



Sunnyvale

Memorandum

Date: 4/3/2023
From: Mary Jeyaprakash, Senior Planner, Community Development Department
Subject: Draft General Plan Amendments

This document contains the Draft General Plan Amendments to Chapter 1: Introduction, Chapter 6: Safety and Noise, and Chapter 7: Environmental Management of the Sunnyvale General Plan in regards to updates in the Safety, Noise, and Air Quality sections and inclusion of Environmental Justice policies. The draft documents can be found in the following order:

1. General Plan Chapters 1 (Environmental Justice), 6 (Noise), and 7 (Air Quality) with track changes showing the differences between the currently adopted sections and the proposed updates;
2. A clean copy of the draft Chapters mentioned in item 1 showing only the proposed updates; and
3. General Plan Chapter 6 (Safety) with track changes showing the differences between the currently adopted section and the proposed updates.

CHAPTER 1

INTRODUCTION

INTRODUCING THE SUNNYVALE GENERAL PLAN

The City of Sunnyvale has a colorful history spanning ~~almost over~~ 100 years since its incorporation in 1912. It began as a train stop in the agricultural promised land known as “The Valley of Hearts Delights” and with planning and foresight has transitioned into its current form as a desirable residential community and strategically located high-tech job center known as the “Heart of Silicon Valley.”

The Sunnyvale General Plan has been a fundamental tool in guiding the City through change and growth. It addresses the physical development of the City and, when used together with a larger body of City Council policies, provides direction for decision-making on City services and resources. It is both a long-range and a strategic planning document, containing long-term goals and policies for the next 10-20 years and strategic actions for the next five to ten years.

The past has shown us that change is constant and will occur whether planned for or not. While the future cannot be forecasted with certainty, the General Plan provides guiding goals and policies that have been selected to be both transforming yet realistic and practical so that Sunnyvale successfully emerges as a vibrant, innovative, and attractive community in which both residents and businesses can thrive.

Topics in the General Plan

The state requires all cities to prepare and maintain a General Plan. Seven elements (topics) are required by state law: land use, circulation (transportation and utilities), housing, conservation, open space, noise, and safety. Communities ~~have the ability to~~can rename or combine these required elements as they choose, as long as there is consistency within and among the documents. Communities may also incorporate within their General Plan other matters which are believed to be of particular local concern.

Sunnyvale’s General Plan consists of a Community Vision and five supporting chapters addressing the physical development of the City. These chapters group related topics together such as Land Use and Transportation, Community Character, Safety and Noise, and Environmental Management. The Housing Element is the only portion of the City’s General Plan that has requirements for periodic updating and certification by the State of California. The following is a summary of the topics found in this General Plan. Mandated elements are noted.

“Make no little plans; they have no magic to stir men’s blood and probably will themselves not be realized. Make big plans; aim high in hope and work, remembering that a noble, logical diagram once recorded will not die.”

Chapter 1 **Introduction**

- Overview of General Plan organization and topics
- [Environmental Justice Policies](#)

Chapter 2 **Community Vision**

- Sunnyvale History
- Community Conditions
- Assets and Issues
- Citywide Vision Goals
- Balanced Growth
- Looking Forward

Chapter 3 **Land Use and Transportation** *(state-mandated Land Use, Open Space and Circulation Element, transportation section)*

- Land Use
- Transportation
- Economy
- Open Space

Chapter 4 **Community Character**

- Design
- Heritage Preservation
- Library
- Arts
- Recreation

Chapter 5 **Housing** *(state-mandated Housing Element)*

Chapter 6 **Safety and Noise** *(state-mandated Safety and Noise Elements)*

- Hazards and Disaster Preparedness
- Police, Fire and Emergency Services
- Noise

Chapter 7 **Environmental Management** *(state-mandated Conservation Element and Circulation Element, public utilities section)*

- Water Supply
- Wastewater Collection and Treatment
- Urban Runoff
- Air Quality
- Solid Waste

These elements address the areas within the boundaries of the City, including the sphere of influence (see Figure 1-1, Sunnyvale Planning Area).

The Consolidation of the General Plan

~~In 2011,~~ the General Plan was assembled from 22 separate General Plan elements and sub-elements that were adopted at different times. This consolidated and streamlined General Plan contains all necessary goal and policy language to address the required elements in a concise and easy-to-use fashion. Goals reference the year of the original adoption ~~as well as the original goal or policy number. Narrative has been condensed and but the original General Plan text is still available on the City's website at GeneralPlan.inSunnyvale.com for reference.~~

How to Use the General Plan

The General Plan provides both basic information about our community and goals and policies to help us achieve our desired future. The General Plan can be understood on a broad citywide level and ~~also~~ on an individual level. Citywide, the General Plan provides demographic information, including population, housing, transportation and public works improvements that describe the City's residents and businesses and future changes that will affect them. Land use plans, growth areas and projections and future infrastructure improvements are described. On an individual level, the General Plan also can provide information specific to a resident or business. Individuals can find general types of uses that are permitted in and near a home or business, long-range plans and changes that may affect a neighborhood or business area and actions the City will take to retain and improve the quality of life in Sunnyvale.

This General Plan is organized around a set of goals. **Goals** are long-range, broad, and comprehensive targets. They are not necessarily measurable or achievable in the lifespan of this General Plan; rather, they describe the overall future outcome the community would like to achieve. Each goal is accompanied by a context for the goal, related community conditions, future trends or issues and supporting policies.

Policies indicate ways to achieve the goal. Policies are focused and specific instructional guidelines. This General Plan contains an Executive Summary of only goals and policies for ease of use.

Translating the General Plan into Action

Goals and policies are used by the community, staff, and decision-makers to guide decisions relating to the physical development of the City including land use, infrastructure, and related budgetary decisions. Future development decisions must be consistent with the General Plan. To assist community members and decision-makers, goals and policies are referenced in all staff reports and findings related to the development of the City. Goals and policies are also carried out through two types of activities: sub-policies and implementation programs.

Sub-policies provide more specific directions and actions to further articulate and achieve the goals and policies. They are the critical link between long-range planning and current decision making. Sub-policies ~~steps~~ are not needed for each policy and can be short-range

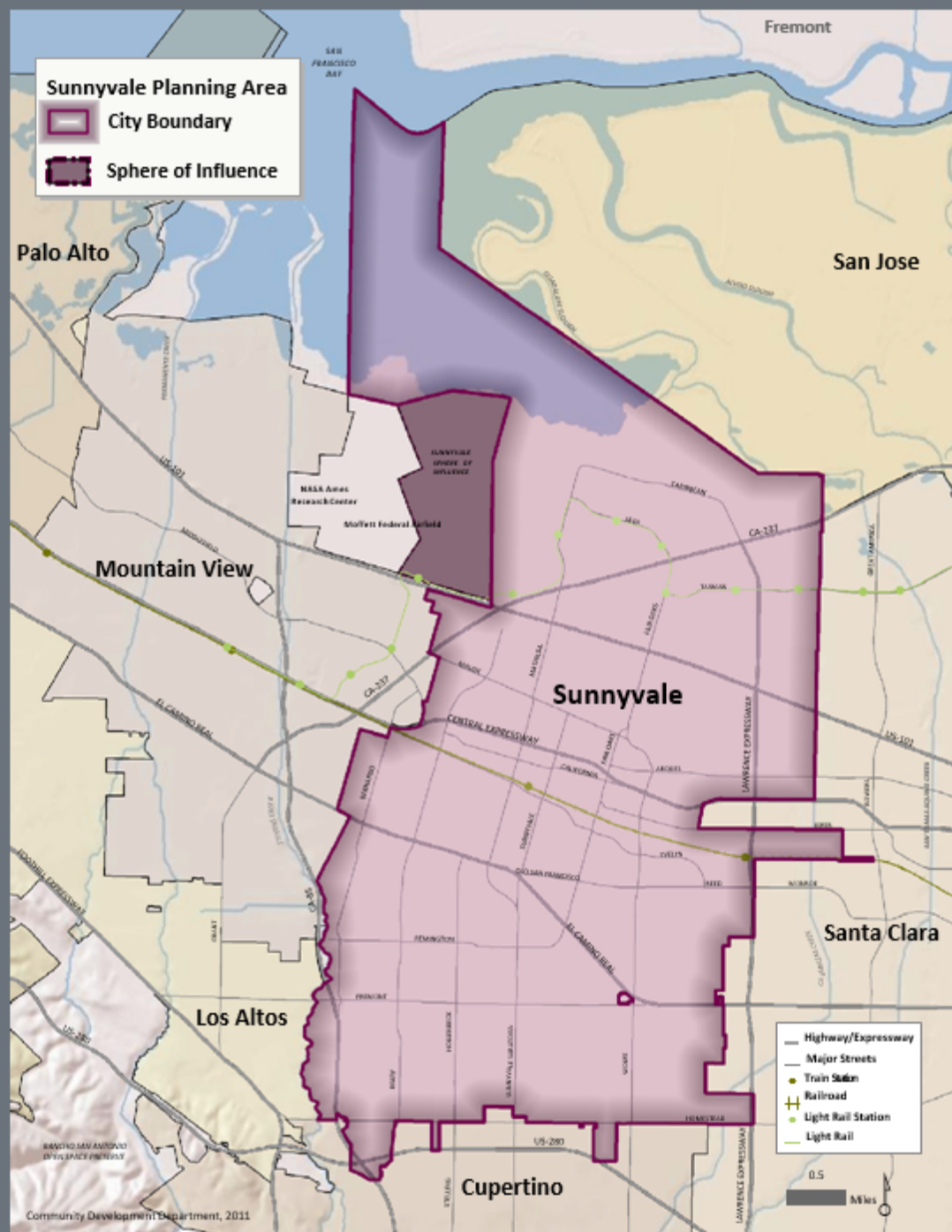
*Sphere of Influence — A geographic area established by the Santa Clara County Local Agency Formation Commission (**LAFCO**) as “a plan for the probable physical boundaries and service area of a local government agency.” (Government Code*

The online version of the General Plan provides easy-to-use links to other sections of the document, supporting information, and outside agencies and programs. Please visit Sunnyvale.ca.gov and search for “General Plan” GeneralPlan.inSunnyvale.com to view the online version of this document.

Sunnyvale covers 22.8 square miles with a sphere of influence of approximately 1.2 miles.

Figure 1-1:
Sunnyvale Planning Area

Sunnyvale covers 22.8 square miles with a sphere of influence of approximately 1.2 miles.



or longer-term actions. Sub-policies, when applicable, are listed below each related policy as a bullet.

Implementation programs are longer-range procedures, programs or activities that also carry out the goals and policies. Implementation programs can be included in Sunnyvale Municipal Code regulations, specific plans, capital improvement projects, or subdivision ordinances, as examples. A list of implementation programs is located in Appendix A.

Public Participation

This General Plan was consolidated with input from the community and an Advisory Committee made up of City Boards and Commissions members. Any future amendments of the General Plan will be subject to further community input and public hearings.

Steps Forward

Future incremental updates of the General Plan may be needed as community conditions change. In approximately 10 years ~~(2021)~~ a comprehensive update of this document will be undertaken, updating the community's conditions and all the goals, policies, and actions within the document.

Environmental Justice

Environmental Justice (EJ) policies promote fair treatment and meaningful participation of people of all cultures, races, and incomes. They improve the health and overall well-being of vulnerable and at-risk communities through reductions in pollution exposure, equitable and inclusive public engagement, increased access to healthy foods, increased prevalence of healthy homes, improved air quality, and increased physical activity.

The City has implemented goals and policies that address pollution exposure, public services, public health, housing, civic engagement, and climate change at a broad, citywide level. There are several policies that are specifically aimed at addressing EJ. As discussed in the environmental justice screening analysis (Appendix H), there are opportunities to further address issues of equity in the City. The policies listed below will be incorporated into the appropriate General Plan Chapter (depicted at the end of the policy) when said Chapter is next updated. At that time, this list will be amended, and ultimately removed, once all have been integrated into the appropriate Chapter.

- **Goal EJ-1:** Prioritize the needs of designated low-income communities within Sunnyvale that bear high pollution burden according to CalEnviroScreen 3.0 (Figure 7-10), to ensure equitable outcomes. (Community Vision)

Policy EJ 1.1: Conduct outreach with communities that are low-income and/or bear a high pollution burden (as identified in the Environmental Justice Screening Analysis), for development and redevelopment projects, to promote equitable and inclusive community engagement in the local planning processes.(Community Vision)

- **Policy EJ 1.2:** Encourage the phasing out of non-conforming land uses from residential communities, especially for communities that are low-income and/or bear a high pollution burden, as identified in the Environmental Justice Screening Analysis. (Land Use and Transportation)
- **Policy EJ 1.3:** Prioritize the development of public facilities (e.g., schools, libraries, community resources centers) in low-income and high pollution burden bearing communities. (Land Use and Transportation)

- **Policy EJ 1.4:** Continue to evaluate the need for new or improved alternative transportation infrastructure (e.g., public transit routes, sidewalks, bicycle facilities) in low-income and high pollution burden bearing communities. (Land Use and Transportation)
- **Policy EJ 1.5:** Apply “universal design principles” in the design and review of development and redevelopment projects so that new development is accessible to all people. Universal design is the design of buildings or environments to make them accessible to all people, regardless of age, ability, or other factors. Examples of universal design are ADA compliant pathways and sidewalks, accessible pedestrian signals, and strategies that allow residents to age in place. (Land Use and Transportation)
- **Policy EJ 1.6:** Support the development of healthy food establishments, grocery stores, and local food growers, particularly in communities that lack access to healthy food. (Land Use and Transportation)
- **Policy EJ 1.7:** Support existing specialty markets and facilitate the establishment of new culturally derived markets within walkable distances to low-income communities. (Land Use and Transportation)
- **Policy EJ 1.8:** Continue to create programs or informational campaigns regarding healthy eating habits and food choices, and the availability of food assistance programs. (Land Use and Transportation)
- **Policy EJ 1.9:** Prioritize the development of recreational facilities, parks, and open space in low-income and high pollution burden bearing communities. (Land Use and Transportation)

CHAPTER 6

SAFETY AND NOISE

NOISE

Noise is defined as unwanted sound.

A-weighted decibels (dBA) — a logarithmic weighted scale used to characterize the range of sound detectable by the human ear.

Ambient noise — a relatively steady background noise which is an accumulation of different noise sources near and far. Most ambient noise in Sunnyvale is related to transportation. Other ambient noise sources include wind and chirping birds.

~~Single-event noise — An unusual, occasional, or temporary noise. Examples include barking dogs, construction work, deliveries and organized athletic, musical, or other group events.~~

Land use operational noise — a continuous or frequent noise related to the basic use of property. Examples include air conditioners, pool pumps, restaurant loudspeakers and industrial machinery.

Noise is a significant and inherent part of Sunnyvale's environment. The noise environment is a result of historical land use decisions, competing regional and community goals, geographic factors and limited local controls. The City's residents and businesses must tolerate some noise, as noise is a part of any urban environment. Excessive noise, however, can cause physical and mental health problems. A legitimate public concern is therefore, to protect residents from excessive noise.

The discussion of noise is divided into two categories: transportation noise and community noise. Transportation noise generated by roadway, aircraft and train and light rail facilities is a major contributor to ambient noise in Sunnyvale. Community noise consists of everything other than transportation-related noise and includes single-event and land use operational noise.

A sound level meter is used to take an instantaneous decibel reading. The resultant reading is the sound level (dBA) for an instant in time, representing the range of sound frequencies that the human ear readily can detect. Noise is measured and regulated in two different ways. For land use operational noise, instantaneous readings are measured. For ambient or transportation related noise (except for single-event train horns), an average noise (L_{dn}) is used (the average sound Level for Day and Night). An L_{dn} measurement (day/night average sound level) is a weighted average sound level in decibels during a 24-hour period.

Due to the logarithmic nature of noise, combining noise does not follow the principles of simple arithmetic. For example, the addition of two similar noise sources, result in a 3 dBA increase. Regarding perceived increases in noise a 1 dBA increase is generally not perceptible, a 3 dBA increase is considered to be barely perceptible, a 5 dBA is distinctly perceptible, and an increase of 10 dBA is perceived as a doubling of the noise level.

For the purposes of enforcement, all noise measurements are taken at ~~applicable property lines of the property generating the noise~~ the impacted property line for detached single-family homes, duplexes, and Mobile Homes and at the impacted primary open space of multi-family dwelling units. Single-event or land use operational noise is measured through instantaneous sound levels. ~~Land-use~~ Exterior noise compatibility ~~sound levels~~ standards are measured with the L_{dn} measurement. ~~These Instantaneous sound levels~~ measurements are used to enforce Sunnyvale noise regulations. For context, noise levels associated with typical noise sources found in urban environments are shown in Figure 6-3.

Single-event noise includes noise sources that occur on an occasional or temporary basis. This noise metric represents all the acoustic energy associated with an individual noise event as if that event occurred within a one-second time period. Examples include heavy trucks passing by, airplane and helicopter flyovers, trains passing by, and an explosion. They do not include noise generated from landscape equipment or children noise from childcare. Residential units exposed to single-event noise from transit (e.g., freight, Caltrain, high speed rail, VTA light rail) are regulated by maximum instantaneous noise limits. There are also policies discouraging placement of residential uses near transit areas and aircraft noise contours. Single-event noise from cars and trucks are not practical to regulate because the City has no ability to control a truck's brake or a car's horn.

Figure 6-3: Decibel Levels of Common Sounds

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	110	Rock Band
Jet Flyover (1,000 feet)	105	
	100	
Gas lawnmower (3 feet)	95	
	90	
Diesel truck (50 feet, 50 mph)	85	Food blender (3 feet)
	80	
Noisy urban area, daytime	75	
Gas lawnmower (100 feet)	70	Vacuum cleaner (10 feet)
Commercial area	65	Normal speech (3 feet)
Heavy traffic (300 feet)	60	
	55	Large business office
Quiet urban daytime	50	Dishwasher in next room
Lawnmower (100 feet)		
	45	
Quiet urban nighttime	40	Theater, large conference room (background)
Quiet suburban nighttime	35	
	30	Library
Quiet rural nighttime	25	Bedroom at night, concert hall (background)
	20	
	15	Broadcast/recording studio
	10	
	5	
	0	

Notes: dBA= A-weighted decibels; mph= miles per hour

Source: Caltrans 2013

Figure 6-3: Decibel Levels of Common Sounds

Noise Source (distance between source and listener)	Sound Level (dBA)	Subjective Impression
Civil Defense Siren (100')	130	
Jet Takeoff (200')	120	Threshold of Pain
Rock Music Concert	110	
Bus (15') _i ; Ambulance Siren (100')	100	Very Loud
Boiler Room Printing Press Plant	90	
Garbage Disposal (3') _i ; Freeway (100')	80	
Freight Cars (100')	70	Moderately Loud
Vacuum Cleaner (10') _i ; Department Store Speech (1')	60	
Light Traffic (100') _i ; Business Office	50	
Typical Home Interior _i ; Typical Home Exterior (Nighttime)	40	Quiet
Quiet Bedroom Soft Whisper	30	
	20	

Measuring Noise: Sounds are measured in decibels (dB). The decibel scale

is logarithmic with the following characteristics:

A change of one dB cannot generally be heard

A change of three dB is a just noticeable difference

A change of five dB is distinct

A change of 10 dB is heard as a doubling of noise (e.g. 70dB is twice as loud as 60 dB)

Combining two noises of the same decibel level will add three dBA to the resulting noise

(e.g. two noises at 60 dBA add up to 63 dBA, not 120 dBA)

See Appendix H for the technical report describing the methodology and data used to develop the 2010 Noise Condition Map (Figure 6-4) and the 1997 Noise Exposure Map (Figure 6-7).

Source: Illingworth and Rodkin, Inc. / Acoustics - Air Quality, 1997

Transportation facilities are Sunnyvale's main source of noise and the most difficult to control. Roadways are the major source of transportation noise, followed by Moffett Federal Airfield, the Caltrain corridor and San Jose International Airport. ~~See the 2010 Noise Contour Map in Figure 6-4.~~ To establish existing community noise levels and assist in future land use planning decisions, a citywide ambient noise survey and traffic noise modeling was conducted. See Figure 6-4 for the 2016 Roadway Contour Map, Figure 6-5 Future (2035) Roadway Contour Map, and Appendix G for noise measurement locations and levels.

~~The 2016 Roadway Noise Contour Map~~ Noise Condition map (Figure 6-4) shows projected noise contours for the year 2010 and the Future (2035) Roadway Noise Contour Map (Figure 6-5), using data from the 2016 LUTE EIR, shows modeled roadway noise contours for existing and future conditions, respectively, for major roadway and railroad noise sources in Sunnyvale. These noise contours represent an average noise level over a 24-hour period. These maps can help determine if future land uses are compatible with their noise environments. If the use would be exposed to excessive noise, the City could require a detailed noise study that shows existing and future noise levels along with methods to achieve acceptable noise levels.

Figure 6-4: 2010 Noise Conditions Map

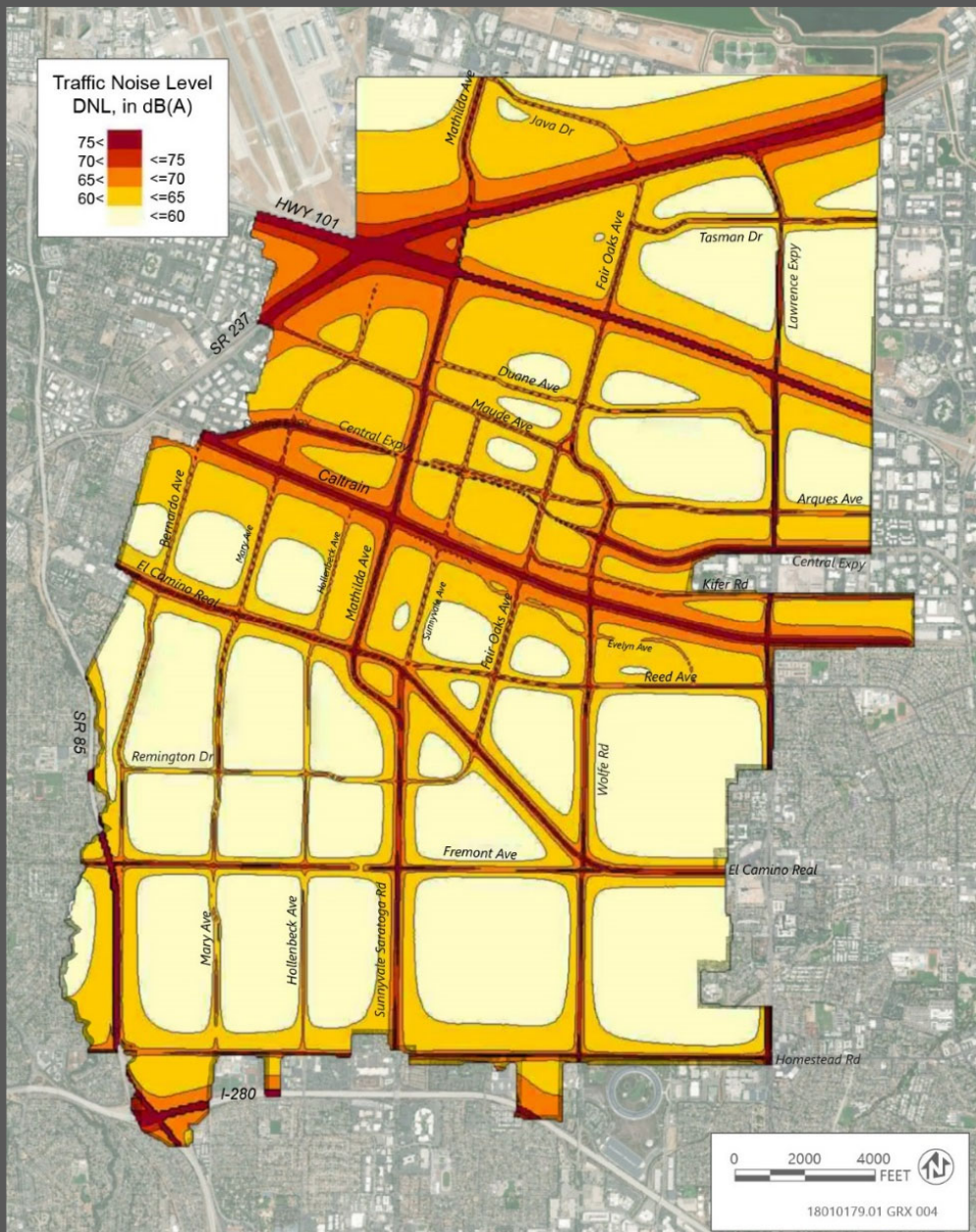
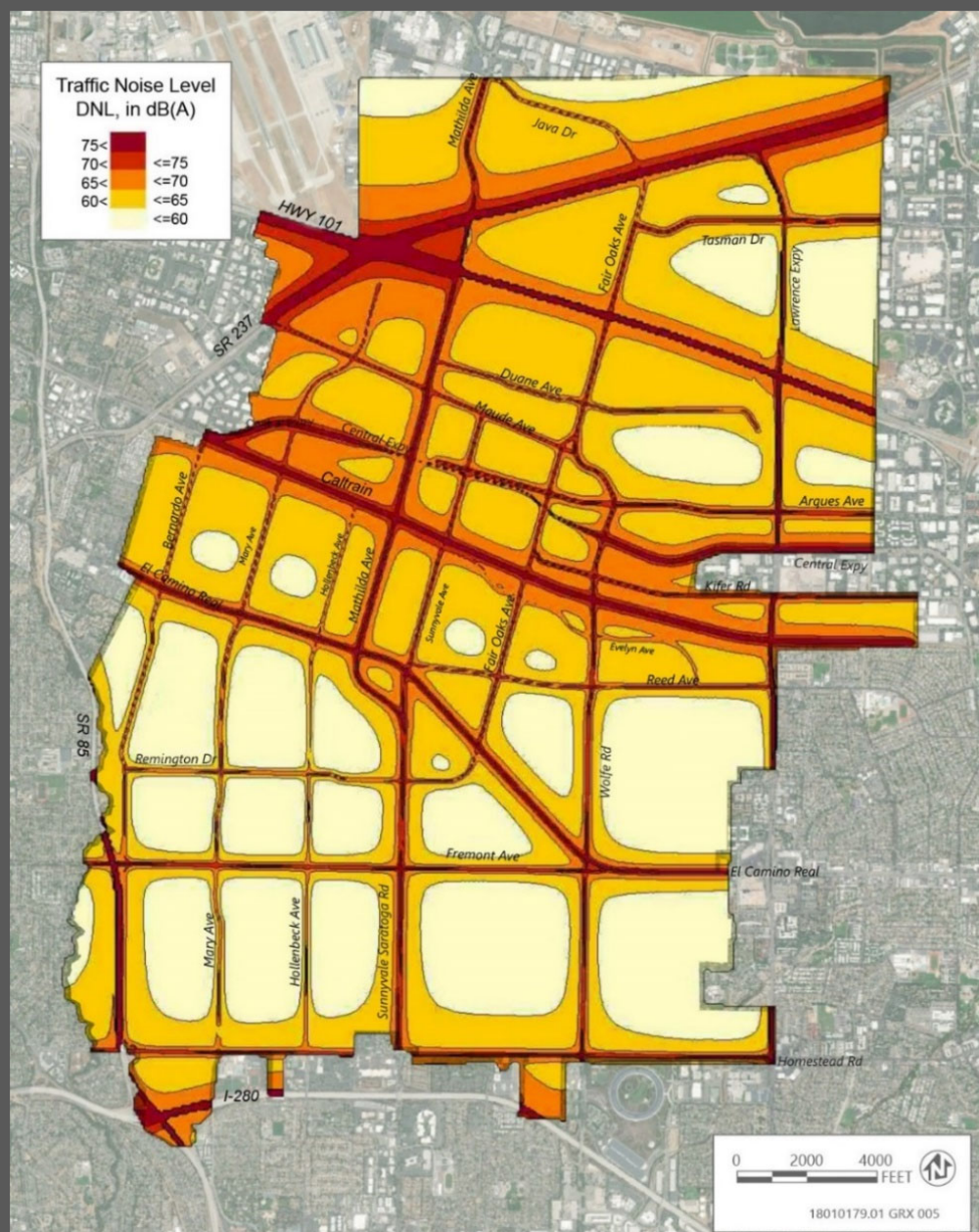


Figure 6-4: 2016 Roadway Noise Contour Map

Source: City of Sunnyvale LUTE EIR, August 2016

Figure 6-5: Future (2035)
Roadway Noise Contour
Map



Source: City of Sunnyvale LUTE EIR, August 2016

GOAL SN-8 COMPATIBLE NOISE ENVIRONMENT

MAINTAIN OR ACHIEVE A COMPATIBLE NOISE ENVIRONMENT FOR ALL LAND USES IN THE COMMUNITY.

What level of noise are people expected to tolerate in a residential, commercial or industrial development? Residential uses are the most sensitive. Industrial uses are the most tolerant. Tolerance also depends on how loud the noise is, when and where it happens, the duration, frequency and tone of the noise and the sensitivity of the person who hears the noise. People are generally most tolerant of existing ambient noise. They are least tolerant of single event noise, operational noise and increases in ambient noise.

Interior Noise Standards

The California Code of Regulations protects interiors of new multifamily dwellings and lodging uses from excessive noise. These requirements apply to hotels, motels, ~~and townhomes, condominiums, apartments, group care homes and all other dwellings~~ all residential uses except single-family detached homes. Interior noise levels cannot exceed an L_{dn} of 45 dBA with doors and windows closed. For new development of these land uses, the City would require a detailed site-specific noise study to ensure acceptable interior noise levels are achieved, and a residential site with an exterior L_{dn} above 60 dBA needs a detailed noise study and mitigation plan. The study must show how the dwelling will meet an interior L_{dn} of 45 dBA. These requirements are enforced through development review and the building permit process.

POLICY SN-8.1 ENFORCE AND SUPPLEMENT STATE LAWS REGARDING INTERIOR NOISE LEVELS OF RESIDENTIAL UNITS. ~~(Previously Noise Policy 3.6A.2)~~

POLICY ~~SN~~ 8.2 APPLY TITLE 24 NOISE INSULATION REQUIREMENTS TO ALL NEW RESIDENTIAL UNITS (SINGLE-FAMILY, DUPLEX, MOBILE HOME, MULTI-FAMILY, AND MIXED-USE UNITS) ~~DETACHED HOMES~~. ~~(Previously Noise Action Statement 3.6A.2b)~~

POLICY SN-8.3 ATTEMPT TO ACHIEVE A MAXIMUM INSTANTANEOUS NOISE LEVEL OF 50 DBA IN BEDROOMS AND 55 DBA IN OTHER AREAS OF RESIDENTIAL UNITS EXPOSED TO TRANSIT (E.G., FREIGHT, CALTRAIN, HIGH SPEED RAIL, VTA LIGHT RAIL). TRAIN OR AIRCRAFT NOISE, WHERE THE EXTERIOR LDN EXCEEDS 55 DBA. ~~(Previously Noise Action Statement 3.6A.2c)~~

Exterior Noise Standards

Based on the 2017 State of California General Plan Guidelines (Governor's Office of Planning and Research [OPR]), the City has adopted exterior noise exposure levels regarded as the highest level of noise exposure that is considered normally acceptable for each land use type (Figure 6-6). Noise levels in exceedance of these adopted levels would require further City review and consideration on a case-by-case basis.

Figure 6-6: Exterior Noise Compatibility Standards for Various Land Uses

<u>Land Use Type¹</u>	<u>Highest Level of Exterior Noise Exposure that is Regarded as "Normally Acceptable"² (Ldn³)</u>
<u>Residential: Low- Density Detached Single-Family Homes, Duplexes, Mobile Homes</u>	<u>60 dBA⁴</u>
<u>Other Residential: Townhomes, Multi-Family Apartments, Condominiums, and all other residential.</u>	<u>65 dBA⁵</u>
<u>Lodging: Motels and Hotels</u>	<u>70 dBA</u>
<u>Outdoor Activities: Golf Courses, Cemeteries, Parks</u>	<u>75 dBA⁶</u>
<u>Schools, Libraries, Museums, Hospitals, Personal Care, Meeting Halls, Churches</u>	<u>70 dBA</u>
<u>Office Buildings, Commercial and Professional Businesses</u>	<u>70 dBA</u>
<u>Auditoriums, Concert Halls, Amphitheaters, Sports Arena, Outdoor Spectator Sports</u>	<u>70 dBA</u>
<u>Industrial, Manufacturing, Utilities</u>	<u>75 dBA</u>

¹ Where a proposed use is not specifically listed, the use shall comply with the noise exposure standards for the nearest similar use as determined by the Community Development Director.

² As defined in the State of California General Plan Guidelines 2017, "Normally Acceptable" is the maximum desirable level for existing or conventional construction that does not incorporate any special acoustic treatment. The standards in Figure 6-6 above were derived based on the conservative assumption that typical building construction materials can achieve, at a minimum, a 25 dB exterior-to-interior noise reduction. For projects located along major transportation corridors (major freeways, arterials, and rail lines), in mixed-use or infill urban locations, this "normally acceptable" exterior noise level may be exceeded for certain areas of the project site (e.g. the frontage adjacent to the corridor, parking areas, balconies). Proposals located in areas where noise exceeds these levels, would require all feasible noise attenuation measures and City consideration prior to approval.

