the SR 89/SR 28 and SR 89/Granlibakken Road intersections, which have the greatest traffic volumes and worst LOS/delay.

Vehicle emission rates were determined using the ARB's EMFAC2007 emission rate program. Free-flow traffic speeds were adjusted to a speed of 1.0 mph to represent a worst-case scenario. EMFAC2007 modeling procedures followed the guidelines recommended by Caltrans (California Department of Transportation 2003). The program assumed LTAB regional traffic data operating during the winter months. A winter temperature of 20° F and humidity of 30% were assumed.

CO concentrations were estimated at four receptor locations located at each intersection for a total of eight receptors. The receptors were placed 100 feet from the center of intersection diagonals, and 71 feet from roadway centerlines at the boundary of the mixing zone (142 feet from each other) to represent a worst-case scenario. Receptor heights were set at 5.9 feet.

Meteorological inputs to the CALINE4 model were determined using methodology recommended in CALINE4 Users Guide (Sonoma Technology and California Department of Transportation 1998). The meteorological conditions used represent a calm winter period. The worst-case wind angles option was used to determine a worst-case concentration for each receptor. The meteorological inputs include: wind speed of 0.5 meter per second, ground-level temperature inversion (atmospheric stability class G), wind direction standard deviation equal to 30 degrees, ambient temperature of 25°F (-3.89° Celsius), altitude above sea level of 1,900 meters (6,235 feet), and a mixing height of 1,000 meters.

A background concentration of 0.9 parts per million was added to the modeled 1-hour values to account for sources of CO not included in the modeling. Eight-hour modeled values were calculated from the 1-hour values using a persistence factor of 0.6. A background concentration of 0.5 parts per million was added to the modeled 8-hour values. Background concentration data were taken from the monitoring data provided by the EPA's Air Data webpage (US Environmental Protection Agency 2009~~b)~~) for the Tahoe City (Site ID 060610007) monitoring station. The Tahoe City monitoring station was installed as part of a short-term air quality study led by the ARB. The station is located approximately eight miles from the Project. Concentrations represent those in the year 2004 as this was the most recent year for CO monitoring at the station. Actual 1- and 8-hour background concentrations in future years would likely be lower than those used in the CO modeling analysis because the trend in CO emissions and concentrations is decreasing because of continuing improvements in engine technology and the retirement of older, higher-emitting vehicles.

Modeled CO concentrations plus background CO levels from the nearest monitoring station are presented in Table 12-~~22~~29. CO concentrations would not exceed the federal or State 1- and 8-hour standards (PCAPCD) under both existing (2008) and future (2021) conditions.

Construction Related Diesel Particulate Matter

Diesel Particulate Matter (DPM) is a carcinogenic toxic air contaminate that will be emitted by heavy-duty equipment during construction. A number of site-specific factors, which are beyond the scope of this master plan evaluation, are required to calculate DPM concentrations caused by construction activity. For example, the specific construction schedule, location of operating construction equipment, and location of exposed sensitive receptors, are necessary to model pollutant dispersion and calculate relative DPM concentrations at receptor locations. In addition, information on the location of specific receptors is required to perform an HRA. Because a detailed construction schedule is

currently unavailable, a quantitative analysis of health risks from construction is not possible.

The Office of Environmental Health Hazard Assessment (OEHHA) indicates that cancer health risks from DPM are typically associated with chronic exposure and recommends using a 70-year exposure period for the cancer risk analysis to represent a chronic exposure scenario. As discussed above, construction is anticipated to take a maximum of ten years. This is well below the recommended 70-year analysis period. Moreover, construction-related DPM emissions will be spread between the north and south bases, rather than concentrated in one location. Tourists visiting the HMR during construction will also be transient and only exposed to elevated DPM during their visit. The first condos constructed at the resort will be completed in December of 2016. Assuming these dwellings will be occupied immediately after construction, the potential exposure period of new residents to construction-related DPM would be no more than four years. It is therefore unlikely that construction activities will result in elevated health risks. In addition, Mitigation Measure AQ-1 will help to minimize concentrations of DPM at nearby sensitive receptors.

TRPA Requirement

As shown in Table 12-~~22~~29, emissions of CO would not result in an increase in CO concentrations when compared to the existing conditions under future year conditions. Exposure of sensitive receptors to construction-related DPM is well below the 70 year recommended analysis period and is not anticipated to result in elevated health risks.

