9 NOISE & AIR QUALITY ELEMENT

Union Pacific Train *(Source: Kevin Murray)*

9.1 | INTRODUCTION

Section 65302(f)(1) of the Government Code requires a noise element to the general plan to identify and appraise noise problems in the community.

Noise is part of everyday life in a community. Noise is generally defined as an undesirable and unwanted sound. Noise can be invasive, irritating, objectionable, and disruptive to the quality of daily life. Noises can vary in range, volume, scope, and source, and can originate from individual occurrences such as freeway traffic, construction equipment, and trains. Whether a sound is unwanted depends on when and where it occurs; what the listener is doing when it occurs; characteristics of the sound (loudness, pitch and duration, speech or music content, irregularity); and how intrusive it is above background sound levels. Acceptable levels of noise vary from land use to land use.

Government Code 65302.1(c) requires the adoption of air quality amendments to a general plan to include a description of local air quality conditions including air quality monitoring data, emission inventories, lists of significant source categories, attainment status and designations, and applicable state and federal air quality plans and transportation plans. Per State Office of Planning and Research (OPR) general plan guidelines, cities and counties that have identified disadvantaged communities, as defined by Senate Bill (SB) 1000, must also incorporate air quality into their general plans.

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Per the Martinez General Plan's Environmental Justice Element, Martinez has a disadvantaged community in the Downtown area (see Figure 10-1). Chronic exposure to air pollutants is a serious health risk to millions of California residents, particularly the young, the elderly, and people with heart disease and respiratory problems. Safeguarding public health has been the primary focus of federal and state air quality legislation and activities for many years. Air pollution can also impair visibility and damage local economies. Through its land use planning authority, local jurisdictions can affect the siting of potential air pollution sources, especially roadways, and "receptors" such as schools, hospitals, and elderly care facilities that are particularly sensitive to air pollutants.

The Noise and Air Quality Element includes the following sections:

9.2 **Regulatory Framework for Noise Elements:** This section discusses the regulations applicable to general plan noise elements.

9.3 **Understanding Noise:** This section defines key terms for noise measurement and describes common sources of noise.

9.4 **Existing and Future Noise Levels:** This section summarizes existing and future transportation and other noise sources in Martinez. It also discusses sources of ground-borne vibration.

9.5 **Regulatory Framework for Air Quality Elements:** This section discusses the regulations applicable to general plan air quality elements. It also discusses air pollutants of concern and defines sensitive receptors.

9.6 **Existing Climate and Air Quality:** This section describes the region's air quality, local climate and air quality, and existing air pollutant levels.

9.7 **Climate Change:** This section discusses greenhouse gases (GHG) and the regulatory framework for GHG emissions.

9.8 **Noise & Air Quality Element Goals, Policies, and Measures:** This section lists the goals, policies, and implementation measures for the Noise & Air Quality Element.

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9.2 | REGULATORY FRAMEWORK FOR NOISE ELEMENTS

This Noise & Air Quality Element is designed to ensure compliance with Section 65302(f) of the California Government Code. Section 65302(f) provides that a noise element shall identify and appraise noise problems in the community. Noise elements must also analyze and quantify, to the extent practicable, as determined by the legislative body, current and projected noise levels for all of the following sources:

- Highways and freeways;
- Primary arterials and major local streets;
- Passenger and freight online railroad operations and ground rapid transit systems;
- Commercial, general aviation, heliport, helistop and military airport operations, aircraft over flights, jet engine test stands, and all other ground facilities and maintenance functions related to airport operation;
- Local industrial plants, including, but not limited to railroad classification yards; and
- Other ground stationary noise sources, including but not limited to, military installations, identified by local agencies as contributing to the community noise environment.

Any noise contours included in noise elements must be shown for all of the above sources and stated in terms of community noise equivalent level (CNEL) or day night average level (Ldn). Implementation measures and possible solutions that address existing and foreseeable noise problems, if any, must also be included in noise elements.

Based upon these requirements, this Noise & Air Quality Element provides information on understanding noise, existing and future noise levels, and includes goals and policies intended to guide public and private planning in attaining acceptable noise levels and shall serve as a guideline for compliance with the state's noise insulation standards. Further, this Noise & Air Quality Element has been prepared in quantitative terms, which includes noise and vibration data, and maps showing noise contours of existing and future noise levels associated with transportation sources. This information will be used to support land use zoning and development siting policies as set forth in the Land Use Element, to avoid establishing proximity of sensitive receptors to noise generating uses and facilities.

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9.3 | UNDERSTANDING NOISE

Various techniques have been developed that measure the effects of noise levels over a period of time. It is difficult to specify noise levels that are generally acceptable to everyone. What is annoying to one person may be unnoticed by another. Standards may be based on documented complaint activity in response to noise levels, or based on studies on the ability of people to sleep, talk, or work under various noise conditions. All such studies, however, recognize that individual responses vary considerably. Standards usually address the needs of most of the general population. In the context of this Noise & Air Quality Element, the following terms are important to understand:

- **A-Weighted Decibel (dBA):** A decibel scale that approximates the way the human ear responds to frequency levels. A-weighted scales are used for measurement of overall noise levels.

- **Ambient Noise:** The total noise occurring over any hourly period from all existing sources within a given area.

- **Community Noise Equivalent Level (CNEL):** A rating of community noise exposure to all sources of sound that differentiates between daytime, evening and night-time noise exposure.

- **Day/Night Average Sound Level (L_{dn}):** A measurement of a 24-hour average noise level at a given location. The 24-hour day is divided into two sub-periods, the daytime period from 7:00 AM to 10:00 PM and the night-time period from 10:00 PM to 7:00 AM. A 10 dBA weighting factor is applied to the noise levels during the night-time period.

- **Decibel (dB):** A unit used to measure the volume of a sound, equal to the logarithm of the ratio of the sound pressure of a standard sound.

- **Equivalent Sound Level (L_{eq}):** A measurement that represents the time average sound level or equivalent continuous noise.

- **Intrusive Noise:** Refers to noise from a particular location or source that intrudes over and above ambient noise.

- **Noise Contours:** Lines drawn about a noise source indicating equal levels of noise exposure to establish land use planning criteria for noise.

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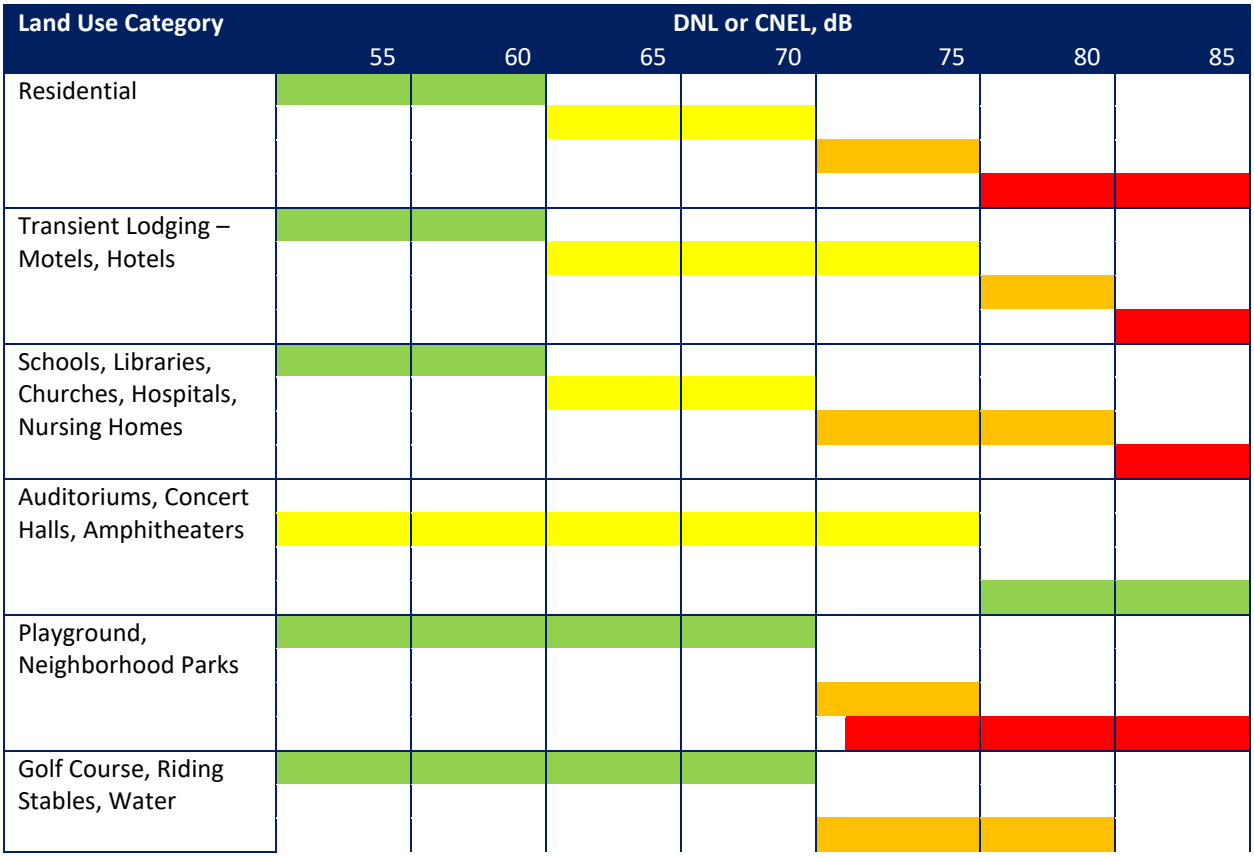
The State of California Office of Planning and Research General Plan Guidelines include recommended interior and exterior noise level standards for local jurisdictions to identify and prevent the creation of incompatible land uses due to noise. According to the State, a noise environment of 50 dBA CNEL to 60 dBA CNEL is normally acceptable for residential uses. Figure 9-1 below illustrates common sources of noise and their approximate noise levels.

Figure 9-1: Community Noise Exposure

Color Legend	
	Normally Acceptable: The specified land use is satisfactory based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.
	Conditionally Acceptable: New construction of development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design.
	Normally Unacceptable: New construction or development should generally be discouraged. If new construction or development does proceed a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.
	Clearly Unacceptable: New construction or development clearly should not be undertaken.



Recreation, Cemeteries							
Office Buildings, Business, Commercial and Professional							
Industrial, Manufacturing, Utilities, Agriculture							

Source: Adapted from State of California Governor's Office of Planning and Research, General Plan Guidelines, 2003

9.4 | EXISTING AND FUTURE NOISE LEVELS

Major roadways cause most of the ambient noise in Martinez. Interstate 680 runs through town generally north and south and State Route 4 runs east and west through the southern portion of the City. In general, most of the land uses within the Martinez area for residential and other noise-sensitive uses are adequately separated from sources of excessive noise. There are areas, however, where noise levels are or will be incompatible with certain land uses. In some cases, noises from transportation sources, such as the railroad and freeways, are unavoidable and difficult to abate within reasonable costs. Because high noise levels within the area will continue to affect certain land uses in the foreseeable future, it is necessary to guide further development to achieve compatibility with noise exposure.