³ L_{dn} is the average sound level over a 24-hour period, with a penalty of 10-dB added for the nighttime hours of 10 pm to 7 am.

⁴ Applies at the primary useable open space area of a detached single-family home, duplex or mobile home, which is typically the backyard or a fenced side yard. This standard shall be measured at the approximate center of the primary useable open space area. This standard does not apply to secondary open space areas, such as front yards, balconies, stoops, and porches.

⁵ The highest level of 65 dBA applies at the primary useable open space area of townhomes and multi-family apartments or condominiums (private rear yards for townhomes; and common courtyards, roof gardens, or gathering spaces for multi-family projects). This standard shall be measured at the approximate center of the primary useable open space area. This standard does not apply to secondary open space areas, such as front yards, balconies, stoops, and porches. The highest level of 70 dBA applies at the primary useable open space area of mixed-use projects (private rear yards for townhomes; and common courtyards, roof gardens, or gathering spaces for multi-family or mixed-use projects) and all other residential uses. This standard does not apply to secondary open space areas, such as front yards, balconies, stoops, and porches.

⁶ Applies at the outdoor activity areas, defined as common areas where people generally congregate, including outdoor seating areas. Where the location of outdoor activity areas is unknown, the exterior noise standard shall be applied to the property line of the receiving land use.

~~In 1976, the State of California published guidelines for noise compatible land use planning. Generally, exterior noise exposures fall into three categories: normally acceptable, conditionally acceptable and unacceptable. Each land use has a particular dBA range within each exterior noise exposure category. The following table summarizes these guidelines.~~

Figure 6-5: State of California Noise Guidelines for Land Use Planning Summary of Land Use Compatibility for Community Noise Environment

The City would consider allowing noise exposure levels above “normally acceptable” levels, only after a detailed noise study is conducted, which includes noise reduction measures that are incorporated into the design, ensuring that receptors are not exposed to excessive noise levels that would interfere with the enjoyment of the intended use of the land, and that interior noise standards where people sleep are met. New development is discouraged when the noise levels are above “normally acceptable” levels. Site-specific conditions and available noise attenuation measures will be considered prior to making an exception to the final determination of land use compatibility and noise exposure.

~~The state Noise Guidelines indicate that all residential land uses with exterior noise levels of 60-75 dBA L_{dn} are “conditionally acceptable.” The City has applied this limit in plans and projects with conditions of approval that attempt to achieve a 60 dBA L_{dn} for backyards, large balconies and common recreation areas. These areas have a high use rate and deserve a fairly quiet setting.~~

Achieving an outdoor L_{dn} of 60 dBA if the noise source is a railroad is generally more difficult. Train noise is usually made up of relatively few loud events. Although the outdoor L_{dn} may be high, the noise level between events is typically acceptable for speech. An L_{dn} limit of 70 dBA is more appropriate for areas affected by train noise. See “Trains and Light Rail” towards the end of this section, for more information on train noise and acceptable noise level for non-residential uses due to train noise.

If the noise source is aircraft, the overhead noise is impractical to mitigate for outdoor residential areas. Preventing residential uses within areas of high L_{dn} from aircraft is a way of avoiding noise exposure of homes from aircraft. However, only industrial areas in the very northeast section of the City fall within a noise contour for the San Jose International Airport.

The Palo Alto Airport is located approximately four miles northwest from the City of Sunnyvale; however, based on the 2022 Aircraft Noise Contours published in the Santa Clara County Comprehensive Land Use Plan, the 60-70 dBA CNEL noise contours do not extend into the City of Sunnyvale.

Historically, the City’s demand for new housing construction has been high~~great~~. Due to the lack of alternative locations, most new residential projects are being developed near major roadways. These environments are noisy, ~~but however,~~ they ~~must comply with Title 24 (State of California Noise Insulation Requirements)~~ and are recommended to comply with state Noise Guidelines for Land Use Planning (see Figure 6-5~~6~~). Invariably, all new residential units (single-family, duplex, mobile home, multi-family, and mixed-use units) must comply with Title 24 (State of California Noise Insulation Requirements), applied between residential units and between units and interior public spaces.

~~In addition to reviewing proposed development for compliance with noise standards, all proposed development must be reviewed to see if it results in a “significant noise impact”~~

See San Jose International Airport’s website at www.sjc.org for noise contour maps.

~~on existing development. To determine if a proposed noise increase is considered “significant” under CEQA, the following standards should be used.~~

Figure 6-6: Significant Noise Impacts from New Development on Existing Land Use

~~POLICY SN-8.4~~ PREVENT SIGNIFICANT NOISE IMPACTS FROM NEW DEVELOPMENT BY APPLYING STATE NOISE GUIDELINES AND SUNNYVALE MUNICIPAL CODE NOISE REGULATIONS IN THE EVALUATION OF LAND USE ISSUES AND PROPOSALS. *(Previously Noise Policy 3.6A.1)*

~~POLICY SN-8.5~~ COMPLY WITH “STATE OF CALIFORNIA NOISE GUIDELINES FOR LAND USE PLANNING” (FIGURE 6-5) FOR THE COMPATIBILITY OF LAND USES WITH THEIR NOISE ENVIRONMENTS, EXCEPT WHERE THE CITY DETERMINES THAT THERE ARE PREVAILING CIRCUMSTANCES OF A UNIQUE OR SPECIAL NATURE. *(Previously Noise Action 3.6A.1c)*

POLICY SN-8.4 REQUIRE DEVELOPMENT PROJECTS TO ASSESS POTENTIAL CONSTRUCTION NOISE IMPACTS ON NEARBY NOISE-SENSITIVE LAND USES AND TO MINIMIZE IMPACTS ON THOSE USES, TO THE EXTENT FEASIBLE.

POLICY SN-8.5 REQUIRE A VIBRATION IMPACT ASSESSMENT FOR PROPOSED PROJECTS IN WHICH HEAVY-DUTY CONSTRUCTION EQUIPMENT WOULD BE USED WITHIN 600 FEET OF AN EXISTING STRUCTURE. IF APPLICABLE, THE CITY SHALL REQUIRE ALL FEASIBLE MITIGATION MEASURES TO BE IMPLEMENTED TO ENSURE THAT NO DAMAGE OR DISTURBANCE TO STRUCTURES WOULD OCCUR.

POLICY SN-8.6 REQUIRE THE FULL DISCLOSURE OF THE POTENTIAL NOISE IMPACTS OF LIVING IN A MIXED-USE OR TRANSIT-ORIENTED DEVELOPMENT OR RESIDENTIAL DEVELOPMENT IN AN INDUSTRIAL TO RESIDENTIAL AREA BY REQUIRING RESIDENTIAL DISCLOSURE NOTICES WITHIN DEEDS AND LEASE AGREEMENTS AS A CONDITION OF PROJECT APPROVAL.

- SN-8.6a. Require new residential development in a mixed-use, transit oriented, or industrial to residential area to include disclosure of potential noise impacts in deeds and lease agreements.

~~POLICY SN-8.6~~ USE FIGURE 6-6, “SIGNIFICANT NOISE IMPACTS FROM NEW DEVELOPMENT ON EXISTING LAND USE” TO DETERMINE IF PROPOSED DEVELOPMENT RESULTS IN A “SIGNIFICANT NOISE IMPACT” ON EXISTING DEVELOPMENT. *(Previously Noise Action Statement 3.6A.1d)*

POLICY SN-8.7 ENSURE NEW STATIONARY NOISE SOURCES AFFECTING EXISTING DEVELOPMENT COMPLY WITH ADOPTED SUNNYVALE MUNICIPAL CODE TITLE 19 (ZONING).

~~POLICY SN-8.7~~ SUPPLEMENT FIGURE 6-5, “STATE OF CALIFORNIA NOISE GUIDELINES FOR LAND USE PLANNING” FOR RESIDENTIAL USES BY ATTEMPTING TO ACHIEVE AN OUTDOOR LDN OF NO GREATER THAN 60 DBA FOR COMMON RECREATIONAL AREAS, BACKYARDS, PATIOS AND MEDIUM AND LARGE SIZE BALCONIES. THESE GUIDELINES SHOULD NOT APPLY WHERE THE NOISE SOURCE IS RAILROAD OR AN AIRPORT. IF THE NOISE SOURCE IS A RAILROAD, THEN AN LDN OF NO GREATER THAN 70 DBA SHOULD BE ACHIEVED IN COMMON AREAS, BACKYARDS, PATIOS AND MEDIUM AND LARGE BALCONIES. IF THE NOISE SOURCE IS FROM AIRCRAFT, THEN PREVENTING NEW RESIDENTIAL USES WITHIN AREAS OF HIGH LDN FROM AIRCRAFT NOISE IS RECOMMENDED. *(Previously Noise Action Statement 3.6A.1f)*

POLICY SN-8.8 AVOID CONSTRUCTION OF NEW RESIDENTIAL USES WHERE THE OUTDOOR LDN IS GREATER THAN 70 DBA AS A RESULT FROM TRAIN NOISE. *(Previously Noise Action Statement 3.6B.6c)*

POLICY SN-8.9 CONSIDER THE COMPATIBILITY OF PROPOSED LAND USES WITH THE NOISE ENVIRONMENT WHEN PREPARING OR REVISING COMMUNITY AND/OR SPECIFIC PLANS AND WHEN REVIEWING DEVELOPMENT PROPOSALS. THE NOISE COMPATIBILITY STANDARDS (FIGURE 6-6) AND THE CONTOUR MAPS DEPICTING NOISE LEVELS (FIGURE 6-4 AND 6-5) SHOULD BE USED BY THE CITY AS A GUIDE TO LAND USE/NOISE COMPATIBILITY.

Noise-sensitive land use
- land uses where noise exposure could result in health-related risks to individuals, as well as places where quiet is an essential element of their intended purpose, including residences, schools, nursing homes, historic sites, cemeteries, parks, recreation, and open space areas, hospitals and care facilities, hotels and other short-term lodging, places of worship, and libraries.

POLICY SN-8.10 REQUIRE A SITE-SPECIFIC NOISE STUDY FOR NEW DEVELOPMENT INVOLVING NOISE-SENSITIVE LAND USES TO ENSURE THE NOISE LEVELS IN FIGURE 6-6 ARE MET. IF THE PROJECT WOULD EXPOSE NEW SENSITIVE LAND USES (E.G., RESIDENCES, SCHOOLS, HOSPITALS) TO NOISE LEVELS EXCEEDING THE NOISE LEVELS IN FIGURE 6-6, ALL APPROPRIATE NOISE REDUCTION MEASURES, IDENTIFIED BY THE STUDY, SHALL BE INCORPORATED INTO THE PROJECT.

POLICY SN-8.11 REQUIRE NEW RESIDENTIAL, SCHOOL, AND HOSPITAL PROJECTS LOCATED WITHIN 600 FEET OF EXISTING MAJOR FREEWAYS AND RAILROAD LINES (E.G., FREIGHT, CALTRAIN, HIGH SPEED RAIL, VTA LIGHT RAIL) TO CONDUCT A VIBRATION IMPACT ASSESSMENT CONSISTENT WITH CITY-APPROVED METHODOLOGIES (E.G., CALTRANS, FEDERAL TRANSPORTATION AUTHORITY) AND INCORPORATE APPROPRIATE VIBRATION REDUCTION MEASURES.

POLICY SN-8.12 FOR NEW OFFICE/R&D AND SIMILAR USES, THE CITY SHALL REQUIRE THAT BUILDING DESIGN ACHIEVES A MAXIMUM INTERIOR NOISE STANDARD OF 55 DBA LEQ (PEAK-HOUR).

POLICY SN-8.13 EXEMPT NEW NOISE-SENSITIVE USES (E.G., RESIDENTIAL, LODGING, SCHOOLS, OFFICES) PROPOSED AS PART OF A TRANSIT-ORIENTED DEVELOPMENT OR MIXED-USE PROJECT FROM EXTERIOR NOISE STANDARDS IN SECONDARY OPEN SPACE AREAS (E.G., FRONT YARDS, STOOPS/FRONT PORCH, PORCHES, OR BALCONIES), SO LONG AS EXTERIOR NOISE STANDARDS IN PRIMARY OPEN SPACE AREAS (E.G., BACKYARD OR FENCED SIDE YARD OF DETACHED SINGLE FAMILY, DUPLEX OR MOBILE HOMES, PRIVATE REAR YARDS FOR TOWNHOMES; AND COMMON COURTYARDS, ROOF GARDENS, OR GATHERING SPACES FOR MULTI-FAMILY OR MIXED-USE PROJECTS) AND INTERIOR NOISE STANDARDS CAN BE MET, AS DEMONSTRATED BY A SITE-SPECIFIC NOISE STUDY.

Techniques to Insulate People from Noise

Sound walls — Sound walls can be an effective method of reducing ambient noise on properties. Typically, sound walls are used to buffer residential or other sensitive uses

from transportation noise or incompatible land use operational noise. Typical sound walls (six to eight feet high) will reduce noise levels by about six to eight dBA. Sound walls are most effective at reducing noise on properties nearest the sound wall. However, sound walls can be unattractive, isolate neighborhoods and give the community a “walled-in” appearance. These effects can be minimized by landscaping and earth berms and by requiring walls that are more decorative than the standard choices.

Setbacks — Building setbacks can reduce noise if the distance is substantial. For example, a building located 50 ft. from the center of the road may have an L_{dn} of 64 dBA at the building façade closer to the roadway. If the building is set back 100 ft. from the center of the roadway (an additional 50 feet), the L_{dn} would be reduced to approximately 60 dBA, which meets the state guidelines.

Site Planning — Good site planning can buffer sensitive areas (such as bedrooms) with less sensitive areas (such as a parking structure). Conventional home building practices will reduce interior noise levels by about 15 dBA, even with the windows partially open. Other measures include double or triple pane windows, airtight doors and windows and vents oriented away from the house.

Typical sound walls (six to eight feet high) will reduce noise levels by about six to eight dBA.

See Interior Noise discussion for more information on interior sound levels.

Landscaping provides little reduction in noise levels. 100 feet of dense foliage only achieves approximately three to five dBA noise reduction.

POLICY SN-8.9-14 CONSIDER TECHNIQUES WHICH BLOCK THE PATH OF NOISE AND INSULATE PEOPLE FROM NOISE. *(Previously Noise Policy 3-6A.3)*

- **SN-8.9a-14a** Use a combination of barriers, setbacks, site planning and building design techniques to reduce noise impacts, keeping in mind their benefits and shortcomings. *(Previously Noise Action Statement SN-8.9a3-6.4.3a)*
- **SN-8.9b-14b** Consider compiling and distributing information to residents of noise- impacted areas about what they can do to protect themselves from noise. *(Previously Noise Action Statement SN-8.9b3-6.4.3b)*
- **SN-8.9c-14c** Proposed sound walls or other noise reduction barriers should be reviewed for design, location and material before installing the barrier. Sound readings should be taken before and after installing the noise reduction barrier in order to determine the efficacy of the noise reduction barrier. Measurement techniques shall be similar to procedures used by Caltrans to measure efficiency of sound walls. *(Previously Noise Action Statement 3-6.4.3cSN-8.9c)*

GOAL SN-9 ACCEPTABLE LIMITS FOR COMMUNITY NOISE

MAINTAIN OR ACHIEVE ACCEPTABLE LIMITS FOR THE LEVELS OF NOISE GENERATED BY LAND USE OPERATIONS AND SINGLE-EVENTS *(Previously Noise Goal 3-6C /Adopted in 1997)*

Noise provisions in the Sunnyvale Municipal Code regulate operational noises and ~~selected single event noises (see the list of Implementation Plans in Appendix A). These noise regulations address complaints and concerns regarding the hours of operation and~~ noise levels produced by certain activities and powered equipment. While the Municipal

Code noise provisions address the majority of noise complaints, noise complaints in special circumstances (e.g., unusual schedules or sensitivities to certain noises) are not accommodated. In some instances, complaints about noise are difficult to resolve despite the intent and guidelines of the noise regulations.

~~Noise complaints that cannot be resolved through the application of code adopted regulations are primarily due to conditions existing prior to the adoption of the 1995 noise code revisions, include conditions that are not appropriate to regulate (children at an in-home child care centers) or conditions that are beyond the City's sphere of influence (transportation noise). Noise complaints about children at childcare are not appropriate to regulate through operational noise regulations of the Sunnyvale Municipal Code. Also, noise complaints due to transportation noise are beyond the City's sphere of influence.~~ Despite these instances, the Sunnyvale Municipal Code addresses most community noise issues, and the majority of complaints are resolved in compliance with Sunnyvale regulations.

POLICY SN-9.1 REGULATE LAND USE OPERATIONAL NOISE INCLUDING BUT NOT LIMITED TO HOURS OF OPERATION LIMITS, CONSISTENT WITH OPERATIONAL NOISE STANDARDS IN THE SUNNYVALE MUNICIPAL CODE. *(Previously Noise Policy 3.6C.1)*

- **SN-9.1a Regulate leaf blower noise including but not limited to hours of operation limits, in the Sunnyvale municipal code.**

~~**POLICY SN-9.2 REGULATE SELECT SINGLE EVENT NOISES AND PERIODICALLY MONITOR THE EFFECTIVENESS OF THE REGULATIONS. *(Previously Noise Policy 3.6C.2)***~~

~~**POLICY SN-9.3 APPLY CONDITIONS TO DISCRETIONARY LAND USE PERMITS WHICH LIMIT HOURS OF OPERATION, HOURS OF DELIVERY AND OTHER FACTORS WHICH AFFECT NOISE. *(Previously Noise Action Statement 3.6C.1b)***~~

POLICY SN-9.2 WHEN NEW EQUIPMENT IS INSTALLED ON A PROPERTY, INCLUDING NEW STATIONARY NOISE SOURCES (E.G., HEATING, VENTILATION, AND AIR CONDITIONING SYSTEMS, GENERATORS, HEATING BOILERS) THAT COULD AFFECT EXISTING SENSITIVE LAND USES, CONSTRUCTION OF ENCLOSURES OR OTHER SCREENING MATERIALS SHOULD BE INSTALLED AROUND THE STATIONARY NOISE SOURCE SUCH THAT EQUIPMENT IS IN COMPLIANCE WITH THE CITY'S OPERATIONAL NOISE CODE.

GOAL SN-10 MAINTAINED OR REDUCED TRANSPORTATION NOISE

PRESERVE AND ENHANCE THE QUALITY OF NEIGHBORHOODS BY
MAINTAINING OR REDUCING THE LEVELS OF NOISE GENERATED BY
TRANSPORTATION FACILITIES *(Previously Noise Goal 3.6B/Adopted in 1997)*

Major Roadways

Major roadways cause most of the transportation noise in Sunnyvale. Sunnyvale has an interstate, three ~~highways~~freeways, two expressways, one state highway and numerous arterial and collector streets within or near its borders. Virtually all existing homes next to freeways and expressways are protected by sound walls or depressed grades. Traffic noise is generally not an issue for commercial, office and industrial uses.

The ~~1997-2016 Roadway Noise Contour Map~~, Figure 6-~~74~~, shows ~~1997-2016~~ noise levels measured ~~50-75~~ ft. from the edge of each major roadway. All major roadways in Sunnyvale have an L_{dn} of at least 60 dBA. Noise levels that range from 60 to 75 dBA L_{dn} are defined as “~~conditionally~~normally acceptable” for residential uses (see Figure 6-~~54~~, State Noise Guidelines for Land Use Planning~~Exterior Noise Compatibility Standards for Various Land Uses~~). The ~~2016 Roadway Noise Exposure Map~~Contour Map can be used to identify areas where existing and proposed uses are impacted by excessive noise. The Future (2035) Roadway Noise Contour Map (Figure 6-5) can be used to determine future noise levels and land use compatibility.

~~In 1986, before sound walls were installed, 410 percent of single family homes were exposed to “conditionally acceptable” noise levels and one percent of single family homes were exposed to “unacceptable” noise levels exceeding those considered “normally acceptable” (over 6075 dBA L_{dn}). It was projected that in the year 2010, these percentages would decrease to 20 percent of single family homes exposed to “conditionally acceptable” noise and less than 0.1 percent exposed to “unacceptable” noise levels.~~

Based on roadway traffic projections, noise levels throughout Sunnyvale are not predicted to change significantly due to increases in roadway traffic. Generally, a three dBA L_{dn} or greater change in noise level is considered “significant” because it can be noticed by the human ear. Most homes will continue to have acceptable noise levels in the future. For individual roadway projects, potential noise impacts are evaluated on a case-by-case basis. Despite the traffic noise, noise levels are considered “normally acceptable” for most homes today and most homes will continue to have “normally acceptable” noise levels in the future. Non-residential uses will generally be unaffected by current and future traffic noise.

POLICY SN-10.1 REDUCE OR REFRAIN FROM INCREASING OR REDUCE THE NOISE IMPACTS OF MAJOR ROADWAYS. *(Previously Noise Policy 3.6B.1)*

- ~~SN-10.1a Identify and mitigate roadway noise impacts as part of local land use plans and proposals. (Previously Noise Action Statement 3.6B.1a)~~

Refer to Figure 6-~~56~~, Exterior Noise Compatibility Standards for Various Land Uses~~State of California Guidelines for Land Use Planning~~ for a list of acceptable, ~~conditionally acceptable and unacceptable~~ noise standards for various land uses.

Generally, a three dBA L_{dn} or greater change in noise level is considered “significant” because it can be noticed by the human ear.

- **SN-10.4b-1a** Regulate the location, design and capacity of local roadway improvement projects to mitigate their noise impacts. (*Previously Noise Action Statement 3.6B.1b*)
- **SN-10.4c-1b** Use local traffic management techniques to reduce or protect noise levels. (*Previously Noise Action Statement 3.6B.1c*)
- **SN-10.4d-1c** Support state legislation to reduce vehicle noise levels. (*Previously Noise Action Statement 3.6B.1f*)

POLICY SN-10.2 CONSIDER POTENTIAL NOISE IMPACTS WHEN EVALUATING PROPOSED TRANSPORTATION PROJECTS (e.g., ROAD, FREEWAY, AND TRANSIT DEVELOPMENTS) MINIMIZE NOISE IMPACTS THROUGH THE IMPLEMENTATION OF MITIGATION MEASURES, SUCH THAT MAXIMUM NOISE EXPOSURE DOES NOT EXCEED LEVELS IN FIGURE 6-6 OR A SUBSTANTIAL INCREASE AS DEFINED IN FIGURE 6-7.

Figure 6-7: Exterior Incremental Traffic-Noise Standards for Noise-Sensitive Uses (dBA)

<u>Residences and Buildings where People Normally Sleep¹</u>		<u>Institutional Land Uses with Primarily Daytime and Evening Uses²</u>	
<u>Existing L_{dn}</u>	<u>Allowable Noise Increment (dBA)</u>	<u>Existing Peak Hour Leg</u>	<u>Allowable Noise Increment (dBA)</u>
<u>45</u>	<u>8</u>	<u>45</u>	<u>12</u>
<u>50</u>	<u>5</u>	<u>50</u>	<u>9</u>
<u>55</u>	<u>3</u>	<u>55</u>	<u>6</u>
<u>60</u>	<u>2</u>	<u>60</u>	<u>5</u>
<u>65</u>	<u>1</u>	<u>65</u>	<u>3</u>
<u>70</u>	<u>1</u>	<u>70</u>	<u>3</u>
<u>75</u>	<u>≤1</u>	<u>75</u>	<u>1</u>
<u>80</u>	<u>0</u>	<u>80</u>	<u>≤1</u>

Source: Federal Transit Administration, Transit Noise Impact and Vibration Assessment, September 2018.

¹ This category includes homes, hospitals, and hotels where a nighttime sensitivity to noise is assumed to be of utmost importance.

² This category includes schools, libraries, theaters, and churches where it is important to avoid interference with such activities as speech, meditation, and concentration on reading material.

³ Where existing levels exceed 70 dBA L_{dn}, any permanent increase in noise would be considered a substantial increase in noise at exterior locations. However, if the noise impact occurs at a secondary outdoor space (e.g., balcony, stoop) of a residential land use, or if there is no outdoor activity area exposed to the noise increase, these standards would not apply.

The City has adopted exterior allowable incremental traffic-noise standards for sensitive land uses according to the Federal Transit Administration Guidelines. Standards are based on both residential, including land uses and buildings where people normally sleep, and institutional, including land uses with primary daytime and evening uses. Incremental exposure increases are defined based on the justification that people are already exposed to high levels of noise and can only tolerate small increases. If existing noise levels are low, then a greater incremental change is allowed. If the following standards are exceeded,

~~a noise analysis is required. The following~~above traffic-noise standards shall be used to determine substantial traffic-noise increases associated with new discretionary development undergoing CEQA review.

Airports and Aircraft-Related Noise

Moffett Federal Airfield

Moffett Federal Airfield (Moffett Field) is ~~now~~operated ~~by the~~by the National Aeronautics— and Space Administration (NASA). In 1995, approximately 24,000 annual aircraft flight operations (a take-off and a landing are each considered to be one flight operation) occurred at Moffett Field and according to the 2012 Comprehensive Land Use Plan (CLUP) for the Moffett Federal Airfield (Moffett), this number will remain similar until at least 2022. ~~Other noise sources at Moffett Field include wind tunnel facilities and the Outdoor Aerodynamic Research Facility. The CLUP is an adopted document prepared by the County of Santa Clara for Moffett which is not located within the City limits, but is within the City's Sphere of Influence. Refer to Appendix G for airfield noise contours.~~

~~In 1976, when the Navy operated Moffett Field, the U.S. Department of Defense prepared guidelines which identify suitable land uses in an area impacted by high noise and potential accidents. These guidelines are part of an Air Installation Compatible Use Zone (AICUZ) study. Noise contours were updated in 1982. The AICUZ Map displays federal guidelines for and uses near the Naval Air Station (NAS) at Moffett Field. Since the Navy no longer operates Moffett and the number and character of flights are different, the AICUZ study is considered an informational document.~~

San Jose International Airport

Residents in northeast Sunnyvale are affected by San Jose International Airport flight patterns; ~~however, no noise contours from this airport extend into the City boundaries. By 2010, they may hear twice as many aircraft as they did in 1995. However~~Eventually, noise levels will ~~eventually~~ stabilize and decrease as quieter aircraft become prevalent. Current and future noise levels are below state limits.

Helicopters

There are no heliports located in Sunnyvale. As of ~~1996~~2021, Santa Clara County has only six heliports. One is open to the public at San Jose International Airport. The others are restricted to private use by companies, hospital/medical uses, executives and other individuals.

~~Figure 6-7: 1997 Noise Exposure Map~~

The Airport Land Use Commission has developed noise standards for heliports affecting residential uses. Design and location criteria for any new private use heliports require permits from the ALUC and affected cities.

In ~~1995~~2017, there were approximately ~~6,000~~9,000 helicopter flight operations at Moffett Field and this number is to remain consistent through 2022. One of the take-off and landing patterns crosses over Sunnyvale. It mainly crosses over industrial land uses but also some residential land uses.

The Airport Land-Use Commission (ALUC) was established to provide for appropriate development of areas surrounding public airports in Santa Clara County. It is intended to minimize the public's exposure to excessive noise and safety hazards and to ensure that the approaches to airports are kept clear of structures that could pose an aviation safety hazard.

POLICY SN-10.3 ALL SENSITIVE LAND USES (E.G., RESIDENCES, SCHOOLS, HOSPITALS) LOCATED WITHIN THE NOISE RESTRICTION AREAS OF MOFFETT FIELD (AS MAPPED IN THE CLUP FOR MOFFETT FEDERAL AIRFIELD) SHALL ADHERE TO THE COUNTY STANDARDS. IN ADDITION, THEY SHOULD MITIGATE IMPACTS TO COMPLY WITH THE INTERIOR AND EXTERIOR NOISE STANDARDS ESTABLISHED BY THE CITY (FIGURE 6-6).

POLICY SN-10.24 SUPPORT EFFORTS TO REDUCE OR MITIGATE AIRPORT NOISE, INCLUDING NOISE IMPACTS OF MOFFETT FEDERAL AIRFIELD, SAN JOSE INTERNATIONAL AIRPORT AND HELICOPTERS.
(Previously Noise Policies 3.6B.2, 3.6B.3, 3.6B.4 and 3.6B.5)

- **SN-10.2a-4a** Support the retention of the Airport Land Use Commission.
(Previously Noise Action Statement 3.6B.2a)
- **SN-10.2b-4b** Support the right of private citizens to sue airports for noise impacts.
(Previously Noise Action Statement 3.6B.2b)
- **SN-10.2c-4c** Encourage airport operation policies and procedures which reduce the level and frequency of noise as well as other policies and federal funding to alleviate the effects of aircraft noise. (Previously Noise Action Statement 3.6B.2c)
- **SN-10.2d-4d** Support federal legislation that requires military and federal aircraft to meet Stage 3 noise requirements similar to commercial aircraft. (Previously Noise Action Statement 3.6B.3i)
- **SN-10.2e-4e** Support state legislation to lower the noise levels of civilian aircraft and airports. (Previously Noise Action Statements 3.6B.4g and 3.6B.4h)

POLICY SN-10.35 OPPOSE ANY EFFORT AND/OR EXPENDITURE OF PUBLIC FUNDS TO PROMOTE MOFFETT FEDERAL AIRFIELD FOR NON-FEDERAL PURPOSES. (Previously Noise Action Statement 3.6B.3g)

Trains and Light Rail

Central Sunnyvale has a Caltrain heavy-rail corridor running east-west. The rail is used by both commuter trains during the day and freight train operations. Unscheduled freight operations can happen at any time, but typically occur at night. Sunnyvale also has a light rail transit in the northern part of the City along Tasman and Java Drives. Nearby surrounding uses are mobile home parks, multifamily residential uses, and industrial areas.

Train Noise

There are two ~~main~~ primary sources of train noise — engine noise and train horn noise. Sunnyvale has two Caltrain stations – Sunnyvale and Lawrence. Train horns blow at both

~~stations, as well as at-grade rail crossings, at the Mary Avenue and Sunnyvale Avenue at-grade rail crossings and the two local stations (Downtown Sunnyvale and Lawrence Station). In 1996, the areas affected by train noise had experiences an L_{dn} of 71-73 dBA at 50 feet from the train tracks. (see Figure 6-7, 1997 Noise Exposure Map). Maximum noise events could reach 90 dBA from engines operation and 105 dBA from horns). All residences in the City experience “normally acceptable” train-generated noise levels, with the exception of approximately 80 homes near the tracks at Sunnyvale Station which experience conditions exceeding “normally acceptable” noise levels. Train-generated noise levels are generally acceptable for all nonresidential uses (City of Sunnyvale 2011).~~

~~These noise levels are acceptable for all but approximately 80 homes near the tracks which experience “conditionally acceptable” noise levels. Some of these homes are exposed to excessive outdoor noise (above 70 dBA L_{dn}) and probably excessive interior noise as well (above 45 dBA L_{dn}). These noise levels are generally acceptable for non-residential uses.~~

~~Freight train operations are not likely to expand. There are few major rail shippers left on the railroad line and heavy industry on the Peninsula and in San Francisco is in decline. Commuter passenger service is now the primary use of the railroad line.~~

~~Commuter train operations are likely to continue and expand. Plans to increase service could increase the noise levels by a noticeable three dBA. Possible electrification of the route could reduce existing L_{dn} by as much as eight dBA. Because of the uncertainty of these plans these conditions are not noted on the Noise Condition map. Sunnyvale has no jurisdiction over the number or noise level of trains, but actions can be taken to monitor and mitigate future noise events.~~

~~Caltrain trains presently consist of diesel locomotive-hauled, bi-level passenger cars. The current weekday Caltrain operating schedule between San Francisco and San Jose (since April 1, 2019) is composed of a mix of 92 express, limited, and local trains (PCJPB 2019). According to the Caltrain Electrification Project Draft EIR, which estimated ground-borne vibration measurements conducted in the City in 2010, ground-borne vibration reached 77 vibration decibels (VdB) at 50 feet from the tracks, which is considered perceptible to humans (PCJPB 2014). When taken at distances farther than 50 feet, the measured VdB is less than 75.~~

~~A mix of electric and diesel trains is scheduled to become operational in 2022 (PCJPB 2019). It would be expected that operational noise associated with Caltrain would lessen as electric trains generate less noise than diesel-powered locomotives; however, given this decrease in engine noise, it is foreseeable that increased horn usage would rise for safety reasons, which could offset the decrease (PCJPB 2014). Adopted policies would address noise and vibration exposure at new land use development located near transit and rail, by requiring site-specific evaluation and incorporation of appropriate noise attenuation measures, to ensure acceptable noise levels.~~



Sunnyvale's transportation center located near Evelyn Avenue and Murphy Street is a prime example of how residents and businesses deal with ambient noise while residing in an urban environment.

Light Rail Noise

Light rail noise is generally less than train noise. Noise and vibration studies completed as part of an Environmental Impact Report/Statement for the construction of the Light Rail Project indicated that barriers should be provided to guard against wheel squeal. No excessive noise impacts are expected for residents in these areas.