Summary: The point of significance for the exposure of sensitive receptors to CO concentrations is the TRPA threshold of any net increase in CO concentrations relative to existing conditions under future year (2021) conditions. The Proposed Project (~~Alternative 1~~Alternative 1/1A) and Alternatives ~~1A, 2~~, 3, 4, 5, and 6 are not expected to result in increased CO concentrations. This impact is considered less than significant.

The evaluation of DPM is based on a qualitative assessment of the construction period and type of sensitive receptors. Based on the discussion above, construction is well below OEHHA 70-year analysis period. Moreover, the actual exposure period to sensitive receptors will be even shorter given the seasonal travel patterns and construction schedule for the new residential dwellings.

Mitigation: No mitigation is required.

Table 12-29

Carbon Monoxide Modeling Concentrations Results (parts per million)[1]

Intersection	Receptor ID	Proposed Project (~~Alternative 1~~Alternative 1/1A) and Alternative 3[2]				No Project (Alternative 2)				Alternative 4				Alternative 5				Alternative 6			
		2008		2030		2008		2030		2008		2030		2008		2030		2008		2030	
		1-hr CO[3] ~~[2]~~	8-hr CO[4] ~~[3]~~	1-hr CO[3] ~~1-hr CO[2]~~	8-hr CO[4] ~~8-hr CO[3]~~	1-hr CO[3] ~~1-hr CO[2]~~	8-hr CO[4] ~~8-hr CO[3]~~	1-hr CO[3] ~~1-hr CO[2]~~	8-hr CO[4] ~~8-hr CO[3]~~	1-hr CO[3] ~~1-hr CO[2]~~	8-hr CO[4] ~~8-hr CO[3]~~	1-hr CO[3] ~~1-hr CO[2]~~	8-hr CO[4] ~~8-hr CO[3]~~	1-hr CO[3] ~~1-hr CO[2]~~	8-hr CO[4] ~~8-hr CO[3]~~	1-hr CO[3] ~~1-hr CO[2]~~	8-hr CO[4] ~~8-hr CO[3]~~	1-hr CO[3] ~~1-hr CO[2]~~	8-hr CO[4] ~~8-hr CO[3]~~	1-hr CO[3] ~~1-hr CO[2]~~	8-hr CO[4] ~~8-hr CO[3]~~
SR89/SR28	1	4.4	2.6	1.2	0.7	4.3	2.5	1.2	0.7	4.2	2.5	1.2	0.7	4.3	2.5	1.2	0.7	4.3	2.5	1.2	0.7
	2	4.4	2.6	1.2	0.7	4.3	2.5	1.2	0.7	4.3	2.5	1.2	0.7	4.4	2.6	1.2	0.7	4.3	2.5	1.2	0.7
	3	4.4	2.6	1.2	0.7	4.3	2.5	1.2	0.7	4.3	2.5	1.2	0.7	4.4	2.6	1.2	0.7	4.3	2.5	1.2	0.7
	4	4.5	2.7	1.2	0.7	4.4	2.6	1.2	0.7	4.4	2.6	1.2	0.7	4.4	2.6	1.2	0.7	4.4	2.6	1.2	0.7
SR89/ Granlibakken Road	5	3.1	1.8	1.1	0.6	3.0	1.8	1.1	0.6	3.0	1.8	1.1	0.6	3.1	1.8	1.1	0.6	3.1	1.8	1.1	0.6
	6	3.1	1.8	1.1	0.6	3.0	1.8	1.1	0.6	3.0	1.8	1.1	0.6	3.1	1.8	1.1	0.6	3.0	1.8	1.1	0.6
	7	3.1	1.8	1.1	0.6	3.0	1.8	1.1	0.6	3.0	1.8	1.1	0.6	3.1	1.8	1.1	0.6	3.1	1.8	1.1	0.6
	8	3.2	1.9	1.1	0.6	3.1	1.8	1.1	0.6	3.1	1.8	1.1	0.6	3.2	1.9	1.1	0.6	3.2	1.9	1.1	0.6

Source: CALINE4.

Notes:

[1] Background concentrations of 0.9 parts per million and 0.5 parts per million were added to the modeling 1-hour and 8-hour results, respectively.