Existing Transportation and Other Noise

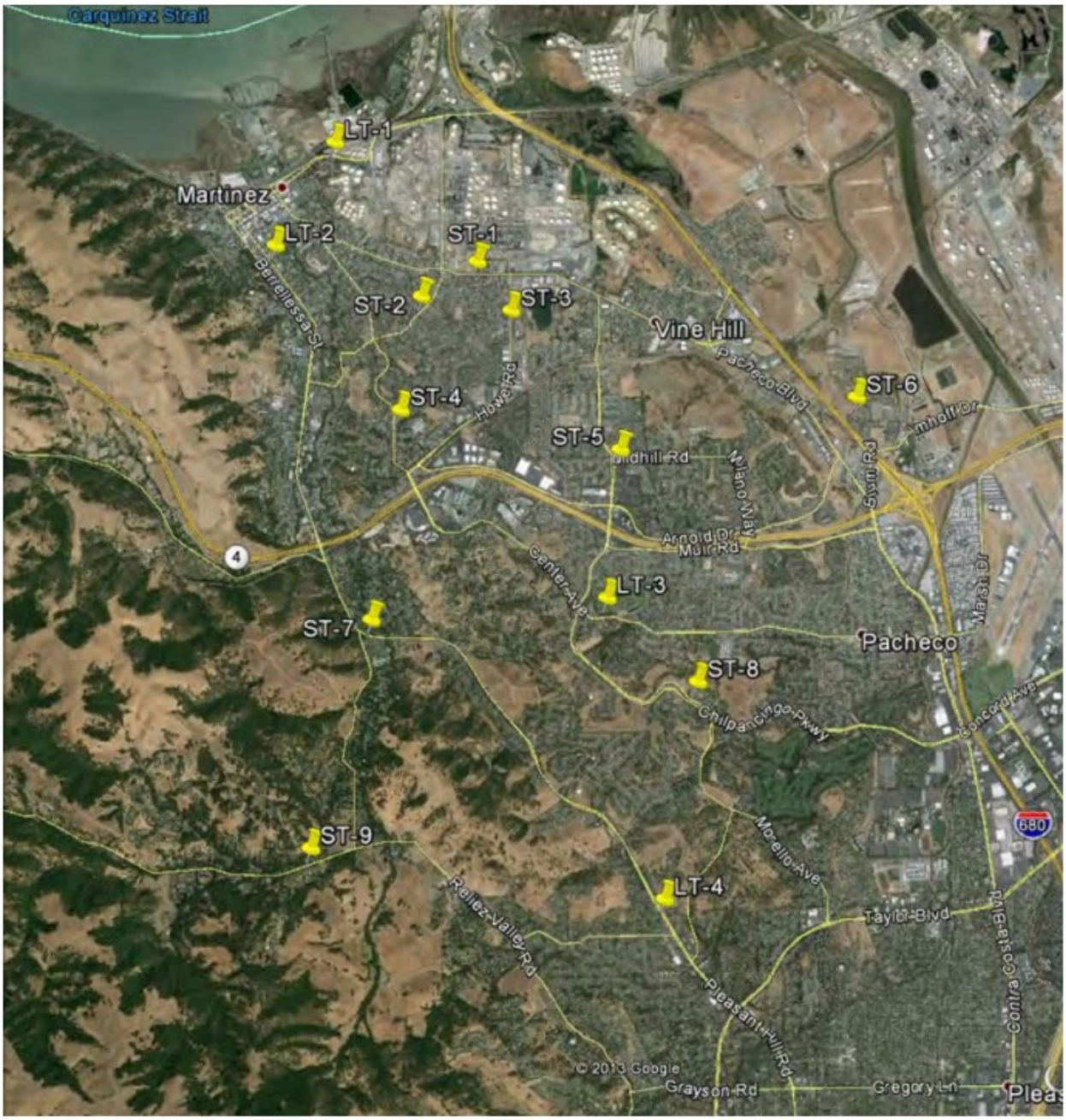
The greatest sources of existing noise within the Martinez area are attributable to transportation. Transportation noise primarily depends on the speed and percentage of the noise source. Significant transportation facilities within or adjacent to the area include:

- Interstate Highway 680
- State Route 4
- Union Pacific and BNSF railroads
- Major arterials and local streets
- Buchanan Field Airport

Although transportation is the primary source of noise in Martinez, other sources of noise do exist. These sources include domestic activities (e.g., car alarms, loud music, barking dogs), construction and demolition, landscaping and maintenance activities, industrial businesses with outdoor operations, commercial businesses with outdoor entertainment, late-night activities,

mechanical equipment, street sweepers, parking lot activities, and loading/unloading activities. Many of these noises can be as disruptive as background transportation noise, but are usually temporary and intermittent in nature.

Figure 9-2: Noise Measurement Locations



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Noise Element Background Report: The City had a noise survey conducted as part of the preparation of this Noise & Air Quality Element. Continuous types of noise recordings were made at 10 locations (shown on Figure 9-2) with a Larson Davis Laboratories Type 820 precision sound level meter. Calibration took place at the beginning of the survey and was post calibrated at the end of the survey.

The noise survey analyzed both long- and short-term noise for various locations. The long-term noise readings included a twenty-four-hour reading and analysis, while the short-term readings were conducted during the daylight hours only. The readings were conducted for a period of two days from February 19, 2014, to February 21, 2014. Two hours of daytime noise and one hour of night-time noise was recorded. The following results are provided at long-term reading locations:

- **Noise Measurement LT-1** was taken 33 feet south of the center of Marina Vista Avenue where Escobar Street merges with Marina Vista Avenue. The measurement position was at the setback of a residential home. Vehicular traffic on the roadways was the dominant noise source affecting the noise measurement, with railroad pass-bys to the north contributing to the noise environment as well. The measured day/night average noise level at this location was up to 67 dBA L_{dn}. Typical daytime L_{eq} noise levels ranged from 60 to 67 dBA and typical night-time L_{eq} noise levels ranged from 49 to 61 dBA.

- **Noise Measurement LT-2** was taken east of Alhambra Avenue. This measurement location was also selected to characterize noise levels along a major road. The measurement position was in a tree about 50 feet from the centerline of Alhambra Avenue. The dominant source of noise was vehicular traffic on Alhambra Avenue. The measured noise level at this location was 66 dBA L_{dn}. Typical daytime L_{eq} noise levels ranged from 60 to 71 dBA and typical night-time L_{eq} noise levels ranged from 49 to 63 dBA.

- **Noise Measurement LT-3** was taken on the south side of Center Avenue along Elder Drive. The measurement position was about 60 feet from the centerline of Center Avenue. Vehicular traffic along Center Avenue was the major source of noise. The day/night average noise level was measured to be up to 69 dBA L_{dn}. Typical daytime Leq noise levels ranged from 64 to 70 dBA and typical night-time L_{eq} noise levels ranged from 54 to 63 dBA.

- **Noise Measurement LT-4** was taken 50 feet from the centerline of Alhambra Avenue along Roanoke Drive. Vehicular traffic along Alhambra Avenue was the major source of noise at this location. The day/night average noise level at this site was measured to be 68 dBA L_{dn}. Typical daytime L_{eq} noise levels ranged from 60 to 67 dBA and typical night-

time L_{eq} noise levels ranged from 49 to 61 dBA. Noise levels at this portion of the road reached as high as 94 dBA L_{max} during daytime hours when there are bus and truck pass-bys and high engine vehicle noise.

Short-term noise measurements were conducted during the day on February 19, 2014, and February 21, 20214. The measured data are summarized in Table 9-1 below. Location ST-1 was on Pacheco Boulevard, traffic from which was the significant contributor to measured noise levels. Noise from the refinery to the north was a secondary noise source at Location ST-1. At Location ST-2, local traffic on Shell Boulevard was the dominant source of noise. At Location ST-3, vehicular traffic on Howe Road was the only significant contributor to measured noise levels. At Location ST-4, vehicular traffic along Pine Street was the dominant source of noise. At Location ST-5, traffic along Morello Avenue was the only significant contributor to measured noise levels. Location ST-6 was in a subdivision east of I-680, where traffic on I-680 was the significant contributor to measured noise levels. Traffic from Alhambra Boulevard was the primary contributor to measured noise levels at location ST-7. Location ST-8 was within Hidden Lakes Park along Morello Avenue/Chilpancingo Parkway, traffic from which was the significant contributor to measured noise levels. At location ST-9, vehicular traffic on Reliez Valley Road was the dominant source of noise during the measurement.

Table 9-1: Summary of Short-Term Noise Measurement Data

Noise Measurement Location	Date & Time	L_{max}	$L_{(1)}$	$L_{(10)}$	$L_{(50)}$	$L_{(90)}$	L_{eq}	L_{dn}
ST-1: 50 feet from the center of Pacheco Blvd. 500 feet from refinery noise source.	2/19/14 11:50 AM-12:00 PM	80	77	73	68	62	69	72
ST-2: Approximately 40 feet from Shell Ave., along Orange St.	2/19/14 1:10-1:20 PM	79	72	67	50	41	62	65
ST-3: 55 feet from the center of Howe Rd.	2/19/14 12:30-12:40 PM	76	74	71	60	49	66	69
ST-4: 40 feet from the center of Pine St.	2/19/14 12:50-1:00 PM	77	74	66	54	43	62	65
ST-5: 70 feet from center of Morello Ave. along Maywood Ln.	2/19/14 1:30-1:40 PM	81	72	68	63	54	65	68
ST-6: Cul-de-sac of Blum View Dr., about 300 feet from I-680 lanes.	2/19/14 2:00-2:30 PM	61	59	55	51	50	52	55
ST-7: 50 feet from Alhambra Blvd., south of SR 4.	2/19/14 2:50-3:00 PM	80	75	70	63	47	66	69
ST-8: From Hidden Lakes Park, 50 feet from nearest lane of Morello Ave. / Chilpancingo Pkwy.	2/19/2014 2:30-2:40 PM	72	70	65	59	49	61	64

ST-9: 60 feet from center of Reliez Valley Rd., west of Alhambra Valley Rd.	2/21/2014 2:30-3:40 PM	71	69	64	49	38	58	60
Note: L_{dn} approximated by correlating to corresponding period at long-term site.								

Railroad Noise: In 2009 a study was conducted by Illingsworth and Rodkin to measure train noise near an "at grade" crossing and the Martinez Amtrak Station downtown where the train sounds its horn frequently. Long-term noise measurement location (M-1) was made from 4:00 PM on January 26, 2009, to 2:00 PM on January 28, 2009. The noise measurement was located about 140 feet from the Union Pacific railroad tracks near the Martinez Amtrak Station. This noise measurement location was about 175 feet south of the "at-grade" railroad crossing. Railroad train events, including train warning whistles, substantially increased noise levels at this location. Maximum instantaneous levels were typically 90 to 105 dBA L_{max}. Train warning horns and bus traffic at the bus station located about 400 feet from this noise measurement location were the major sources of environmental noise. Hourly average noise levels typically ranged from about 63 to 78 dBA L_{eq} during daytime hours and from about 45 to 75 dBA L_{eq} at night. Hourly average noise levels containing train events, especially during the night-time, controlled the day-night average noise level calculated for the measurement period. The calculated day-night average noise level at location M-1 was 76 dBA L_{dn}.

Short-term (1-hour) daytime noise measurements at locations M-2 and M-3 were made to document the noise sources in the vicinity of the station. Noise measurement location M-1 was made at about 540 feet south of the railroad tracks and about five (5) feet above the ground. The dominant source of noise at this location during the measurement was bus traffic and intermittent train horns. The resulting hourly average noise level was 63 dBA L_{eq}. Noise measurement M-2 was at about 140 feet from the railroad tracks. The primary noise sources at this location were bus traffic in the station, train pass-bys, and intermittent train horns. The resulting hourly average noise level was 72 dBA L_{eq}.