POLICY SN-10.4-6 MITIGATE AND AVOID THE NOISE IMPACTS FROM TRAINS AND LIGHT RAIL FACILITIES. ~~(Previously Noise Policies 3.6B.6 and 3.6B.7)~~

- **SN-10.4a-6a** Monitor plans and projects which would increase the number of commuter or freight trains and evaluate their noise impacts and seek mitigation for any change that worsens local conditions. (Previously Noise Action Statement 3.6B.6a and 3.6B.6b)
- **SN-10.4b-6b** Educate owners of older homes on ways to reduce noise levels from trains. (Previously Noise Action Statement 3.6B.6d)
- **SN-10.4c-6c** Support legislation to reduce the noise level of trains. (Previously Noise Action Statement 3.6B.6e)
- **SN-10.4d-6d** Seek the cooperation of train engineers to avoid unnecessary and prolonged use of air horns except for safety purposes. (Previously Noise Action Statement 3.6B.6f)
- **SN-10.4e-6e** Monitor regional plans for light rail facilities in Sunnyvale to ensure that noise impacts are identified and mitigated. (Previously Noise Action Statement 3.6B.7a)

CHAPTER 7

ENVIRONMENTAL MANAGEMENT

AIR QUALITY

GOAL EM-11 IMPROVED AIR QUALITY

IMPROVE SUNNYVALE'S AIR QUALITY AND REDUCE THE EXPOSURE OF ITS CITIZENS TO AIR POLLUTANTS. ~~(Previously Air Quality Goal A / Adopted in 1993)~~

All major urban areas in California, including Sunnyvale, experience some degree of reduced air quality. The combination of climatic conditions and a multitude of air pollutant sources (particularly ~~the automobile~~mobile sources) results in reduced air quality, ~~which can be considered as reducing the quality of life by~~ adversely ~~effects on~~affecting human health, ~~causing~~ damage to ~~plants or crops~~vegetation, and other effects such as soiling, visibility reduction and accelerated corrosion of materials.

One of the major reasons that air quality continues to be a problem in the Bay Area specifically and California in general, is a relatively high rate of population and economic growth. The major obstacle to improved air quality in the future is increasing population and vehicle use and deteriorating operating conditions on highways and roads. Furthermore, the impacts of climate change, including increased frequency of heat waves and wildfires, are projected to exacerbate existing air quality issues in the region.

The major air quality problems in Sunnyvale as well as the broader the Bay Area region are high concentrations of ozone, fine particulate matter (PM-2.5)carbon monoxide, and respirable particulate matter (PM-10) that exceeds state and national ambient air quality standards. Ozone ~~and carbon monoxide are~~is primarily released in the air from combustion sources such as automobiles and factories. PM-2.5 and PM-10 emission sources include fugitive (otherwise known as suspended particulate matter) is a collection of particles of dust, soot, aerosols, wildfires, and other matter which are small enough to remain suspended in the air for a long period of time. Man-made sources of PM-10 include automobile exhausts, and road travel, smoke, and factory emissions. Particulate matter emissions from the combustion of diesel fuel, commonly from diesel powered vehicles and landscape equipment, are especially harmful to health and are known as diesel particulate matter (DPM).

While air pollution affects everyone in the Bay Area, low-income communities tend to be most at-risk given the prevalence of existing health risks, lack of resources, and because these communities are historically located in areas with high concentrations of air pollutants. PM-2.5 and DPM concentrations are particularly high in north Sunnyvale, near U.S. Highway 101 (US 101) and State Route 237 (SR 237), with some census tracts in this portion of the Ceity identified as low-income under Assembly Bill 1550 (The Climate Investments for California Communities Act). Figure 7-10 shows low-income communities and areas of high pollution burden in Sunnyvale. To be conservative, the City considers high pollution burden areas as those that have a CalEnviroScreen combined pollution burden score at or above the 50th percentile of all other census tracts in California. Two census tracts in Sunnyvale fall into both low-income and high pollution burden categories. Until air pollution issues are resolved on a regional level, low-income and disadvantaged populations will continue to be disproportionately affected. It is

Sensitive Land Use — A use which has populations that are more susceptible to poor air quality, such as children, the elderly, and those with pre-existing health conditions. Examples include residential uses, day-care facilities, schools, hospitals, senior housing, or nursing homes.

Sensitive Receptors - Sensitive populations such as children, elderly, and the sick that are more susceptible to the effects of air pollution than the general population.

important to consider environmental justice issues in future land use planning projects that involve sensitive land uses or sensitive receptors.

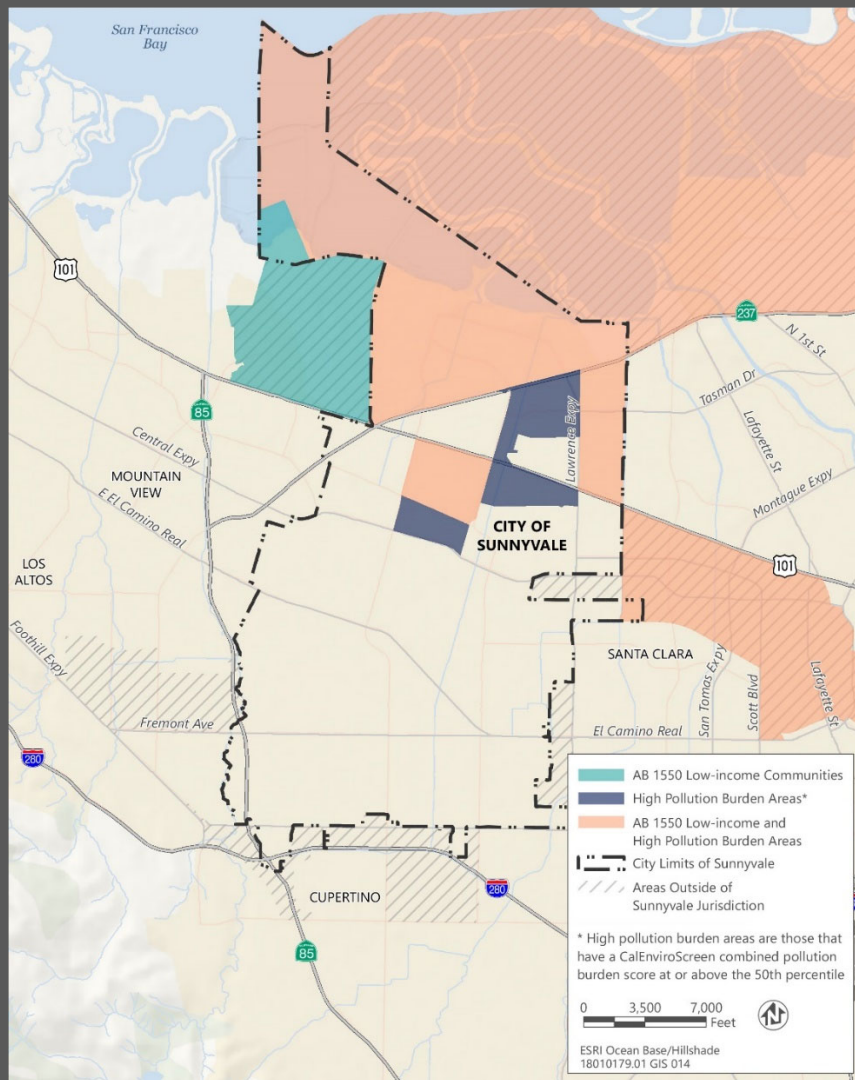


Figure 7-10: Low-income Communities and Areas of High Pollution Burden in the City of Sunnyvale

According to CalEnviroScreen 3.0, two census tracts in the city are within the top 25 percent of highest scoring tracts for the state and may qualify as CalEPA-defined disadvantaged communities, because they fall under 'low-income' and 'high pollution burden' census tracts. However, both census tracts extend beyond city limits and the populations within these tracts reside outside of the City boundaries, falling under the jurisdiction of the City of San Jose and the City of Santa Clara. Because there are no residential uses in the portions of these census tracts within City boundaries; they would not be considered disadvantage communities for the City under SB 535.

The Bay Area Air Quality Management District (BAAQMD) is required to prepare and adopt a list of actions, improvements and programs that improve system-wide transportation level-of-service (LOS) and improve air quality. See Goal LT-3 (Effective multimodal transportation system) See Goal LT-5 (Effective, Safe, Pleasant and Convenient Transportation) for further discussion and policies on transportation improvements.

California Clean Air Act — A law setting forth a comprehensive program to ensure that all areas within the State of California will attain federal and state ambient air quality standards by the earliest practicable date. The law mandates comprehensive planning and implementation efforts and empowers local air pollution control districts to adopt transportation control measures and indirect source control measures to achieve and maintain the ambient air quality standards.

To ~~combat this~~ improve air quality, the most efficient and cost-effective technological or “hardware” -controls have already been implemented. Remaining technological controls, which are increasingly expensive, have been found to be unable to reduce emissions to the point where all air quality standards (glossary-description in the margin) would be met. Therefore, attention has been focused in recent years on the relationship of land use, community design and transportation as a means of reducing air pollutant generation. For further information on air quality measurements and environmental justice, see Appendix H, Air Quality Technical Report and Environmental Justice Background Report for the City of Sunnyvale General Plan Update.

Cooperation with Regional Agencies

Past efforts by federal, state and local governments have resulted in steady, gradual improvement in air quality in Sunnyvale and the greater Bay Area. Sunnyvale is within the Bay Area Air Quality Management District (BAAQMD). The City of Sunnyvale ~~has is implemented~~ implementing a number of several programs and projects that directly or indirectly reduce air pollutant emissions. For example, the City collaborates regionally through Sunnyvale’s Climate Action Plan (CAP) adopted in 2014 and significantly updated in 2019 as the Climate Action Playbook (also CAP). The CAP identifies programs and strategizes to improve air quality. Most of these programs are also identified in other programs and are part of a larger regional effort to improve air quality. These projects include:

- Adding ~~high occupancy vehicle (HOV) express~~ lanes to U.S. 101, S.R. 85, and S.R. 237. These ~~improvements have expanded their capacity~~ lanes provide improved travel time reliability, and efficient usage on all travel lanes.
- Facilitating regional transportation such as, ~~the Tasman Light Rail extension,~~ increases in Caltrain service, electrification of Caltrain, construction of California High Speed Rail, and grade separating existing at-grade crossings at Sunnyvale and Mary avenues, and a “Super Express” commuter bus service.
- Constructing ~~high occupancy vehicle (HOV) lanes on the~~ Lawrence Expressway grade separation.

POLICY EM-11.1 ~~THE CITY SHOULD ACTIVELY PARTICIPATE IN REGIONAL AIR QUALITY PLANNING. (Previously Air Quality Policy G.1 also Air Quality Goal G)~~

Land Use and Air Quality

Future development within Sunnyvale impacts regional air quality. Direct impacts are those related to emissions released on-site from stationary sources. Indirect impacts are related to vehicle trips attracted to or generated by residential, commercial or employment-generating land uses.

Stationary Sources — Industries are required to provide information to the public about emissions of toxic air contaminants (quick-description in the margin) and their impact on public health. There are ~~74 numerous permitted stationary~~ sources ~~of TACs within and adjacent to~~ Sunnyvale. The majority of these sources are gasoline stations, emergency backup generators, and dry-cleaning facilities, microelectronic industries, dry cleaners and

~~auto repair businesses. There are two large stationary sources in Sunnyvale that are included in the California Air Resources Board's (CARB) inventory of large stationary source facilities that emit more than 10 tons of criteria air pollutants per year. These facilities report annual TAC and greenhouse gas (GHG) emissions to CARB.~~

Future growth in Sunnyvale may include new stationary sources of pollutants. However, any new stationary sources would be subject to BAAQMD's Regulation 2, Rule 2, the New Source Review (NSR) permitting program. The NSR makes progress towards attaining and maintaining compliance with state and national air quality standards by requiring facilities to use the best available control technology (BACT) to limit emissions and by enforcing ~~to the "no net increase" requirements of the California Clean Air Act.~~ For pollutants that the Bay Area is designated as a nonattainment area for, facilities are required to "offset" any new emissions increases to ensure that there is "no net increase" in region-wide emissions, which requires BAAQMD to develop a permitting system that provides new sources, can only be approved if there is an offsetting decrease in emissions elsewhere in the air basin. For any new businesses or facilities that could emit air pollutants, it is important to consider sensitive receptors. The siting of any new sensitive receptors also needs to consider any existing air pollutant sources nearby.

Indirect Sources — Several large roadways pass through Sunnyvale: US 101, SR 82 (El Camino Real), SR 237, Lawrence Expressway, Central Expressway, I-280, and SR 85. Emissions from mobile sources are a large portion of the anticipated increase in emissions in the City and one of the largest sources of criteria air pollutants and ozone precursors. As discussed in the *City of Sunnyvale Land Use and Transportation Element Draft Environmental Impact Report* (LUTE EIR, 2017), despite a reduction in per capita vehicle miles traveled (VMT), future buildout of the General Plan would result in an overall increase in VMT of up to 44 percent over existing conditions (i.e., 2017) in 2035. Indirect automobile emissions estimated with future buildout are shown to increase slightly in the next 10 years. Reducing emissions from these indirect mobile sources is a critical likely to be an important strategy in regional efforts to meet Sunnyvale's CAP goals and to attain the state and federal national ambient air quality standards in the Bay Area.

There are several methods in which land use regulations can be used to both reduce emissions and alleviate the impact on residents. Infill and transit-oriented residential or mixed-use development help bring people closer to places of employment and retail services. Vehicle use can also be reduced by supporting the development of projects that facilitate and enhance the use of alternative modes of transportation, including pedestrian-oriented retail and activity centers and dedicated bicycle lanes and paths. By locating employment and retail service areas closer to residential areas, vehicle use can be reduced.

~~In 1993, the Sunnyvale Futures Study examined the effects of revising the General Plan to provide for an improved jobs/housing balance. The study considered potential residential designations of several sites previously designated with commercial and industrial uses and was approved by Council and created a series of Industrial-to-Residential (IIR sites.) Preliminary findings indicated that increased carbon monoxide concentrations will occur at certain intersections. However, predicted air quality would fall within the standards. Improvements in the job/housing balance would provide more local housing options, reducing commute lengths and vehicle miles traveled.~~

~~Major progress has been made in the 1980's and 1990's in reducing emissions from stationary sources and mobile sources in the Bay Area, with the result that steady~~

Toxic Air Contaminants (TAC)
— TACs are a defined set of airborne pollutants that may pose a present or potential hazard to human health. A wide range of sources, from industrial plants to motor vehicles, emit TACs. In California, the Air Toxics Hot Spots Information and Assessment Act (AB 2588), requires stationary sources to report the types and quantities of TACs their facilities routinely release into the air. Locally, the BAAQMD implements and enforces this process through permitting review and issuance.

Vehicle Miles Traveled (VMT)
— A metric that accounts for the number of vehicle trips generated and the length or distance of those trips. Total vehicle miles traveled is the aggregate mileage traveled by all vehicles. VMT is a key measure of overall street and highway use. Reducing VMT is often a major objective in efforts to reduce vehicle congestion and achieve air quality and climate change goals.

Sensitive Receptors — Sensitive populations such as children, athletes, elderly, and the sick that are more susceptible to the effects of air pollution than the general population.

See Goal LT-1 (Coordinated Regional and Local Planning) and LT-6-11 (Supportive Economic Development Environment) for policies on mixed uses and locating housing closer to employment centers.

Heavy-Duty Trucks include all diesel-powered trucks with a gross vehicle weight rating over 8,501 pounds.

Major Pollution Sources include any stationary permitted source, roadways with 10,000 or more average daily trips, highways with 100,000 or more average daily trips, or railways and railyards.

Health Risk Assessments are site-specific quantitative analysis of TAC exposure to sensitive receptors that consider all major sources. All HRAs shall comply with BAAQMD guidance.

~~improvement in air quality has been documented despite population growth. Under the California Clean Air Act and Amendments, the state Air Resources Board CARB and BAAQMD will continue to be adopting new and more stringent regulations on existing and future industrial sources, implementing more stringent emission standards for vehicles, developing and implementing transportation control measures (TCMs) to reduce vehicular emissions, and adding new sources to the list of controlled process (e.g., consumer products, fireplaces and wood stoves, etc.). These measures, should continue to improve air quality in the future, if implemented expeditiously, should continue the overall improvement in air quality evident over the past 20 years.~~

POLICY EM-11.2 UTILIZE LAND USE STRATEGIES TO REDUCE AIR QUALITY IMPACTS, INCLUDING OPPORTUNITIES FOR CITIZENS TO LIVE AND WORK IN CLOSE PROXIMITY. ~~(Previously Air Quality Policies B.1 and C.2)~~

POLICY EM-11.3 REQUIRE ALL NEW DEVELOPMENT TO UTILIZE SITE PLANNING TO PROTECT CITIZENS FROM UNNECESSARY EXPOSURE TO AIR POLLUTANTS. ~~(Previously Air Quality Policy A.1)~~

- ~~EM-11.3a Adopt strategies that increase the dispersion of traffic emissions such as requiring new development to include vegetative barriers, solid barriers, or by incorporating design elements to promote air flow and pollutant dispersion along street corridors (i.e., varying the form and height of buildings along street corridors, buffer spaces along high-volume roadways).~~

POLICY EM-11.4 (EJ) REQUIRE DEVELOPMENT PROJECTS THAT ARE LOCATED WITHIN 1,000 FEET OF A MAJOR POLLUTION SOURCE AND THAT INCLUDE SENSITIVE USES TO IMPLEMENT ALL APPLICABLE BEST MANAGEMENT PRACTICES THAT WILL REDUCE EXPOSURE TO TACS AND FINE PARTICULATE MATTER (PM-2.5). ALTERNATIVELY, REQUIRE A SITE-SPECIFIC HEALTH RISK ASSESSMENT (HRA).

POLICY EM-11.5 (EJ) FUTURE NONRESIDENTIAL DEVELOPMENTS IDENTIFIED AS A PERMITTED STATIONARY TAC SOURCE OR PROJECTED TO GENERATE MORE THAN 100 HEAVY-DUTY TRUCK TRIPS DAILY WILL BE EVALUATED IN ACCORDANCE WITH BAAQMD'S GUIDELINES, TO ENSURE THEY DO NOT CAUSE A SIGNIFICANT HEALTH RISK.

POLICY EM-11.6 (EJ) WHERE SIGNIFICANT HEALTH RISK EXPOSURE IS IDENTIFIED, AS DEFINED BY BAAQMD, AT NEW DEVELOPMENT SITES, INDOOR AIR FILTRATION SYSTEMS SHALL BE INSTALLED TO EFFECTIVELY REDUCE PARTICULATE MATTER (PM2.5 AND PM10) LEVELS TO AVOID ADVERSE PUBLIC HEALTH IMPACTS. PROJECT SHALL SUBMIT PERFORMANCE SPECIFICATION AND DESIGN DETAILS TO THE CITY TO DEMONSTRATE THAT LIFETIME RESIDENTIAL EXPOSURES WOULD NOT EXCEED BAAQMD-RECOMMENDED RISK LEVELS.

POLICY EM-11.47: APPLY THE INDIRECT SOURCE RULE TO NEW DEVELOPMENT WITH SIGNIFICANT AIR QUALITY IMPACTS. INDIRECT SOURCE REVIEW WOULD COVER ~~COMMERCIAL AND RESIDENTIAL~~ANY PROJECTS AS WELL AS OTHER LAND USES THAT WOULD PRODUCE OR ATTRACT MOTOR VEHICLE TRAFFIC. ~~(Previously Air Quality Policy B.3)~~

POLICY EM-11.8 ENCOURAGE THE USE OF ELECTRIC LANDSCAPING EQUIPMENT (E.G., LEAF BLOWERS, HEDGERS, MOWERS).

POLICY EM-11.9 CONTINUE TO PHASE OUT THE USE OF GAS-POWERED LANDSCAPING EQUIPMENT IN CITY OPERATIONS.

POLICY EM-11.10 REQUIRE DEVELOPMENT PROJECTS TO COMPLY WITH CONSTRUCTION BEST MANAGEMENT PRACTICES, SUCH AS THOSE IN BAAQMD'S BASIC CONSTRUCTION MITIGATION MEASURES.

POLICY EM-11.11 (EJ) PRIORITIZE URBAN GREENING PROJECTS SUCH AS TREE PLANTING, PUBLIC LANDSCAPING, AND POCKET PARKS, IN AREAS OF THE CITY THAT ARE LOW-INCOME AND/OR BEAR A HIGH POLLUTION BURDEN (FIGURE 7-10).

POLICY EM-11.12 (EJ) ENCOURAGE RETROFIT PROGRAMS IN COORDINATION WITH UTILITY PROVIDERS AND BAAQMD TO INSTALL AIR

Best Management Practices (BMPs) can include a variety of measures, depending on the TAC source and receptor type, including, but not limited to, setback distances, barriers, and building ventilation systems. Refer to Appendix A – Implementation Plans.

~~See Goal LT-5 (Effective, Safe, Pleasant and Convenient Transportation) for policies on transportation improvements.~~

Transportation Demand Management (TDM) - Strategies that reduce travel demand such as telecommuting, shuttles, teleshopping, flextime, carpooling, increased use of public transit, promoting bicycle amenities, and others and other strategies to reduce the overall number of vehicle trips made in single-occupant vehicles.

See Chapter 3 (Land Use and Transportation) Policy LT-3.5 (Follow Congestion Management Program Requirements).

See Chapter 3 (Land Use and Transportation) Policy LT-3.19 (Intelligent Transportation Systems) and Policy LT-3.20 (Traffic Signal Optimization and Response).

FILTERS IN RESIDENTIAL AND SENSITIVE LAND USES, PRIORITIZING THOSE IN AREAS OF THE CITY THAT ARE LOW-INCOME AND/OR BEAR A HIGH POLLUTION BURDEN (FIGURE 7-10).

Transportation Improvements and Air Quality

There are two main ways that transportation improvements can positively impact air quality. The first is to reduce congestion that causes increased vehicle emissions (stop-and-go traffic). The second is to enhance and encourage alternative modes of transportation to reduce the total number of vehicle trips and to use cleaner vehicles.

Sunnyvale has undertaken a variety of programs, congestion management efforts such as, traffic signal improvement and synchronization, Transportation Demand Management (TDM) requirement, and Intelligent Transportation System Implementation. The City encourages alternate transportation modes by improving and expanding existing bicycle and pedestrian networks, supporting an advisory commission for bicycle and pedestrian related policies, implementing safe routes to school (SRTS) improvements, developing education programs to encourage walking and biking, and improving access and reliability of transit services. Sunnyvale also encourages use of cleaner vehicles citywide by electrifying City fleet vehicles and increasing electric vehicle infrastructure requirements to improve air quality with regards to transportation.

~~Reduce Congestion~~

- ~~▪ Traffic signal improvement and synchronization~~
- ~~▪ Ten-year capital improvements plan~~
- ~~▪ Preferential parking for carpool vehicles~~
- ~~▪ Transportation demand management (TDM)~~

Alternative Transportation Modes

- ~~▪ Continue to require City sidewalks~~
- ~~▪ Develop requirements for bicycle facilities~~
- ~~▪ Bicycle and Pedestrian Advisory Commission Committee (BPAC) to review and advise City Council on capital improvement projects involving bicycle and pedestrian facilities as well as educational programs.~~
- ~~▪ Electric City vehicles~~

POLICY EM-11.5-13 REDUCE AUTOMOBILE EMISSIONS THROUGH TRAFFIC AND TRANSPORTATION IMPROVEMENTS, AND ELECTRIFICATION. (Previously Air Quality Policy A.2)

- EM-11.13a Encourage a shift to electric vehicles citywide.
- EM-11.13b Expand requirements to install electric vehicle charging stations

citywide, including adjusting minimum requirements for new construction through the City's adopted Reach Codes.

- EM-11.13c Increase electric vehicle infrastructure requirements for existing buildings.

POLICY EM-11.14 PROMOTE ALTERNATE TRANSPORTATION MODES.

- EM-11.14a Continue to support and maintain the City's Bicycle and Pedestrian Advisory Commission (BPAC) to advise City Council on bicycle and pedestrian related policies.
- EM-11.14b Continue to support improvements in accessibility and reliability of transit services.
- EM-11.14c Improve bicycle and pedestrian facilities.
- EM-11.14d Continue to implement education programs to encourage walking and biking.

POLICY EM-11.6-15 CONTRIBUTE TO A REDUCTION REDUCE IN REGIONAL VEHICLE MILES TRAVELED PER CAPITA OR PER EMPLOYEE, CONSISTENT WITH CLIMATE ACTION PLAYBOOK AND LAND USE AND TRANSPORTATION COUNCIL POLICY. (Previously Air Quality Policy C.3)

See Council Policy 1.2.8 (Transportation Analysis Policy) for further policies addressing Vehicle Miles Traveled.

POLICY EM-11.716 REDUCE EMISSIONS FROM CITY OF SUNNYVALE FLEET VEHICLES. (Previously Air Quality Policy C.4)

POLICY EM-11.8 ASSIST EMPLOYERS IN MEETING REQUIREMENTS OF TRANSPORTATION DEMAND MANAGEMENT (TDM) PLANS FOR EXISTING AND FUTURE LARGE EMPLOYERS AND PARTICIPATE IN THE DEVELOPMENT OF TDM PLANS FOR EMPLOYMENT CENTERS IN SUNNYVALE. (Previously Air Quality Policy B.2)

POLICY EM-11.17 (EJ) CONSIDER TRANSPORTATION IMPROVEMENTS IN AREAS OF THE CITY THAT ARE LOW-INCOME AND/OR BEAR A HIGH POLLUTION BURDEN (FIGURE 7-10).

POLICY EM-11.18 (EJ) REDUCE ODOR CONFLICTS BY COORDINATING WITH BAAQMD TO MONITOR ODOR COMPLAINTS AND REQUIRE CORRECTIVE ACTION.

POLICY EM-11.19 (EJ) MINIMIZE EXPOSURE OF SENSITIVE USES TO OBJECTIONABLE ODORS BY REVIEWING NEW ODOR SOURCES USING BAAQMD GUIDELINES AND OTHER ENVIRONMENTAL REVIEW PROCESSES AND REQUIRE APPROPRIATE CORRECTIVE ACTION.

APPENDIX B

GLOSSARY

A-weighted decibel (dBA): a logarithmic weighted scale used to characterize the range of sound detectable by the human ear.

Affiliated volunteers: attached to a recognized voluntary organization and are trained for specific disaster response activities. Their relationship with the organization precedes the immediate disaster, and they are invited by that organization to become involved in a particular aspect of emergency management. An example of affiliated volunteers is Sunnyvale Amateur Radio Emergency Services (SARES). (See also Unaffiliated Volunteers)

Ambient Noise: a relatively steady background noise which is an accumulation of different noise sources near and far. Most ambient noise in Sunnyvale is related to transportation. Other ambient noise sources include wind and chirping birds.

Articulation: Variations in the depth of building plane which break up monotonous walls and create interesting patterns of light and shadow.

Assembly Bill (AB) 32: California's Global Warming Solutions Act of 2006. This act requires that California's greenhouse gas (GHG) emissions be reduced to 1990 levels by 2020. This is a reduction of approximately 30% from projected "business-as-usual" levels. AB 32 gives the California Air Resources Board (CARB) authority to identify and regulate sources of GHG emissions. CARB's Scoping Plan for implementing AB 32 includes a wide range of strategies including reducing GHG emissions from cars and light trucks through transportation planning relating to land use. Other measures include implementing green building standards that increase energy efficiency, water conservation, waste reduction, and recycling.

Association of Bay Area Governments (ABAG): In 2017, ABAG merged with MTC to form a consolidated planning agency. ABAG serves as the comprehensive regional planning agency and Council of Governments for the nine counties and 101 cities and towns of the San Francisco Bay Region. The region encompasses Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, and Sonoma counties.

Bay Area Air Quality Management District (BAAQMD): The regional air pollution control agency tasked with regulating stationary sources of air pollution in the counties of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, and Sonoma.

Bay Conservation and Development Commission (BCDC): The California state planning and regulatory agency with regional authority over the San Francisco Bay, the bay's shoreline band, and the Suisun Marsh.

Beneficial Uses: The uses of water of the State of California that are protected against degradation. Examples of beneficial uses include, but are not limited to: domestic, municipal, agricultural and industrial water supply; power generation; recreation; aesthetic enjoyment; navigation; and preservation of fish and wildlife and other aquatic resources or preserves.

Below Market Rate Housing Unit: Any housing specifically priced to be sold or rented to low or moderate-income households for less than the fair-market value of the unit. Includes financing of housing at less than prevailing interest rates. See also Low-income Household, Moderate-income Household, and Very-low income Household.

Bike Lane: A lane along the outer edge of the traveled way of a street delineated by pavement stripes creating a 4- to 6-foot-wide lane and demarcated by signs and pavement legends denoting “bike lane.”

Bike Path: A paved travel facility separated from any roadway and generally featuring a minimum 10-foot width, demarcation for travel in opposing directions, and improved shoulders.

Bike Route: A street delineated with signs identifying the street as designated for bike travel. Minimum widths are not defined, but typically bike routes are designated where connectivity of a bikeway network is provided, on-street parking is minimized, traffic controls are adjusted for bicycles, surface irregularities are minimized, and roadway maintenance is at a higher standard than other streets.

Bikeway: A term encompassing the range of bicycle travel facilities, including bike paths, bike lanes, and bike routes.

CalEnviroScreen: a science-based mapping tool developed by the California Office of Environmental Health Hazard Assessment that helps identify California communities that are most affected by many sources of pollution, and that are often especially vulnerable to pollution’s effects. CalEnviroScreen uses environmental, health, and socioeconomic information to produce a numerical score for each census tract in the state.

Caltrain: Commuter rail serving San Francisco, San Mateo, and Santa Clara counties, overseen by the Peninsula Corridor Joint Powers Board and managed by the San Mateo Transit District.

Certified Unified Program Agency (CUPA): A certification awarded by the California Environmental Protection Agency that allows the City to implement several important State environmental programs locally

Character: Special physical characteristics of a structure or area that set it apart from its surrounding and contribute to its individuality.

Climate Action Playbook~~n~~ (CAP): A planning document that identifies ways in which the community can reduce GHG emissions. The CAP was developed ~~will be developed~~ in accordance with the criteria for a Qualified Greenhouse Gas Reduction Program set by BAAQMD and is Sunnyvale’s version of a Climate Action Plan.

Climate Change: Refers to any significant change in measures of climate (such as temperature, precipitation, or wind) lasting for an extended period (decades or longer). Climate change may result from natural factors, such as changes in the sun’s intensity or slow changes in the earth’s orbit around the sun; natural processes within the climate system (such as changes in ocean circulation); and human activities that change the atmosphere’s composition (such as burning fossil fuels) and the land surface (such as deforestation, reforestation, urbanization, or desertification).

Community Garden: Places where neighbors and residents can gather to cultivate plants, vegetables, and fruits and, depending on local laws, keep bees and raise chickens or other livestock and poultry.

Complete Streets: Well-balanced, connected, safe, and convenient multimodal street networks that are designed and constructed to serve all users of streets whether they are driving, walking, biking, or taking transit.

Congestion Management Program (CMP): Programs developed and managed by organizations formed by 1991 state law to undertake the responsibility for urban area transportation planning and funding and for managing the county's blueprint to reduce congestion and improve air quality. The Santa Clara Valley Transportation Authority (VTA) is the Congestion Management Agency that develops and implements the Congestion Management Program for Santa Clara County. Components of the Congestion Management Program include traffic analysis requirements for land development, monitoring of transportation system service levels, short- and long-term capital improvement planning and implementation, and allocation of federal, state, and regional transportation funding.

Cyclovia: Closure of the partial or full width of certain streets to motor vehicle traffic for a weekend day and allowing cyclists and pedestrians to use the streets. Stations promoting healthy lifestyles, the arts, or other activities would be available for community participation.

Density: See Residential Density.

Density Bonus: The allocation of development rights that allow a parcel to accommodate additional square footage or additional residential units beyond the maximum for which the parcel is zoned, usually in exchange ~~for~~ for the provision or preservation of an amenity at the same site or at another location.

Design Guidelines: ~~Design guidelines are Criteria based on the City's General Plan goals and policies, intended to enhance the overall image of the City, protect and preserve the existing character of the community, create a balance between both protecting the existing neighborhood character and accommodating new developments, and achieve a high quality design. more limited and would generally not affect land use or building regulations.~~

Districts: special areas within a city which have a unique and unified character. Most districts share a predominantly homogenous form of horizontal structures and relatively similar building styles.

Downtown Specific Plan (DSP): An area plan for approximately ~~125-150~~ acres in Downtown Sunnyvale, ~~last~~ comprehensively updated in ~~2003~~2020, ~~with several amendments since then.~~ The plan establishes a common vision for the Downtown, defines a unique market niche, and creates a framework to link current and future downtown projects into a vibrant, cohesive place. The plan allows for mixed use and utilizes principles of transit-oriented development.