[2] Note that because ~~Alternative 1~~Alternative 1A includes four fewer residential condominiums than the Project (Alternative 1), CO concentrations generated by this ~~Alternative 1~~Alternative 1A may be slightly lower than those estimated using land use assumptions for the Project (Alternative 1). The analysis contained above for ~~Alternative 1~~Alternative 1A should therefore be considered conservative.

[3]~~[2]~~ The federal and State 1-hour standards are 35 and 20 parts per million, respectively.

[4]~~[3]~~ The federal and State 8-hour standards are 9 and 9.0 parts per million, respectively.

Impact: **AQ-4. Will the Project Conflict with or Obstruction of Implementation of the Applicable Air Quality Plan?**

Analysis: *No Impact; No Project (Alternative 2).*

The No Project (Alternative 2) will not change existing land uses, densities, the roadway network, population, or employment, and will not generate construction emissions. The No Project (Alternative 2) will therefore not conflict with or obstruct applicable air quality plans. There will be no impact and no further analysis is required.

Mitigation: No mitigation is required.

Analysis: *Significant Impact; Proposed Project (~~Alternative 1~~Alternative 1/1A) and ~~Alternatives 1A, 3,~~Alternatives 3, 5, and 6*

PCAPCD and TRPA Requirements

As discussed above, the ARB adopted a revised SIP for CO for the north and south shores of Lake Tahoe. The SIP demonstrates how these areas will continue to maintain compliance with the federal 8-hour CO standard. The TRPA adopted a *Regional Plan* to outline how the region will achieve and maintain air quality thresholds (see section 12.2.3).

A project is typically deemed inconsistent with air quality plans if it results in population and/or employment growth that exceeds growth estimates included in the applicable planning documents and therefore generates emissions not accounted for in the emissions budget. The Proposed Project (~~Alternative 1~~Alternative 1/1A) and Alternative 3 would expand certain plan area uses beyond current TRPA and Placer County boundary lines and conflict with existing land use prescriptions. Boundary lines are established by the land use assumptions in the County General Plan and TRPA Code, so any boundary line violation could be inconsistent with the CO SIP and TRPA *Regional Plan*. An analysis of plan level-consistency was therefore conducted using the Project's potential to violate the CAAQS and NAAQS.

Construction Emissions. Modeling presented in Impact AQ-1 indicates that the Proposed Project (~~Alternative 1~~Alternative 1/1A) and ~~Alternatives 1A, 3,~~Alternatives 3, 5, and 6 may result in construction emissions that exceed the CAAQS or NAAQS on days requiring sustainable construction equipment or activity. This is a significant impact.

Operational Emissions. The Proposed Project (~~Alternative 1~~Alternative 1/1A) and ~~Alternatives 1A, 3,~~Alternatives 3, 5, and 6 will increase VMTs (see Impact AQ-2), but will not violate CO standards, the pollutant of greatest concern in the LTAB (see impact AQ-3). The Project also incorporates traffic management strategies and LEED standards to reduce operation emissions. The Project Applicant will ensure HMR meets land use projections contained within TRPA and Placer County planning documents. Consequently, this impact is less than significant.

Mitigation: **Mitigation Measure AQ-1: Implement PCAPCD Best Management Practices (BMPs) to reduce pollutant emissions during construction.**

After Mitigation: *Less than Significant Impact, Proposed Project (~~Alternative 1~~Alternative 1/1A) ~~and Alternative 1A~~; Significant and Unavoidable Impact, Alternatives- 3, 5, and 6*

Mitigation Measure AQ-1 will minimize construction related emissions generated by the Project (~~Alternative 1~~Alternative 1/1A) ~~and Alternative 1A~~ to less than significant (see Impact AQ-1). Consequently, implementation of the Project (Alternative 1/1A) will not conflict or obstruct with implementation of the applicable air quality plans, including the CO SIP and TRPA *Regional Plan*.

PM_{10} emissions generated by Alternatives~~–~~ 3, 5, and 6~~,~~; and $PM_{2.5}$ generated by Alternative 3, will remain significant after implementation of Mitigation Measure AQ-1 (see Impact AQ-1). Therefore, construction of the project alternatives may conflict or obstruct with implementation of the applicable air quality plans, including the CO SIP and TRPA *Regional Plan*.