Maximum noise level at M-1 was measured to be as high as 105 dBA because of railroad train warning horns. During the 1-hour observation on January 28, 2009, instantaneous maximum noise levels measured at 140 feet from the railroad tracks were about 76 dBA because of train horns while waiting at the station, and about 68 dBA during train pass-bys.

Buchanan Field Airport: The effects of aircraft operations at Buchanan Field Airport have been of concern to residents of the airport environs and local government agencies since the 1980s. Contra Costa County is the agency that has jurisdictional authority over the airport. The County adopted a comprehensive noise abatement and compatibility program for the Buchanan Field Airport in the late 1980s, which was subsequently updated in 2008. This program was prepared under Part 150 of the Federal Aviation Regulations (FAR Part 150), which is designed to reduce existing non-compatible land uses around the airport and prevent the introduction of additional

non-compatible uses. The program was adopted by the County to respond to community concerns and noise complaints over individual aircraft operations, and is designed to eliminate noisier classes of aircraft from operating at the airport. The County sets maximum permitted noise levels for aircraft utilizing Buchanan Field Airport, and provides enforcement and compliance provisions.

Noise exposure maps prepared and published in the 2008 Buchanan Field Airport Master Plan Update showed that existing 2005 noise levels up to 75 CNEL were experienced near the airport. The Buchanan Field Airport Master Plan Update does not identify the Martinez area as containing existing noise-sensitive land uses within the noise contours.

Existing Noise Contours: Previous noise contour data was updated based upon the data collected in a 2014 noise monitoring survey and traffic data collection. The updated contours are also based on existing data, field measurements, and noise modeling results. Traffic noise models that were utilized were developed by California Department of Transportation (Caltrans). SoundPLAN (noise modeling software) was utilized to model and graphically display transportation-related noise sources and stationary noise sources. The existing noise contour map shown in Figure 9-3 was prepared in terms of L_{dn} in increments of 5 decibels down to 60 dBA L_{dn}.

Future Transportation and Other Noise

Traffic Noise: Future traffic noise levels are predicted for year 2040. As shown in Table 9-2 and Figure 9-4, noise levels for major roadways throughout the planning area are expected to increase. The increase in noise levels is associated with additional traffic on the local roadway network under buildout of the Martinez General Plan. It should be noted that future noise impacts may be somewhat reduced with ongoing adoption of electric cars. Propulsion noise from electric cars is quieter compared to cars with internal combustion engines. At low speeds (under 15 miles per hour) sound levels from electric cars are much lower since propulsion noise generated by the vehicle dominates over any aerodynamic and tire-pavement noise.

A shown in Table 9-2, traffic noise levels are projected to increase of up to four (4) dB(A)LDN at locations 75 feet of study roadways. While most roadways are expected to increase by two (2) dB(A)LDN or less, noise levels along Escobar Street (Alhambra to Court Street), Marina Vista Avenue (Court Street to Escobar Street), Pacheco Boulevard (Arthur Road to Route 4), and Shell Avenue (Marina Vista Avenue to Pacheco Boulevard) would increase by three (3) dB(A)LDN and noise levels along Marina Vista Avenue (Alhambra Avenue to Court Street) and Shell Avenue (Pine Street to Alhambra Avenue) would increase by four (4) dB(A)LDN. The end of this Element contains various policies and implementation measure to reduce future noise impacts.

Table 9-2: Existing and Future Modeled Noise Levels along Roadways

Roadway Segment	DB (A) L_{dn} at 75 feet		
	Existing	Cumulative 2040	Change
Alhambra Ave. (SR-4 to Alhambra Valley Rd.)	65	66	1
Alhambra Ave. (Alhambra Valley Rd. to Blue Ridge Dr.)	68	68	0
Alhambra Ave. (Escobar St. to Shell Ave./D St.)	65	66	1
Alhambra Ave. (Shell Ave./D St. to SR-4)	65	66	1
Arnold Dr. (Morello Ave. to I-680)	66	68	2
Arnold Dr. (Howe Rd. to Morello Ave.)	68	70	2
Berrellesa St. (Escobar St. to Alhambra Ave.)	57	59	2
Center Ave (Morello Ave. to Pacheco Blvd./I-680)	64	65	1
Center Ave. (SR-4 to Morello Ave.)	60	50	-10
Court St. (Escobar St. to Pine St.)	57	59	2
Court St. (South of Pine St.)	56	58	2
Eastbound SR-4 (West of Alhambra Ave.)	72	72	0
Escobar St. (Alhambra Ave. to Court St.)	55	58	3
Escobar St. (Court St. to Marina Vista Ave.)	57	59	2
Howe Rd. (South of Pacheco Blvd.)	65	66	1
Marina Vista Ave. (Alhambra Ave. to Court St.)	55	59	4
Marina Vista Ave. (Court St. to Escobar St.)	63	66	3
Marina Vista Ave. (Escobar St. to Shell Ave.)	60	60	0
Marina Vista Ave. (Shell Ave. to I-680)	67	68	1
Morello Ave. (Pacheco Blvd. to SR-4)	63	64	1
Morello Ave. (SR-4 to Center Ave.)	63	64	1
Morello Ave. (South of Center Ave.)	59	60	1
Muir Rd. (East of Morello Ave.)	58	60	2
Muir Rd. (West of Morello Ave.)	71	73	2
Northbound I-680 (Marina Vista Ave. to Pacheco Blvd.)	71	73	2
Northbound I-680 (North of Marina Vista Ave.)	83	85	2
Pacheco Blvd. (Arthur Rd. to SR-4)	63	66	3
Pacheco Blvd. (Morello Ave. to I-680)	70	71	1
Pacheco Blvd. (Pine St. to Shell Ave.)	64	65	1
Pine St. (Court St. to Pacheco Blvd.)	60	62	2
Pine St. (Pacheco Blvd. to Shell Ave.)	60	62	2
Pine St. (Shell Ave. to Howe Rd.)	62	63	1
Shell Ave. (Marina Vista Ave. to Pacheco Blvd.)	59	62	3
Shell Ave. (Pine St. to Alhambra Ave.)	58	62	4
Source: Illingworth & Rodkin, 2014			

Figure 9-3: Existing Vehicular Traffic Noise Contours

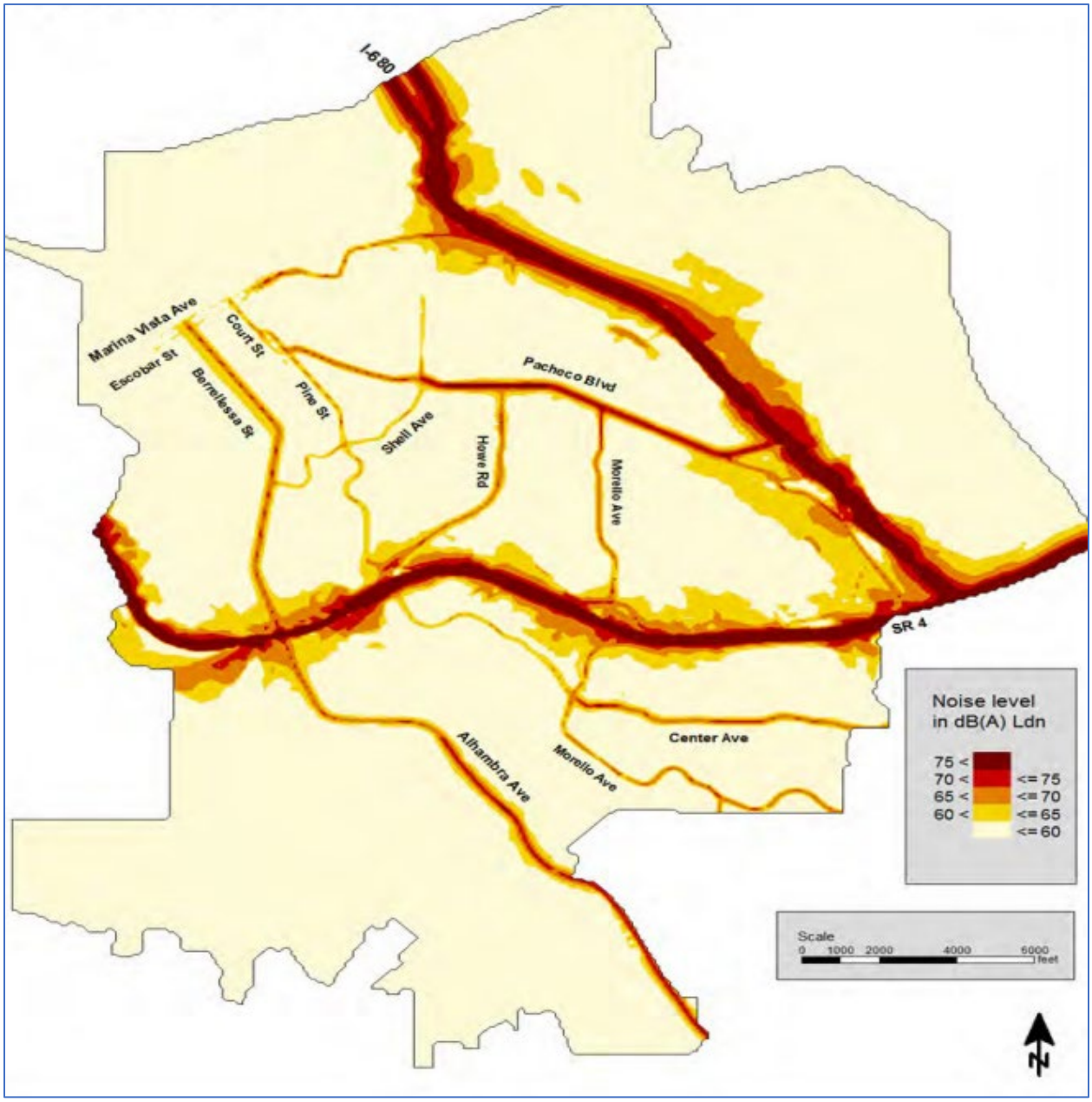
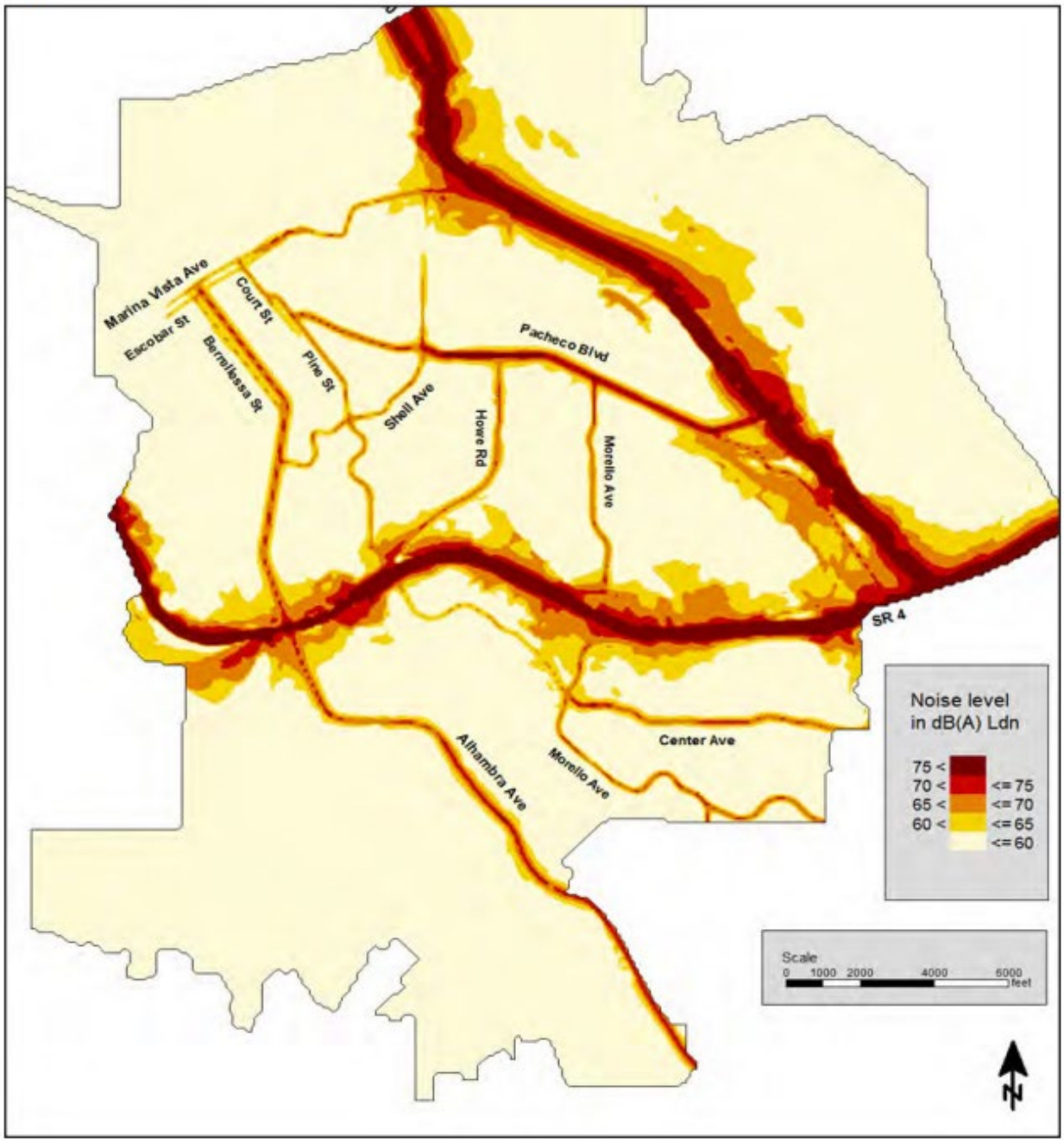