Environmental Justice: Goals and policies that promote fair treatment and meaningful participation of people of all cultures, races, and incomes with respect to environmental laws, regulations, and policies, such that everyone gets the same degree of protection from environmental and health hazards and equal access to the decision making process to have a healthy environment where they can live, learn, and work.

Emissions: The release of a substance into the atmosphere, including particulate matter and gases.

Farmers Market (Certified California Farmers' Market): A market (1) operated by a local government agency, one or more certified producers, or a nonprofit organization; (2) certified by and operating in a location approved by the county agricultural commissioner; and (3) where farmers sell directly to consumers agricultural products or processed

products made from agricultural products that the farmers grow themselves.

Floor Area Ratio (FAR): The gross floor area on a site divided by the total net area of the site, expressed as a percentage. For example, on a site with 100,000 net square feet of land area, a FAR of 100% will be built with 100,000 gross square feet. On the same site, a FAR of 50% would be built with 50,000 square feet of floor area; a FAR of 35% would be 35,000 square feet. The FAR may also be represented without percentages in some cases (e.g., 100% is the same as 1.0). Also commonly used in zoning, FARs are typically applied on a parcel-by-parcel basis as opposed to an average FAR for an entire land use or zoning district.

Freeboard: a vertical distance, or clearance, from a 1 percent flood incident. Standards set by the FEMA and the Army Corp of Engineers call for a minimum three-foot freeboard.

Gateways: Gateways are specific places along a boundary where people enter and leave the City or district.

Greenhouse Gas (GHG): Any gas that absorbs infrared radiation in the atmosphere. Types of GHGs include water vapor, carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), chlorofluorocarbons (CFCs), hydrochlorofluorocarbons (HCFCs), ozone (O₃), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF₆).

Heavy-Duty Trucks: All diesel-powered trucks with a gross vehicle weight rating over 8,501 pounds.

Heritage Resource: A natural or human-made object of scientific, aesthetic, educational, political, social, cultural, architectural or historical significance to the citizens of the city, the Santa Clara Valley region, the state, or the nation, which are designated and determined to be appropriate for preservation by the city council. See SMC Title 19 for a complete definition.

Heritage Housing District: A zoning overlay which can be added to a residential zoning district to inform the community of the presence of a Heritage Housing District

Infrastructure: Public services and facilities, including schools, roads, communications systems, utilities, etc. (See also Lifelines)

Inundation: Flooding caused by water topping a dam or water released by a dam, reservoir, levee or other break.

Intelligent Transportation Systems (ITS): An umbrella term for a range of technologies including processing, control, communication, and electronics that are applied to a transportation system. As examples, freeway electronic variable information signs, 511 services, and real-time traffic counting systems are considered intelligent transportation systems.

Intersection Level of Service (LOS): A measure of traffic volume and corresponding average delay of conflicting traffic movements to determine the effectiveness of intersection operations. Intersection LOS is most commonly used to analyze intersections and roadway segments by categorizing traffic flow with corresponding driving conditions and roadway and intersection efficiency.

Impervious Surfaces: Constructed or modified surfaces that do not effectively allow infiltration of rainfall into the soil below. Impervious surfaces include, but are not limited to building rooftops, asphalt or concrete pavement, sidewalks, and driveways where such

surfaces are not constructed with pervious materials. (See also Pervious Surface)

Land Use Operational Noise: a continuous or frequent noise related to the basic use of property. Examples include air conditioners, pool pumps, restaurant loudspeakers and industrial machinery

Lifelines: Essential services that are necessary for the continued functioning of the community following a disaster. They include utilities (gas, electricity, water, sewer, and communications), City streets, major highways, bridges and railways lines. Information on age, service, condition and location help emergency preparedness planners assess the likelihood of failure.

Local Landmark: A heritage resource which is significant in that the resource materially benefits the historical character of a neighborhood or area, or the resource in its location represents an established and familiar visual feature of the community or city, and has been designated and determined to be appropriate for preservation by the city council. See SMC Title 19 for a complete definition.

Low-income Household: a household with an annual income usually not greater than 80 percent of the area median income ~~for a household of four persons.~~

Maximum Extent Practicable: A standard for implementation of stormwater management programs under the Clean Water Act to reduce the level of the pollutants in stormwater runoff to the maximum extent possible, taking into account equitable considerations and competing facts including, but not limited to the seriousness of the problem, public health risks, environmental benefits, pollutant removal effectiveness, regulatory compliance, cost, and technical feasibility.

Metropolitan Transportation Commission (MTC): In 2017, ABAG merged with MTC to form a consolidated planning agency. MTC is the transportation planning, financing, and coordinating agency for the nine-county San Francisco Bay Area.

Mixed Use: Properties on which various uses such as office, commercial, institutional, and residential are combined in a single building or on a single site in an integrated development project with significant functional interrelationships and a coherent physical design. A single site may include contiguous properties.

Moderate-income Household: A household with an annual income between the lower income eligibility limits (usually 80 percent of the area median family income) and 120 percent of the area median ~~family-household~~ income.

Multimodal: A transportation system that supports and connects cars, bicycles, pedestrians, and public transit.

Nodes: Junctions where roadways or other pathways intersect and there is a crossing or convergence of paths. Nodes are also specific areas around major intersections along El Camino Real in Sunnyvale where more intense mixed-use development ~~will be~~ encouraged.

Noise: Unwanted sound. See also Land Use Operational Noise, Single-Event Noise, and Ambient Noise.

Noise-Sensitive Land Use: Land uses where noise exposure could result in health-related risks to individuals, as well as places where quiet is an essential element of their intended purpose, including residences, schools, nursing homes, historic sites, cemeteries,

parks, recreation, and open space areas, hospitals and care facilities, hotels and other short-term lodging, places of worship, and libraries.

Non-Transport Use: Use within a roadway right-of-way that does not support the movement of vehicles and pedestrians, such as landscaping and parking (see also Transport Uses).

One Percent Flood: Also known as a 100--year flood, has a one percent probability to being equaled or exceeded in any given year.

Paratransit: Special transport services providing door-to-door service for people not -able to use the standard fixed-route, scheduled transit service. Typical customers may be seniors or may have disabilities.

Parking, De-Coupled or Unbundled: Parking that is sold or rented separately from a land use. For example, rather than renting an apartment for \$1,000 per month with two parking spaces at no extra cost, each apartment can be rented for \$850 per month, plus \$75 per month for each parking space; occupants only pay for the parking spaces they actually need. This approach can improve land use and transportation efficiency, since occupants save money when they reduce parking demand, are not forced to pay for parking they do not need, and can adjust their parking supply as their needs change.

Pervious Surfaces: May include natural or designed landscapes or specially constructed paving materials (e.g. pervious paving) that allow stormwater to infiltrate into sub-surface soils.

Planter Strip: A strip of landscaped land typically located between a roadway curb and a sidewalk and oriented longitudinally along a roadway edge that creates an aesthetic feature and provides buffering characteristics for pedestrians from moving automobiles.

Pollution Burden: represents the potential exposures to pollutants and the adverse environmental conditions caused by pollution. Low and high pollution burdens are assigned based on census tracts. High pollution burden is assigned to a census tract with a pollution burden and vulnerability higher than other census tracts with lower scores. Low pollution burden is assigned to census tracts with a pollution burden and vulnerability lower than other census tracts with higher scores.

Residential Density: Residential densities are described as dwelling units per acre (du/acre). For example, a 2-acre site with 14 homes would have a density of 7 du/acre. One acre equals 43,560 square feet.

Road Diet: Reduction of the number of travel lanes on a roadway in order to improve traffic safety, provide bicycle or pedestrian facilities, and/or calm traffic speeds and volumes.

Santa Clara Valley Water ~~District~~ District-(SCVWDValley Water): Provides stream stewardship, wholesale water supply, and flood protection for Santa Clara County. Valley Water was formerly referred to as SCVWD-

Scale: the relative relationship in size of buildings and other objects to one another.

Seiche: wave generated in an enclosed body of water

Senate Bill (SB) 375 (Chapter 728, Statutes of 2008): Directs the California Air Resources Board to set regional targets for metropolitan planning organizations to reduce GHG emissions from cars and light trucks. SB 375 aligns the regional allocation of housing needs and regional transportation planning in an effort to reduce GHG emissions from motor vehicle trips. ABAG is the metropolitan planning organization for Sunnyvale and the surrounding region.

Sensitive Receptors: Sensitive populations such as children, ~~athletes,~~ elderly, and the sick that are more susceptible to the effects of air pollution than the general population. ~~at large.~~

Sensitive Land Use: A use which has populations that are more susceptible to poor air quality, such as children, the elderly, and those with pre-existing health conditions. ~~more likely to have health-related issues from an adjacent or nearby use. Examples include~~ Can include residential uses, day-care facilities, ~~elementary and high~~ schools, hospitals, senior housing, or nursing homes.

Service Level Standard: Standards established for the efficient and cost-effective operation of transportation systems. For example, a transit agency may set ridership, on-time performance, and/or cost per rider objectives as service level standards for guiding decisions on whether to maintain, increase, or decrease a service.

Single-Event Noise: An unusual, occasional or temporary noise. Examples include barking dogs, construction work, deliveries, and ~~organized~~ athletic, musical or other group events.

Single-Occupant Vehicle: A private vehicle operated on the roadway by a single driver with no passengers.

Smart Growth: A broad concept that describes the change in community design from post-World War II development principles to development that better serves the economic, environmental, and social needs of communities. The US Environmental Protection Agency identified the following ten principles of smart growth: (1) mix land uses; (2) take advantage of compact building design; (3) create a range of housing opportunities and choices; (4) create walkable neighborhoods; (5) foster distinctive, attractive communities with a strong sense of place; (6) preserve open space, farmland, natural beauty, and critical environmental areas; (7) strengthen and direct development toward existing communities; (8) provide a variety of transportation choices; (9) make development decisions predictable, fair, and cost effective; and (10) encourage community and stakeholder collaboration in development decisions.

Specific Plans: A planning document that implements the goals and policies of the General Plan for a specified geographic area in a city. It hHas development standards like a Zoning District, but also includes design features which strengthen the district identity and may have different land uses than allowed elsewhere. Specific plans can identify appropriate uses, set regulations for building height, setbacks or floor area ratios and establish landscaping standards, architectural design standards, unique street lighting, public plazas and special signage.

Sphere of Influence (SOI): The probable ultimate physical boundaries and service area of a local agency (city or district) as determined by the Local Agency Formation Commission of the County (LAFCO).

Subsidence: Subsidence is the motion of a surface (usually, the Earth's surface) as it shifts downward relative to a fixed point such as sea-level. The opposite of- subsidence is uplift, which results in an increase in elevation. Subsidence can occur when too much groundwater is pumped out, causing the land above to sink.

Sustainable/Sustainability: Broadly, to keep up or keep going; to maintain an action or process. In the context of land use and environmental sustainability, there are many

definitions and some debate about their merits. The National Environmental Policy Act of 1969 declared as its goal a national policy to “create and maintain conditions under which humans and nature can exist in productive harmony, and fulfill the social, economic and other requirements of present and future generations of Americans.” The United Nations’ 1987 Report of World Commission on Environment and Development: Our Common Future defined sustainable development as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs.” It can also be defined as physical development that simultaneously provides for economic prosperity, environmental quality, and social equity.

Sustainable Communities Strategy (SCS): A regional growth strategy required under SB 375 that, in combination with transportation policies and programs, strives to reduce GHG emissions, and, if feasible, achieves regional GHG reduction targets set by the California Air Resources Board. The Sustainable Communities Strategy is part of _____ a Regional Transportation Plan, must comply with federal law, and must be based on “current planning assumptions” that include the information in local general plans and sphere of influence boundaries. (See Senate Bill [SB] 375.)

Toxic Air Contaminants (TAC): TACs are a defined set of airborne pollutants that may pose a present or potential hazard to human health. A wide range of sources, from industrial plants to motor vehicles, emit TACs. In California, the Air Toxics Hot Spots Information and Assessment Act (AB 2588), requires stationary sources to report the types and quantities of TACs their facilities routinely release into the air. Locally, the BAAQMD implements and enforces this process through permitting review and issuance.

Trail: A path physically separate from roadway or other transportation systems, but not substituting for those systems, that may be paved and is intended to provide primarily recreation opportunities but may serve transportation needs for bicyclists and pedestrians.

Transit: The conveyance of persons or goods from one place to another by means of a local or regional public transportation system.

Transit, Public: A system of regularly scheduled buses and/or trains available to the public on a fee-per-ride basis. Also called mass transit.

Transit-Oriented Development (TOD): Moderate to higher-density development, located within an easy walk of a major transit stop, generally with a mix of residential, employment, and shopping opportunities designed for pedestrians without excluding the automobile. Transit-oriented development can be new construction or redevelopment of one or more buildings whose design and orientation facilitate transit use.

Transportation Demand Management (TDM): The application of strategies (telecommuting, teleshopping, flextime, carpooling, increased use of public transit and private shuttle) and policies to reduce travel demand ~~(specifically that of single-occupant of overall private vehicles) trips or to redistribute this demand in space or in time.~~ Managing demand can be a cost-effective alternative to increasing capacity. A demand management approach to transport also has the potential to deliver better environmental outcomes, improved public health, stronger communities, and more prosperous and livable cities. Transportation demand management techniques link with and support community movements for sustainable transport.

Transportation System: The infrastructure used for the movement of community members and visitors using all modes of transport through the city including roadways, sidewalks, bike routes, railways, and other pathways.

Transport Use: A conveyance to move persons or goods on a street (see also Non-Transport Use).

Trip: A one-way journey that proceeds from an origin to a destination via a single mode of transportation. ~~the smallest unit of movement considered in transportation studies.~~ Each trip has one “production end” (origin) and one “attraction end” (destination). Typical origins and destinations are home, work, shopping, school, and entertainment.

Tsunami: A series of waves caused by the sudden shift or subsidence of the sea floor which accompanies some earthquakes. They are characterized by great speed and may cause considerable damage along an exposed coast thousands of miles from the source.

Unaffiliated volunteers: Not part of a recognized voluntary agency and often have no formal training in emergency response. They are not officially invited to become involved but are motivated by a sudden desire to help others in times of trouble. They come with a variety of skills. They may come from within the affected area or from outside the area. (See also Affiliated Volunteers)

Universal Design: The design of products and environments to be usable by all people, to the greatest extent possible, without adaptation or specialized design.

Vehicle Miles Traveled (VMT): A metric that accounts for the number of vehicle trips generated and the length or distance of those trips. One vehicle traveling the distance of 1 mile. Total vehicle miles traveled is the aggregate mileage traveled by all vehicles ~~within a specified region for a specified time period.~~ VMT is a key measure of overall street and highway use. Reducing VMT is often a major objective in efforts to reduce vehicular congestion and achieve air quality and climate change goals.

Village Center: A specifically identified neighborhood crossroad or district nucleus that is planned to become the focus of activity and future transformative change for the nearby neighborhoods. It is designed to support a lifestyle with less reliance on a private automobile. It is an active, pedestrian-oriented place with neighborhood-serving commercial uses that are close to residents and are mixed, typically vertically, with residential uses. It serves as a meeting place for the community and may also support public and quasi-public services in order to reduce the need for automobile trips. Residential uses in the Village Center address diversity in lifestyles, ages, and incomes in order to allow residents to stay in the neighborhood longer. A Village Center has a unique “sense of place” beyond what has been experienced in Sunnyvale’s older neighborhood commercial areas.

Visual Landmarks: Visually prominent and outstanding structures or natural features that function as points of orientation and identification for individuals and areas of the City.

Very-Low Income Household: A household with an annual income usually no greater than 50 percent of the area median family household income. (See also Low and Moderate Income Households)

Zoning: The division of a city or county by legislative regulations into areas, or zones, which specify allowable uses for real property and size restrictions for buildings within these areas. It is a program that implements the General Plan.

CHAPTER 1

INTRODUCTION

INTRODUCING THE SUNNYVALE GENERAL PLAN

The City of Sunnyvale has a colorful history spanning over 100 years since its incorporation in 1912. It began as a train stop in the agricultural promised land known as “The Valley of Hearts Delights” and with planning and foresight has transitioned into its current form as a desirable residential community and strategically located high-tech job center known as the “Heart of Silicon Valley.”

The Sunnyvale General Plan has been a fundamental tool in guiding the City through change and growth. It addresses the physical development of the City and, when used together with a larger body of City Council policies, provides direction for decision-making on City services and resources. It is both a long-range and a strategic planning document, containing long-term goals and policies for the next 10-20 years and strategic actions for the next five to ten years.

The past has shown us that change is constant and will occur whether planned for or not. While the future cannot be forecasted with certainty, the General Plan provides guiding goals and policies that have been selected to be both transforming yet realistic and practical so that Sunnyvale successfully emerges as a vibrant, innovative and attractive community in which both residents and businesses can thrive.

Topics in the General Plan

The state requires all cities to prepare and maintain a General Plan. Seven elements (topics) are required by state law: land use, circulation (transportation and utilities), housing, conservation, open space, noise, and safety. Communities can rename or combine these required elements as they choose, as long as there is consistency within and among the documents. Communities may also incorporate within their General Plan other matters which are believed to be of particular local concern.

Sunnyvale’s General Plan consists of a Community Vision and five supporting chapters addressing the physical development of the City. These chapters group related topics together such as Land Use and Transportation, Community Character, Safety and Noise, and Environmental Management. The Housing Element is the only portion of the City’s General Plan that has requirements for periodic updating and certification by the State of California. The following is a summary of the topics found in this General Plan. Mandated elements are noted.

“Make no little plans; they have no magic to stir men’s blood and probably will themselves not be realized. Make big plans; aim high in hope and work, remembering that a noble, logical diagram once recorded will not die.”
— Daniel H. Burnham

Chapter 1 Introduction

- Overview of General Plan organization and topics
- Environmental Justice Policies

Chapter 2 Community Vision

- Sunnyvale History
- Community Conditions
- Assets and Issues
- Citywide Vision Goals
- Balanced Growth
- Looking Forward

Chapter 3 Land Use and Transportation
(state-mandated Land Use, Open Space and Circulation Element, transportation section)

- Land Use
- Transportation
- Economy
- Open Space

Chapter 4 Community Character

- Design
- Heritage Preservation
- Library
- Arts
- Recreation

Chapter 5 Housing
(state-mandated Housing Element)

Chapter 6 Safety and Noise
(state-mandated Safety and Noise Elements)

- Hazards and Disaster Preparedness
- Police, Fire and Emergency Services
- Noise

Chapter 7 Environmental Management
(state-mandated Conservation Element and Circulation Element, public utilities section)

- Water Supply

- Wastewater Collection and Treatment
- Urban Runoff
- Air Quality
- Solid Waste

These elements address the areas within the boundaries of the City, including the sphere of influence (see Figure 1-1, Sunnyvale Planning Area).

The Consolidation of the General Plan

In 2011, the General Plan was assembled from 22 separate General Plan elements and sub-elements that were adopted at different times. This consolidated and streamlined General Plan contains all necessary goal and policy language to address the required elements in a concise and easy-to-use fashion. Goals reference the year of the original adoption.

How to Use the General Plan

The General Plan provides both basic information about our community and goals and policies to help us achieve our desired future. The General Plan can be understood on a broad citywide level and on an individual level. Citywide, the General Plan provides demographic information, including population, housing, transportation and public works improvements that describe the City's residents and businesses and future changes that will affect them. Land use plans, growth areas and projections and future infrastructure improvements are described. On an individual level, the General Plan also can provide information specific to a resident or business. Individuals can find general types of uses that are permitted in and near a home or business, long-range plans and changes that may affect a neighborhood or business area and actions the City will take to retain and improve the quality of life in Sunnyvale.

This General Plan is organized around a set of goals. **Goals** are long-range, broad and comprehensive targets. They are not necessarily measurable or achievable in the lifespan of this General Plan; rather, they describe the overall future outcome the community would like to achieve. Each goal is accompanied by a context for the goal, related community conditions, future trends or issues and supporting policies.

Policies indicate ways to achieve the goal. Policies are focused and specific instructional guidelines. This General Plan contains an Executive Summary of only goals and policies for ease of use.

Translating the General Plan into Action

Goals and policies are used by the community, staff and decision-makers to guide decisions relating to the physical development of the City including land use, infrastructure and related budgetary decisions. Future development decisions must be consistent with the General Plan. To assist community members and decision-makers, goals and policies are referenced in all staff reports and findings related to the development of the City. Goals and policies are also carried out through two types of activities: sub-policies and implementation programs.

Sphere of Influence — A geographic area established by the Santa Clara County Local Agency Formation Commission (LAFCO) as “a plan for the probable physical boundaries and service area of a local government agency.” (Government Code

The online version of the General Plan provides easy-to-use links to other sections of the document, supporting information, and outside agencies and programs. Please visit Sunnyvale.ca.gov and search for “General Plan” to view the online version of this document.

Sub-policies provide more specific directions and actions to further articulate and achieve the goals and policies. They are the critical link between long-range planning and current decision making. Sub-policies are not needed for each policy and can be short-range or longer-term actions. Sub-policies, when applicable, are listed below each related policy as a bullet.

Implementation programs are longer-range procedures, programs or activities that also carry out the goals and policies. Implementation programs can be included in Sunnyvale Municipal Code regulations, specific plans, capital improvement projects, or subdivision ordinances, as examples. A list of implementation programs is located in Appendix A.

Public Participation

This General Plan was consolidated with input from the community and an Advisory Committee made up of City Boards and Commissions members. Any future amendments of the General Plan will be subject to further community input and public hearings.

Steps Forward

Future incremental updates of the General Plan may be needed as community conditions change. In approximately 10 years a comprehensive update of this document will be undertaken, updating the community's conditions and all the goals, policies, and actions within the document.

Environmental Justice

Environmental Justice (EJ) policies promote fair treatment and meaningful participation of people of all cultures, races, and incomes. They improve the health and overall well-being of vulnerable and at-risk communities through reductions in pollution exposure, equitable and inclusive public engagement, increased access to healthy foods, increased prevalence of healthy homes, improved air quality, and increased physical activity.

The City has implemented goals and policies that address pollution exposure, public services, public health, housing, civic engagement, and climate change at a broad, citywide level. There are several policies that are specifically aimed at addressing EJ. As discussed in the environmental justice screening analysis (Appendix H), there are opportunities to further address issues of equity in the City. The policies listed below will be incorporated into the appropriate General Plan Chapter (depicted at the end of the policy) when said Chapter is next updated. At that time, this list will be amended, and ultimately removed, once all have been integrated into the appropriate Chapter.

- **Goal EJ-1:** Prioritize the needs of designated low-income communities within Sunnyvale that bear high pollution burden according to CalEnviroScreen 3.0 (Figure 7-10), to ensure equitable outcomes. (Community Vision)
- **Policy EJ 1.1:** Conduct outreach with communities that are low-income and/or bear a high pollution burden (as identified in the Environmental Justice Screening Analysis), for development and redevelopment projects, to promote equitable and inclusive community engagement in the local planning processes. (Community Vision)

- **Policy EJ 1.2:** Encourage the phasing out of non-conforming land uses from residential communities, especially for communities that are low-income and/or bear a high pollution burden, as identified in the Environmental Justice Screening Analysis. (Land Use and Transportation)
- **Policy EJ 1.3:** Prioritize the development of public facilities (e.g., schools, libraries, community resources centers) in low-income and high pollution burden bearing communities. (Land Use and Transportation)
- **Policy EJ 1.4:** Continue to evaluate the need for new or improved alternative transportation infrastructure (e.g., public transit routes, sidewalks, bicycle facilities) in low-income and high pollution burden bearing communities. (Land Use and Transportation)
- **Policy EJ 1.5:** Apply “universal design principles” in the design and review of development and redevelopment projects so that new development is accessible to all people. Universal design is the design of buildings or environments to make them accessible to all people, regardless of age, ability, or other factors. Examples of universal design are ADA compliant pathways and sidewalks, accessible pedestrian signals, and strategies that allow residents to age in place. (Land Use and Transportation)
- **Policy EJ 1.6:** Support the development of healthy food establishments, grocery stores, and local food growers, particularly in communities that lack access to healthy food. (Land Use and Transportation)
- **Policy EJ 1.7:** Support existing specialty markets and facilitate the establishment of new culturally derived markets within walkable distances to low-income communities. (Land Use and Transportation)
- **Policy EJ 1.8:** Continue to create programs or informational campaigns regarding healthy eating habits and food choices, and the availability of food assistance programs. (Land Use and Transportation)
- **Policy EJ 1.9:** Prioritize the development of recreational facilities, parks, and open space in low-income and high pollution burden bearing communities. (Land Use and Transportation)

CHAPTER 6

SAFETY AND NOISE

Noise is defined as unwanted sound.

NOISE

Noise is a significant and inherent part of Sunnyvale's environment. The noise environment is a result of historical land use decisions, competing regional and community goals, geographic factors and limited local controls. The City's residents and businesses must tolerate some noise, as noise is a part of any urban environment. Excessive noise, however, can cause physical and mental health problems. A legitimate public concern is therefore, to protect residents from excessive noise.

The discussion of noise is divided into two categories: transportation noise and community noise. Transportation noise generated by roadway, aircraft and train and light rail facilities is a major contributor to ambient noise in Sunnyvale. Community noise consists of everything other than transportation-related noise and includes single-event and land use operational noise.

A sound level meter is used to take an instantaneous decibel reading. The resultant reading is the sound level (dBA) for an instant in time, representing the range of sound frequencies that the human ear readily can detect. Noise is measured and regulated in two different ways. For land use operational noise, instantaneous readings are measured. For ambient or transportation related noise (except for single-event train horns), an average noise (L_{dn}) is used (the average sound Level for Day and Night). An L_{dn} measurement (day/night average sound level) is a weighted average sound level in decibels during a 24-hour period.

Due to the logarithmic nature of noise, combining noise does not follow the principles of simple arithmetic. For example, the addition of two similar noise sources, result in a 3 dBA increase. Regarding perceived increases in noise a 1 dBA increase is generally not perceptible, a 3 dBA increase is considered to be barely perceptible, a 5 dBA is distinctly perceptible, and an increase of 10 dBA is perceived as a doubling of the noise level.

For the purposes of enforcement, all noise measurements are taken at the impacted property line for detached single-family homes, duplexes, and Mobile Homes and at the impacted primary open space of multi-family dwelling units. Single-event or land use operational noise is measured through instantaneous sound levels. Exterior noise compatibility standards are measured with the L_{dn} measurement. Instantaneous sound levels are used to enforce Sunnyvale noise regulations. For context, noise levels associated with typical noise sources found in urban environments are shown in Figure 6-3.

Single-event noise includes noise sources that occur in an occasional or temporary basis. This noise metric represents all the acoustic energy associated with an individual noise event as if that event occurred within a one-second time period. Examples include heavy trucks passing by, airplane and helicopter flyovers, trains passing by, and an explosion. They do not include noise generated from landscape equipment or children noise from childcare. Residential units exposed to single-event noise from transit (e.g., freight, Caltrain, high speed rail, VTA light rail) are regulated by maximum instantaneous noise limits. There are also policies discouraging placement of residential uses near transit areas and aircraft noise contours. Single-event noise from cars and trucks are not practical to regulate because the City has no ability to control a truck's brake or a car's horn.

A-weighted decibels (dBA) — a logarithmic weighted scale used to characterize the range of sound detectable by the human ear

Ambient noise — a relatively steady background noise which is an accumulation of different noise sources near and far. Most ambient noise in Sunnyvale is related to transportation. Other ambient noise sources include wind and chirping birds.

Land use operational noise — a continuous or frequent noise related to the basic use of property. Examples include air conditioners, pool pumps, restaurant loudspeakers and industrial machinery.

Figure 6-3: Decibel Levels of Common Sounds

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	110	Rock Band
Jet Flyover (1,000 feet)	105	
	100	
Gas lawnmower (3 feet)	95	
	90	
Diesel truck (50 feet, 50 mph)	85	Food blender (3 feet)
	80	
Noisy urban area, daytime	75	
Gas lawnmower (100 feet)	70	Vacuum cleaner (10 feet)
Commercial area	65	Normal speech (3 feet)
Heavy traffic (300 feet)	60	
	55	Large business office
Quiet urban daytime/Electric Lawnmower (100 feet)	50	Dishwasher in next room
	45	
Quiet urban nighttime	40	Theater, large conference room (background)
Quiet suburban nighttime	35	
	30	Library
Quiet rural nighttime	25	Bedroom at night, concert hall (background)
	20	
	15	Broadcast/recording studio
	10	
	5	
	0	

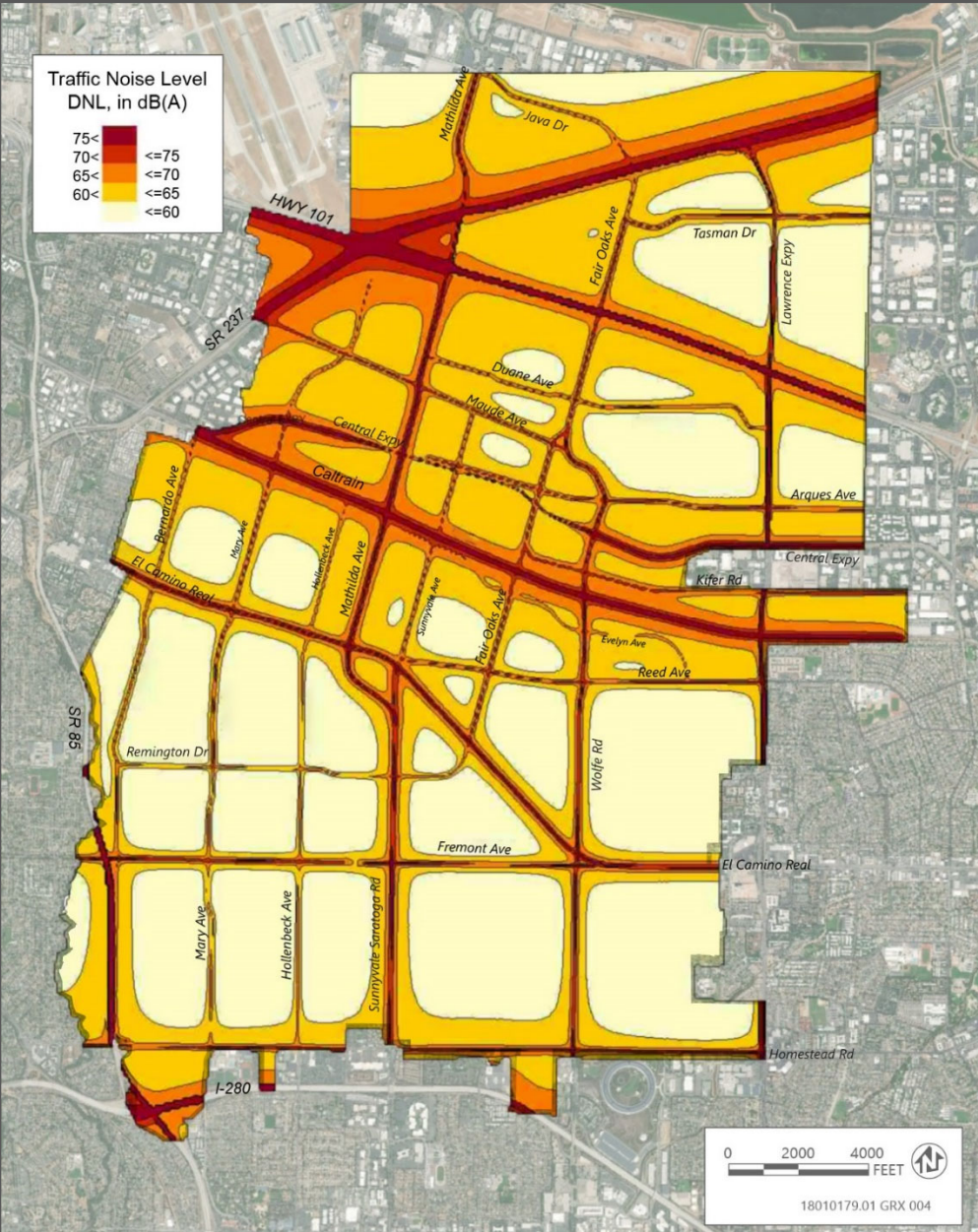
Notes: dBA= A-weighted decibels; mph= miles per hour

Source: Caltrans 2013

Transportation facilities are Sunnyvale's main source of noise and the most difficult to control. Roadways are the major source of transportation noise, followed by Moffett Federal Airfield, the Caltrain corridor and San Jose International Airport. To establish existing community noise levels and assist in future land use planning decisions, a citywide ambient noise survey and traffic noise modeling was conducted. See Figure 6-4 for the 2016 Roadway Noise Contour Map, Figure 6-5 Future (2035) Roadway Noise Contour Map, and Appendix G for noise measurement locations and levels.

The 2016 Roadway Noise Contour Map (Figure 6-4) and the Future (2035) Roadway Noise Contour Map (Figure 6-5), using data from the 2016 LUTE EIR, shows modeled roadway noise contours for existing and future conditions, respectively, for major roadway noise sources in Sunnyvale. These noise contours represent an average noise level over a 24-hour period. These maps can help determine if future land uses are compatible with their noise environments. If the use would be exposed to excessive noise, the City could require a detailed noise study that shows existing and future noise levels along with methods to achieve acceptable noise levels.