Analysis: *Less Than Significant Impact; Alternative 4*

Construction Emissions. Modeling presented in Impact AQ-1 indicates that the Alternative 4 will not result in construction emissions that exceed the CAAQS or NAAQS on days requiring sustainable construction equipment or activity. Therefore, Alternative 4 will not conflict with an air quality plan and this impact is less than significant.

Operational Emissions. Alternative 4 will not increase total VMTs (see Impact AQ-2), and will not violate CO standards, the pollutant of greatest concern in the LTAB (see impact AQ-3). Consequently, this impact is less than significant.

Mitigation: No mitigation is required.

Impact: AQ-5. Will the Project Generate Objectionable Odors?

Analysis: *Less than Significant Impact; Proposed Project (~~Alternative 1~~Alternative 1/1A) and No Project (Alternative 2), and ~~Alternatives 1A, 3,~~Alternatives 3, 4, 5, and 6*

PCAPCD and TRPA Requirements

The generation and severity of odors is dependent on a number of factors, including the nature, frequency, and intensity of the source; wind direction; and the location of the receptor(s). Odors rarely cause physical harm, but can cause discomfort, leading to complaints to regulatory agencies. Typical facilities known to produce odors include landfills, wastewater treatment plants, manufacturing plants, and certain agricultural activities.

The existing HMR is not known to include any major facilities that produce odors. According to the PCAPCD and the TRPA, there have been no odor complaints against HMR (Finnell pers. comm.; Emmett pers. comm.). Consequently, continuing operation is not anticipated to generate any objectionable odors that affect a substantial number of people.

Project implementation would not result in the addition of any major odor producing facilities. Since there have been no odor complaints against HMR, implementation of the Proposed Project (~~Alternative 1~~Alternative 1/1A) and Alternatives ~~1A,~~ 2, 3, 4, 5, and 6, which will not add new odor sources, is not anticipated to generate objectionable odors that affect a substantial number of people.

Diesel emissions from construction equipment and volatile organic compounds from paving activities may create odors during construction. These odors would be temporary and localized, and they would cease once construction activities have been completed. Thus, it is not anticipated that the operation or the construction of the Proposed Project (~~Alternative 1~~Alternative 1/1A) and Alternatives ~~1A,~~ 2, 3, 4, 5, and 6 would result in odor complaints. This impact is considered less than significant.

Mitigation: No mitigation is required.

12.5 CUMULATIVE IMPACTS AND MITIGATION MEASURES

Impact: **AQ-C1. Would the Project Result in a Cumulative Short-Term Impact on Air Quality?**

Analysis: *No Impact; No Project (Alternative 2).*

There would be no construction under No Project (Alternative 2). Therefore, there will be no impacts. No further analysis is required.

Mitigation: No mitigation is required.

Analysis: *Significant Impact, Proposed Project (~~Alternative 1~~Alternative 1/1A) and ~~Alternatives 1A, 3,~~Alternatives 3, 5, and 6*

As discussed in Impact AQ-1, the Project would generate emissions of ROG, NO_X, CO, $PM_{10,}$ and $PM_{2.5}$ during construction. These emissions are primarily associated with fugitive dust during site grading and the use of heavy-duty equipment. Unmitigated construction activity under the Proposed Project (~~Alternative 1~~Alternative 1/1A) and ~~Alternatives 1A, 3,~~Alternatives 3, 5, and 6 would exceed the PCAPCD significance standard for PM_{10} ~~–~~during Phase 1a. — Emissions of $PM_{2.5}$ generated by Alternative 3 would also exceed the PCAPCD threshold during Phase 1a. This is a significant cumulative impact.

Mitigation: **Mitigation Measure AQ-1: Implement PCAPCD Best Management Practices (BMPs) to reduce pollutant emissions during construction.**

After Mitigation: *Less than Significant Impact, Proposed Project (~~Alternative 1~~Alternative 1/1A)~~ and Alternative 1A~~; Significant and Unavoidable Impact, Alternatives- 3, 5,and 6*

Implementation Mitigation Measure AQ-1 will reduce PM10 emissions generated by the Proposed Project (~~Alternative 1~~Alternative 1/1A) ~~and Alternative 1A~~ to less than significant. It is anticipated that similar projects in the LTAB, including those listed in Chapter 20 – Mandated Analysis, Table 20-1 would also be required to implement similar BMPs to reduce project-level construction-related emissions. Thus, the Proposed Project (~~Alternative 1~~Alternative 1/1A) would not contribute to a cumulative impact.