Figure 9-4. 2040 Vehicular Traffic Noise Contours



Railroad Noise: It is expected that the Union Pacific and BNSF railways will continue to carry freight traffic and Amtrak will continue to provide commuter rail. The Martinez General Plan does not propose and increase in rail traffic, but it could result in new or redeveloped noise sensitive uses in the vicinity of the railways. These uses could be exposed to excessive noise levels during train pass-bys and when train warning horns are sounded. This Element contains

policies and implementation measures that are intended to reduce exposure to excessive noise levels.

Airport Noise: New development allowed under the Martinez General Plan may result in the creation of new noise-sensitive land uses within the Buchanan Field noise contours. This Element contains polices and actions intended to reduce airport noise impacts throughout the City.

Stationary Noise Sources: Although the Martinez General Plan does not specifically propose any new stationary noise sources, new development and redevelopment could result in land uses that generate noise levels in excess of City noise standards. Such land uses include commercial loading docks, industrial uses, HVAC equipment, car washes, day-care facilities, auto repair, and recreational uses. This Element includes policies and actions that are intended to reduce noise associated with stationary sources.

Ground-Borne Vibration

Ground vibration consists of rapidly fluctuating motions or waves with an average motion of zero. Several different methods are typically used to quantify vibration amplitude. One is the "Peak Particle Velocity (PPV)" and another is the "Root Mean Square (RMS) velocity". PPV is defined as the maximum instantaneous positive or negative peak of the vibration wave. RMS velocity is defined as the average of the squared amplitude of the signal. The PPV and RMS vibration velocity amplitudes are used to evaluate human response to vibration. In the study done for the Martinez General Plan, a PPV descriptor with units of mm/sec or in/sec was used to evaluate construction-generated vibration for building damage and human complaints. Table 9-3 displays the reactions of people and the effects on buildings that continuous vibration levels produce. The annoyance levels shown in Table 9-3 should be interpreted with care since vibration may be found to be annoying at much lower levels than those shown, depending on the level of activity or the sensitivity of the individual. To sensitive individuals, vibrations approaching the threshold of perception can be annoying.

Low-level vibrations frequently cause irritating secondary vibration, such as a slight rattling of windows, doors, or stacked dishes. The rattling sound can give rise to exaggerated vibration complaints, even though there is very little risk of actual structural damage. In high noise environments, which are more prevalent where ground-borne vibration approaches perceptible levels, this rattling phenomenon may also be produced by loud airborne environmental noise causing induced vibration in exterior doors and windows.

Construction activities can cause vibration that varies in intensity depending on several factors. The use of pile driving, and vibratory compaction equipment typically generates the highest

construction-related ground-borne vibration levels. Because of the impulsive nature of such activities, the PPV descriptor has been routinely used to measure and assess ground-borne vibration and almost exclusively to assess the potential of vibration to induce structural damage and the degree of annoyance for humans.

Table 9-3: Reaction of People and Damage to Buildings from Continuous or Frequent Intermittent Vibration Levels

Velocity Level PPV (in/sec.)	Human Reaction	Effect on Buildings
0.01	Barely perceptible	No effect
0.04	Distinctly perceptible	Vibration unlikely to cause damage of any type to any structure
0.08	Distinctly perceptible to strongly perceptible	Recommended upper level of the vibration to which ruins and ancient monuments should be subjected
0.10	Strongly perceptible	Virtually no risk of damage to normal buildings
0.3	Strongly perceptible to severe	Threshold at which there is a risk of damage to older residential dwellings such as plastered walls or ceilings
0.5	Severe – vibrations considered unpleasant	Threshold at which there is a risk of damage to newer residential structures.
Source: Transportation and Construction Vibration Guidance Manual, California Department of Transportation, September 2013		

The two primary concerns with construction-induced vibration, the potential to damage a structure and the potential to interfere with the enjoyment of life, are evaluated against different vibration limits. Studies have shown that the threshold of perception for average persons is in the range of 0.008 to 0.012 in/sec PPV. Human perception to vibration varies with the individual and is a function of physical setting and the type of vibration. Persons exposed to elevated ambient vibration levels such as people in an urban environment may tolerate a higher vibration level.

Structural damage can be classified as cosmetic only, such as minor cracking of building elements, or may threaten the integrity of the building. Safe vibration limits that can be applied to assess the potential for damaging a structure vary by researcher and there is no general consensus as to what amount of vibration may pose a threat for structural damage to the building. Construction-induced vibration that can be detrimental to the building is very rare and

has only been observed in instances where the structure is at a high state of disrepair or particularly fragile and the construction activity occurs immediately adjacent to the structure.

Railroad operations are potential sources of substantial ground vibration depending on distance, the type and speed of trains, and the type of railroad track. People's response to ground vibration has been correlated best with the RMS velocity level of the ground. The velocity of the ground is expressed on the decibel scale. The reference velocity is 1 x 10-6 in/sec RMS, which equals 0 VdB, and 1 in/sec equals 120 VdB. Although not a universally accepted notation, the abbreviation "VdB" is used in this document for vibration levels in decibels to reduce the potential for confusion with airborne sound levels in decibels.

Typical background vibration levels in residential areas are usually 50 VdB or lower, well below the threshold of perception for most humans (60 to 70 VdB). Perceptible vibration levels inside residences are attributed to the operation of heating and air conditioning systems, door slams, and foot traffic. Construction activities, train operations, and heavy truck traffic are some of the most common external sources of vibration that can be perceptible inside residences. Table 9-4 illustrates some common sources of vibration and the association to human perception or the potential for structural damage.

Table 9-4: Typical Levels of Ground-Borne Vibration

Human/Structural Response	Velocity Level Vdb	Typical Events (50-ft. setback)
Threshold (minor cosmetic damage)	100	Blasting, pile driving, vibratory compaction equipment, heavy tracked vehicles (bulldozers, cranes, drill rigs, etc.)
Difficulty with tasks such as reading a video computer screen	90	Commuter rail (upper range)
Residential annoyance (infrequent and occasional events)	80	Rapid transit (upper range) Commuter rail (typical bus or truck over bump or on rough roads)
Residential annoyance (frequent events)	70	Rapid transit (typical)
Approximate human threshold of perception to vibration	60	Buses, trucks, and heavy street traffic
Lower limit for equipment ultra-sensitive to vibration	50	Background vibration in residential settings in the absence of activity.
Source: Transit Noise and Vibration Impact Assessment, U.S. Department of Transportation Federal Transit Administration, May 2006		

9.5 | REGULATORY FRAMEWORK FOR AIR QUALITY ELEMENTS

Pursuant to the federal Clean Air Act (CAA) of 1970, the U.S. Environmental Protection Agency (EPA) established national ambient air quality standards (NAAQS) for major pollutants, termed "criteria" pollutants. Federal and state governments have established ambient air quality standards, or criteria, for outdoor concentrations of criteria air pollutants to protect public health.

Both the EPA and the California Air Resources Board (CARB) have established ambient air quality standards for carbon monoxide (C_O), ozone (O_3), nitrogen dioxide (N_{O2}), sulfur dioxide (SO_2), lead (Pb), and suspended particulate matter (PM). In addition, the State of California has set standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles. These standards are designed to protect the health and welfare of the public with a reasonable margin of safety. These ambient air quality standards are levels of contaminants which represent safe levels that avoid specific adverse health effects associated with each criteria pollutant. Health effects of criteria pollutants and their potential sources are described below and summarized in Table 9-5.

Air Pollutants

Ozone (O_3): Ozone is produced in the atmosphere through a complex series of photochemical reactions involving reactive organic gases (ROG) and oxides of nitrogen (NO_X). The main sources of ROG and NO_X, often referred to as ozone precursors, are combustion processes (including combustion in motor vehicle engines) and the evaporation of solvents, paints and fuels. In the Bay Area, automobiles are the single largest source of ozone precursors. Ozone is referred to as a regional air pollutant because its precursors are transported and diffused by wind concurrently with ozone production through the photochemical reaction process. Ozone causes eye irritation, airway constriction, and shortness of breath, and can aggravate existing respiratory diseases such as asthma, bronchitis and emphysema.

Carbon Monoxide (CO): Carbon Monoxide is an odorless, colorless gas usually formed as the result of the incomplete combustion of fuels. The single largest source of CO is motor vehicles. While CO transport is limited, it disperses with distance from the source under normal meteorological conditions. However, under certain extreme meteorological conditions, CO concentrations near congested roadways or intersections may reach unhealthful levels that adversely affect local sensitive receptors (e.g., residents, schoolchildren, the elderly, hospital patients, etc.). Typically, high CO concentrations are associated with roadways or intersections operating at unacceptable levels of service (LOS) or with extremely high traffic volumes. Exposure to high concentrations of CO reduces the oxygen-carrying capacity of the blood and can cause headaches, nausea, dizziness and fatigue, impair central nervous system function,

and induce angina (chest pain) in persons with serious heart disease. Very high levels of CO can be fatal.