Figure 6-4: 2016 Roadway Noise Contour Map



Source: City of Sunnyvale LUTE EIR, August 2016

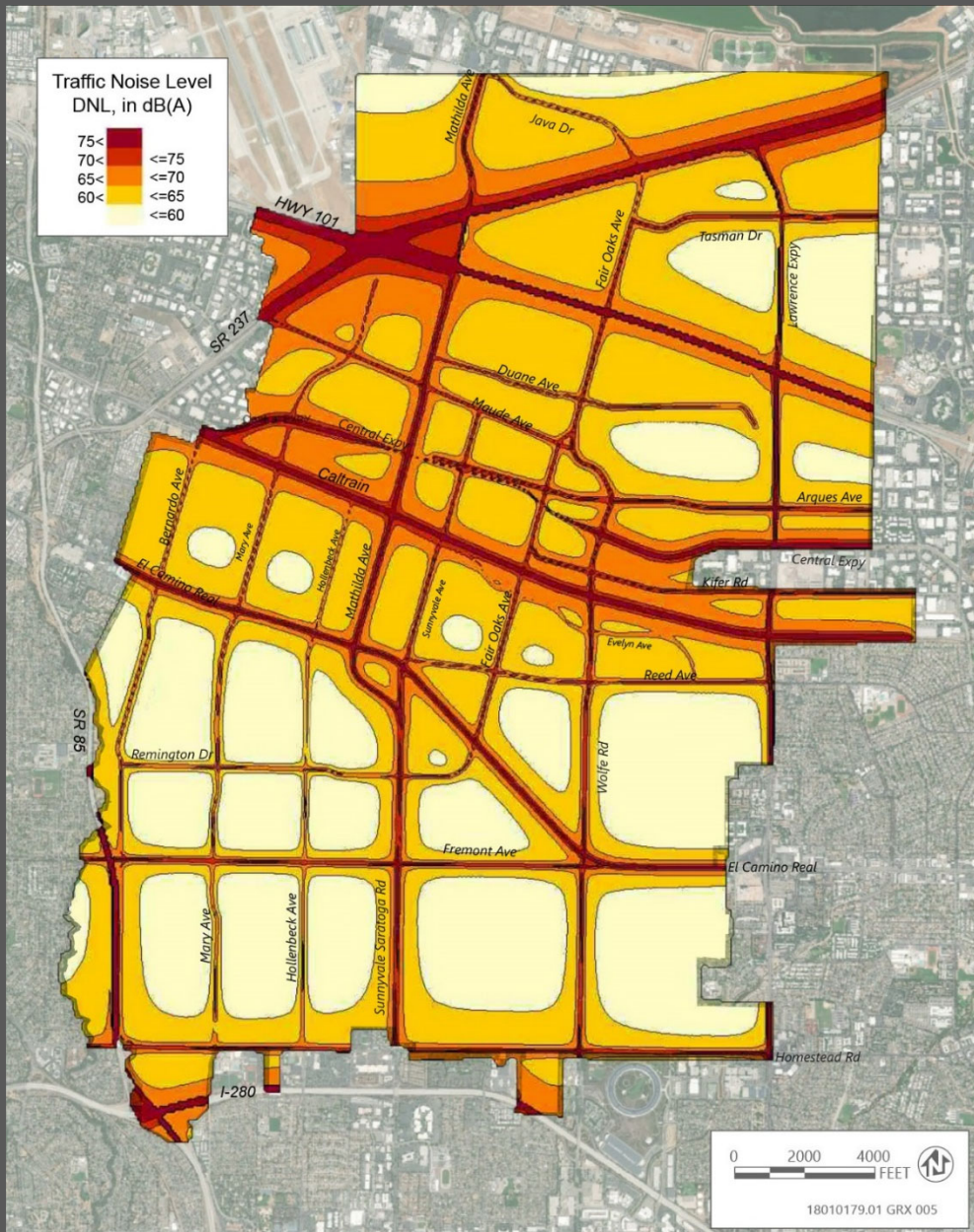


Figure 6-5: Future (2035) Roadway Noise Contour Map

Source: City of Sunnyvale LUTE EIR, August 2016

GOAL SN-8 COMPATIBLE NOISE ENVIRONMENT

MAINTAIN OR ACHIEVE A COMPATIBLE NOISE ENVIRONMENT FOR ALL LAND USES IN THE COMMUNITY.

What level of noise are people expected to tolerate in a residential, commercial or industrial development? Residential uses are the most sensitive. Industrial uses are the most tolerant. Tolerance also depends on how loud the noise is, when and where it happens, the duration, frequency and tone of the noise and the sensitivity of the person who hears the noise. People are generally most tolerant of existing ambient noise. They are least tolerant of single event noise, operational noise and increases in ambient noise.

Interior Noise Standards

The California Code of Regulations protects interiors of new multifamily dwellings and lodging uses from excessive noise. These requirements apply to hotels, motels and all residential uses except single-family detached homes. Interior noise levels cannot exceed an L_{dn} of 45 dBA with doors and windows closed. For new development of these land uses, the City would require a detailed site-specific noise study to ensure acceptable interior noise levels are achieved. These requirements are enforced through development review and the building permit process.

POLICY SN-8.1 ENFORCE AND SUPPLEMENT STATE LAWS REGARDING INTERIOR NOISE LEVELS OF RESIDENTIAL UNITS.

Policy SN-8.2 APPLY TITLE 24 NOISE INSULATION REQUIREMENTS TO ALL NEW RESIDENTIAL UNITS (SINGLE-FAMILY, DUPLEX, MOBILE HOME, MULTI-FAMILY, AND MIXED-USE UNITS).

POLICY SN-8.3 ATTEMPT TO ACHIEVE A MAXIMUM INSTANTANEOUS NOISE LEVEL OF 50 DBA IN BEDROOMS AND 55 DBA IN OTHER AREAS OF RESIDENTIAL UNITS EXPOSED TO TRANSIT (E.G., FREIGHT, CALTRAIN, HIGH SPEED RAIL, VTA LIGHT RAIL).

Exterior Noise Standards

Based on the 2017 State of California General Plan Guidelines (Governor's Officer of Planning and Research [OPR]), the City has adopted exterior noise exposure levels regarded as the highest level of noise exposure that is considered normally acceptable for each land use type (Figure 6-6). Noise levels in exceedance of these adopted levels would require further City review and consideration on a case-by-case basis.

Figure 6-6: Exterior Noise Compatibility Standards for Various Land Uses

Land Use Type ¹	Highest Level of Exterior Noise Exposure that is Regarded as “Normally Acceptable” ² (L _{dn} ³)
Residential: Low- Density Detached Single-Family Homes, Duplexes, Mobile Homes	60 dBA ⁴
Other Residential: Townhomes, Multi-Family Apartments, Condominiums, and all other residential.	65 dBA ⁵
Lodging: Motels and Hotels	70 dBA
Outdoor Activities: Golf Courses, Cemeteries, Parks	75 dBA ⁶
Schools, Libraries, Museums, Hospitals, Personal Care, Meeting Halls, Churches	70 dBA
Office Buildings, Commercial and Professional Businesses	70 dBA
Auditoriums, Concert Halls, Amphitheaters, Sports Arena, Outdoor Spectator Sports	70 dBA
Industrial, Manufacturing, Utilities	75 dBA

- ¹ Where a proposed use is not specifically listed, the use shall comply with the noise exposure standards for the nearest similar use as determined by the Community Development Director.
- ² As defined in the State of California General Plan Guidelines 2017, “Normally Acceptable” is the maximum desirable level for existing or conventional construction that does not incorporate any special acoustic treatment. The standards in Figure 6-6 above were derived based on the conservative assumption that typical building construction materials can achieve, at a minimum, a 25 dB exterior-to-interior noise reduction. For projects located along major transportation corridors (major freeways, arterials, and rail lines), in mixed-use or infill urban locations, this “normally acceptable” exterior noise level may be exceeded for certain areas of the project site (e.g. the frontage adjacent to the corridor, parking areas, balconies). Proposals located in areas where noise exceeds these levels, , would require all feasible noise attenuation measures and City consideration prior to approval.
- ³ L_{dn} is the average sound level over a 24-hour period, with a penalty of 10-dB added for the nighttime hours of 10 pm to 7 am.
- ⁴ Applies at the primary useable open space area of a detached single-family home, duplex or mobile home, which is typically the backyard or a fenced side yard. This standard shall be measured at the approximate center of the primary useable open space area. This standard does not apply to secondary open space areas, such as front yards, balconies, stoops, and porches.
- ⁵ The highest level of 65 dBA applies at the primary useable open space area of townhomes and multi-family apartments or condominiums (private rear yards for townhomes; and common courtyards, roof lawns, or gathering spaces for multi-family projects). This standard shall be measured at the approximate center of the primary useable open space area. This standard does not apply to secondary open space areas, such as front yards, balconies, stoops, and porches. The highest level of 70 dBA applies at the primary useable open space area of mixed-use projects (private rear yards for townhomes; and common courtyards, roof gardens, or gathering spaces for multi-family or mixed-use projects) and all other residential uses. This standard does not apply to secondary open space areas, such as front yards, balconies, stoops, and porches.
- ⁶ Applies at the outdoor activity areas, defined as common areas where people generally congregate, including outdoor seating areas. Where the location of outdoor activity areas is unknown, the exterior noise standard shall be applied to the property line of the receiving land use.

The City would consider allowing noise exposure levels above “normally acceptable” levels, only after a detailed noise study is conducted, which includes noise reduction measures that are incorporated into the design, ensuring that receptors are not exposed to excessive noise levels that would interfere with the enjoyment of the intended use of the land, and that interior noise standards where people sleep are met. New development is discouraged when the noise levels are above “normally acceptable” levels. Site-specific conditions and available noise attenuation measures will be considered prior to making an exception to the final determination of land use compatibility and noise exposure.

Achieving an outdoor L_{dn} of 60 dBA if the noise source is a railroad is generally more difficult. Train noise is usually made up of relatively few loud events. Although the outdoor L_{dn} may be high, the noise level between events is typically acceptable for speech. An L_{dn} limit of 70 dBA is more appropriate for areas affected by train noise. See 'Trains and Light Rail' towards the end of this section, for more information on train noise and acceptable noise level for non-residential uses due to train noise.

If the noise source is aircraft, the overhead noise is impractical to mitigate for outdoor residential areas. Preventing residential uses within areas of high L_{dn} from aircraft is a way of avoiding noise exposure of homes from aircraft. However, only industrial areas in the very northeast section of the City fall within a noise contour for the San Jose International Airport.

POLICY SN-8.4 REQUIRE DEVELOPMENT PROJECTS TO ASSESS POTENTIAL CONSTRUCTION NOISE IMPACTS ON NEARBY NOISE-SENSITIVE LAND USES AND TO MINIMIZE IMPACTS ON THOSE USES, TO THE EXTENT FEASIBLE.

POLICY SN-8.5 REQUIRE A VIBRATION IMPACT ASSESSMENT FOR PROPOSED PROJECTS IN WHICH HEAVY-DUTY CONSTRUCTION EQUIPMENT WOULD BE USED WITHIN 600 FEET OF AN EXISTING STRUCTURE. IF APPLICABLE, THE CITY SHALL REQUIRE ALL FEASIBLE MITIGATION MEASURES TO BE IMPLEMENTED TO ENSURE THAT NO DAMAGE OR DISTURBANCE TO STRUCTURES WOULD OCCUR.

POLICY SN-8.6 REQUIRE THE FULL DISCLOSURE OF THE POTENTIAL NOISE IMPACTS OF LIVING IN A MIXED-USE OR TRANSIT-ORIENTED DEVELOPMENT OR RESIDENTIAL DEVELOPMENT IN AN INDUSTRIAL TO RESIDENTIAL AREA BY REQUIRING RESIDENTIAL DISCLOSURE NOTICES WITHIN DEEDS AND LEASE AGREEMENTS AS A CONDITION OF PROJECT APPROVAL.

- **SN-8.6a.** Require new residential development in a mixed-use, transit oriented, or industrial to residential area to include disclosure of potential noise impacts in deeds and lease agreements.

POLICY SN-8.7 ENSURE NEW STATIONARY NOISE SOURCES AFFECTING EXISTING DEVELOPMENT COMPLY WITH ADOPTED SUNNYVALE MUNICIPAL CODE TITLE 19 (ZONING).

POLICY SN-8.8 AVOID CONSTRUCTION OF NEW RESIDENTIAL USES WHERE THE OUTDOOR LDN IS GREATER THAN 70 DBA AS A RESULT FROM TRAIN NOISE.

POLICY SN-8.9 CONSIDER THE COMPATIBILITY OF PROPOSED LAND USES WITH THE NOISE ENVIRONMENT WHEN PREPARING OR REVISING COMMUNITY AND/OR SPECIFIC PLANS AND WHEN REVIEWING DEVELOPMENT PROPOSALS. THE NOISE COMPATIBILITY STANDARDS (FIGURE 6-6) AND THE CONTOUR MAPS DEPICTING NOISE LEVELS (FIGURE 6-4 AND 6-5) SHOULD BE USED BY THE CITY AS A GUIDE TO LAND USE/NOISE COMPATIBILITY.

POLICY SN-8.10 REQUIRE A SITE-SPECIFIC NOISE STUDY FOR NEW DEVELOPMENT INVOLVING NOISE-SENSITIVE LAND USES TO ENSURE THE NOISE LEVELS IN FIGURE 6-6 ARE MET. IF THE PROJECT WOULD EXPOSE NEW SENSITIVE LAND USES (E.G., RESIDENCES, SCHOOLS, HOSPITALS) TO NOISE LEVELS EXCEEDING THE NOISE LEVELS IN FIGURE 6-6, ALL APPROPRIATE NOISE REDUCTION MEASURES, IDENTIFIED BY THE STUDY, SHALL BE INCORPORATED INTO THE PROJECT.

POLICY SN-8.11 REQUIRE NEW RESIDENTIAL, SCHOOL, AND HOSPITAL PROJECTS LOCATED WITHIN 600 FEET OF EXISTING MAJOR FREEWAYS AND RAILROAD LINES (E.G., FREIGHT, CALTRAIN, HIGH SPEED RAIL, VTA LIGHT RAIL) TO CONDUCT A VIBRATION IMPACT ASSESSMENT CONSISTENT WITH CITY-APPROVED METHODOLOGIES (E.G., CALTRANS, FEDERAL TRANSPORTATION AUTHORITY) AND INCORPORATE APPROPRIATE VIBRATION REDUCTION MEASURES.

POLICY SN-8.12 FOR NEW OFFICE/R&D AND SIMILAR USES, THE CITY SHALL REQUIRE THAT BUILDING DESIGN ACHIEVES A MAXIMUM INTERIOR NOISE STANDARD OF 55 DBA LEQ (PEAK-HOUR).

POLICY SN-8.13 EXEMPT NEW NOISE-SENSITIVE USES (E.G., RESIDENTIAL, LODGING, SCHOOLS, OFFICES) PROPOSED AS PART OF A TRANSIT-ORIENTED DEVELOPMENT OR MIXED-USE PROJECT FROM EXTERIOR NOISE STANDARDS IN SECONDARY OPEN SPACE AREAS (E.G., FRONT YARDS, STOOPS/FRONT PORCH/, PORCHES, OR BALCONIES), SO LONG AS EXTERIOR NOISE STANDARDS IN PRIMARY OPEN SPACE AREAS (E.G., BACKYARD OR FENCED SIDE YARD OF DETACHED SINGLE FAMILY, DUPLEX OR MOBILE HOMES; PRIVATE REAR YARDS FOR TOWNHOMES; AND COMMON COURTYARDS, ROOF GARDENS, OR GATHERING SPACES FOR MULTI-FAMILY OR MIXED-USE PROJECTS) AND INTERIOR NOISE STANDARDS CAN BE MET, AS DEMONSTRATED BY A SITE-SPECIFIC NOISE STUDY.

Techniques to Insulate People from Noise

Typical sound walls (six to eight feet high) will reduce noise levels by about six to eight dBA.

Sound walls — Sound walls can be an effective method of reducing ambient noise on properties. Typically, sound walls are used to buffer residential or other sensitive uses from transportation noise or incompatible land use operational noise. Typical sound walls (six to eight feet high) will reduce noise levels by about six to eight dBA. Sound walls are most effective at reducing noise on properties nearest the sound wall. However, sound walls can be unattractive, isolate neighborhoods and give the community a “walled-in” appearance. These effects can be minimized by landscaping and earth berms and by requiring walls that are more decorative than the standard choices.

See Interior Noise discussion for more information on interior sound levels.

Setbacks — Building setbacks can reduce noise if the distance is substantial. For example, a building located 50 ft. from the center of the road may have an L_{dn} of 64 dBA at the building façade closer to the roadway. If the building is set back 100 ft. from the center of the roadway (an additional 50 feet), the L_{dn} would be reduced to approximately 60 dBA, which meets the state guidelines.

Site Planning — Good site planning can buffer sensitive areas (such as bedrooms) with less sensitive areas (such as a parking structure). Conventional home building practices

will reduce interior noise levels by about 15 dBA, even with the windows partially open. Other measures include double or triple pane windows, airtight doors and windows and vents oriented away from the house.

POLICY SN-8.14 CONSIDER TECHNIQUES WHICH BLOCK THE PATH OF NOISE AND INSULATE PEOPLE FROM NOISE.

- **SN-8.14a** Use a combination of barriers, setbacks, site planning and building design techniques to reduce noise impacts, keeping in mind their benefits and shortcomings.
- **SN-8.14b** Consider compiling and distributing information to residents of noise-impacted areas about what they can do to protect themselves from noise.
- **SN-8.14c** Proposed sound walls or other noise reduction barriers should be reviewed for design, location and material before installing the barrier. Sound readings should be taken before and after installing the noise reduction barrier in order to determine the efficacy of the noise reduction barrier. Measurement techniques shall be similar to procedures used by Caltrans to measure efficiency of sound walls.

**GOAL SN-9
ACCEPTABLE LIMITS FOR COMMUNITY NOISE**

MAINTAIN OR ACHIEVE ACCEPTABLE LIMITS FOR THE LEVELS OF NOISE
GENERATED BY LAND USE OPERATIONS AND SINGLE-EVENTS

Noise provisions in the Sunnyvale Municipal Code regulate operational noises and noise levels produced by certain activities and powered equipment. While the Municipal Code noise provisions address the majority of noise complaints, noise complaints in special circumstances (e.g., unusual schedules or sensitivities to certain noises) are not accommodated. In some instances, complaints about noise are difficult to resolve despite the intent and guidelines of the noise regulations.

Noise complaints about children at childcare are not appropriate to regulate through operational noise regulations of the Sunnyvale Municipal Code. Also, noise complaints due to transportation noise are beyond the City's sphere of influence. Despite these instances, the Sunnyvale Municipal Code addresses most community noise issues, and the majority of complaints are resolved in compliance with Sunnyvale regulations.

POLICY SN-9.1 REGULATE LAND USE OPERATIONAL NOISE INCLUDING BUT NOT LIMITED TO HOURS OF OPERATION LIMITS, CONSISTENT WITH OPERATIONAL NOISE STANDARDS IN THE SUNNYVALE MUNICIPAL CODE

- **SN-9.1a** Regulate leaf blower noise including but not limited to hours of operation limits, in the Sunnyvale municipal code.

POLICY SN-9.2 WHEN NEW EQUIPMENT IS INSTALLED ON A PROPERTY, INCLUDING NEW STATIONARY NOISE SOURCES (E.G., HEATING, VENTILATION, AND AIR CONDITIONING SYSTEMS, GENERATORS, HEATING BOILERS) THAT COULD AFFECT EXISTING SENSITIVE LAND USES, CONSTRUCTION OF ENCLOSURES OR OTHER SCREENING MATERIALS SHOULD BE INSTALLED AROUND THE STATIONARY NOISE SOURCE SUCH THAT EQUIPMENT IS IN COMPLIANCE WITH THE CITY'S OPERATIONAL NOISE CODE (SECTION 19.42.030).

GOAL SN-10 MAINTAINED OR REDUCED TRANSPORTATION NOISE

PRESERVE AND ENHANCE THE QUALITY OF NEIGHBORHOODS BY MAINTAINING OR REDUCING THE LEVELS OF NOISE GENERATED BY TRANSPORTATION FACILITIES

Major Roadways

Major roadways cause most of the transportation noise in Sunnyvale. Sunnyvale has an interstate, three freeways, two expressways, one state highway and numerous arterial and collector streets within or near its borders. Virtually all existing homes next to freeways and expressways are protected by sound walls or depressed grades. Traffic noise is generally not an issue for commercial, office and industrial uses.

The 2016 Roadway Noise Contour Map, Figure 6-4, shows 2016 noise levels measured 75 ft. from the edge of each major roadway. All major roadways in Sunnyvale have an L_{dn} of at least 60 dBA. Noise levels that range from 60 to 75 dBA L_{dn} are defined as “normally acceptable” for residential uses (see Figure 6-6.4 Exterior Noise Compatibility Standards for Various Land Uses). The 2016 Roadway Noise Contour Map can be used to identify areas where existing and proposed uses are impacted by excessive noise. The 2035 Roadway Noise Contour Map (Figure 6-5) can be used to determine future noise levels and land use compatibility.

Based on roadway traffic projections, noise levels throughout Sunnyvale are not predicted to change significantly due to increases in roadway traffic. Generally, a three dBA L_{dn} or greater change in noise level is considered “significant” because it can be noticed by the human ear. Most homes will continue to have acceptable noise levels in the future. For individual roadway projects, potential noise impacts are evaluated on a case-by-case basis. Despite the traffic noise, noise levels are considered “normally acceptable” for most homes today and most homes will continue to have “normally acceptable” noise levels in the future. Non-residential uses will generally be unaffected by current and future traffic noise.

POLICY SN-10.1 REDUCE OR REFRAIN FROM INCREASING THE NOISE IMPACTS OF MAJOR ROADWAYS.

Refer to Figure 6-6, Exterior Noise Compatibility Standards for Various Land Uses for a list of acceptable noise standards for various land uses.

Generally, a three dBA or greater change in noise level is considered “significant” because it can be noticed by the human ear.

- **SN-10.1a** Regulate the location, design and capacity of local roadway improvement projects to mitigate their noise impacts.
- **SN-10.1b** Use local traffic management techniques to reduce or protect noise levels.
- **SN-10.1c** Support state legislation to reduce vehicle noise levels.

POLICY SN-10.2 CONSIDER POTENTIAL NOISE IMPACTS WHEN EVALUATING PROPOSED TRANSPORTATION PROJECTS (e.g., ROAD, FREEWAY, AND TRANSIT DEVELOPMENTS). MINIMIZE NOISE IMPACTS THROUGH THE IMPLEMENTATION OF MITIGATION MEASURES, SUCH THAT MAXIMUM NOISE EXPOSURE DOES NOT EXCEED LEVELS IN FIGURE 6-6 OR A SUBSTANTIAL INCREASE AS DEFINED IN FIGURE 6-7.

Figure 6-7: Exterior Incremental Traffic-Noise Standards for Noise-Sensitive Uses (dBA)

Residences and Buildings where People Normally Sleep ¹		Institutional Land Uses with Primarily Daytime and Evening Uses ²	
Existing L_{dn}	Allowable Noise Increment (dBA)	Existing Peak Hour L_{eq}	Allowable Noise Increment (dBA)
45	8	45	12
50	5	50	9
55	3	55	6
60	2	60	5
65	1	65	3
70	1	70	3
75	<1	75	1
80	0	80	<1

Source: Federal Transit Administration, Transit Noise Impact and Vibration Assessment, September 2018.

- ¹ This category includes homes, hospitals, and hotels where a nighttime sensitivity to noise is assumed to be of utmost importance.
- ² This category includes schools, libraries, theaters, and churches where it is important to avoid interference with such activities as speech, meditation, and concentration on reading material.
- ³ Where existing levels exceed 70 dBA L_{dn} , any permanent increase in noise would be considered a substantial increase in noise at exterior locations. However, if the noise impact occurs at a secondary outdoor space (e.g., balcony, stoop) of a residential land use, or if there is no outdoor activity area exposed to the noise increase, these standards would not apply.

The City has adopted exterior allowable incremental traffic-noise standards for sensitive land uses according to the Federal Transit Administration Guidelines. Standards are based on both residential, including land uses and buildings where people normally sleep, and institutional, including land uses with primary daytime and evening uses. Incremental exposure increases are defined based on the justification that people are already exposed to high levels of noise and can only tolerate small increases. If existing noise levels are low, a greater incremental change is allowed. The above traffic-noise standards shall be used to determine substantial traffic-noise increases associated with new discretionary development undergoing CEQA review.

Airports and Aircraft-Related Noise

Moffett Federal Airfield

Moffett Federal Airfield (Moffett Field) is operated by the National Aeronautics and Space Administration (NASA). In 1995, approximately 24,000 annual aircraft flight operations (a take-off and a landing are each considered to be one flight operation) occurred at Moffett Field and according to the 2012 Comprehensive Land Use Plan (CLUP) for the Moffett Federal Airfield (Moffett), this number will remain similar until at least 2022. The CLUP is an adopted document prepared by the County of Santa Clara for Moffett which is not located within the City limits, but is within the City's Sphere of Influence. Refer to Appendix G for airfield noise contours.

POLICY SN-10.3 ALL SENSITIVE LAND USES (E.G., RESIDENCES, SCHOOLS, HOSPITALS) LOCATED WITHIN THE NOISE RESTRICTION AREAS OF MOFFETT FIELD (AS MAPPED IN THE CLUP FOR MOFFETT FEDERAL AIRFIELD) SHALL ADHERE TO THE COUNTY STANDARDS. IN ADDITION, THEY SHOULD MITIGATE IMPACTS TO COMPLY WITH THE INTERIOR AND EXTERIOR NOISE STANDARDS ESTABLISHED BY THE CITY (FIGURE 6-6).

San Jose International Airport

Residents in northeast Sunnyvale are affected by San Jose International Airport flight patterns; however, no noise contours from this airport extend into the City boundaries.. Eventually, noise levels will stabilize and decrease as quieter aircraft become prevalent. Current and future noise levels are below state limits.

Helicopters

There are no heliports located in Sunnyvale. As of 2021, Santa Clara County has only six heliports. One is open to the public at San Jose International Airport. The others are restricted to private use by companies, hospital/medical uses, executives and other individuals.

The Airport Land Use Commission has developed noise standards for heliports affecting residential uses. Design and location criteria for any new private use heliports require permits from the ALUC and affected cities.

In 2017, there were approximately 9,000 helicopter flight operations at Moffett Field and this number is to remain consistent through 2022. One of the take-off and landing patterns crosses over Sunnyvale. It mainly crosses over industrial land uses but also some residential land uses.

POLICY SN-10.4 SUPPORT EFFORTS TO REDUCE OR MITIGATE AIRPORT NOISE, INCLUDING NOISE IMPACTS OF MOFFETT FEDERAL AIRFIELD, SAN JOSE INTERNATIONAL AIRPORT AND HELICOPTERS.

- **SN-10.4a** Support the retention of the Airport Land Use Commission.

- **SN-10.4b** Support the right of private citizens to sue airports for noise impacts.
- **SN-10.4c** Encourage airport operation policies and procedures which reduce the level and frequency of noise as well as other policies and federal funding to alleviate the effects of aircraft noise.
- **SN-10.4d** Support federal legislation that requires military and federal aircraft to meet Stage 3 noise requirements similar to commercial aircraft.
- **SN-10.4e** Support state legislation to lower the noise levels of civilian aircraft and airports.

POLICY SN-10.5 OPPOSE ANY EFFORT AND/OR EXPENDITURE OF PUBLIC FUNDS TO PROMOTE MOFFETT FEDERAL AIRFIELD FOR NON-FEDERAL PURPOSES.

The Airport Land-Use Commission (ALUC) was established to provide for appropriate development of areas surrounding public airports in Santa Clara County. It is intended to minimize the public's exposure to excessive noise and safety hazards and to ensure that the approaches to airports are kept clear of structures that could pose an aviation safety hazard.

Trains and Light Rail

Central Sunnyvale has a Caltrain heavy-rail corridor running east-west. The rail is used by both commuter trains during the day and freight train operations. Unscheduled freight operations can happen at any time, but typically occur at night. Sunnyvale also has a light rail transit in the northern part of the City along Tasman and Java Drives. Nearby surrounding uses are mobile home parks, multifamily residential uses, and industrial areas.

Train Noise

There are two primary sources of train noise — engine noise and train horn noise. Sunnyvale has two Caltrain stations – Sunnyvale and Lawrence. Train horns blow at both stations, as well as at-grade rail crossings, at Mary Avenue and Sunnyvale Avenue. Areas affected by train noise experience an L_{dn} of 71–73 dBA at 50 feet from the train tracks. Maximum noise events can reach 90 dBA from engine operation and 105 dBA from horns. All residences in the City experience “normally acceptable” train-generated noise levels, with the exception of approximately 80 homes near the tracks at Sunnyvale Station which experience conditions exceeding “normally acceptable” noise levels. Train-generated noise levels are generally acceptable for all nonresidential uses (City of Sunnyvale 2011).

Caltrain trains presently consist of diesel locomotive-hauled, bi-level passenger cars. The current weekday Caltrain operating schedule between San Francisco and San Jose (since April 1, 2019) is composed of a mix of 92 express, limited, and local trains (PCJPB 2019). According to the Caltrain Electrification Project Draft EIR, which estimated ground-borne vibration measurements conducted in the City in 2010, ground-borne vibration reached 77 vibration decibels (VdB) at 50 feet from the tracks, which is considered perceptible to humans (PCJPB 2014). When taken at distances farther than 50 feet, the measured VdB is less than 75.

A mix of electric and diesel trains is scheduled to become operational in 2022 (PCJPB 2019). It would be expected that operational noise associated with Caltrain would lessen as electric trains generate less noise than diesel-powered locomotives; however, given this decrease in engine noise, it is foreseeable that increased horn usage would rise for safety reasons, which could offset the decrease (PCJPB 2014). Adopted policies would address noise and vibration exposure at new land use development located near transit and rail,

by requiring site-specific evaluation and incorporation of appropriate noise attenuation measures, to ensure acceptable noise levels.



Sunnyvale's transportation center located near Evelyn Avenue and Murphy Street is a prime example of how residents and businesses deal with ambient noise while residing in an urban environment.

Light Rail Noise

Light rail noise is generally less than train noise. Noise and vibration studies completed as part of an Environmental Impact Report/Statement for the construction of the Light Rail Project indicated that barriers should be provided to guard against wheel squeal. No excessive noise impacts are expected for residents in these areas.

POLICY SN-10.6 MITIGATE AND AVOID THE NOISE IMPACTS FROM TRAINS AND LIGHT RAIL FACILITIES.

- **SN-10.6a** Monitor plans and projects which would increase the number of commuter or freight trains and evaluate their noise impacts and seek mitigation for any change that worsens local conditions.
- **SN-10.6b** Educate owners of older homes on ways to reduce noise levels from trains.
- **SN-10.6c** Support legislation to reduce the noise level of trains.
- **SN-10.6d** Seek the cooperation of train engineers to avoid unnecessary and prolonged use of air horns except for safety purposes.
- **SN-10.6e** Monitor regional plans for light rail facilities in Sunnyvale to ensure that noise impacts are identified and mitigated.

CHAPTER 7

ENVIRONMENTAL MANAGEMENT

AIR QUALITY

Sensitive Land Use — A use which has populations that are more susceptible to poor air quality, such as children, the elderly, and those with pre-existing health conditions. Examples include residential uses, day-care facilities, schools, hospitals, senior housing, or nursing homes.

Sensitive Receptors — Sensitive populations such as children, elderly, and the sick that are more susceptible to the effects of air pollution than the general population.

GOAL EM-11 IMPROVED AIR QUALITY

IMPROVE SUNNYVALE'S AIR QUALITY AND REDUCE THE EXPOSURE OF ITS CITIZENS TO AIR POLLUTANTS.

All major urban areas in California, including Sunnyvale, experience some degree of reduced air quality. The combination of climatic conditions and a multitude of air pollutant sources (particularly mobile sources) results in reduced air quality, adverse effects on human health, damage to vegetation, and other effects such as soiling, visibility reduction and accelerated corrosion of materials.

One of the major reasons that air quality continues to be a problem in the Bay Area specifically and California in general, is a relatively high rate of population and economic growth. The major obstacle to improved air quality in the future is increasing population and vehicle use and deteriorating operating conditions on highways and roads. Furthermore, the impacts of climate change, including increased frequency of heat waves and wildfires, are projected to exacerbate existing air quality issues in the region.

The major air quality problems in Sunnyvale as well as the broader Bay Area region are high concentrations of ozone, fine particulate matter (PM-2.5), and respirable particulate matter (PM-10) that exceed state and national ambient air quality standards. Ozone is primarily released in the air from combustion sources such as automobiles and factories. PM-2.5 and PM-10 emission sources include fugitive dust, soot, wildfires, and other matter which are small enough to remain suspended in the air for a long period of time. Man-made sources of PM-10 include automobile exhaust, road travel, smoke and factory emissions. Particulate matter emissions from the combustion of diesel fuel, commonly from diesel powered vehicles and landscape equipment, are especially harmful to health and are known as diesel particulate matter (DPM).