Alternatives 3, 5, and 6 would result in a significant and unavoidable short-term construction related impact, even after implementation of Mitigation Measure AQ-1. Given the large scale and number of related projects within the region, emissions generated by Alternatives 3, 5 and 6 would contribute to a cumulative impact.

Analysis: *Less Than Significant Impact; Alternative 4*

As documented in Table 12-~~11~~12, Alternative 4 will not exceed ~~PCQPCD~~ PCAPCD significance thresholds for construction emissions. Other projects in the area do not involve extensive earth moving activities. Therefore, Alternative 4 will not contribute to a cumulative impact.

Mitigation: No mitigation is required.

Impact: AQ-C2. Would the Project Result in a Cumulative Long-Term Regional Impact on Air Quality?

Analysis: *Less than Significant Impact; No Project (Alternative 2) and Alternative 4*

The No Project (Alternative 2) and Alternative 4 were found to have less than significant long-term impacts on air quality. The No Project (Alternative 2) is expected to have net, long-term reduction in emissions due to increasing technological efficiencies. Alternative 4 would have a net long-term reduction in air pollutant emissions. The No Project (Alternative 2) and Alternative 4 will therefore not contribute to a cumulatively considerable impact on air quality.

Mitigation: No mitigation is required.

Analysis: *Significant Impact; Proposed Project (~~Alternative 1~~Alternative 1/1A) and ~~Alternatives 1A, 3,~~Alternatives 3, 5, and 6*

As shown in Impact AQ-2, implementation of the Proposed Project (~~Alternative 1~~Alternative 1/1A) and ~~Alternatives 1A, 3,~~Alternatives 3, 5, and 6 increase VMT in the Project area and vicinity relative to ~~existing conditions~~the No- Project (Alternative 2). This increase in VMT may result in long-term increase in criteria pollutant emissions from traffic operations. When combined with emissions from area and stationary sources, the Proposed Project (~~Alternative 1~~Alternative 1/1A) and ~~Alternatives 1A, 3,~~Alternatives 3, 5, and 6 generate ROG and NO_X emissions in excess of 10 pounds per day, which exceeds the PCAPCD's cumulative significance threshold. This is considered a significant impact.

Mitigation: **Mitigation Measure AQ-2a: Contribute to the TRPA Traffic and Air Quality Mitigation Program**

After Mitigation: *Less than Significant Impact; Proposed Project (~~Alternative 1~~Alternative 1/1A) and ~~Alts Alternatives 1A, 3,~~Alternatives 3, 5, and 6*

To mitigate cumulative operational impacts, the PCAPCD requires the payment of fees for each pound of pollutant in excess of 10 pounds per day. Based on consultation with the PCAPCD, payment of the TRPA off-site fee (Mitigation Measure AQ-2a) will satisfy this PCAPCD fee requirement (Rinker pers. Comm.). Implementation of Mitigation Measure AQ-2a will therefore provide the necessary funding to offset the Project's contribution to long-term criteria pollutant emissions. TRPA adopted the Traffic and Air Quality Mitigation Program as a means of generating the revenue necessary to implement programs to reduce VMT, resulting in improvements to both traffic and traffic-related air quality. The Proposed Project (~~Alternative 1~~Alternative 1/1A) and ~~Alternatives 1A, 3,~~Alternatives 3, 5, and 6 will therefore not contribute to a cumulatively considerable air quality impact.

Impact: AQ-C3. Would the Project Result in a Cumulative Long-Term Local Impact on Air Quality?

Analysis: *Less than Significant Impact; Proposed Project (~~Alternative 1~~Alternative 1/1A)~~,~~ ~~No Project (Alternative 2)~~ and ~~Alternatives 1A, 3,~~Alternatives 2, 3, 4, 5, and 6*

CO modeling for the Proposed Project (~~Alternative 1~~Alternative 1/1A) and Alternatives 2 (No Project), 3, 4, 5, and 6 showed that existing and future concentrations from idling would not exceed existing State, federal, and TRPA thresholds. This modeling is based on traffic volumes that assumed cumulative growth throughout the Lake Tahoe area. Because the Proposed Project (~~Alternative 1~~Alternative 1/1A) and Alternatives ~~1A,~~ 2, 3, 4, 5, and 6 would not exceed State, federal, or TRPA thresholds, they would not contribute to a cumulative air quality violation.