Nitrous Oxide (NO_2): Nitrous oxide is a reddish-brown gas that is a biproduct of combustion processes. Automobiles and industrial operations are the main sources of NO_2. Aside from its contribution to ozone formation, NO_2 also contributes to other pollution problems, including a high concentration of fine particulate matter, poor visibility, and acid deposition. NO_2 may be visible as a coloring component on high pollution days, especially in conjunction with high ozone levels. NO_2 decreases lung function and may reduce resistance to infection. On January 22, 2010, the EPA strengthened the health-based NAAQS for NO_2.

Sulfur Dioxide (SO_2): Sulfur dioxide is a colorless, irritating gas formed primarily from incomplete combustion of fuels containing sulfur. Industrial facilities also contribute to gaseous SO_2 levels in the region. SO_2 irritates the respiratory tract, can injure lung tissue when combined with fine particulate matter, and reduces visibility and the level of sunlight.

Particulate Matter (PM): Particulate matter is the term used for a mixture of solid particles and liquid droplets found in the air. Coarse particles are those that are larger than 2.5 microns but smaller than 10 microns (PM_{10}). $PM_{2.5}$ refers to fine suspended particulate matter with an aerodynamic diameter of 2.5 microns or less that is not readily filtered out by the lungs. Nitrates, sulfates, dust, and combustion particulates are major components of PM10 and $PM_{2.5}$. These small particles can be directly emitted into the atmosphere as by-products of fuel combustion, through abrasion, such as tire or brake lining wear, or through fugitive dust (wind or mechanical erosion of soil). They can also be formed in the atmosphere through chemical reactions. Particulates may transport carcinogens and other toxic compounds that adhere to the particle surfaces, and can enter the human body through the lungs.

Lead (Pb): Lead is a metal found naturally in the environment as well as in manufactured products. The major sources of lead emissions have historically been mobile and industrial sources. As a result of the phase-out of leaded gasoline, metal processing is currently the primary source of lead emissions. The highest levels of lead in air are generally found near lead smelters. Other stationary sources are waste incinerators, utilities, and lead-acid battery manufacturers. Twenty years ago, mobile sources were the main contributor to ambient lead concentrations in the air. In the early 1970s, the EPA established national regulations to gradually reduce the lead content in gasoline. In 1975, unleaded gasoline was introduced for motor vehicles equipped with catalytic converters. The EPA banned the use of leaded gasoline in highway vehicles in December 1995. As a result of the EPA's regulatory efforts to remove lead from gasoline, emissions of lead from the transportation sector and levels of lead in the air decreased dramatically.

Toxic Air Contaminants (TACs): In addition to the criteria pollutants discussed above, Toxic Air Contaminants (TACs) are another group of pollutants of concern. TACs are injurious in small quantities and are regulated by the EPA and CARB. Some examples of TACs include benzene, butadiene, formaldehyde, and hydrogen sulfide. The identification, regulation and monitoring of TACs is relatively recent compared to that for criteria pollutants. High-volume freeways, stationary diesel engines, and facilities attracting heavy and constant diesel vehicle traffic (e.g., distribution centers and truck stops) were identified as posing the highest risk to adjacent receptors. Other facilities associated with increased risk include warehouse distribution centers, large retail and industrial facilities, high volume transit centers, and schools with a high volume of bus traffic. Health risks from TACs are a function of both concentration and duration of exposure.

Table 9-5: Health Effect of Air Pollutants

Pollutant	Sources	Primary Effects
Carbon Monoxide (C)	• Incomplete combustion of fuels and other carbon-containing substances, such as motor exhaust. Natural events, such as decomposition of organic matter	• Reduced tolerance for exercise • Impairment of mental function • Impairment of fetal development • Death at high levels of exposure • Aggravation of some heart diseases (angina)
Nitrogen Dioxide (NO_2)	• Motor vehicle exhaust • High temperature stationary combustion • Atmospheric reactions	• Aggravation of respiratory illness • Reduced visibility • Reduced plant growth • Formation of acid rain
Ozone (O_3)	• Atmospheric reaction of organic gases with nitrogen oxides in sunlight	• Aggravation of respiratory and cardiovascular diseases • Irritation of eyes • Impairment of cardiopulmonary function • Plant leaf injury.
Lead (Pb)	• Contaminated soil	• Impairment of blood functions and nerve construction • Behavioral and hearing problems in children

Suspended Particulate Matter ($PM_{2.5}$ and PM_{10})	• Stationary combustion of solid fuels • Construction activities. • Industrial processes • Atmospheric chemical reactions	• Reduced lung function. • Aggravation of the effects of gaseous pollutants • Aggravation of respiratory and cardiorespiratory diseases • Increased cough and chest discomfort • Soiling • Reduced visibility
Sulfur Dioxide (SO_2)	• Combustion of sulfur-containing fossil fuels • Smelting of sulfur-bearing metal ores • Industrial processes	• Aggravation of respiratory diseases (asthma, emphysema) • Reduced lung function. • Irritation of eyes • Reduced visibility • Plant injury • Deterioration of metals, textiles, leather, finishes, coatings etc.
Toxic Air Contaminants (TACs)	• Cars and trucks, especially diesels • Industrial sources such as chrome platers • Neighborhood businesses such as dry cleaners and service stations • Building materials and products	• Cancer • Chronic eye, lung, or skin irritation • Neurological and reproductive disorders
Source: CARB, 2008		

Sensitive Receptors

Some groups of people are more affected by air pollution than others. The State has identified the following people who are most likely to be affected by air pollution:

- Children under 14;
- Elderly over 65;
- Athletes; and
- People with cardiovascular and chronic respiratory diseases.

These groups listed above are classified as “sensitive receptors”. Locations that may contain a high concentration of these sensitive population groups include residential areas, hospitals, day-care facilities, elder care facilities, elementary schools, and parks.

Federal Air Quality Regulations

At the federal level, the EPA has been charged with implementing national air quality programs. EPA’s air quality mandates are drawn primarily from the Federal Clean Air Act (FCAA), which was enacted in 1963. The FCAA was amended in 1970, 1977, and 1990. The FCAA required EPA to establish primary and secondary national ambient air quality standards (NAAQS) and required each state to prepare an air quality control plan referred to as a “State Implement Plan (SIP)”.

Federal standards include both primary and secondary standards. Primary standards set limits to protect public health, including the health of sensitive populations such as asthmatics, children and the elderly. Secondary standards set limits to protect public welfare, including protection against decreased visibility and damage to animals, crops, vegetation and buildings.

The Federal Clean Air Act Amendments of 1990 (FCAAA) added requirements for states with nonattainment areas to revise their SIPs to incorporate additional control measures to reduce air pollution. The SIP is periodically modified to reflect the latest emissions inventories, planning documents, and rules and regulations of the air basins as reported by their jurisdictional agencies. The EPA has a responsibility to review all state SIPs to determine conformity with the mandates of the FCAAA and determine if implementation will achieve air quality goals. If the EPA determines a SIP to be inadequate, a Federal Implementation Plan (FIP) may be prepared for the nonattainment area which imposes additional control measures. Failure to submit an approvable SIP or to implement the plan within the mandated time frame may result in the application of sanctions on transportation funding and stationary air pollution sources in the air basin.

In 1970 the FCAA authorized the establishment of national health-based air quality standards and also set deadlines for their attainment. The FCAA Amendments of 1990 changed deadlines for attaining NAAQS as well as the remedial actions required of areas of the nation that exceed the standards. Under the FCAA, state and local agencies in areas that exceed the NAAQS are required to develop SIPs to show how they will achieve the NAAQS by specific dates. The FCAA requires that projects receiving federal funds demonstrate conformity to the approved SIP and local air quality attainment plan for the region. Conformity with the SIP requirements would satisfy the FCAA requirements.

9 NOISE & AIR QUALITY ELEMENT

State Air Quality Regulations

The California Air Resources Board (CARB) is the agency responsible for the coordination and oversight of state and local air pollution control programs in California. CARB is also responsible for developing and implementing air pollution control plans to achieve and maintain the NAAQS. CARB is primarily responsible for Statewide pollution sources and produces a major part of the SIP. Local air districts provide additional strategies for sources under their jurisdiction. CARB combines this data and submits the completed SIP to the EPA. Other CARB duties include the following:

- Monitoring air quality (in conjunction with air monitoring networks maintained by air pollution control and air quality management districts);
- Establishing California Air Quality Standards (CAAQS);
- Determining and updating area designations and maps; and
- Setting emissions standards for new mobile sources, consumer products, small utility engines, and off-road vehicles.

Attainment Status Designations: The CARB is required to designate areas of the State as "attainment", "nonattainment", or "unclassified" for all state ambient air quality standards. An "attainment" designation for an area signifies that pollutant concentrations did not violate the standard for that pollutant in that area. A "non-attainment" designation indicates that a pollutant concentration violated the standard at least once, excluding those occasions when a violation was caused by an exceptional event, as defined in the criteria. An "unclassified" designation signifies that data does not support either an "attainment" or "nonattainment" designation. The CCAA divides districts into "moderate", "serious" and "severe" air pollution categories, with increasingly stringent control requirements mandated for each category.

California Clean Air Act: The California Clean Air Act (CCAA) requires that all air districts in the state endeavor to achieve and maintain California Air Quality Standards (CAAQS) for carbon monoxide (CO), ozone (O_3), sulfur dioxide (SO_2), and nitrogen dioxide (NO_2) by the earliest practical date. The CCAA provides air districts with authority to regulate indirect sources of air pollution and mandates that air quality districts focus particular attention on reducing emissions from transportation and area-wide emission sources. Each "nonattainment" district is required to adopt a plan to achieve a five (5) percent annual reduction (averaged over consecutive 3-year periods) in district-wide emissions of each nonattainment pollutant or its precursors. An air district's Clean Air Plan shows how that district would reduce emissions to

achieve CAAQS. Generally, the state standards for these pollutants are more stringent than the national standards.

CARB Air Quality and Land Use Handbook: In 1998, CARB identified particulate matter from diesel-fueled engines as a toxic air contaminant. CARB has completed a risk management process that identified potential cancer risks for a range of activities using diesel-fueled engines. CARB subsequently developed an Air Quality and Land Use Handbook in 2005 that is intended to serve as a general reference guide for evaluating and reducing air pollution impacts associated with new projects that go through the land use decision-making process. The CARB handbook recommends that planning agencies consider proximity to air pollution sources when considering new locations for "sensitive" land uses, such as residences, medical facilities, day-care centers, schools, and playgrounds. Air pollution sources of concern include freeways, rail yards, ports, refineries, distribution centers, chrome plating facilities, dry cleaners, and large gasoline service stations. Key recommendations in the Handbook relative to the Martinez area include taking steps to consider or avoid siting new, sensitive land uses as follows:

- Within 500 feet of a freeway, urban roads with 100,000 vehicles/day, or rural roads with 50,000 vehicles/day;
- Within 300 feet of gasoline fueling stations; and
- Within 300 feet of dry-cleaning operations (note that dry cleaning with TACs is being phased out and will be prohibited in 2023).

Bay Area Air Quality Management District (BAAQMD): The BAAQMD seeks to attain and maintain air quality conditions in the San Francisco Bay Area Air Basin through a comprehensive program of planning, regulation, enforcement, technical innovation, and education. The clean air strategy includes the preparation of plans for the attainment of CAAQS, adoption and enforcement of rules and regulations, and issuance of permits for stationary sources. The BAAQMD also inspects stationary sources and responds to citizen complaints, monitors ambient air quality and meteorological conditions, and implements programs and regulations required by law.