While air pollution affects everyone in the Bay Area, low-income communities tend to be most at-risk given the prevalence of existing health risks, lack of resources, and because these communities are historically located in areas with high concentrations of air pollutants. PM-2.5 and DPM concentrations are particularly high in north Sunnyvale, near U.S. Highway 101 (US 101) and State Route 237 (SR 237), with some census tracts in this portion of the City identified as low-income under Assembly Bill 1550 (The Climate Investments for California Communities Act). Figure 7-10 shows low-income communities and areas of high pollution burden in Sunnyvale. To be conservative, the City considers high pollution burden areas as those that have a CalEnviroScreen combined pollution burden score at or above the 50th percentile of all other census tracts in California. Two census tracts in Sunnyvale fall into both low-income and high pollution burden categories. Until air pollution issues are resolved on a regional level, low-income and disadvantaged populations will continue to be disproportionately affected. It is important to consider environmental justice issues in future land use planning projects that involve sensitive land uses or sensitive receptors.

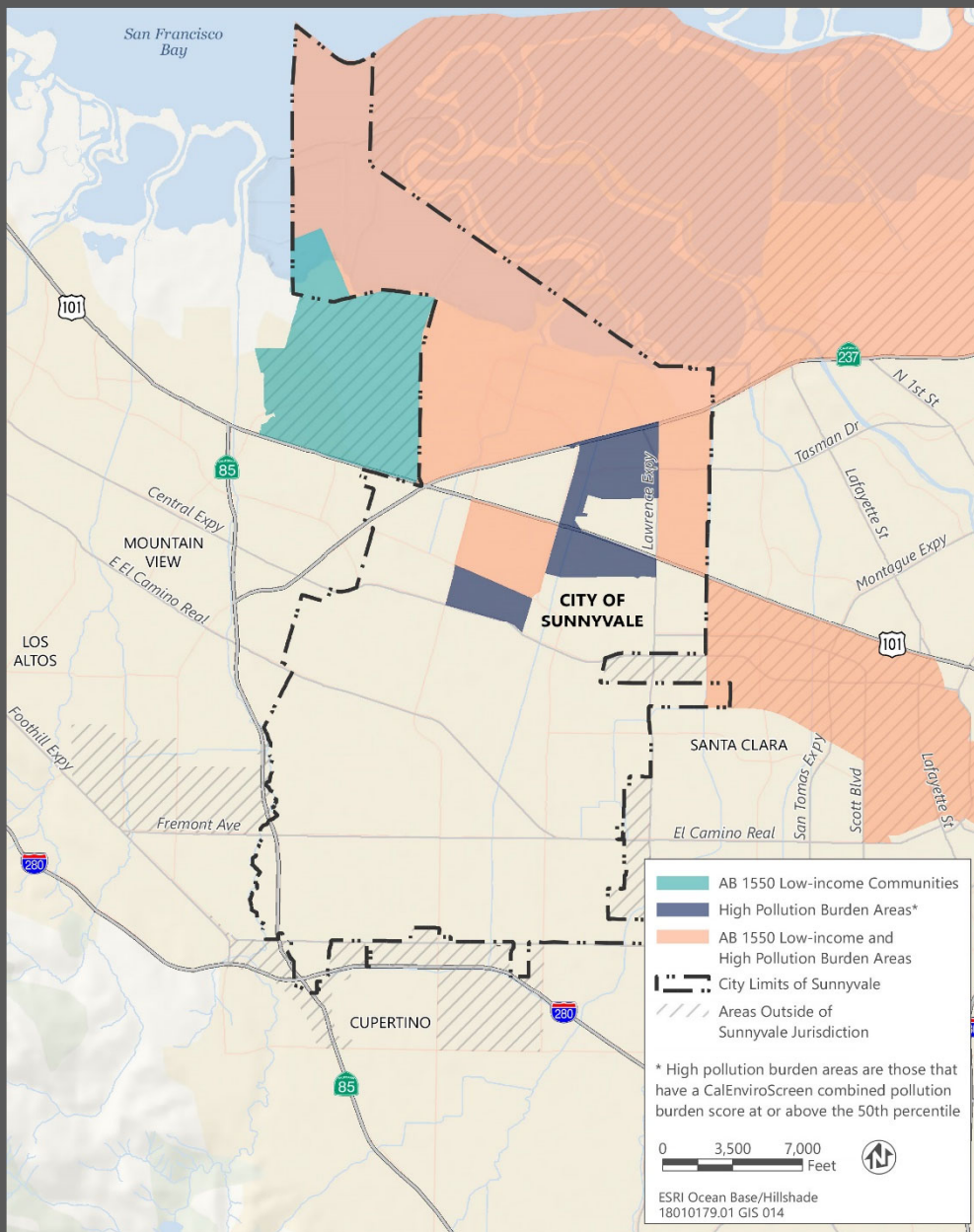


Figure 7-10: Low-income Communities and Areas of High Pollution Burden in the City of Sunnyvale

According to CalEnviroScreen 3.0, two census tracts in the city are within the top 25 percent of highest scoring tracts for the state and may qualify as CalEPA-defined disadvantaged communities, because they fall under 'low-income' and 'high pollution burden' census tracts. However, both census tracts extend beyond city limits and the populations within these tracts reside outside of the City boundaries, falling under the jurisdiction of the City of San Jose and the City of Santa Clara. Because there are no residential uses in the portions of these census tracts within City boundaries; they would not be considered disadvantage communities for the City under SB 535.

California Clean Air Act
— A law setting forth a comprehensive program to ensure that all areas within the State of California will attain federal and state ambient air quality standards by the earliest practicable date. The law mandates comprehensive planning and implementation efforts and empowers local air pollution control districts to adopt transportation control measures and indirect source control measures to achieve and maintain the ambient air quality standards.

See Goal LT-3 (Effective multimodal transportation system) for further discussion and policies on transportation improvements.

To improve air quality, the most efficient and cost-effective technological or “hardware” controls have already been implemented. Remaining technological controls, which are increasingly expensive, have been found to be unable to reduce emissions to the point where all air quality standards (description in the margin) would be met. Therefore, attention has been focused in recent years on the relationship of land use, community design and transportation as a means of reducing air pollutant generation. For further information on air quality measurements and environmental justice, see Appendix H, Air Quality and Environmental Justice Background Report for the City of Sunnyvale General Plan Update.

Cooperation with Regional Agencies

Past efforts by federal, state and local governments have resulted in steady, gradual improvement in air quality in Sunnyvale and the greater Bay Area. Sunnyvale is within the Bay Area Air Quality Management District (BAAQMD). The City of Sunnyvale is implementing several programs and projects that directly or indirectly reduce air pollutant emissions. For example, the City collaborates regionally through Sunnyvale’s Climate Action Plan (CAP) adopted in 2014 and significantly updated in 2019 as the Climate Action Playbook (also CAP). The CAP identifies programs and strategies to improve air quality. Most of these programs are also identified in other programs and are part of a larger regional effort to improve air quality. These projects include:

- Adding express lanes to US 101, SR 85, and SR 237. These lanes provide improved travel time reliability, and efficient usage on all travel lanes.
- Facilitating regional transportation such as, increase in Caltrain service, electrification of Caltrain, construction of California High Speed Rail, and grade separating existing at-grade crossings at Sunnyvale and Mary avenues.
- Constructing the Lawrence Expressway grade separation.

POLICY EM-11.1 ACTIVELY PARTICIPATE IN REGIONAL AIR QUALITY PLANNING.

Land Use and Air Quality

Future development within Sunnyvale impacts regional air quality. Direct impacts are those related to emissions released on-site from stationary sources. Indirect impacts are related to vehicle trips attracted to or generated by residential, commercial or employment-generating land uses.

Stationary Sources — Industries are required to provide information to the public about emissions of toxic air contaminants (description in the margin) and their impact on public health. There are numerous permitted stationary sources within and adjacent to Sunnyvale. The majority of these sources are gasoline stations, emergency backup generators and dry-cleaning facilities. There are two large stationary sources in Sunnyvale that are included in the California Air Resources Board’s (CARB) inventory of large stationary source facilities that emit more than 10 tons of criteria air pollutants per year. These facilities report annual TAC and greenhouse gas (GHG) emissions to CARB.

Future growth in Sunnyvale may include new stationary sources of pollutants. However, any new stationary sources would be subject to BAAQMD's Regulation 2, Rule 2, the New Source Review (NSR) permitting program. The NSR makes progress towards attaining and maintaining compliance with state and national air quality standards by requiring facilities to use the best available control technology (BACT) to limit emissions and by enforcing the "no net increase" requirements of the California Clean Air Act. For pollutants that the Bay Area is designated as a nonattainment area for, facilities are required to "offset" any new emissions increases to ensure that there is "no net increase" in region-wide emissions.

Indirect Sources — Several large roadways pass through Sunnyvale: US 101, SR 82 (El Camino Real), SR 237, Lawrence Expressway, Central Expressway, I-280, and SR 85. Emissions from mobile sources are a large portion of the anticipated increase in emissions in the City and one of the largest sources of criteria air pollutants and ozone precursors. As discussed in the *City of Sunnyvale Land Use and Transportation Element Draft Environmental Impact Report* (LUTE EIR, 2017), despite a reduction in per capita vehicle miles traveled (VMT), future buildout of the General Plan would result in an overall increase in VMT of up to 44 percent over existing conditions (i.e., 2017) in 2035.

Reducing emissions from mobile sources is a critical strategy to meet Sunnyvale's CAP goals and to attain the state and national ambient air quality standards in the Bay Area. There are several methods in which land use regulations can be used to both reduce emissions and alleviate the impact on residents. Infill and transit-oriented residential or mixed-use development help bring people closer to places of employment and retail services. Vehicle use can also be reduced by supporting the development of projects that facilitate and enhance the use of alternative modes of transportation, including pedestrian-oriented retail and activity centers and dedicated bicycle lanes and paths.

CARB and BAAQMD have and will continue to adopt more stringent regulations on existing and future industrial sources, implement more stringent emission standards for vehicles, implement transportation control measures (TCMs) to reduce vehicular emissions, and add new sources to the list of controlled process (e.g., consumer products, fireplaces and wood stoves). These measures should continue to improve air quality in the future.

Toxic Air Contaminants (TAC)
— TACs are a defined set of airborne pollutants that may pose a present or potential hazard to human health. A wide range of sources, from industrial plants to motor vehicles, emit TACs. In California, the Air Toxics Hot Spots Information and Assessment Act (AB 2588), requires stationary sources to report the types and quantities of TACs their facilities routinely release into the air. Locally, the BAAQMD implements and enforces this process through permitting review and issuance.

Vehicle Miles Traveled (VMT)
— A metric that accounts for the number of vehicle trips generated and the length or distance of those trips. Total vehicle miles traveled is the aggregate mileage traveled by all vehicles. VMT is a key measure of overall street and highway use. Reducing VMT is often a major objective in efforts to reduce vehicle congestion and achieve air quality and climate change goals.

See Goal LT-1 (Coordinated Regional and Local Planning) and LT-11 (Supportive Economic Development Environment) for policies on mixed uses and locating housing closer to employment centers.

POLICY EM-11.2 UTILIZE LAND USE STRATEGIES TO REDUCE AIR QUALITY IMPACTS, INCLUDING OPPORTUNITIES FOR CITIZENS TO LIVE AND WORK IN CLOSE PROXIMITY.

POLICY EM-11.3 REQUIRE ALL NEW DEVELOPMENT TO UTILIZE SITE PLANNING TO PROTECT CITIZENS FROM UNNECESSARY EXPOSURE TO AIR POLLUTANTS.

- EM-11.3a Adopt strategies that increase the dispersion of traffic emissions such as requiring new development to include vegetative barriers, solid barriers, or by incorporating design elements to promote air flow and pollutant dispersion along street corridors (i.e., varying the form and height of buildings along street corridors, buffer spaces along high-volume roadways).

Major Pollution Sources include any stationary permitted source, roadways with 10,000 or more average daily trips, highways with 100,000 or more average daily trips, or railways and railyards.

POLICY EM-11.4 (EJ) REQUIRE DEVELOPMENT PROJECTS THAT ARE LOCATED WITHIN 1,000 FEET OF A MAJOR POLLUTION SOURCE AND THAT INCLUDE SENSITIVE USES TO IMPLEMENT ALL APPLICABLE BEST MANAGEMENT PRACTICES THAT WILL REDUCE EXPOSURE TO TACS AND FINE PARTICULATE MATTER (PM-2.5). ALTERNATIVELY, REQUIRE A SITE-SPECIFIC HEALTH RISK ASSESSMENT (HRA).

Heavy-Duty Trucks include all diesel-powered trucks with a gross vehicle weight rating over 8,501 pounds.

POLICY EM-11.5 (EJ) FUTURE NONRESIDENTIAL DEVELOPMENTS IDENTIFIED AS A PERMITTED STATIONARY TAC SOURCE OR PROJECTED TO GENERATE MORE THAN 100 HEAVY-DUTY TRUCK TRIPS DAILY WILL BE EVALUATED IN ACCORDANCE WITH BAAQMD'S GUIDELINES, TO ENSURE THEY DO NOT CAUSE A SIGNIFICANT HEALTH RISK .

Health Risk Assessments are a site-specific quantitative analysis of TAC exposure to sensitive receptors that consider all major sources. All HRAs shall comply with BAAQMD guidance.

POLICY EM-11.6 (EJ) WHERE SIGNIFICANT HEALTH RISK EXPOSURE IS IDENTIFIED, AS DEFINED BY BAAQMD, AT NEW DEVELOPMENT SITES, INDOOR AIR FILTRATION SYSTEMS SHALL BE INSTALLED TO EFFECTIVELY REDUCE PARTICULATE MATTER (PM2.5 AND PM10) LEVELS TO AVOID ADVERSE PUBLIC HEALTH IMPACTS. PROJECT SHALL SUBMIT PERFORMANCE SPECIFICATION AND DESIGN DETAILS TO THE CITY TO DEMONSTRATE THAT LIFETIME RESIDENTIAL EXPOSURES WOULD NOT EXCEED BAAQMD-RECOMMENDED RISK LEVELS.

POLICY EM-11.7: APPLY THE INDIRECT SOURCE RULE TO NEW DEVELOPMENT WITH SIGNIFICANT AIR QUALITY IMPACTS. INDIRECT SOURCE REVIEW WOULD COVER ANY PROJECTS THAT WOULD PRODUCE OR ATTRACT MOTOR VEHICLE TRAFFIC.

POLICY EM-11.8 ENCOURAGE THE USE OF ELECTRIC LANDSCAPING EQUIPMENT (E.G., LEAF BLOWERS, HEDGERS, MOWERS).

POLICY EM-11.9 CONTINUE TO PHASE OUT THE USE OF GAS-POWERED LANDSCAPING EQUIPMENT IN CITY OPERATIONS.

POLICY EM-11.10 REQUIRE DEVELOPMENT PROJECTS TO COMPLY WITH CONSTRUCTION BEST MANAGEMENT PRACTICES, SUCH AS THOSE IN BAAQMD'S BASIC CONSTRUCTION MITIGATION MEASURES.

POLICY EM-11.11 (EJ) PRIORITIZE URBAN GREENING PROJECTS SUCH AS TREE PLANTING, PUBLIC LANDSCAPING, AND POCKET PARKS, IN AREAS OF THE CITY THAT ARE LOW-INCOME AND/OR BEAR A HIGH POLLUTION BURDEN (FIGURE 7-10).

POLICY EM-11.12 (EJ) ENCOURAGE RETROFIT PROGRAMS IN COORDINATION WITH UTILITY PROVIDERS AND BAAQMD TO INSTALL AIR FILTERS IN RESIDENTIAL AND SENSITIVE LAND USES, PRIORITIZING THOSE IN AREAS OF THE CITY THAT ARE LOW-INCOME AND/OR BEAR A HIGH POLLUTION BURDEN (FIGURE 7-10).

Best Management Practices (BMPs) can include a variety of measures, depending on the TAC source and receptor type, including, but not limited to, setback distances, barriers, and building ventilation systems. Refer to Appendix A – Implementation Plans.

Transportation Improvements and Air Quality

Transportation Demand Management (TDM) - Strategies that reduce travel demand such as telecommuting, shuttles, teleshopping, flextime carpooling, increased use of public transit, promoting bicycle amenities, and others to reduce the overall number of vehicle trips.

See Chapter 3 (Land Use and Transportation) Policy LT-3.5 (Follow Congestion Management Program Requirements).

See Chapter 3 (Land Use and Transportation) Policy LT-3.19 (Intelligent Transportation Systems) and Policy LT-3.20 (Traffic Signal Optimization and Response).

See Council Policy 1.2.8 (Transportation Analysis Policy) for further policies addressing Vehicle Miles Traveled.

There are two main ways that transportation improvements can positively impact air quality. The first is to reduce congestion that causes increased vehicle emissions (stop-and-go traffic). The second is to enhance and encourage alternative modes of transportation to reduce the total number of vehicle trips and to use cleaner vehicles.

Sunnyvale has undertaken a variety of congestion management efforts such as, traffic signal improvement and synchronization, Transportation Demand Management (TDM) requirement, and Intelligent Transportation System Implementation. The City encourages alternate transportation modes by improving and expanding existing bicycle and pedestrian networks, supporting an advisory commission for bicycle and pedestrian related policies, implementing safe routes to school (SRTS) improvements, developing education programs to encourage walking and biking, and improving access and reliability of transit services. Sunnyvale also encourages use of cleaner vehicles citywide by electrifying City fleet vehicles and increasing electric vehicle infrastructure requirements to improve air quality with regards to transportation.

POLICY EM-11.13 REDUCE AUTOMOBILE EMISSIONS THROUGH TRANSPORTATION IMPROVEMENTS AND ELECTRIFICATION.

- EM-11.13a Encourage a shift to electric vehicles citywide.
- EM-11.13b Expand requirements to install electric vehicle charging stations citywide, including adjusting minimum requirements for new construction through the City's adopted Reach Codes.
- EM-11.13c Increase electric vehicle infrastructure requirements for existing buildings.

POLICY EM-11.14 PROMOTE ALTERNATE TRANSPORTATION MODES.

- EM-11.14a Continue to support and maintain the City's Bicycle and Pedestrian Advisory Commission (BPAC) to advise City Council on bicycle and pedestrian related policies.
- EM-11.14b Continue to support improvements in accessibility and reliability of transit services.
- EM-11.14c Improve bicycle and pedestrian facilities.
- EM-11.14d Continue to implement education programs to encourage walking and biking.

POLICY EM-11.15 REDUCE VEHICLE MILES TRAVELED PER CAPITA OR PER EMPLOYEE, CONSISTENT WITH CLIMATE ACTION PLAYBOOK AND LAND USE AND TRANSPORTATION COUNCIL POLICY.

POLICY EM-11.16 REDUCE EMISSIONS FROM CITY OF SUNNYVALE FLEET VEHICLES.

POLICY EM-11.17 (EJ) CONSIDER TRANSPORTATION IMPROVEMENTS IN AREAS OF THE CITY THAT ARE LOW-INCOME AND/OR BEAR A HIGH POLLUTION BURDEN (FIGURE 7-10).

POLICY EM-11.18 (EJ) REDUCE ODOR CONFLICTS BY COORDINATING WITH BAAQMD TO MONITOR ODOR COMPLAINTS AND REQUIRE CORRECTIVE ACTION.

POLICY EM-11.19 (EJ) MINIMIZE EXPOSURE OF SENSITIVE USES TO OBJECTIONABLE ODORS BY REVIEWING NEW ODOR SOURCES USING BAAQMD GUIDELINES AND OTHER ENVIRONMENTAL REVIEW PROCESSES AND REQUIRE APPROPRIATE CORRECTIVE ACTION.

APPENDIX B

GLOSSARY

A-weighted decibel (dBA): a logarithmic weighted scale used to characterize the range of sound detectable by the human ear.

Affiliated volunteers: attached to a recognized voluntary organization and are trained for specific disaster response activities. Their relationship with the organization precedes the immediate disaster, and they are invited by that organization to become involved in a particular aspect of emergency management. An example of affiliated volunteers is Sunnyvale Amateur Radio Emergency Services (SARES). (See also Unaffiliated Volunteers)

Ambient Noise: a relatively steady background noise which is an accumulation of different noise sources near and far. Most ambient noise in Sunnyvale is related to transportation. Other ambient noise sources include wind and chirping birds.

Articulation: Variations in the depth of building plane which break up monotonous walls and create interesting patterns of light and shadow.

Assembly Bill (AB) 32: California's Global Warming Solutions Act of 2006. This act requires that California's greenhouse gas (GHG) emissions be reduced to 1990 levels by 2020. This is a reduction of approximately 30% from projected "business-as-usual" levels. AB 32 gives the California Air Resources Board (CARB) authority to identify and regulate sources of GHG emissions. CARB's Scoping Plan for implementing AB 32 includes a wide range of strategies including reducing GHG emissions from cars and light trucks through transportation planning relating to land use. Other measures include implementing green building standards that increase energy efficiency, water conservation, waste reduction, and recycling.

Association of Bay Area Governments (ABAG): In 2017, ABAG merged with MTC to form a consolidated planning agency. ABAG serves as the comprehensive regional planning agency and Council of Governments for the nine counties and 101 cities and towns of the San Francisco Bay Region. The region encompasses Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, and Sonoma counties.

Bay Area Air Quality Management District (BAAQMD): The regional air pollution control agency tasked with regulating stationary sources of air pollution in the counties of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, and Sonoma.

Bay Conservation and Development Commission (BCDC): The California state planning and regulatory agency with regional authority over the San Francisco Bay, the bay's shoreline band, and the Suisun Marsh.

Beneficial Uses: The uses of water of the State of California that are protected against degradation. Examples of beneficial uses include, but are not limited to: domestic, municipal, agricultural and industrial water supply; power generation; recreation; aesthetic enjoyment; navigation; and preservation of fish and wildlife and other aquatic resources or preserves.

Below Market Rate Housing Unit: Any housing specifically priced to be sold or rented to low or moderate-income households for less than the fair-market value of the unit. Includes financing of housing at less than prevailing interest rates. See also Low-income Household, Moderate-income Household, and Very-low income Household.

Bike Lane: A lane along the outer edge of the traveled way of a street delineated by pavement stripes creating a 4- to 6-foot-wide lane and demarcated by signs and pavement

legends denoting “bike lane.”

Bike Path: A paved travel facility separated from any roadway and generally featuring a minimum 10-foot width, demarcation for travel in opposing directions, and improved shoulders.

Bicycle Route: A street delineated with signs identifying the street as designated for bike travel. Minimum widths are not defined, but typically bike routes are designated where connectivity of a bikeway network is provided, on-street parking is minimized, traffic controls are adjusted for bicycles, surface irregularities are minimized, and roadway maintenance is at a higher standard than other streets.

Bikeway: A term encompassing the range of bicycle travel facilities, including bike paths, bike lanes, and bike routes.

CalEnviroScreen: a science-based mapping tool developed by the California Office of Environmental Health Hazard Assessment that helps identify California communities that are most affected by many sources of pollution, and that are often especially vulnerable to pollution’s effects. CalEnviroScreen uses environmental, health, and socioeconomic information to produce a numerical score for each census tract in the state.

Caltrain: Commuter rail serving San Francisco, San Mateo, and Santa Clara counties, overseen by the Peninsula Corridor Joint Powers Board and managed by the San Mateo Transit District.

Certified Unified Program Agency (CUPA): A certification awarded by the California Environmental Protection Agency that allows the City to implement several important State environmental programs locally

Character: Special physical characteristics of a structure or area that set it apart from its surrounding and contribute to its individuality.

Climate Action Playbook (CAP): A planning document that identifies ways in which the community can reduce GHG emissions. The CAP was developed in accordance with the criteria for a Qualified Greenhouse Gas Reduction Program set by BAAQMD and is Sunnyvale’s version of a Climate Action Plan.

Climate Change: Refers to any significant change in measures of climate (such as temperature, precipitation, or wind) lasting for an extended period (decades or longer). Climate change may result from natural factors, such as changes in the sun’s intensity or slow changes in the earth’s orbit around the sun; natural processes within the climate system (such as changes in ocean circulation); and human activities that change the atmosphere’s composition (such as burning fossil fuels) and the land surface (such as deforestation, reforestation, urbanization, or desertification).

Community Garden: Places where neighbors and residents can gather to cultivate plants, vegetables, and fruits and, depending on local laws, keep bees and raise chickens or other livestock and poultry.

Complete Streets: Well-balanced, connected, safe and convenient multimodal street networks that are designed and constructed to serve all users of streets whether they are driving, walking, biking or taking transit.

Congestion Management Program (CMP): Programs developed and managed by organizations formed by 1991 state law to undertake the responsibility for urban area

transportation planning and funding and for managing the county's blueprint to reduce congestion and improve air quality. The Santa Clara Valley Transportation Authority (VTA) is the Congestion Management Agency that develops and implements the Congestion Management Program for Santa Clara County. Components of the Congestion Management Program include traffic analysis requirements for land development, monitoring of transportation system service levels, short- and long-term capital improvement planning and implementation, and allocation of federal, state, and regional transportation funding.

Cyclovía: Closure of the partial or full width of certain streets to motor vehicle traffic for a weekend day and allowing cyclists and pedestrians to use the streets. Stations promoting healthy lifestyles, the arts, or other activities would be available for community participation.

Density: See Residential Density.

Density Bonus: The allocation of development rights that allow a parcel to accommodate additional square footage or additional residential units beyond the maximum for which the parcel is zoned, usually in exchange for the provision or preservation of an amenity at the same site or at another location.

Design Guidelines: Criteria based on the City's General Plan goals and policies, intended to enhance the overall image of the City, protect and preserve the existing character of the community, create a balance between both protecting the existing neighborhood character and accommodating new developments, and achieve a high quality design.

Districts: special areas within a city which have a unique and unified character. Most districts share a predominantly homogenous form of horizontal structures and relatively similar building styles.

Downtown Specific Plan (DSP): An area plan for approximately 150 acres in Downtown Sunnyvale, comprehensively updated in 2020. The plan establishes a common vision for the Downtown, defines a unique market niche, and creates a framework to link current and future downtown projects into a vibrant, cohesive place. The plan allows for mixed use and utilizes principles of transit-oriented development.

Environmental Justice: Goals and policies that promote fair treatment and meaningful participation of people of all cultures, races, and incomes with respect to environmental laws, regulations, and policies, such that everyone gets the same degree of protection from environmental and health hazards and equal access to the decision making process to have a healthy environment where they can live, learn, and work.

Emissions: The release of a substance into the atmosphere, including particulate matter and gases.

Farmers Market (Certified California Farmers' Market): A market (1) operated by a local government agency, one or more certified producers, or a nonprofit organization; (2) certified by and operating in a location approved by the county agricultural commissioner; and (3) where farmers sell directly to consumers agricultural products or processed products made from agricultural products that the farmers grow themselves.

Floor Area Ratio (FAR): The gross floor area on a site divided by the total net area of the site, expressed as a percentage. For example, on a site with 100,000 net square feet of land area, a FAR of 100% will be built with 100,000 gross square feet. On the same site, a FAR of 50% would be built with 50,000 square feet of floor area; a FAR of 35% would be 35,000 square feet. The FAR may also be represented without percentages in some cases (e.g., 100% is the same as 1.0). Also commonly used in zoning, FARs are typically applied on a parcel-by-parcel basis as opposed to an average FAR for an entire land use or zoning district.

Freeboard: a vertical distance, or clearance, from a 1 percent flood incident. Standards set by the FEMA and the Army Corp of Engineers call for a minimum three-foot freeboard.

Gateways: Gateways are specific places along a boundary where people enter and leave the City or district.

Greenhouse Gas (GHG): Any gas that absorbs infrared radiation in the atmosphere. Types of GHGs include water vapor, carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), chlorofluorocarbons (CFCs), hydrochlorofluorocarbons (HCFCs), ozone (O₃), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF₆).

Heavy-Duty Trucks: All diesel-powered trucks with a gross vehicle weight rating over 8,501 pounds.

Heritage Resource: A natural or human-made object of scientific, aesthetic, educational, political, social, cultural, architectural or historical significance to the citizens of the city, the Santa Clara Valley region, the state, or the nation, which are designated and determined to be appropriate for preservation by the city council. See SMC Title 19 for a complete definition.

Heritage Housing District: A zoning overlay which can be added to a residential zoning district to inform the community of the presence of a Heritage Housing District

Infrastructure: Public services and facilities, including schools, roads, communications systems, utilities, etc. (See also Lifelines)

Inundation: Flooding caused by water topping a dam or water released by a dam, reservoir, levee or other break.

Intelligent Transportation Systems (ITS): An umbrella term for a range of technologies including processing, control, communication, and electronics that are applied to a transportation system. As examples, freeway electronic variable information signs, 511 services, and real-time traffic counting systems are considered intelligent transportation systems.

Intersection Level of Service (LOS): A measure of traffic volume and corresponding average delay of conflicting traffic movements to determine the effectiveness of intersection operations. Intersection LOS is most commonly used to analyze intersections and roadway segments by categorizing traffic flow with corresponding driving conditions and roadway and intersection efficiency.

Impervious Surfaces: Constructed or modified surfaces that do not effectively allow infiltration of rainfall into the soil below. Impervious surfaces include, but are not limited to building rooftops, asphalt or concrete pavement, sidewalks and driveways where such surfaces are not constructed with pervious materials. (See also Pervious Surface)

Land Use Operational Noise: a continuous or frequent noise related to the basic use of property. Examples include air conditioners, pool pumps, restaurant loudspeakers and industrial machinery

Lifelines: Essential services that are necessary for the continued functioning of the community following a disaster. They include utilities (gas, electricity, water, sewer and communications), City streets, major highways, bridges and railways lines. Information on age, service, condition and location help emergency preparedness planners assess the likelihood of failure.

Local Landmark: A heritage resource which is significant in that the resource materially benefits the historical character of a neighborhood or area, or the resource in its location represents an established and familiar visual feature of the community or city, and has been designated and determined to be appropriate for preservation by the city council. See SMC Title 19 for a complete definition.

Low-income Household: a household with an annual income usually not greater than 80 percent of the area median income.

Maximum Extent Practicable: A standard for implementation of stormwater management programs under the Clean Water Act to reduce the level of the pollutants in stormwater runoff to the maximum extent possible, taking into account equitable considerations and competing facts including, but not limited to the seriousness of the problem, public health risks, environmental benefits, pollutant removal effectiveness, regulatory compliance, cost, and technical feasibility.

Metropolitan Transportation Commission (MTC): In 2017, ABAG merged with MTC to form a consolidated planning agency. MTC is the transportation planning, financing, and coordinating agency for the nine-county San Francisco Bay Area.

Mixed Use: Properties on which various uses such as office, commercial, institutional and residential are combined in a single building or on a single site in an integrated development project with significant functional interrelationships and a coherent physical design. A single site may include contiguous properties.

Moderate-income Household: A household with an annual income between the lower income eligibility limits (usually 80 percent of the area median family income) and 120 percent of the area median household income.

Multimodal: A transportation system that supports and connects cars, bicycles, pedestrians and public transit.

Nodes: Junctions where roadways or other pathways intersect and there is a crossing or convergence of paths. Nodes are also specific areas around major intersections along El Camino Real in Sunnyvale where more intense mixed-use development is encouraged.

Noise: Unwanted sound. See also Land Use Operational Noise, Single-Event Noise, and Ambient Noise.

Noise-Sensitive Land Use: Land uses where noise exposure could result in health-related risks to individuals, as well as places where quiet is an essential element of their intended purpose, including residences, schools, nursing homes, historic sites, cemeteries, parks, recreation, and open space areas, hospitals and care facilities, hotels and other short-term lodging, places of worship, and libraries.

Non-Transport Use: Use within a roadway right-of-way that does not support the movement of vehicles and pedestrians, such as landscaping and parking (see also Transport Uses).

One Percent Flood: Also known as a 100-year flood, has a one percent probability to being equaled or exceeded in any given year.

Paratransit: Special transport services providing door-to-door service for people not able to use the standard fixed-route, scheduled transit service. Typical customers may be seniors or may have disabilities.

Parking, De-Coupled or Unbundled: Parking that is sold or rented separately from a land use. For example, rather than renting an apartment for \$1,000 per month with two parking spaces at no extra cost, each apartment can be rented for \$850 per month, plus \$75 per month for each parking space; occupants only pay for the parking spaces they actually need. This approach can improve land use and transportation efficiency, since occupants save money when they reduce parking demand, are not forced to pay for parking they do not need, and can adjust their parking supply as their needs change.

Pervious Surfaces: May include natural or designed landscapes or specially constructed paving materials (e.g. pervious paving) that allow stormwater to infiltrate into sub-surface soils.

Planter Strip: A strip of landscaped land typically located between a roadway curb and a sidewalk and oriented longitudinally along a roadway edge that creates an aesthetic feature and provides buffering characteristics for pedestrians from moving automobiles.