Mitigation: No mitigation is required.

12.6 REFERENCES

12.6.1 Printed

ABB AS. 2003. Martine Electrical Installations and Diesel Electric Propulsion. April.

Alcatraz Cruises. 2011. Hornblower Hybrid – Energy and Fuel Savings. Available: <http://www.alcatrazcruises.com/website/hybrid.aspx#environmental_features>. Accessed: August 11, 2011.

Beaudin Ganze Consulting Engineers, Inc. 2007. Homewood Mountain Resort Development Water, Gas, and Electric Energy Use Project. Prepared for Homewood Mountain Resort. Homewood, CA. October.

Benson, Paul. 1984, revised 1989. *CALINE4—A Dispersion Model for Predicting Air Pollutant Concentrations Near Roadways*. Sacramento, CA: California Department of Transportation.

California Air Resources Board. 2000. *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles*. Stationary Source Division, Mobile Source Control Division. Sacramento, CA. October.

California Air Resources Board. 2007. Final Regulation Order: Amendments to the Airborne Toxic Control Measure for Stationary Compression Ignition Engines. Page 20. Effective October 18, 2007.

California Air Resources Board. 2009a. ARB Databases: Aerometric Data Analysis and Management System (ADAM). Last Revised: May 7, 2009. Available: <http://www.arb.ca.gov/html/databases.htm>. Accessed: September 29, 2009.

~~California Air Resources Board. 2009b. 2006 State Area Designations. Last Revised: February 9, 2009. Available <http://www.arb.ca.gov/desig/adm/adm.htm> Accessed: September 29, 2009.~~

California Air Resources Board. ~~2009c~~2009b. Almanac Emissions Project Data (Published in 2009): 2008 Estimated Annual Average Emissions Lake Tahoe Air Basin. Available: <http://www.arb.ca.gov/app/emsinv/emssumcat_query.php?F_YR=2008&F_DIV=4&F_SEASON=A&SP=2009&F_AREA=AB&F_AB=LT#0>. Accessed: September 29, 2009.

California Air Resources Board. 2010a. Ambient Air Quality Standards. Last Revised: September 8, 2010. Available: < http://www.arb.ca.gov/research/aaqs/aaqs2.pdf >. Accessed: November 1, 2010.

California Air Resources Board. 2010b. Area Designations Maps/ State and National. Last Revised: September 7, 2010. Available: <http://www.arb.ca.gov/desig/adm/adm.htm>. Accessed: July 22, 2011.

California Department of Transportation. 2003. Draft Use of EMFAC 2002 to Replace CT-EMFAC: A Users Guide. February 27.

Department of Conservation, California Geological Survey. 2006. *Relative Likelihood for the Presence of Naturally Occurring Asbestos in Placer County California*. Prepared by Chris T. Higgins and John P. Clinkenbeard.

Energy Information Administration. 2009a. Number of Natural Gas Consumers. Last Revised: October 30, 2009. Available: <http://tonto.eia.doe.gov/dnav/ng/ng_cons_num_dcu_SCA_a.htm>. Accessed: November 18, 2009.

Energy Information Administration. 2009b. Natural Gas Consumption by End Use. Last Revised: October 30, 2009. Available: <http://tonto.eia.doe.gov/dnav/ng/ng_cons_sum_dcu_SCA_a.htm>. Accessed: November 18, 2009.

Fehr & Peers. 2009. Memorandum: Homewood Mountain Resort Existing g Volumes and Trip Generation. Addressed to Rob Brueck, Hauge Brueck Associates, LLC. From Katy Cole and Marissa Harned, Fehr & Peers. October.

Hybrid-Marine Ltd. 2007. HEMP sea Trial, summary of results. Isle Of Wight, England.

Jones & Stokes. 2007. Software User's Guide: URBEMIS2007 for Windows, Appendix A and I. Prepared for South Coast Air Quality Management District. November.

Schneider Electric. 2011. Solar Sailor - Hong Kong Jockey Club (HKJC) ferries (Australia). Available: <http://www2.schneider-electric.com/sites/corporate/en/solutions/energy_efficiency/marine/solar-sailor-hong-kong-jockey-club-hkjc-ferries.page>. Accessed: August 11, 2011.