BAAQMD Clean Air Plan: The BAAQMD is responsible for developing a Clean Air Plan which guides the region's air quality planning efforts to attain the CAAQS. The BAAQMD's 2017 Clean Air Plan contains district-wide control measures to reduce ozone precursor emissions (i.e., ROG and NO_X), particulate matter, and GHGs. Highlights of the 2017 Clean Air Plan, which was adopted on April 19, 2017, by the BAAQMD's board of directors, are as follows:

- Develop a region-wide strategy to increase fossil fuel combustion efficiency at industrial facilities, beginning with the three largest sources of industrial emissions: oil refineries, power plants, and cement plants;
- Reduce methane emissions from landfills, and oil and natural gas production, storage and distribution;
- Reduce emissions of toxic air contaminants by adopting more stringent limits and methods for evaluating toxic risks at existing and new facilities.
- Implement pricing measures to reduce travel demand;
- Accelerate the widespread adoption of electric vehicles;
- Promote the use of clean fuels and low or zero carbon technologies in trucks and heavy-duty vehicles;
- Expand the production of low-carbon, renewable energy by promoting on-site technologies such as rooftop solar and ground-source heat pumps;
- Support community choice energy programs throughout the Bay Area;
- Promote energy efficiency in both new and existing buildings; and
- Promote the switch from natural gas to electricity for space and water heating in Bay Area buildings.

9.6 | EXISTING CLIMATE AND AIR QUALITY

Regional Air Quality

The Martinez Planning Area is located in the San Francisco Bay Area Air Basin. The Air Basin includes the counties of San Francisco, Santa Clara, San Mateo, Marin, Napa, Contra Costa, and Alameda, along with the southeast portion of Sonoma County and the southwest portion of Solano County.

The City of Martinez is within the jurisdiction of the BAAQMD. Air quality conditions in the San Francisco Bay Area have improved significantly since the BAAQMD was created in 1955. Ambient concentrations of air pollutants, and the number of days during which the region exceeds air quality standards, have fallen dramatically. Exceedances of air quality standards

occur primarily during meteorological conditions conducive to high pollution levels, such as cold, windless winter nights; or hot, sunny summer afternoons.

Ozone levels, measured by peak concentrations and the number of days over the state 1-hour standard, have declined substantially in the San Francisco Bay Area as a result of aggressive programs by the BAAQMD and other regional, state, and federal air quality agencies. The reduction of peak concentrations represents progress in improving public health; however, the Bay Area still exceeds the state standard for 1-hour ozone.

Levels of PM_{10} have exceeded state standards two of the last three years, and the area is considered in "nonattainment" for this pollutant relative to the state standards. The Bay Area is an "unclassified" area for the federal PM_{10} standard. No exceedances of the state or federal CO standards have been recorded at any of the region's monitoring stations since 1991. The Bay Area is currently considered a "maintenance" area for state and federal CO standards.

Local Climate and Air Quality

Air quality is a function of both local climate and local sources of air pollution. Air quality is the balance of the natural dispersal capacity of the atmosphere and emissions of air pollutants from human uses of the environment. Climate and topography are major influences on air quality in the Plan area.

The Carquinez Strait runs from Rodeo to Martinez. It is the only sea-level gap between the Bay and the Central Valley. The subregion includes the lowlands bordering the strait to the north and south, and the area adjoining Suisun Bay and the western part of the Sacramento-San Joaquin Delta as far east as Bethel Island. The subregion extends from Rodeo in the southwest and Vallejo in the northwest to Fairfield on the northeast and Brentwood on the southeast.

Prevailing winds are from the west in the Carquinez Strait. During the summer and fall months, high pressure offshore coupled with low pressure in the Central Valley causes marine air to flow eastward through the Carquinez Strait. The wind is strongest in the afternoon. Afternoon wind speeds of 15 to 20 mph are common throughout the strait region. Annual average wind speeds are 8 mph in Martinez, and 9 to 10 mph further east. Sometimes atmospheric conditions cause air to flow from the east. East winds usually contain more pollutants than the cleaner marine air from the west. In the summer and fall months, this can cause elevated pollutant levels to move into the central San Francisco Bay Area Air Basin through the strait. These high-pressure periods are usually accompanied by low wind speeds, shallow mixing depths, higher temperatures, and little or no rainfall.

Summer mean maximum temperatures reach about 90° Fahrenheit (°F) in the subregion. Mean minimum temperatures in the winter are in the high 30s. Temperature extremes are especially pronounced in sheltered areas farther from the moderating effects of the strait itself, e.g., in Fairfield.

Many industrial facilities with significant air pollutant emissions (e.g., chemical plants and refineries) are located within the Carquinez Strait subregion. The pollution potential of this area is often moderated by high wind speeds. However, upsets at industrial facilities can lead to short-term pollution episodes, and emissions of unpleasant odors may occur at any time. Receptors downwind of these facilities could suffer more long-term exposure to air contaminants than individuals elsewhere. The impacts of these sources can only be addressed on a project-by-project basis since most of the impacts are generally localized.

Existing Air Pollutant Levels

The significance of a pollutant concentration is determined by comparing the concentration to an appropriate ambient air quality standard. The standards represent the allowable pollutant concentrations designed to ensure that the public health and welfare are protected, while including a reasonable margin of safety to protect the more sensitive individuals in the population. The San Francisco Bay Area is one of the cleanest metropolitan areas in the country with respect to air quality. BAAQMD monitors air quality conditions at more than 28 locations throughout the Bay Area. There is a monitoring station in Concord at 2975 Treat Boulevard. Summarized air pollutant data for this station are provided in Table 9-8. This table shows the highest air pollutant concentrations measured at the station over the five-year period from 2012 through 2014.

Table 9-8: Highest Measured Air Pollutant Concentrations in Concord

Pollutant	Avg. Time	Measured Air Pollutant Levels		
		2012	2013	2014
Ozone (O_3)	1-hour	0.093 ppm	0.074 ppm	0.95 ppm
	8-hour	0.086 ppm	0.062 ppm	0.081 ppm
Carbon Monoxide (CO)	8-hour	0.82 ppm	ND	ND
Nitrogen Dioxide (NO_2)	1-hour	0.40 ppm	0.045 ppm	0.048 ppm
	Annual	0.008 ppm	0.009 ppm	0.007 ppm
Respirable Particulate Matter (PM_{10})	24-hour	33.7 µm/m^3	50.5 µm/m^3	42.5 µm/m^3
	Annual	12.6 µm/m^3	8.3 µm/m^3	7.3 µm/m^3
Fine Particulate Matter ($PM_{2.5}$)	24-hour	32.2 µm/m^3	36.2 µm/m^3	30.6 µm/m^3
	Annual	6.6 µm/m^3	7.6 µm/m^3	6.7 µm/m^3
Source: CARB, iADAM Air Quality Statistics (see: http://www.arb.ca.gov/adam/)				

Notes: ppm = parts per million; µm/m^3 = micrograms per cubic meter; ND = No data available

9.8 | CLIMATE CHANGE

Greenhouse Gases

Global temperatures are affected by naturally occurring and anthropogenic-generated (generated by humankind) atmospheric gases, such as water vapor, carbon dioxide, methane, and nitrous oxide. Gases that trap heat in the atmosphere are called greenhouse gases (GHG). Solar radiation enters the earth's atmosphere from space, and a portion of the radiation is absorbed at the surface. The earth emits this radiation back toward space as infrared radiation. GHGs, which are mostly transparent to incoming solar radiation, are effective in absorbing infrared radiation and redirecting some of this back to the earth's surface. As a result, this radiation that otherwise would have escaped back into space is now retained, resulting in a warming of the atmosphere. This is known as the "greenhouse effect". The greenhouse effect helps maintain a habitable climate. Emissions of GHGs from human activities, such as electricity production, motor vehicle use, and agriculture, are elevating the concentration of GHGs in the atmosphere, and are reported to have led to a trend of unnatural warming of the earth's natural climate, known as global warming or global climate change. The term "global climate change" is often used interchangeably with the term "global warming," but "global climate change" is preferred because it implies that there are other consequences to the global climate in addition to rising temperatures. Other than water vapor, the primary GHGs contributing to global climate change include the following gases:

- Carbon dioxide (CO_2), primarily a biproduct of fuel combustion;
- Nitrous oxide (N_2O), a biproduct of fuel combustion (also associated with agricultural operations such as the fertilization of crops);
- Methane (CH_4), commonly created by off-gassing from agricultural practices (e.g., livestock), wastewater treatment, and landfill operations;
- Chlorofluorocarbons (CFCs), used in the past as refrigerants, propellants and cleaning solvents, but their production has been mostly prohibited by international treaty;
- Hydrofluorocarbons (HFCs), now widely used as a substitute for CFCs in refrigeration and cooling; and
- Perfluorocarbons (PFCs) and sulfur hexafluoride (SF_6), commonly created by industries such as aluminum production and semiconductor manufacturing.

These gases vary considerably in terms of "Global Warming Potential (GWP)", a term developed to compare the propensity of each GHG to trap heat in the atmosphere relative to another GHG. GWP is based on several factors, including the relative effectiveness of a gas to absorb infrared radiation and the length of time the gas remains in the atmosphere. The GWP of each GHG is measured relative to CO_2. Accordingly, GHG emissions are typically measured and reported in terms of equivalent CO_2 (CO_2e). For instance, SF_6 is 22,800 times more intense in terms of global climate change contribution than CO_2.

An expanding body of scientific research supports the theory that global climate change is currently affecting changes in weather patterns, average sea level, ocean acidification, chemical reaction rates, and precipitation rates, and that it will increasingly do so in the future. The climate and several naturally-occurring resources within California could be adversely affected by the global warming trend. Increased precipitation and sea level rise could increase coastal flooding, saltwater intrusion, and degradation of wetlands. Mass migration and/or loss of plant and animal species could also occur. Potential effects of global climate change that could adversely affect human health include more extreme heat waves and heat-related stress; an increase in climate-sensitive diseases; more frequent and intense natural disasters such as flooding, hurricanes, and drought; and increased levels of air pollution.

Regulatory Framework for GHG Emissions

Federal Regulations: The U.S. participates in the United Nations Framework Convention on Climate Change (UNFCCC). While the United States signed the Kyoto Protocol, which would have required reductions in GHGs, the U.S. Congress never ratified the protocol. The federal government chose voluntary and incentive-based programs to reduce emissions and has established programs to promote climate technology and science.

On April 2, 2007, the U.S. Supreme Court ruled that the EPA has the authority to regulate CO_2 emissions under the federal Clean Air Act (CAA), and on December 7, 2009, the EPA Administrator signed a final action under the CAA, finding that six greenhouse gases (CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6) constitute a threat to public health and welfare, and that the combined emissions from motor vehicles cause and contribute to global climate change.

On April 1, 2010, the EPA and the Department of Transportation's National Highway Traffic Safety Administration (NHTSA) announced a final joint rule to establish a national program consisting of new standards for model year 2012 through 2016 light-duty vehicles that will reduce greenhouse gas emissions and improve fuel economy.

On May 13, 2010, the EPA issued a final rule to address greenhouse gas emissions from stationary sources under the CAA permitting programs. This final rule sets thresholds for GHG

emissions that define when permits under the New Source Review Prevention of Significant Deterioration (PSD) and Title V Operating Permit programs are required for new and existing industrial facilities.