Pollution Burden: represents the potential exposures to pollutants and the adverse environmental conditions caused by pollution. Low and high pollution burdens are assigned based on census tracts. High pollution burden is assigned to a census tract with a pollution burden and vulnerability higher than other census tracts with lower scores. Low pollution burden is assigned to census tracts with a pollution burden and vulnerability lower than other census tracts with higher scores.

Residential Density: Residential densities are described as dwelling units per acre (du/acre). For example, a 2-acre site with 14 homes would have a density of 7 du/acre. One acre equals 43,560 square feet.

Road Diet: Reduction of the number of travel lanes on a roadway in order to improve traffic safety, provide bicycle or pedestrian facilities, and/or calm traffic speeds and volumes.

Santa Clara Valley Water District (Valley Water): Provides stream stewardship, wholesale water supply, and flood protection for Santa Clara County. Valley Water was formerly referred to as SCVWD

Scale: the relative relationship in size of buildings and other objects to one another.

Seiche: wave generated in an enclosed body of water

Senate Bill (SB) 375 (Chapter 728, Statutes of 2008): Directs the California Air Resources Board to set regional targets for metropolitan planning organizations to reduce GHG emissions from cars and light trucks. SB 375 aligns the regional allocation of housing needs and regional transportation planning in an effort to reduce GHG emissions from motor vehicle trips. ABAG is the metropolitan planning organization for Sunnyvale and the surrounding region.

Sensitive Receptors: Sensitive populations such as children, elderly, and the sick that are more susceptible to the effects of air pollution than the general population.

Sensitive Land Use: A use which has populations that are more susceptible to poor air quality, such as children, the elderly, and those with pre-existing health conditions.. Examples include residential uses, day-care facilities, schools, hospitals, senior housing, or nursing homes.

Service Level Standard: Standards established for the efficient and cost-effective operation of transportation systems. For example, a transit agency may set ridership, on-time performance, and/or cost per rider objectives as service level standards for guiding decisions on whether to maintain, increase, or decrease a service.

Single-Event Noise: An unusual, occasional or temporary noise. Examples include barking dogs, construction work, deliveries, and athletic, musical or other group events.

Single-Occupant Vehicle: A private vehicle operated on the roadway by a single driver with no passengers.

Smart Growth: A broad concept that describes the change in community design from post-World War II development principles to development that better serves the economic, environmental, and social needs of communities. The US Environmental Protection Agency identified the following ten principles of smart growth: (1) mix land uses; (2) take advantage of compact building design; (3) create a range of housing opportunities and choices; (4) create walkable neighborhoods; (5) foster distinctive, attractive communities with a strong sense of place; (6) preserve open space, farmland, natural beauty, and critical environmental areas; (7) strengthen and direct development toward existing communities; (8) provide a variety of transportation choices; (9) make development decisions predictable, fair, and cost effective; and (10) encourage community and stakeholder collaboration in development decisions.

Specific Plans: A planning document that implements the goals and policies of the General Plan for a specified geographic area in a city. It has development standards like a Zoning District, but also includes design features which strengthen the district identity and may have different land uses than allowed elsewhere. Specific plans can identify appropriate uses, set regulations for building height, setbacks or floor area ratios and establish landscaping standards, architectural design standards, unique street lighting, public plazas and special signage.

Sphere of Influence (SOI): The probable ultimate physical boundaries and service area of a local agency (city or district) as determined by the Local Agency Formation Commission of the County (LAFCO).

Subsidence: Subsidence is the motion of a surface (usually, the Earth's surface) as it shifts downward relative to a fixed point such as sea-level. The opposite of subsidence is uplift, which results in an increase in elevation. Subsidence can occur when too much groundwater is pumped out, causing the land above to sink.

Sustainable/Sustainability: Broadly, to keep up or keep going; to maintain an action or process. In the context of land use and environmental sustainability, there are many definitions and some debate about their merits. The National Environmental Policy Act of 1969 declared as its goal a national policy to "create and maintain conditions under which humans and nature can exist in productive harmony, and fulfill the social, economic and other requirements of present and future generations of Americans." The United Nations' 1987 Report of World Commission on Environment and Development: Our Common Future defined sustainable development as "development that meets the needs of the

present without compromising the ability of future generations to meet their own needs.” It can also be defined as physical development that simultaneously provides for economic prosperity, environmental quality and social equity.

Sustainable Communities Strategy (SCS): A regional growth strategy required under SB 375 that, in combination with transportation policies and programs, strives to reduce GHG emissions, and, if feasible, achieves regional GHG reduction targets set by the California Air Resources Board. The Sustainable Communities Strategy is part of a Regional Transportation Plan, must comply with federal law, and must be based on “current planning assumptions” that include the information in local general plans and sphere of influence boundaries. (See Senate Bill [SB] 375.)

Toxic Air Contaminants (TAC): TACs are a defined set of airborne pollutants that may pose a present or potential hazard to human health. A wide range of sources, from industrial plants to motor vehicles, emit TACs. In California, the Air Toxics Hot Spots Information and Assessment Act (AB 2588), requires stationary sources to report the types and quantities of TACs their facilities routinely release into the air. Locally, the BAAQMD implements and enforces this process through permitting review and issuance.

Trail: A path physically separate from roadway or other transportation systems, but not substituting for those systems, that may be paved and is intended to provide primarily recreation opportunities but may serve transportation needs for bicyclists and pedestrians.

Transit: The conveyance of persons or goods from one place to another by means of a local or regional public transportation system.

Transit, Public: A system of regularly scheduled buses and/or trains available to the public on a fee-per-ride basis. Also called mass transit.

Transit-Oriented Development (TOD): Moderate to higher-density development, located within an easy walk of a major transit stop, generally with a mix of residential, employment, and shopping opportunities designed for pedestrians without excluding the automobile. Transit-oriented development can be new construction or redevelopment of one or more buildings whose design and orientation facilitate transit use.

Transportation Demand Management (TDM): The application of strategies (telecommuting, teleshopping, flextime, carpooling, increased use of public transit and private shuttle) and policies to reduce travel demand of overall vehicles trips. Managing demand can be a cost-effective alternative to increasing capacity. A demand management approach to transport also has the potential to deliver better environmental outcomes, improved public health, stronger communities, and more prosperous and livable cities. Transportation demand management techniques link with and support community movements for sustainable transport.

Transportation System: The infrastructure used for the movement of community members and visitors using all modes of transport through the city including roadways, sidewalks, bike routes, railways, and other pathways.

Transport Use: A conveyance to move persons or goods on a street (see also Non-Transport Use).

Trip: A one-way journey that proceeds from an origin to a destination via a single mode of transportation. Each trip has one “production end” (origin) and one “attraction end” (destination). Typical origins and destinations are home, work, shopping, school, and

entertainment.

Tsunami: A series of waves caused by the sudden shift or subsidence of the sea floor which accompanies some earthquakes. They are characterized by great speed and may cause considerable damage along an exposed coast thousands of miles from the source.

Unaffiliated volunteers: Not part of a recognized voluntary agency and often have no formal training in emergency response. They are not officially invited to become involved but are motivated by a sudden desire to help others in times of trouble. They come with a variety of skills. They may come from within the affected area or from outside the area. (See also Affiliated Volunteers)

Universal Design: The design of products and environments to be usable by all people, to the greatest extent possible, without adaptation or specialized design.

Vehicle Miles Traveled (VMT): A metric that accounts for the number of vehicle trips generated and the length or distance of those trips. Total vehicle miles traveled is the aggregate mileage traveled by all vehicles. VMT is a key measure of overall street and highway use. Reducing VMT is often a major objective in efforts to reduce vehicular congestion and achieve air quality and climate change goals.

Village Center: A specifically identified neighborhood crossroad or district nucleus that is planned to become the focus of activity and future transformative change for the nearby neighborhoods. It is designed to support a lifestyle with less reliance on a private automobile. It is an active, pedestrian-oriented place with neighborhood-serving commercial uses that are close to residents and are mixed, typically vertically, with residential uses. It serves as a meeting place for the community and may also support public and quasi-public services in order to reduce the need for automobile trips. Residential uses in the Village Center address diversity in lifestyles, ages, and incomes in order to allow residents to stay in the neighborhood longer. A Village Center has a unique “sense of place” beyond what has been experienced in Sunnyvale’s older neighborhood commercial areas.

Visual Landmarks: Visually prominent and outstanding structures or natural features that function as points of orientation and identification for individuals and areas of the City.

Very-Low Income Household: A household with an annual income usually no greater than 50 percent of the area median household income. (See also Low and Moderate Income Households)

Zoning: The division of a city or county by legislative regulations into areas, or zones, which specify allowable uses for real property and size restrictions for buildings within these areas. It is a program that implements the General Plan.



CHAPTER 6

SAFETY AND NOISE

The Safety and Noise chapter contains information on the following topics:

- **Hazards and disaster preparedness and response** - information on existing natural and manmade hazards and policies and plans to mitigate these hazards and prepare for disasters.
- **Police, fire and emergency services** - information on police, fire and emergency services and policies and plans to continue to improve these services.
- **Noise** - information on existing and projected noise conditions with policies and programs to maintain or reduce noise from transportation, land use operations and single-event noise.



HAZARDS AND DISASTER PREPAREDNESS AND RESPONSE

GOAL SN-1

ACCEPTABLE LEVELS OF RISK FOR NATURAL AND HUMAN-CAUSED HAZARDS

ENSURE THAT NATURAL AND HUMAN-CAUSED HAZARDS ARE RECOGNIZED AND CONSIDERED IN DECISIONS AFFECTING THE COMMUNITY AND THAT LAND USES REFLECT ACCEPTABLE LEVELS OF RISK BASED ON IDENTIFIED HAZARDS AND OCCUPANCY. *(Previously Safety Mission A / Adopted In 2008)*

Consideration of natural and manmade hazards in land use decisions is a critical component of the City's planning process. By carefully balancing the community's need for safety with other needs such as housing, employment and transportation, the City can ensure that the knowledge of existing safety hazards are reasonably considered in all planning and development review processes.

Among the hazards that should be considered are seismic, flood, fire, hazardous materials and aviation hazards. An important consideration is also the protection of vital City lifelines from hazards. Hazards and lifelines are discussed in more detail below.

POLICY SN-1.1 EVALUATE AND CONSIDER EXISTING AND POTENTIAL HAZARDS IN DEVELOPING LAND USE POLICIES. MAKE LAND USE DECISIONS BASED ON AN AWARENESS OF THE HAZARDS AND POTENTIAL HAZARDS FOR THE SPECIFIC PARCEL OF LAND. *(Previously Safety Policy A1)*

Seismic Hazards

Damaging earthquakes are infrequent; however, they pose the most significant threat in relation to the destruction they may cause to the City.

Sunnyvale is located between two active earthquake faults. (See Figure 6-1, San Francisco Bay Region Earthquake Probability Map.) Scientists have identified four fault segments on which they believe large earthquakes are most likely to occur. The USGS estimated that there is a 63 percent chance for at least one earthquake of magnitude 6.7 or larger to strike in the San Francisco Bay Area before the year 2037. An earthquake of this size could strike at any time.

The City has taken significant steps to reduce the risk of seismic hazards. To improve the seismic safety of buildings in the less stable soil areas of the City, geotechnical reports are now required for all developments in the City. New Building Code requirements and the continuing modernization of the City have greatly reduced the number of structures most

See ~~General Plan~~ In Sunnyvale, ~~com~~ www.sunnyvale.ca.gov for Santa Clara County Sunnyvale's Local Hazard Mitigation Plan and for more information about likely hazards and mitigations.

A 1 percent flood, also known as a 100 year flood, has a 1 percent probability to being equaled or exceeded in any given year.

See the Environmental Management Chapter for more information on the storm drain system.

vulnerable to seismic events. The City actively participates in the State of California Seismic Hazards Mapping Program. In addition, the seismic safety of City buildings has received considerable attention. Many City buildings have been designated as "Essential Services Buildings." Seismic retrofitting of the Community Center, City Hall Annex, Library, Corporation yard (stores section) has been completed, along with all six fire stations.

Other hazards of a seismic event include flooding and fire hazards. A local major earthquake could cause the failure of parts of the levee system in the San Francisco Bay and such a failure could lead to flooding in the northern parts of the City that are below sea level. Fire in the aftermath of an earthquake could also pose serious problems in Sunnyvale. Major variables that could intensify the situation include water system damage, multiple fires and isolation of some areas due to roadway over crossing failures. The following sections discuss flood hazards and fire hazards and mitigations to these effects.

Flood Hazards

Santa Clara Valley is classified as an active flood plain that has been severely altered by human activity. Approximately 1,800 acres of Sunnyvale has been designated by the Federal Emergency Management Agency (FEMA) as Special Flood Hazard Areas (SFHA). The SFHA show areas in Sunnyvale susceptible to flooding (See Figure 6-2, FEMA Flood Hazard Map). In Sunnyvale, SFHAs are generally located in the northeast portion of the City. Flood events are generally caused by a creek topping its banks, clogged catch basins or storm drains.

The City has been a participant in the FEMA Community Rating System (CRS) since 1998. In May 2003, the City of Sunnyvale was granted a Class 7 community rating by FEMA, enabling Sunnyvale citizens and businesses to obtain discounts on their flood insurance premiums. This rating is granted based on the community's participation in public information activities, mapping and regulating activities and flood preparedness and damage reduction activities. Sunnyvale's program addresses flood hazards with a combination of infrastructure projects and building code requirements.

Current Flood Control Infrastructure

Creeks and Flood Control Channels - The Santa Clara Valley Water District (SCVWD or Valley Water) maintains Calabazas Creek, Stevens Creek and the Sunnyvale East and West flood control channels. These channels, coupled with the City's storm drains take the majority of surface run-off to the San Francisco Bay. The East and West Channels and Calabazas Creek were built to contain a 1 percent annual chance flood.

Storm Drain System - The City of Sunnyvale owns and operates approximately 3,200 storm drain inlets, two pump stations and 150 miles of storm drains. Surface runoff from paved areas enters the storm drain system through storm drain inlets, which discharge directly to the Bay. The two pump stations collect runoff from low lying urban areas and discharge the runoff to creeks and sloughs. Since these pump stations are at a higher elevation, gravity flow conveys the stormwater to the Bay.

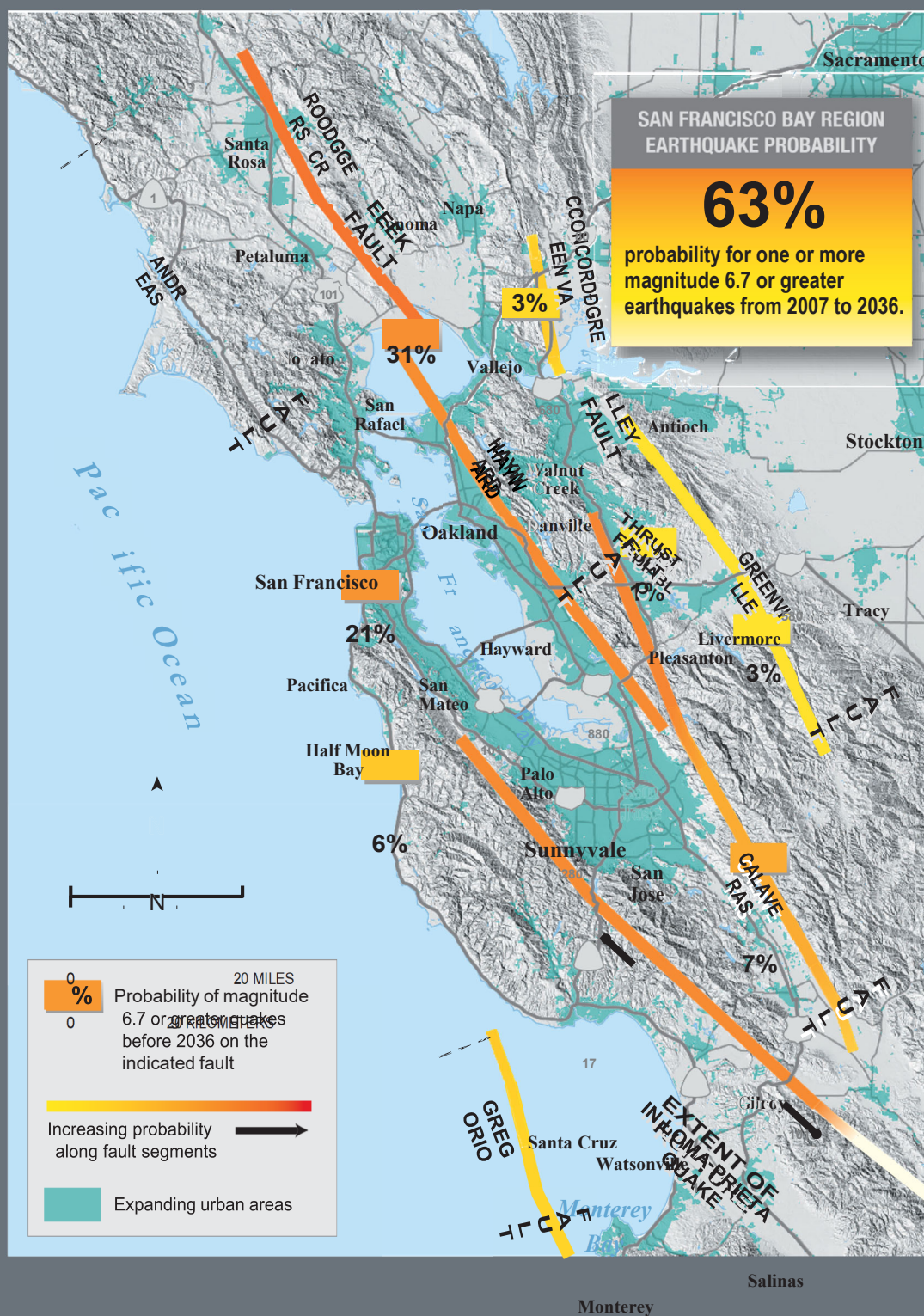


Figure 6-1: San Francisco Bay Region Earthquake Probability

Source: United States Geographic Service (USGS), 2008

For detailed information, refer to Sunnyvale Municipal Code Chapter 16.62 and the Flood Insurance Rate Map on file in the Public Works Department.

Levees and Dikes – Dike and levee systems have been constructed along the San Francisco Bay, originally to form and protect the salt evaporators and concentrators that ring the southernmost arm of the bay, not as a barrier to prevent flooding a populated area. The dikes are constructed of weak, locally-derived Bay materials that are constantly undergoing settlement, erosion by the elements and damage by burrowing animals.

Without the present system of dikes and levees, a part of Sunnyvale normally would be subjected to flooding by tides. It assumed that this would still be the case if these dikes were to be topped breached or failed. To allow use of land that was subject to tidal flooding and subsidence, the levee systems have been extended and strengthened to protect these low-lying lands.

Dams – Stevens Creek Dam, located on Stevens Creek 2.5 miles south of the City of Sunnyvale's boundary, is an earthen dam approximately 135 feet in height. Constructed in 1936, the dam's principal purpose is water supply. The waters impounded in the reservoir are released at a rate such that the waters will percolate into the ground, thus recharging the ground water aquifer.

Building Code Requirements — Sunnyvale has enforced specific building code requirements in the flood prone areas to minimize potential property damage from flooding. Specific requirements for development in these areas to reduce flood hazards include minimum foundation pad heights above the projected flood depth as specified on the Flood Insurance Rate Map.

Future Flood Control Activities

There are four sources of flooding that can threaten Sunnyvale:

Excessive Precipitation – The areas in Sunnyvale that will flood as a result of heavy rains and the resulting surface runoff border Calabazas Creek and the East and West Flood control channels. Specific street flooding will also occur from clogged storm drains and low places in some roadways.

Storm drain inlets are routinely inspected prior to the rainy season each year and cleaned, if necessary, to prevent flooding, alleviate odors and/or prevent mosquitos from breeding. Maintenance crews also clean inlets in response to citizen and business complaints. The majority of the inlets are shallow (less than three feet deep) and debris is removed manually. Deeper inlets are cleaned using a vacuum truck and flushed with water to eliminate remaining debris.

Three significant flooding events have occurred in Sunnyvale since the 1993 writing of the Seismic Safety and Safety Sub-element. These events occurred in 1995, 1997 and the *El Nino* flooding of 1998. These were all declared disasters throughout Santa Clara County. In the years following these storms, the SCVWD, as the agency that maintains and improves the flood control channels in SCVWD completed a project to construct wing walls along Calabazas Creek several feet higher than they were. Additional channel openings, called "boxes", were also installed under Homestead Road, Vireo Avenue and Lochinvar Avenue, expanding the creek size under these streets. As a result of this improvement, in 2009, City and SCVWD staff worked together to petition FEMA to remove more than 200



Figure 6-2: FEMA Flood Hazard Map

acres of flood zone properties in Sunnyvale along Calabazas Creek, in the vicinity of both Vinemaple Avenue and Oakmead Parkway.

The District is also in the planning and design stage of two capital projects to improve the capacity of the Sunnyvale East and West Channels. The two projects were part of the 2000 voter-approved Clean, Safe Creeks Program (Measure B). Once completed, the projects will provide 100-year flood protection to 1,600 parcels along the Sunnyvale East Channel and 47 acres of industrial lands along the Sunnyvale West Channel. In August 2010, the District Board approved the Planning Study Report and its recommendation for flood protection. Currently the project is in the design phase. Construction is expected to commence in spring of 2014.

Subsidence — Subsidence is the motion of a surface (usually, the Earth's surface) as it shifts downward relative to a fixed point such as sea-level. The opposite of subsidence is uplift, which results in an increase in elevation. Subsidence can occur when too much groundwater is pumped out, causing the land above to sink.

Tidal and Tsunamis — Earthquakes may generate flooding from a tsunami (sea wave caused by an earthquake), seiche (wave generated in an enclosed body of water), or dam failure. A tsunami off the San Francisco coast could cause Bay water to top local levees, especially if it arrived at high tide. Tidal flooding could occur if the system of dikes and levees failed or their banks overflowed. Local earthquakes could cause failure in parts of the levee system which would create problems if a tsunami were to happen as well. The Santa Clara Valley Water District's system is put in place to help reduce damage done by all hazards discussed above whether they happen individually or simultaneously.

The problem of dike vulnerability has been compounded by the general lowering of the ground surface in this part of Santa Clara County — six to eight feet from 1916 to 1966 in the northern areas of the City. During the same time frame the ground subsided three to four feet in the areas along El Camino Real. Until ground water recharge methods were initiated in the late 1960s, the amount of freeboard on the dikes was constantly being diminished by an accelerated subsidence rate caused by groundwater withdrawal. Although human-caused subsidence has been minimal since 1967, a certain amount of subsidence is happening naturally due to regional tectonic movements, peat decay and a three inch rise in the sea level during the last 50 years.

A Capital Improvement Project was completed by the Department of Public Works in 2006 to repair and strengthen the levees surrounding the ponds, reducing the chance that the levees would fail in the event of a major earthquake.

Freeboard — a vertical distance, or clearance, from a 1 percent flood incident. Standards set by the FEMA and the Army Corp of Engineers call for a minimum three foot freeboard.

Dam Failure — Failure of the Stevens Creek Reservoir dam caused by an earthquake could also affect the City of Sunnyvale. Most significantly affected would be the southwest part of the City south of Remington and west of Sunnyvale-Saratoga Road. This estimated flood inundation area is based upon the maximum 3,700 acre-feet storage capacity of the reservoir. Depending upon the quantity of water released, the depth of flooding could vary from several inches to several feet. For any large release of water Interstate-280 would act as a barrier to keep some water out of Sunnyvale.

Safety improvements to the reservoir and the dam were made in the mid-2000s. The reservoir and the dam were engineered to withstand an earthquake on the San Andreas Fault of a magnitude 8.25 on the Richter scale. Upstream and downstream berms were built and the dam was raised 10 feet. The contour of gentle slopes surrounding the dam, plus the compacted earth along the sides and the face of the dam, were designed to encourage run-off and the collection of water and to discourage landslides. The spillway

was also upgraded to be capable of withstanding a flow of 15,600 cubic feet per second. As an added precaution, safety inspections are done after all earthquakes of 5.0 or greater magnitude.

Rise in Sea LevelClimate-Related Hazards - Global climate change is exacerbating the frequency and intensity of extreme weather events and hazards cities worldwide will face. Climate change impacts include rising sea levels, more frequent and intense storms, and drier conditions that catalyze wildfires. Although changes in sea level have been gradual and constant over the past 5,000 years, the rate of sea level rise in the past 100 years has almost doubled during the past several decades due to climate change. ~~The cause of the increase in the rate of sea level rise may be due in part to climate change and high levels greenhouse gas intensities.~~ A rise in sea level could cause significant problems in the future: flooding, shoreline erosion and saltwater intrusion into ~~fresh water~~ freshwater streams and aquifers. Although subsidence is now controlled by groundwater recharge and management of pumped aquifers, it may not be feasible to control the effects of global warming on rising sea levels.

To mitigate climate impacts, the City adopted an initial Climate Action Plan (2014) and later the Climate Action Playbook (2019), a long-term roadmap to reducing greenhouse gas emissions. The Climate Action Playbook includes “Strategy 6: Adapting to a Changing Climate,” which specifically focuses on how the City can better prepare to address climate-related hazards.

Sunnyvale adopted the Santa Clara County Local Hazard Mitigation Plan (2017), a multi-jurisdictional planning document for hazard mitigation. This plan includes climate resiliency measures to adapt and prepare for climate change.

No landslides on any of the county's dams have occurred in the past decade, not even in the 1995, 1997 and 1998 “El Nino” storms or after the 1989 earthquake.

POLICY SN-1.2 TAKE MEASURES TO PROTECT LIFE AND PROPERTY FROM THE EFFECTS OF A 1 PERCENT (100 YEAR) FLOOD. ~~(Previously Safety Policy A2)~~

- **SN-1.2a** Encourage the Santa Clara Valley Water District to reevaluate the capacity of Stevens Creek, Calabazas Creek, Sunnyvale East, West and El Camino Flood Control Channels in relation to a 1 percent (100 year) flood. ~~(Previously Seismic Safety and Safety Key Initiative A.2.1)~~
- **SN-1.2b** Encourage SCVWD to maintain their dikes and levees at least 3 ft. above the 1 percent flood level and to provide continued inspection and repair from damage caused by burrowing animals. ~~(Previously Seismic Safety and Safety Key Initiative A.2.3)~~

POLICY SN-1.3 OPERATE AND MAINTAIN THE STORM DRAINAGE SYSTEM AT A LEVEL TO MINIMIZE DAMAGES AND ENSURE PUBLIC SAFETY. ~~(Previously Surface Runoff Policy C.1)~~

- **SN-1.2c** Participate in the National Flood Insurance Program. ~~(Previously Seismic Safety and Safety Key Initiative A.2.5)~~

POLICY SN-1.4 MONITOR AND PLAN FOR HYDRAULIC CHANGES DUE TO GLOBAL WARMING, EARTHQUAKES AND/OR SUBSIDENCE.

(Previously Surface Runoff Policy C.3)

- **SN-1.4a** Budget for and construct additional storm drainage detention and pumping facilities as needed, to assure the continued ability to discharge urban runoff and stormwater into channels, creeks and San Francisco Bay. *(Previously Surface Runoff Action Statement C.3.d)*
- **SN-1.4b** When designing structures along shorelines, consider future sea level changes. *(Previously Surface Runoff Action Statement C.3.e)*

POLICY SN-1.5 (EJ) INCREASE THE RESILIENCE OF FLOOD CONTROL INFRASTRUCTURE WITHIN AND NEAR FEDERAL EMERGENCY MANAGEMENT AGENCY-DESIGNATED FLOOD ZONES TO PROTECT COMMUNITIES FROM EXISTING FLOOD IMPACTS AND PROJECTED CLIMATE VULNERABILITIES.

Fire Hazards

Sunnyvale has a relatively low risk factor for fire loss and past fire experience has demonstrated Sunnyvale to be a relatively fire-safe community. However, as in any City, the potential for serious fire events is ever present. A trained and well-equipped fire service must be ready to respond to fires and other incidents. While the potential for extraordinary disaster always exists, and while the aging process of the City and its buildings will have some adverse impact on fire loss, the overall environment is comparatively fire-safe.

Because Sunnyvale is a relatively new community and because the City has a strong facilities inspection and fire education program, the incidence of fire is low. Each year, inspections are completed at all commercial facilities, apartments, hotels and schools with an emphasis on prevention. Additionally, fire station-based education programs target school children, while the Crime Prevention Unit provides more advanced public education programs to businesses and neighborhoods.

The majority of fires experienced in Sunnyvale are kitchen fires caused by inattention while cooking. Future public education will focus on residential kitchen fires to raise awareness and provide the community with information that will help to reduce the incidence of these types of fires.

See Goal SN-5 (Effective Fire Response System) for further information and policies on fire risk and response.

Hazardous Materials

For decades, Sunnyvale has been home to many innovative high tech companies. New and emerging technology companies (e.g. solar cell companies and LED light manufacturers) whose presence here is vital to a thriving and diverse business community, require the use of a large variety of hazardous materials, including highly toxic compressed gases. The highest hazard facilities, those with larger quantities of hazardous materials or materials having greater toxicity, are located in the industrial area in the northern part of the City.

As of 2010, more than 900 businesses in the City of Sunnyvale store or use hazardous materials in quantities requiring a permit. By serving as a Certified Unified Program Agency (CUPA) the City's Department of Public Safety is able to conduct inspections of hazardous materials facilities and to review and certify risk management plans to prevent accidental releases of hazardous materials. The City also maintains a hazardous materials response team, which is specially trained and equipped to mitigate emergencies that result in hazardous materials spills, releases and discharges. This team is relied upon to maintain the safety of all citizens when confronted with an emergency involving hazardous materials. The City has also improved Hazardous Materials response by maintaining a Type II HazMat Response Unit.

New hazardous materials threats continue to emerge in research and development activities, as well as terrorist initiated use of chemical, biological, radiological, nuclear and explosive (CBRNE) (also known as weapons of mass destruction (WMD)) agents. The City will continue to evaluate the need for collaborating between hazardous materials inspectors and first responders.

The State of California recognized and responded to the need for increased sharing of hazardous materials information by passing Assembly Bill 2286 which requires all businesses handling regulated quantities of hazardous material to electronically report inventories and site maps to the jurisdiction by 2013. Similarly, the City will be required to report hazardous materials inventories and compliance inspection data to the state by 2013.

Certified Unified Program Agency —
A certification awarded by the California Environmental Protection Agency that allows the City to implement several important state environmental programs locally.

POLICY SN-1.5-6 PROMOTE A LIVING AND WORKING ENVIRONMENT SAFE FROM EXPOSURE TO HAZARDOUS MATERIALS. *(Previously Safety Policy A3)*

- **SN-1.5a-6a** Maintain the City's status as a Unified Program Agency as certified by the Environmental Protection Agency. *(Previously Seismic Safety and Safety Key Initiative 4.3.3)*

POLICY SN-1.7 (EJ) COORDINATE WITH STATE AND COUNTY AGENCIES TO PRIORITIZE HAZARDOUS SITE CLEANUP AND REMEDIATION ACTIVITIES IN LOW-INCOME AND HIGH POLLUTION BURDEN BEARING COMMUNITIES.

POLICY SN-1.6-8 OPERATE A RESPONSE SYSTEM THAT WILL PROVIDE EFFECTIVE CONTROL AND INVESTIGATION OF HAZARDOUS MATERIALS EMERGENCIES. ~~(Previously Fire Services Policy 4.2B.2)~~

- **SN-1.6a-8a** Provide a specially trained and equipped response team capable of mitigating emergencies resulting from hazardous materials leaks, spills and discharges and conduct related inspections and permit activities. ~~(Previously Fire Services Action Statement 4.2B.2a)~~
- **SN-1.6b-8b** Consider electronic technology to provide Hazardous Materials Management Plan (HMMP) information "on-line" at emergency scenes. ~~(Previously Fire Services Action Statement 4.2B.2c)~~
- **SN-1.6c-8c** Consider regional hazardous materials response system. ~~(Previously Fire Services Action Statement 4.2B.2d)~~
- **SN-1.6d-8d** Study potential impacts of emerging bio-technology on response capabilities and related inspection and permit activities. ~~(Previously Fire Services Action Statement 4.2B.2e)~~

Aviation Hazards

Sunnyvale lies in the landing pattern of Moffett Federal Airfield and, during south winds, planes take off over heavily-developed areas. Risk of future accidents exists even though the Navy's usage of Moffett Field as a Naval Air Station ended in 1994.

Compatible land uses for and around NASA Ames/Moffett Field have been the subject of intense debate for many years. Other than the potential of aircraft accidents, noise is the most significant concern of area residents. The noise levels at Moffett Federal Airfield have dropped significantly since the Navy was operating the field. Stage III aircraft are now required for aircraft landing at Moffett. This is the lowest level for both noise and emission levels. Both the level of activity and noise levels are more closely examined in the Noise subsection of this chapter.