Sonoma Technology Inc and California Department of Transportation. 1998. *User's Guide for CL4*. Prepared for California Department of Transportation. June.

Tahoe Regional Planning Agency. 2006. *2006 Threshold Evaluation Report*. May. Available: <http://www.trpa.org/default.aspx?tabindex=1&tabid=174>. Accessed: October 12, 2009.

Tahoe Regional Planning Agency. 2009. TRPA Code of Ordinances, Chapter 91: Air Quality Control. Available: < http://www.trpa.org/default.aspx?tabindex=2&tabid=172>. Accessed: November 23, 2009.

~~U.S. Environmental Protection Agency. 2009a. The Greenbook Nonattainment Areas for Criteria Pollutants. Last Revised: July11, 2009. Available <http://www.epa.gov/oar/oaqps/greenbk/> Accessed: September 29, 2009.~~

U.S. Environmental Protection Agency. _2009~~b~~. _Air Data: Monitor Values Report- Criteria Air Pollutants. Last Revised: January 10, 2009. Available: <http://www.epa.gov/air/data/reports.html>. Accessed: November 9, 2009.

U.S. Environmental Protection Agency. 2011. The Greenbook Nonattainment Areas for Criteria Pollutants. Last Revised: April 21, 2011. Available <http://www.epa.gov/oar/oaqps/greenbk/>. Accessed: July 22, 2011.

U.S. Green Building Council 2009. LEED for Neighborhood Development. PowerPoint Presentation. Available: <http://www.usgbc.org/DisplayPage.aspx?CMSPageID=148 >. Accessed: December 29, 2009.

World Water Taxi. 2011. Sea Bee Hybrid. Available: <http://www.sea-bee.com/SeaBeeHybrid.htm>. Accessed: August 11, 2011.

12.6.2 Personal Communications

~~Chang, Yu-Shuo A. Air Quality Planner. Placer County Air Pollution Control District, Auburn, CA. August 10, 2009—Email message to Shannon Hatcher, ICF International.~~

~~Chang, Yu-Shuo B. Air Quality Planner. Placer County Air Pollution Control District, Auburn, CA. November 11, 2009—Telephone Conversation with Laura Smith, ICF International.~~

Emmett, Charles. Tahoe Regional Planning Agency, Tahoe, CA. January 6, 2010—Email Message to Laura Smith, ICF International.

Finnell, John. Senior Air Pollution Control Engineer. Placer County Air Pollution Control District, Auburn CA. November 9, 2009—email message to Laura Smith, ICF International.

Harned, Marissa A. Transportation Planner, Fehr & Peers, Reno, NV. October 28, 2009—Email message to Shannon Hatcher, ICF International.

Harned, Marissa B. Transportation Planner, Fehr & Peers, Reno, NV. November 3, 2009—Email message to Laura Smith, ICF International.

Harned, Marissa C. Transportation Planner, Fehr & Peers, Reno, NV. November 5, 2009—Email message to Laura Smith, ICF International.

Harned, Marissa D. Transportation Planner, Fehr & Peers, Reno, NV. November 19, 2009—Email message to Laura Smith and Shannon Hatcher, ICF International.

Rinker, Angel. Associate Planner. Placer County Air Pollution Control District, Auburn, CA. September 9, 2010—Email message to Laura Smith, ICF International.

Tirman, David A. Executive Vice President. JMA Ventures LLC, Truckee, CA. November 9, 2009—Email message to Laura Smith, ICF International.

Tirman, David B. Executive Vice President. JMA Ventures LLC, Truckee, CA. November 11, 2009—Email message to Laura Smith, ICF International.

Tirman, David C. Executive Vice President. JMA Ventures LLC, Truckee, CA. November 11, 2009—Email message to Laura Smith, ICF International, and Rob Brueck, Hauge Brueck & Associates.

Tirman, David D. Executive Vice President. JMA Ventures LLC, Truckee, CA. November 13, 2009—Email message to Laura Smith, ICF International, and Rob Brueck, Hauge Brueck & Associates.

Tirman, David E. Executive Vice President. JMA Ventures LLC, Truckee, CA. November 16, 2009—Email message to Laura Smith, ICF International, and Rob Brueck, Hauge Brueck & Associates.