State Regulations: The State of California is also very concerned about GHG emissions and their effect on global climate change. The State recognizes that "there appears to be a close relationship between the concentration of GHGs in the atmosphere and global temperatures" and that "the evidence for climate change is overwhelming." The effects of climate change on California, in terms of how it would affect the ecosystem and economy, remain uncertain. According to the 2006 Climate Action Team Report, the following climate change effects and conditions can be expected in California over the course of the next century:

- A diminishing Sierra snowpack declining by 70 to 90 percent, affecting the state's water supply;
- Increasing temperatures from eight (8) to 10.4 degrees °F under the higher emission scenarios, leading to a 25 to 35 percent increase in the number of days ozone pollution standards are exceeded in most urban areas;
- Coastal erosion along the length of California and seawater intrusion into the Sacramento River Delta from a four (4) to 33-inch rise in sea level. This would exacerbate flooding in already vulnerable regions;
- Increased vulnerability of forests due to pest infestation and increased temperatures;
- Increased challenges for the state's important agricultural industry from water shortages, increasing temperatures, and saltwater intrusion into the Delta; and
- Increased electricity demand, particularly in the hot summer months.

Bay Area Air Quality Management District: As discussed earlier in this Element, BAAQMD is the regional government agency that regulates sources of air pollution within the nine San Francisco Bay Area counties. The BAAQMD regulates GHG emissions through the following plans, programs and guidelines:

- Regional Clean Air Plans: BAAQMD and other air districts prepare clean air plans in accordance with the state and federal Clean Air Acts.

- Climate Protection Program: The BAAQMD established a climate protection program to reduce pollutants that contribute to global climate change and affect air quality in the San Francisco Bay Area Air Basin.

- CEQA Air Quality Guidelines: The BAAQMD adopted revised CEQA Air Quality Guidelines on June 2, 2010 and then adopted a modified version of the Guidelines in May, 2011. The BAAQMD CEQA Air Quality Guidelines include thresholds of significance for greenhouse gas emissions.

Martinez Climate Action Plan (CAP): The production of carbon dioxide from human activities contributes to pollution affecting air quality, and greenhouse gasses (GHG) that cause global warming. Policies that reduce the creation of carbon dioxide will assist with improving air quality. The City of Martinez adopted a CAP in June 2009. The Martinez CAP presents goals, principles and strategies for reducing the City's GHG emissions. A 2005 emissions inventory for community-wide GHG emissions equaled approximately 321,000 metric tons of CO2e, with emissions from transportation constituting the single largest source in the City at about 49 percent. To achieve the City's goals, the Martinez CAP developed objectives and strategies in transportation, energy, solid waste and recycling, water conservation, and adaptation and carbon sequestration.

9.8 | NOISE & AIR QUALITY ELEMENT GOALS, POLICIES, AND MEASURES

GOAL NA-G-1: Continue to implement City noise standards to provide protection from unsafe and undesirable noise levels.

Policy NA-P-1.1: The interior and exterior noise level standards for noise-sensitive areas of new uses affected by transportation-related noise are as follows:

1. For traffic noise within Martinez, L_{dn} and peak-hour L_{eq} values are estimated to be approximately similar. Interior noise level standards are applied within noise-sensitive areas of the various land uses, with windows and doors in the closed positions.

2. Outdoor activity areas for single-family residential uses are defined as backyards. For large parcels or residences with no clearly defined outdoor activity area, the standard shall be applicable within a 100-foot radius of the residence.

3. For multi-family residential uses, and for mixed-use projects that include residential units, the exterior noise level standard shall be applied at the common outdoor recreation area, such as at pools, play areas or tennis courts.

4. Where it is not possible to reduce noise in outdoor activity areas to 60 dB L_{dn} or less using a practical application of the best-available noise reduction measures, an exterior noise level of up to 65 dB L_{dn} may be allowed provided that available exterior noise level reduction measures have been implemented and interior noise levels are in compliance with this table.

5. Outdoor activity areas of transient lodging facilities include swimming pool and picnic areas.

6. Hospitals are often noise-generating uses. The exterior noise level standards for hospitals are applicable only at clearly identified areas designated for outdoor relaxation by either hospital staff or patients.

7. Only the exterior spaces of these uses designated for employee or customer relaxation have any degree of sensitivity to noise.

Measure NA-I-1.1a: Evaluate new development proposals for compliance with the standards established in Table 9-5. Where necessary, the City may require preparation of a noise study to determine compliance.

Table 9-5: Maximum Noise Levels for New Uses Affected by Traffic Noise

New Land Use	Outdoor Activity Areas (L_{dn})	Interior Spaces (Ldn/Peak Hour L_{eq1}	Notes
All Residential	60-65	45	2, 3, 4
Transient Lodging	65	45	5
Hospitals & Nursing Homes	60	45	6
Theaters & Auditoriums	-	35	
Churches, Meeting Halls, Schools, Libraries, etc.	60	40	
Office Buildings	65	45	7
Commercial Buildings	65	50	7
Playgrounds, Parks, etc.	70	-	
Industrial	65	50	7
Note: The numbers in the notes column correspond to numbers listed under Noise & Air Quality Policy N-P-1.2			

Policy NA-P-1.2: The interior and exterior noise level standards for noise-sensitive areas of new uses affected by non-transportation related noise are as follows:

1. Outdoor activity areas for single-family residential uses are defined as backyards. For large parcels or residences with no clearly defined outdoor activity area, the standard shall be applicable within a 100-foot radius of the residence.

2. For multi-family residential uses, the exterior noise level standard shall be applied at the common outdoor recreation area, such as at pools, play areas or tennis courts. Where such areas are not provided, the standards shall be applied at individual patios and balconies of the development.

3. Outdoor activity areas of transient lodging facilities include swimming pool and picnic areas, and are not commonly used during night-time hours.

4. Hospitals are often noise-generating uses. The exterior noise level standards for hospitals are applicable only at clearly identified areas designated for outdoor relaxation by either hospital staff or patients.

5. Only the exterior spaces of these uses designated for employee or customer relaxation have any degree of sensitivity to noise.

6. The outdoor activity areas of office, commercial and park uses are not typically utilized during night-time hours.

7. It may not be possible to achieve compliance with this standard at residential uses located immediately adjacent to loading dock areas of commercial uses while trucks are unloading. The daytime and night-time noise level standards applicable to loading docks shall be 55 and 50 dB L_{eq}, respectively.

Standards for maximum noise levels for new uses affected by non-transportation noise shall be reduced by 5 dB for sounds consisting primarily of speech or music, and for recurring impulsive sounds.

If the existing ambient noise level exceeds the standards of Table 9-6, then the noise level standards shall be increased at 5 dB increments to encompass the ambient.

Table 9-6: Maximum Noise Levels for New Uses Affected by Non-Transportation Noise

New Land Use	Outdoor Activity Area - L_{eq}		Interior - L_{eq}	Notes
	Daytime	Night-Time	Day & Night	
All Residential	50	45	35	1, 2, 7
Transient Lodging	55	-	40	3
Hospitals & Nursing Homes	50	45	35	4
Theaters & Auditoriums	-	-	35	
Churches, Meeting Halls, Schools, Libraries, etc.	55	-	40	
Office Buildings	55	-	45	5, 6
Commercial Buildings	55	-	45	5, 6
Playgrounds, Parks, etc.	65	-	-	6
Light Industrial	65	65	50	5

Measure NA-I-1.2a: Evaluate new development proposals for compliance with the standards established in Table 9-6. Where necessary, the City may require preparation of a noise study to determine compliance.

Policy NA-P-1.3: Any City-required acoustical analysis shall be prepared according to specific standards and practices.

Measure N-I-1.3a: An acoustical analysis may be required by the City for development projects that are deemed to possibly result in violation of the noise standards outlined in Policies N-1.1 and N-1.2, above, either in terms of a noise impact created by the new development that could affect nearby properties, or if the new development may be impacted by existing noise sources in the community. Additionally, a noise analysis may be required regarding project proximity to noise sensitive receptors.

Where an acoustical analysis is required by the City, it shall be prepared in accordance with the following provisions:

a) Applicant has the financial responsibility (with the study to be administered by the City).

b) Must be prepared by qualified persons experienced in the fields of environmental noise assessment and architectural acoustics.

c) Include representative noise-level measurements with sufficient sampling periods and locations to adequately describe local conditions.

d) Estimate existing and projected (project and cumulative) noise levels in terms of City noise standards for both interior and exterior exposures.

e) Recommend appropriate project-level noise mitigation measures. Where the noise source in question consists of intermittent single events, the report must address the effects of maximum noise levels in sleeping rooms evaluating possible sleep disturbance.

f) Estimate interior and exterior noise exposure after the prescribed mitigations are implemented.

g) Describe the post-project assessment program which could be used to evaluate the effectiveness of the proposed mitigations.

Policy NA-P-1.4: New development shall comply with City noise standards.

Measure N-I-1.4a: New development shall comply with noise standards in Policies NA-P-1.1, NA-P-1.2, and NA-P-1.3

Policy NA-P-1.5: Emergency vehicle, siren, horn, and similar noise sources such as non-vehicular emergency sirens, shall be exempt from provisions of the General Plan noise standards.

Measure NA-I-1.5a: Noise from emergency vehicles, sirens, horns, generators used in emergency periods (such as power outages), and similar short-term noises are exempt from City noise standards. Include provisions in updated Noise Ordinance.

Measure NA-I-1.5b: Consider an update to the City's Noise Ordinance, consistent with the standards and policies contained in the General Plan.

GOAL NA-G-2: Encourage acceptable noise levels in Martinez.

Policy NA-P-2.1: Maintain a pattern of land uses that separates noise-sensitive land uses from major traffic noise sources to the extent feasible.

Policy NA-P-2.2: New development should be site planned and architecturally designed to minimize and mitigate indoor and exterior noise and noise impacts on neighboring uses where feasible.

Policy NA-P-2.3: Discourage the establishment of acoustically incompatible land uses in juxtaposition or adjacency to each other, when possible.

Policy NA-P-2.4: Discourage land use patterns and traffic patterns that expose sensitive noise receptors (hospitals, schools, churches, senior care uses, etc.) to noise levels that exceed noise standards and the City's Noise Control Ordinance.

Policy NA-P-2.5: Use open space, wherever practical, to isolate noise sources from sensitive land uses by the employment of adequate separation distances.

Policy NA-P-2.6: Protect parks and recreational areas from excessive noise to permit the enjoyment of sports and other leisure time and recreational activities.

Policy NA-P-2.7: Reduce noise impacts from construction activities.

Measure NA-I-2.7a: Consider amendment of the City's Noise Control Ordinance to address appropriate hours of construction which shall be implemented in all construction projects unless an exemption is first obtained from the City in response to special circumstances.

Measure NA-I-2.7b: All internal combustion engines used in conjunction with construction shall be muffled according to the equipment manufacturer's requirements.

Policy NA-P-2.8: Minimize the noise impacts of air flight paths over the City, including the impacts of helicopter flight paths related to operation of regional hospitals.
Implementation Measures

Measure NA-I-2.8a: Work with Buchanan Airfield to promote a fly neighborly program to minimize noise results from low altitude general aircraft over Martinez.

Measure NA-I-2.8b: Work with surrounding and area jurisdictions and hospitals to reduce the impact of helicopter take-offs, landings and over-flights in Martinez.

GOAL NA-G-3: Mitigate noise sources in Martinez in keeping with the Noise Control Ordinance.

Policy NA-P-3.1: Require where necessary the preparation of ground-borne vibration studies by qualified professionals when construction activities include vibration-sensitive uses and significant site grading, foundation work, or underground work.

Measure NA-I-3.1a: Require feasible engineering noise control measures identified as mitigation measures in environmental impact reports or mitigated negative declarations on proposed projects be incorporated and adhered to prior to project occupancy.

Measure NA-I-3.1b: When appropriate and feasible, implement actions, such as quiet zones, to reduce the impacts of train noise near Downtown, and use best available or practical control technology to minimize noise.

Measure NA-I-3.1c: Continue working collaboratively with transportation, County, and other agencies to reduce noise from existing and future facilities by considering noise reduction strategies related to design and location of the facilities.

Measure NA-I-3.1d: Require development projects to reduce adverse construction vibration impacts to sensitive receptors, as feasible, when vibration-related construction activities are projected to occur within 100 feet from existing sensitive receptors. Measures to reduce noise and vibration effects may include, but are not limited to:

a) Phase demolition, earth-moving and ground-impacting operations so as not to occur in the same time period.

b) The pre-existing condition of all buildings within a 100-foot radius will be recorded in order to evaluate damage from construction activities. Fixtures and finishes within a 100-foot radius of construction activities susceptible to damage will be documented (photographically and in writing) prior to construction. All damage will be repaired back to its pre-existing condition.

c) Substituting vibration-generating equipment with equipment or procedures that would generate lower levels of vibration. For instance, in comparison to impact piles, drilled piles or the use of a sonic or vibratory pile driver are preferred alternatives where geological conditions would permit their use.

Other specific measures as they are deemed appropriate by the implementing agency to maintain consistency with adopted policies and regulations regarding vibration.

Policy NA-P-3.2: Encourage City-hired contractors and maintenance companies to purchase and use quiet equipment and tools, and refrain from causing undue noise problems.

Policy NA-P-3.3: Recommend the use of noise-mitigating devices, such as sound-attenuating paving on streets, wall barriers, landscaping, earth berms, sound walls, mufflers, sound traps, baffles, and/or other noise reduction techniques as conditions of development approval to reduce noise intrusion from transportation and fixed sources.

GOAL NA-G-4: Reduce noise from traffic.

Policy NA-P-4.1: Select quieter pavement that also meets other criteria established by City pavement standards.

Measure NA-I-4.1a: During selection of pavement contracts and new development, select quieter pavement types whenever possible.

Policy NA-P-4.2: Control the sound of vehicle amplification systems so that noise is not heard within 50 feet or more of the vehicle.

Policy NA-P-4.3: Control excessive exhaust noise.

Measure NA-I-4.3a: Enforce Section 27002 and 27150 of the California Motor Vehicle Code when noises from vehicles and or exhaust are deemed to exceed allowable limits.

GOAL NA-G-5: Improve air quality over current conditions and meet or exceed state and regional standards.

Policy NA-P-5.1: Continue to support and coordinate air quality planning efforts with other local, regional and state agencies to improve regional air quality.

Measure NA-I-5.1a: Require new stationary sources with potential air quality impacts to obtain the necessary permits from BAAQMD.

Measure NA-I-5.1b: Review proposed projects for their potential effect on air quality conditions as part of the environmental impact review process.

Measure NA-I-5.1c: Continue to review and comment on projects in neighboring communities with potential impacts on Martinez.

Measure NA-I-5.1d: Promote enforcement of air emissions standards by BAAQMD.

Measure NA-I-5.1e: Support CCTA and ABAG to help reduce traffic congestion and provide an improved and efficient regional transportation system.

Policy NA-P-1.2: Cooperate with regional efforts to expand public and mass transit services.

GOAL NA-G-6: Reduce levels of air contaminants.

Policy NA-P-6.1: Reduce local contributions to the air contaminant levels in the air basin and particulate emissions to achieve levels below BAAQMD levels, in particular the levels of ozone and particulate matter.

Measure NA-I-6.1a: Require construction projects to implement the following dust control measures:

a) Water all active construction areas at least twice daily and more often during windy periods. Active areas adjacent to residences should be kept damp at all times.

b) Cover all hauling trucks or maintain at least two feet of freeboard.

c) Pave, apply water at least twice daily, or apply non-toxic stabilizers on all unpaved access roads, parking areas, and staging areas.

d) Sweep daily with water sweepers all paved access roads, parking areas, and staging areas and sweep streets daily with water sweepers if visible soil material is deposited onto the adjacent roads.

e) Hydroseed or apply non-toxic soil stabilizers to inactive construction areas (i.e., previously graded areas that are inactive for 10 days or more).

f) Enclose, cover, water twice daily, or apply non-toxic soil binders to exposed stockpiles.

g) Limit traffic speeds on any unpaved roads to 15 mph.

h) Replant vegetation in disturbed areas as quickly as possible.

i) Suspend construction activities that cause visible dust plumes to extend beyond the construction site.

j) Post a publicly visible sign with contact information for dust complaints.

Measure NA-I-6.1b: Require construction projects to reduce diesel particulate matter, PM2.5, and other construction emissions by implementing the following measures:

a) Provide a plan for approval by the City or the Bay Area Air Quality Management District (BAAQMD) demonstrating that heavy-duty (>50 horsepower) off-road vehicles to be used in the construction project, including owned, leased, and subcontractor vehicles, will achieve a project wide fleet-average 20 percent NOX reduction and 45 percent particulate reduction compared to the most recent CARB fleet average for the year 2011.

b) Post signs indicating that diesel equipment and trucks standing idle for more than five minutes are to be turned off. This includes trucks waiting to deliver or receive soil, aggregate, or other bulk materials. Rotating drum concrete trucks may keep their engines running if they are onsite or adjacent to the construction site. Install temporary electrical service whenever possible to avoid the need for independently powered equipment.

c) Properly tune and maintain equipment for low emissions.

Measure NA-I-2.1c: Require a construction health risk assessment either through screening or refine modeling, for large-scale construction projects that may result in significant diesel particulate matter. The construction health risk assessment must identify impacts and, if necessary, include measures to reduce exposure. Reduction in health risk can be accomplished through, though is not limited to, the following measures:

a) Construction equipment selection;

b) Use of alternative fuels, engine retrofits, and added exhaust devices;

c) Modification of the construction schedule;

d) Implementation of BAAQMD Basic and/or Additional Construction Mitigation Measures for control of fugitive dust.

Measure NA-I-6.1d: Encourage the use of non-vehicular means of transportation through land use patterns and investing in pedestrian and bicycle infrastructure and, as feasible, supporting a Safe Routes to School Program.

Measure NA-I-6.1e: Minimize impacts of new development by reviewing development proposals for potential impacts pursuant to CEQA and the BAAQMD Air Quality Handbook. Apply land use and transportation planning techniques to encourage the use of non-vehicular means of transportation, and/or shared transportation where possible, with the incorporation of:

a) Public transit stops;

b) Pedestrian and bicycle linkage to commercial centers, employment centers, schools, and parks;

c) Preferential parking for carpools and van pools;

d) Traffic flow improvements; and

e) Employer trip reduction programs.

GOAL NA-G-7: Approval of new construction to include review of sensitive receptors.

Policy NA-P-7.1: Utilize site planning and building design to reduce exposure to toxic air contaminants and PM2.5.

Measure NA-I-7.1a: Future development that includes sensitive receptors such as schools, hospitals, day care centers, residential developments, and retirement homes located within specific setback distances from highways, railroads, local roadways, and stationary sources as described in the Martinez General Plan Environmental Impact Report will require a site-specific analysis to determine the level of Toxic Air Contaminants (TAC) and PM2.5 exposure. The analysis shall be conducted following procedures outlined by BAAQMD. If the site-specific analysis reveals significant exposures, such as cancer risk greater than 10 in one million or cumulative cancer risk

greater than 100 in one million, additional measures shall be employed to reduce the risk to below the threshold. If this is not possible, the sensitive receptor shall be relocated.

Measure NA-I-7.1b: Future non-residential developments will be evaluated through the CEQA process or BAAQMD permit process to ensure that they do not cause a significant health risk in terms of cancer risk greater than 10 in one million, acute or chronic hazards with a Hazard Index greater than 1.0, or annual PM2.5 exposure greater than 0.3 µg/m3, or a significant cumulative health risk in terms of excess cancer risk greater than 100 in one million, acute or chronic hazards with a Hazard Index greater than 10.0, or annual PM2.5 exposure greater than 0.8 µg/m3.

Measure NA-I-7.1c: Air filtration systems installed shall be rated MERV-13 or higher and a maintenance plan for the air filtration system shall be implemented.

Measure NA-I-7.1d: Trees and/or vegetation shall be required to provide a buffer between sensitive receptors and pollution sources when feasible. Trees that are best suited to trapping particulate matter shall be planted, including the following: Corsican pine (Pinus nigra var. maritima), Leyland cypress (x Cupressocyparis leylandii), hybrid poplar (Populus deltoides x trichocarpa), and coast redwood (Sequoia sempervirens).

Measure NA-1-7.1e: Sites shall be designed to locate sensitive receptors as far away as possible from freeways, roadways, refineries, diesel generators, and distribution centers.

Measure NA-1-7.1f: Improve indoor air quality by reviewing development plans to ensure that operable windows, balconies, and building air intakes are located as far away as possible from pollution sources. If near a distribution center, residential units shall not be located immediately adjacent to a loading dock or where trucks concentrate to deliver goods.

GOAL NA-G-8: Reduce potential odor sources.

Policy NA-P-8.1: Coordinate land use planning to prevent odors and odor complaints.

Measure NA-I-8.1a: Consult with BAAQMD to identify the potential for odor sources from proposed development projects where the development could have the potential to adversely affect existing or planned sensitive receptors.

Measure NA-I-8.1b: Review proposed development and prohibit uses that may produce odors that have the potential to result in frequent odor complaints unless the development proposal can exhibit methods to mitigate such odors.

Measure NA-I-8.1c: To the extent allowed by State law, prohibit sensitive receptors from locating near odor sources where frequent odor complaints are likely to occur, unless it can be shown that potential odor complaints can be mitigated.

GOAL NA-G-9: Reduce greenhouse gas emissions to exceed or meet requirements of AB 32 and SB 375.

Policy NA-P-9.1: Continue to maintain and improve a Climate Action Plan that will outline strategies to achieve the City's goal to reduce greenhouse gas emissions.

Measure NA-I-9.1a: Review and adjust City policies to be consistent with the Climate Action Plan.

Measure NA-I-9.1b: Update the Climate Action Plan (CAP) to address the following: a) quantify base year GHG emissions levels in Martinez; b) establish GHG reduction targets that meet the targets established by SB 32; c) adopt policies and programs to achieve the GHG targets; and d) establish an implementation and monitoring program to track effectiveness.

Measure NA-I-9.1c: Continue to work with local agencies to reduce emissions.

Measure NA-9.1d: Review state goals for greenhouse gas reductions and provide a report to City Council every five years or as deemed necessary.

Measure NA-9.1e: Continue to monitor federal, state and local activities related to climate change activities.

Measure NA-9.1f: To the extent practical, require new development projects to comply with the greenhouse gas reduction strategies and programs of the City's Climate Action Plan.

Policy NA-P-9.2: Consider adoption of an ordinance to phase out natural gas hook-ups in new building construction.