In 2012, the Santa Clara County Airport Land Use Commission (ALUC) has completed a Comprehensive Land Use Plan (CLUP) for Moffett Federal Airfield, which is intended to be used to safeguard the general welfare of the inhabitants within the vicinity of an airport. CLUP estimates 24,000 annual aircraft flight operations occur at Moffett Airfield until at least 2022. NASA/Ames has recently explored and initiated the leasing of airfield usage to large private companies as part of corporate collaborations. Close Close monitoring of future increased in usage flight operations and potential growth of Moffett Field is warranted important. While Sunnyvale has no direct authority over NASA/Ames, NASA has been responsive to the cities of Sunnyvale and Mountain View regarding noise/traffic levels.

See Goal SN-10 (Maintained or Reduced Transportation Noise) for further discussion and policies about Moffett Field noise.

Further policies addressing NASA Ames/Moffett Field are available in the Council Policy Manual, available at www.sunnyvale.ca.gov

POLICY SN-1.7-9 MAKE PLANNING DECISIONS THAT ESTABLISH AND/OR MAINTAIN A SAFE MIX OF AVIATION AND LAND USE FOR THE AREAS AFFECTED BY ~~NASA AMES/MOFFETT FIELD~~ **MOFFETT FEDERAL AIR FIELD**. *(Previously Safety Policy A4)*

- **SN-1.7a-9a** Oppose any effort to promote Moffett **Federal Air** Field for civil/general aviation. *(Previously Safety Key Initiative A.4.1)*

Lifelines

Lifelines are essential services that are necessary for the continued functioning of the community following a disaster. They include utilities (gas, electricity, water, sewer and communications), City streets, major highways, bridges and railways lines. Information on age, service, condition and location help emergency preparedness planners assess the likelihood of failure.

Electric Power – PG&E provides the natural gas and electrical power for Sunnyvale. The severity of damage to these utilities resulting from an earthquake and what effects it will have is very difficult to forecast. PG&E has three electrical sub-stations in the Sunnyvale area – along with a backup power supply network comprised of multiple transmission lines. If power is interrupted, service from other sources can be obtained.

Water Service – Sunnyvale has four sources of potable water in the City: San Francisco's Hetch Hetchy system, the Santa Clara Valley Water District (SCVWD), 10 City wells and Cal Water. This system supplies both domestic and emergency water for the City. Projects were completed in the 1990's that provide the grid connections in Sunnyvale's water delivery system that will allow water from any supply source to be distributed to any area of the City, along with additional backup supply sources.

Sanitary Sewer – The Water Pollution Control Plant (WPCP) is a large facility that processes all of the City's sewage. The WPCP has two separate generators normally used every day that supply approximately 90 percent of the electrical needs of the plant. Operators of the plant have participated in a thorough training program in plant operations and emergency incidents (including chemical spills, leaks and containment procedures).

Roadways and Overcrossings – Sunnyvale has 46 major roadway over-crossings and bridges on streets and freeways within City limits. Sunnyvale has completed seismic retrofitting for all over-crossings in the City of Sunnyvale. The Mathilda overcrossing at Evelyn is scheduled for modernization and widening to be completed with the most recent seismic safety standards by 2011.

See EM-1, EM-2, EM-3 and EM-4 (Water Supply) for further discussion and policies in the Environmental Management Chapter.

POLICY SN-1.8-10 MAINTAIN LIFELINES IN GOOD OPERATING CONDITION TO LESSEN DAMAGE AND INCREASE SURVIVABILITY AFTER A MAJOR DISASTER. *(Previously Safety Policy A5)*

For more information about the levee system, see the Flood Hazards discussion.

- **SN-1.8a-10a** Study, evaluate and fund the improvements needed to the levee system at the Water Pollution Control Plant to increase its ability to survive a major earthquake. *(Previously Seismic Safety and Safety Key Initiative A.5.3)*
- **SN-1.8b-10b** Actively pursue funding for the undergrounding of utilities in accordance with the principals and guidelines of Public Utilities Commission and PG&E Tariff Rule 20-A. *(Previously Seismic Safety and Safety Key Initiative A.5.4)*

GOAL SN-2 EFFECTIVE DISASTER PREPAREDNESS

ENSURE THAT THE CITY, ITS COMMUNITY MEMBERS, BUSINESS, FAITH-BASED ORGANIZATIONS, COMMUNITY ORGANIZATIONS AND SPECIAL NEEDS POPULATIONS ARE PREPARED TO EFFECTIVELY RESPOND AND RECOVER FROM MAJOR DISASTERS AND EMERGENCIES. *(Previously Seismic Safety and Safety Mission B and C Combined / Adopted in 2008)*

There is a difference between the day-to-day response to emergencies and the response needed to meet the demands of a disaster. City Departments respond to the routine emergencies of the community. However, disasters pose a different set of demands that the normal resources and established levels of service cannot meet. In general terms, a disaster is defined as an emergency event which exceeds the capacity of the City to handle it in the same manner as it handles the day-to-day emergencies. Effective disaster management requires the City to use all of its resources to meet emergency needs.

The overall strategy of disaster management is to provide for an integrated approach to preventing, planning, responding, preparing and mitigating disasters.

Isolation after a Disaster

Neighborhood and/or community isolation after a disaster such as a major earthquake is likely as some normal transportation routes and communication lines may be damaged during such an event. Internal isolation occurs when the City's ability to receive reports of emergencies, relay emergency information and respond to citizen's requests for help is limited by destroyed or damaged lifelines. External isolation occurs when the City's ability to communicate emergency conditions and the ability to request or receive outside emergency resources is lost due to destroyed or damaged lifelines. When these effects delay or prevent the delivery of emergency services into affected areas it increases the level of risk to persons and property.

Emergency Planning and Coordination

Responsibility for preparing for emergencies lies both with the City and the members of the community. No government agency has all the resources needed to respond to all the needs of its community members in or after a disaster. The City has established an emergency management program to coordinate emergency planning for neighborhoods, schools and businesses. When City resources are exhausted and a local emergency has been declared, outside assistance can be requested through an established network of local, operational area, regional, state and federal mutual aid.

Community and Staff Notification Systems

Public Safety has automated a notification system that uses two different methods to rapidly notify personnel for emergencies. The first method is the rapid, automatic notification of specific groups of staff members identified as having certain needed skills sets, such as SWAT, Hazardous Materials, Accident Investigation teams and DPS administration. Santa Clara County also has a Web base that allows any subscriber in the county to enter their phone number, usually cell number, and e-mail address. Santa Clara County implemented a system which includes this Web-based "reverse 911" type system in 2010.

Community Resources

One of the City's greatest resources is its people. When a disaster – natural or man-made – strikes a community, spontaneous, unaffiliated volunteers – neighbors and residents – often arrive on-site at a disaster ready to help. As seen in previous disasters (e.g. Loma Prieta Earthquake, September 11 tragedy, Hurricane Katrina, etc.) affiliated and unaffiliated volunteers willingly and in unprecedented numbers, will do anything to provide assistance in recovery efforts including office work, treating the injured, looking for the missing, making signs, removing debris from collapsed structures and interviewing other volunteers. In Santa Clara County, specifically in Sunnyvale, the City is providing the means beforehand to identify and train affiliated volunteers and have in place an Emergency Volunteer Plan to address the needs of unaffiliated volunteers.

Unaffiliated volunteers are not part of a recognized voluntary agency and often have no formal training in emergency response. They are not officially invited to become involved but are motivated by a sudden desire to help others in times of trouble. They come with a variety of skills. They may come from within the affected area or from outside the area.

Volunteer and resource programs include:

- **Sunnyvale Neighborhoods Actively Prepare (SNAP)** - a program to educate and train our residents to take care of themselves in the aftermath of a major disaster.
- **Project Ark** - a disaster shelter program that involves emergency containers called "ARKS" placed at eight school sites around the City.

Affiliated volunteers are attached to a recognized voluntary organization and are trained for specific disaster response activities. Their relationship with the organization precedes the immediate disaster and they are invited by that organization to become involved in a particular aspect of emergency management. An example of affiliated volunteers is Sunnyvale Amateur Radio Emergency Services (SARES).

- **Sunnyvale Amateur Radio Emergency Services (SARES)** - an organization of more than 100 amateur radio operators in the community that provide assistance to the City at both routine special events, when additional radio communications are needed and during emergencies/disasters.
- **Volunteer Emergency Response Team (VERT)** - a team created by the City of Sunnyvale to organize emergency volunteers.
- **Volunteer Center** - a countywide workgroup sponsored by the Volunteer Center of Silicon Valley and the Emergency Manager's association to plan and coordinate volunteers during a major disaster or emergency.
- **City Disaster Workers (DSW)** - a training given to all City employees to enable them to remain at, or report back to work in the event of a disaster.
- **Other City Volunteering Efforts** - the City allows employees to volunteer for disaster relief efforts during normal work hours with City approval.

Post Disaster Recovery

The recovery from a disaster needs to be as well planned as the initial emergency response. When a community has been devastated by a disaster, pressure from displaced businesses and families to rebuild as quickly as possible can be overwhelming for the local Planning Commission and City Council. If this happens, little thought will be given to correcting past mistakes, evaluating changes in land usage and their long-range effects on a community. A community can effectively plan to recover from a disaster and with thoughtful planning; those strategies will provide a framework for the recovery.

Local Hazard Mitigation Plan

In 2005, ABAG received grant funds to assist local agencies to comply with the Disaster Mitigation Act of 2000 requirements. ABAG invited local agencies to participate and complete the detailed planning necessary to create a pre-disaster mitigation plan. ABAG completed a regional plan for the nine Bay Area counties which was adopted by ABAG on March 17, 2005 after being approved by FEMA. Local agencies were given the opportunity to partner with ABAG to reduce the staff time required to complete a plan. Sunnyvale staff participated with ABAG and completed a FEMA approved Local Annex to the approved ABAG Plan in 2005. The plan is part of an overall strategy to reduce or eliminate long term risk to life and property from a natural hazard event. Adoption of the "Local Annex" ~~as a~~ as a part of the overall plan better prepares Sunnyvale for future emergencies and allows the City to apply for FEMA grant funds to mitigate existing risks. Sunnyvale's first Local Hazard Mitigation Plan (LHMP) was adopted in 2005.

Sunnyvale's 2005 Local Hazard Mitigation Plan (LHMP) Annex focuses on the nine likely hazards to occur in the Bay Area. The nine hazards are five earthquake related hazards – faulting, shaking, landslides, liquefaction and tsunamis; and four weather related hazards – flooding, landslides, wildfires and drought.) The LHMP continues to be examined and analyzed for future needed changes that may develop in the area of recovery. In 2017, Sunnyvale adopted the Santa Clara County regional Local Hazard Mitigation Plan, to update the City's LHMP which incorporates the County and all incorporated cities in the County to provides an updated multi-jurisdictional hazard mitigation plan for all incorporated cities in the County. This plan includes mitigation measures to prevent and reduce hazard loss; protect people, properties, and natural resources; improve public awareness and emergency response services; and minimize the impacts of climate change. This plan ~~will be~~ will be updated periodically.

For more information on the City's emergency preparedness and volunteer programs and other resources, see ees.inSunnyvale.com www.sunnyvale.ca.gov

See Goal SN-1 (Recognition of Natural and Human-Caused Hazards) for further discussion and policies on hazards and ~~general plan.inSunnyvale.com~~ for the Local Hazard Mitigation Plan (LHMP) see www.sunnyvale.ca.gov.

POLICY SN-2.1 CONSTRUCT OR MAINTAIN CITY FACILITIES UTILIZED FOR EMERGENCY RESPONSE TO ESSENTIAL SERVICES BUILDINGS, SO THAT THEY REMAIN OPERABLE AFTER A MAJOR SEISMIC EVENT. ~~(Previously Safety Policy B1)~~

POLICY SN-2.2 PROVIDE FOR THE EMERGENCY MANAGEMENT OF THE CITY IN ORDER TO RESPOND EFFECTIVELY AND TO ASSURE LIFE AND PROPERTY SAFETY IN THE EVENT OF A DISASTER. ~~(Previously Safety Policy B2)~~

- **SN-2.2a** Develop an alternate Emergency Operations Center site, in the event of loss of the primary site. ~~(Previously Safety Key Initiative B.2.4)~~

POLICY SN-2.3 PROVIDE AN INTEGRATED APPROACH TO PLANNING AND MANAGEMENT FOR EMERGENCIES AND DISASTERS. ~~(Previously Safety Policy B3)~~

POLICY SN-2.4 PROVIDE INFORMATION, ASSISTANCE AND ENCOURAGEMENT TO COMMUNITY MEMBERS, PUBLIC/PRIVATE SCHOOLS, DAY CARE CENTERS, BUSINESS AND INDUSTRY TO ASSIST IN THEIR PLANNING AND PREPAREDNESS FOR EMERGENCIES AND DISASTERS. ~~(Previously Safety Policy B4, B5 and B6)~~

POLICY SN-2.5 PROVIDE EMERGENCY RADIO OR OTHER COMMUNICATION DEVICES FOR COORDINATION OF EMERGENCY RESPONSE AND THE CAPABILITY TO COMMUNICATE WITH OUTSIDE AGENCIES AND COMMUNITY MEMBERS. ~~(Previously Safety Policy B7)~~

POLICY SN-2.6 ACTIVELY SEEK AND APPLY FOR GRANT FUNDING FROM AVAILABLE GOVERNMENTAL AND PRIVATE SOURCES THAT WOULD ENHANCE EMERGENCY PREPAREDNESS. ~~(Previously Safety Policy B8)~~

POLICY SN-2.7 PROVIDE FOR THE CONTINUATION OF CITY GOVERNMENT AND SERVICES FOLLOWING A MAJOR DISASTER AS QUICKLY AS FEASIBLE. ~~(Previously Safety Policy C1)~~

POLICY SN-2.8 ENCOURAGE COMMUNITY MEMBERS AND BUSINESS/INDUSTRY TO PLAN FOR RECOVERY FROM DISASTERS AS QUICKLY AS FEASIBLE. ~~(Previously Safety Policy C2)~~

POLICE, FIRE AND EMERGENCY SERVICES

GOAL SN-3 SAFE AND SECURE CITY

ENSURE A SAFE AND SECURE ENVIRONMENT FOR PEOPLE AND PROPERTY IN THE COMMUNITY BY PROVIDING EFFECTIVE PUBLIC SAFETY RESPONSE AND PREVENTION AND EDUCATION SERVICES *(Previously Law Enforcement Goal 4.1A and 4.1B/Adopted in 1995)*

Community safety is the top priority for the City. The community, both residents and visitors, must feel fundamentally safe while living, working or conducting daily activities within the City of Sunnyvale. This is accomplished in many ways; from prevention of the crime before it occurs, to patrol response to the emergency, to investigation of the crime once the initial report has been written. In addition to crime prevention and investigation, there are non-criminal emergencies as well as traffic related community safety concerns.

The City's crime prevention function has two aspects: Eliminating the desire and eliminating the opportunity to commit crime. While it may be more difficult to eliminate one's desire to commit a crime, the City can lessen the desire by taking away the opportunities. Current crime prevention techniques include the environmental design of residential and commercial developments, neighborhood watch programs, community

education in sexual assault awareness and robbery prevention and high visibility patrol.

One of the key elements of any successful crime prevention program is community involvement. This is accomplished by reaching out to citizens of all ages and socio-economic background. The City has forged these relationships in the schools, neighborhood groups and fraternal organizations and within the business community.

Over the last several years Public Safety has utilized the Problem Oriented Policing model for identifying potential trouble spots within the City and expending available resources to help clean the area up and avoid having a rising crime rate. The addition of the Neighborhood Preservation Unit (NP) and the Neighborhood Enhancement Action Team (NEAT) are two such resources that assist with identifying areas of the City which may turn into problem areas. NP and NEAT pro-actively survey neighborhoods and help rid them of blight like overgrown weeds, graffiti, broken windows and general run-down residential and commercial properties. NEAT works with the residents, landlords and business owners to address property appearance, crime within the neighborhood and quality of life issues. Addressing and correcting these issues makes for a safer, friendlier environment.

When the desire for crime continues to exist, the need for fundamentally sound patrol response and skilled investigative follow up become key elements. These two key elements help keep the overall crime rate low, which routinely places the City of Sunnyvale as one of the top 10 safest cities in America with a population greater than 100,000. These crime rates are derived from the Uniformed Crime Report that is published yearly by the Federal Bureau of Investigation. The report is based on crime statistics provided from police departments across the nation.

Technology and Public Safety

As technology around the world continues to develop, the City keeps its pace and worked with private sector vendors to increase its technological capabilities. In fiscal year 2010/11, a third generation Mobile Dispatch Terminal called Mobilcom was installed in police and fire apparatus. This new technology will enable dispatch to send the closest unit(s) to an emergency call, thereby further reducing our response times. Mobilcom also allows the in-field end users access to information on local, state and federal data bases as well as internet links such as Google Earth to assist with the investigation of crimes.

Other technological advances being pursued and implemented are shared statewide Records Information Systems (RMS). These systems allow for input and retrieval of suspect, vehicle, stolen property and other pertinent information that assists to the apprehension of criminals within our communities.

Within Public Safety's own databases are technological tools for the officers and citizens that provide real time crime information. All of these technology tools are utilized by the Crime Analyst to track crime trends by types of crimes, the areas where they are occurring, day of the week and time of day. The Crime Analyst also compiles suspect data from the crime reports to assist the officers with identifying gang activity within the City.

See Goal SN-4 (Public Confidence in Police Services) for further information on community relationships, including Neighborhood Resource Officers and Challenge Team Sunnyvale.

See [General Plan Community Vision Chapter for yearly crime statistics as part of Community Condition Indicators at General Plan](#).
[In Sunnyvale.com for yearly crime statistics.](#)

See Goal HE-2 (Maintain and Enhance the conditions and Affordability of Existing Housing) for further information and policies on neighborhood preservation and rehabilitation programs.

For more information
about the Department of
Public Safety's programs,
see

~~dps.inSunnyvale.com~~www.sunnyvale.ca.gov

In the future we can look forward to further technological advances in tracking crime trends as well as interoperability between jurisdictions with RMS and communications systems.

POLICY SN-3.1 PROVIDE RAPID AND TIMELY RESPONSE TO ALL EMERGENCIES. *(Previously Law Enforcement Policy 4.1A.1)*

POLICY SN-3.2 CONTROL CONDUCT RECOGNIZED AS THREATENING TO LIFE AND PROPERTY. *(Previously Law Enforcement Policy 4.1A.2)*

POLICY SN-3.3 PROVIDE INVESTIGATIVE SERVICES DIRECTED TOWARD SUCCESSFUL PROSECUTION AND CONVICTION OF CRIMINAL OFFENDERS. *(Previously Law Enforcement Policy 4.1A.3)*

POLICY SN-3.4 REDUCE CRIME AND FEAR BY STRENGTHENING THE POLICE/ COMMUNITY PARTNERSHIP. *(Previously Law Enforcement Policy 4.1A.4)*

POLICY SN-3.5 FACILITATE THE SAFE MOVEMENT OF PEDESTRIANS, BICYCLISTS AND VEHICLES. *(Previously Law Enforcement Policy 4.1A.5)*

POLICY SN-3.6 AID THOSE WHO CANNOT CARE FOR THEMSELVES (INTOXICATED, ADDICTED, MENTALLY ILL, PHYSICALLY DISABLED, THE YOUNG, THE OLD). *(Previously Law Enforcement Policy 4.1B.1)*

POLICY SN-3.7 PROVIDE CRISIS INTERVENTION, CONFLICT MANAGEMENT AND RESOLUTION. *(Previously Law Enforcement Policy 4.1B.2)*

GOAL SN-4

PUBLIC CONFIDENCE IN POLICE SERVICES

INCREASE AND MAINTAIN PUBLIC CONFIDENCE IN THE ABILITY OF THE PUBLIC SAFETY DEPARTMENT TO PROVIDE QUALITY POLICE SERVICES *(Previously Law Enforcement Goal 4.1C / Adopted in 1995)*

Public confidence is the cornerstone of a successful law enforcement organization. A police agency that is disengaged from the community cannot possibly meet the demands of modern day law enforcement operations and the expectations of today's society. As an agency builds the confidence of the community, the public often feels comfortable contacting law enforcement to request assistance or to relay information. The agency that quickly responds to this contact with a professional, well trained and well equipped police force, stands to further build trust with the community that ultimately leads to an enhanced quality of service. A professional organization that approaches each community contact as an opportunity to establish a deep connection with the citizen will likely be rewarded with information that can be utilized to effectively and efficiently provide the needed services, whether that is the investigation of a homicide or the resolution of a neighborhood dispute.

Professional Standards and the Public Safety Assurance of Quality Control

In order to sustain the successes of community confidence building efforts, an agency must provide feedback to the community about investigations of criminal acts or complaints related to the conduct of officers, to the degree possible. The public must know that the information that is provided to the police is actually being utilized to solve the crime that they reported or to improve the service delivered to the community. Often times this type of community confidence is enhanced through mandatory reporting requirements currently utilized by all agencies in Santa Clara County. Public Safety participates in all County level sub-committees charged with creating and reviewing county reporting protocols and the mandatory reporting requirements contained within them.

Citizen commendations and complaints provide the City with valuable information for evaluating employee performance, identifying areas of police misconduct, monitoring police relations with the public and identifying the need for new or revised policies or improved training. For these reasons, citizens are encouraged to report both commendations and matters of misconduct to the City.

Neighborhood Resource Officers

The Department of Public Safety takes pride in being connected to community. More than 30 years ago, the Neighborhood Resource Officer position was created. The primary focus of these officers is to be in schools connecting with children and teachers. Additionally, these officers provide service to neighborhoods and the business community in the form of crime prevention tips and neighborhood conflict resolution. This direct contact will sustain and enhance public trust now and into the future.

Challenge Team Sunnyvale

In 2007, Public Safety created the "Challenge Team Sunnyvale." Monthly, members of the community meet at Public Safety Headquarters to discuss youth and community issues. These community members represent the business community, nonprofit organizations, health care professionals, faith base organizations, judicial representatives and law enforcement. The team has brought resources together to sponsor youth activities, mentoring programs and the group is currently working towards a public/ private collaboration that will be designed to bring youth services to underserved areas of the community. It is this deep connection that will sustain community confidence and enhance public trust into the future.

Continuously Enhancing Community Connections

In 2004, the City requested the assistance of the Police Executive Research Forum (PERF) to evaluate our community outreach efforts and provide suggestions to strengthen our valued relationship with the public. The Neighborhood Resource Officer position, as well as the entire Crime Prevention Unit in the Department of Public Safety, was highlighted as key to enhancing connections with the community and strengthening public trust.

The study determined that citizens in the City of Sunnyvale feel safe in the community and are extremely satisfied with the delivery of police services. PERF did point out several areas by which the department could create a deeper connection with the public. The study suggested enhancements to the Public Safety website and the use of the media to highlight Public Safety activities. The City of Sunnyvale has made substantive changes to the website designed to highlight services available and enhance the public's experience. In addition, the City is currently utilizing social media and an e-newsletter designed to highlight activities and bring transparency to operations.

The City will continue to explore the benefits of the utilization of social media and the use of smart phone technology to open avenues of communication with the public and provide transparency to the community. In addition to non-traditional methods, the City emphasizes connections in non-traditional settings. Connecting Public Safety Officers with other City departments, such as Economic Development and Community Services, enhances service to the public. These types of relationships break down barriers and perceptions, leading to significant enhancements of public trust.

POLICY SN-4.1 PROVIDE INSPECTION AND CONTROL OF PERSONNEL AND DEPARTMENT OPERATIONS WHICH IS RESPONSIVE TO CITIZENS' CONCERNS. *(Previously Law Enforcement Policy 4.1C.2)*

POLICY SN-4.2 PROVIDE FOR ASSESSMENT OF CHANGING COMMUNITY NEEDS AND EXPECTATIONS. *(Previously Law Enforcement Policy 4.1C.1)*

- **SN-4.2a** Identify means of measuring citizen satisfaction with police services. *(Previously Law Enforcement Action Statement 4.1C.2a)*

GOAL SN-5 EFFECTIVE FIRE SERVICE RESPONSE SYSTEM

PROVIDE A FIRE SERVICE RESPONSE SYSTEM THAT WILL CONTROL THE SPREAD OF FIRE IN BUILDINGS AND OTHER PROPERTIES AND MAINTAIN MINIMAL CASUALTIES AND PROPERTY LOSS FROM FIRE AND OTHER RELATED EMERGENCIES *(Previously Fire Services Goal 4.2A/ Adopted in 1995)*

Structure fires are the foundation for most firefighting, training, equipment and policy decisions. While representing only a small percent of total calls for service, structure fires pose the greatest threat to life, safety and high dollar property loss and a quick response to emergency incidents is essential.

A strong fire prevention program is a necessity for a safe community. An appropriate combination of building and life safety codes, ordinances, permitting processes, inspection and enforcement efforts and public education are all vital components of such a program. Providing fire safety education to buildings with greater than average fire and life hazard potential, such as schools, hotels, restaurants, nursing homes, high density housing and other public assemblies is crucial to increasing life safety and reducing property loss.

On average, the Fire Services Division responds to approximately 7,300 calls for service annually. Of those calls for service, approximately 70 percent are Emergency Medical (EMS) calls. Per year, the Division responds to approximately 620 hazardous material calls and 140 structure fires. There are six fire stations in the city, all of which were remodeled between 1998 and 1999. The stations are situated throughout the city, based on a combination of call volume and response time. The department has mutual aid and/or auto aid agreements with Santa Clara County Fire, San Jose Fire, Mountain View Fire and Santa Clara (City) Fire. These agreements cover responses to freeway incidents and

See Goal SN-1 (Acceptable Levels of Risk for Natural and Human-Caused Hazards) for additional discussion of fire hazards and response.

structure fire incidents, in areas of common shared boundaries between jurisdictions.

An often-cited measure of fire suppression capability is the rating assigned to a department by the nationally recognized Insurance Services Office (ISO). The ISO is a subsidiary of a publicly traded company and acts as an advisory organization which provides information that insurance companies may use to establish premium costs. The rating is based on, among other things, fire alarm and communications systems, telephone and dispatching systems, fire equipment, staffing, training and geographic distribution of fire stations. Based on all this information, the ISO assigns a classification rating from 1-10. Sunnyvale has an ISO rating of 2, which falls within the 'superior' category.

During fiscal year 2009/2010, fifteen Fire Services vehicles were equipped with Mobile Dispatch Terminals (MDT's), with funding provided by the Assistance to Firefighters grant. The MDT's improve Fire Services response capabilities through the use of state-of-the-art technology, which provides field response data and field mapping. This technology allows fire personnel to reduce the response time to fire and EMS emergencies.

The next phase of the MDT implementation is the use of GPS-based dispatching. This technology will utilize a program called Automated Vehicle Locator (AVL). This program will allow the dispatcher's Computer Aided Dispatch (CAD) to identify the fire apparatus which is closest to the call being received and prompting the dispatch of that apparatus.

On a regional level, the issue of consolidating fire apparatus maintenance is being discussed and explored. Currently, all nine providers of fire service in the county run their own in-house maintenance unit. Developing shared maintenance facilities will most likely provide economies of scale and cost savings for participating departments, in addition to enhanced coverage of service.

POLICY SN-5.1 ASSURE THAT EQUIPMENT AND FACILITIES ARE PROVIDED AND MAINTAINED TO MEET REASONABLE STANDARDS OF SAFETY, DEPENDABILITY AND COMPATIBILITY WITH FIRE SERVICE OPERATIONS.
(Previously Fire Services Policy 4.2A.1)

POLICY SN-5.2 PROVIDE TRAINING THAT IS ADEQUATE FOR REQUIRED DUTIES. (Previously Fire Services Policy 4.2A.2)

For more information
on the Fire Services
program, see ~~fireprevention-~~
~~inSunnyvale.com~~ www.sunnyvale.ca.gov

POLICY SN-5.3 RESPOND TO REQUEST FOR SERVICES. *(Previously Fire Services Policy 4.2A.3)*

POLICY SN-5.4 CONDUCT FIELD OPERATIONS AND EMERGENCY SCENE MANAGEMENT IN A SAFE, EFFECTIVE AND EFFICIENT MANNER. *(Previously Fire Services Policy 4.2A.4)*

- **SN-5.4a** Maintain a system of pre-fire surveys for selected buildings and provide critical information that is immediately available to responding emergency personnel should an incident occur. Fully integrate all pre-fire surveys into apparatus-based CAD's, in order to provide pre-fire survey information "on-line" at emergency scenes. *(Previously Fire Services Action Statement 4.2A.4b)*
- **SN-5.4b** Take measures that reduce the number of false alarms. *(Previously Action Statement 4.2A.4f)*

GOAL SN-6 **EFFECTIVE EMERGENCY RESPONSE CAPABILITY**

PROVIDE EFFECTIVE RESPONSE CAPABILITY FOR EMERGENCY MEDICAL EVENTS AND OTHER NON-FIRE INCIDENTS THAT MAY DIRECTLY ENDANGER THE LIVES, PROPERTY AND WELL-BEING OF THE COMMUNITY. *(Previously Fire Services Goal 4.2B / Adopted in 1995)*

The Department of Public Safety participates in an emergency medical services (EMS) system that is integrated into the larger Santa Clara County Emergency Medical Services System. This system provides for Basic Life Support (BLS) response by Public Safety resources followed by Advanced Life Support (ALS) response by the County of Santa Clara. This tiered response system efficiently utilizes resources within a cost effective manner.

The EMS system within California is governed by county and state regulations as well as court decisions. Through this regulatory system, the County of Santa Clara holds the exclusive rights to operate the ALS paramedic transport system. The County of Santa Clara is responsible for the medical oversight of the EMS system, including the care provided by Public Safety personnel. Public Safety maintains a physician medical director to meet regulatory and statutory requirements for equipment purchases and mandatory internal quality improvement activities. Public Safety is a State of California Certifying Entity and an approved EMT-Basic Training Program and is able to train, certify and recertify our own personnel as EMT-Basic providers.

See Goal SN-1 (Acceptable Levels of Risk for Natural and Human-Caused Hazards) for a discussion of hazardous materials risks and response.

In 1996, Public Safety implemented an early defibrillation program, which allowed public safety personnel to utilize an AED to treat patients in cardiac arrest. Changes in California law provide the opportunity to add AEDs to City facilities for use by non-traditional responders and laypersons. Sunnyvale was one of the first communities in the California to implement the program. Many cardiac arrest victims have been saved by Public Safety personnel as well as residents and visitors to our City facilities through the use of these AEDs.

The County of Santa Clara contracts with a vendor to provide a fee-for-service paramedic transport system for all of Santa Clara County with the exception of the City of Palo Alto who maintains their own fire department based paramedic transport service. The Santa Clara County Paramedic Ambulance Contract sets response time standards for the vendor that applies throughout the County.

Sunnyvale is the only city in Santa Clara County that does not provide paramedic services through its own or contracted fire service provider. This provides the City little opportunity to affect change. Since the inception of paramedic services in Santa Clara County, Public Safety has brought to Council options to provide paramedic services within the Public Safety model. Public Safety will continue to monitor the County's paramedic service provision. Public Safety will evaluate the options/opportunities to deliver paramedic services within the Department of Public Safety and will periodically report to Council its findings.

Within this ongoing paramedic evaluation process, the City will utilize advances in technology to help reduce response times. Scheduled for completion in 2011 is the establishment of a link between the Public Safety Dispatch computers and County Communications to decrease the response time of paramedics. As in-vehicle GPS becomes more accessible, closest-unit dispatching will be explored to further reduce response times to medical emergencies.

POLICY SN-6.1 PROVIDE IMMEDIATE LIFE SUPPORT TO THOSE THREATENED BY SITUATIONS REQUIRING EMERGENCY MEDICAL SERVICES OR RESCUE.
(Previously Fire Services Policy 4.2B.1)

- **SN-6.1a** Study and where feasible, provide alternate methods of emergency medical service delivery when it is determined to be more efficient and beneficial to those in need. Consider EMT-P level training. *(Previously Fire Services Action Statement 4.2B.1b)*

GOAL SN-7 EFFECTIVE EMERGENCY COMMUNICATION SERVICES

PROVIDE EMERGENCY COMMUNICATIONS SERVICES (*Previously Support Services
Goal 4.3D / Adopted in 1988*)

The Sunnyvale Department of Public Safety Dispatch Center provides a public safety answer point twenty four hours a day 365 days a year. This is a critical link between the City's emergency services, first responders and its citizens, and is the primary method of coordination of Public Safety services. When a citizen has a complaint, problem, or emergency, virtually all of this information is channeled through the Public Safety Dispatch Center, which then disseminates and/or dispatches the information to Public Safety responders or allied agencies/departments. The Dispatch Center handles tens of thousands of calls for service each year, including many calls from non-English speaking citizens. With the advent of cellular phones as well as a growing population, the numbers of calls have increased dramatically and most likely will continue into the foreseeable future.

Most calls coming into the Dispatch Center are either fire or police-related. These include crimes in progress, medical emergencies and fires. The timely transmission of information to field units is critical to enabling successful outcomes. As such, training, the use of new technology and interoperability enables the communications dispatchers to effectively gather and disseminate information more efficiently.

The Department of Homeland Security has stated that interoperability is a top priority for Public Safety agencies nationwide. The purpose of this interoperability goal is to connect voice and data communications for near real-time sharing across multiple agencies, counties and regional partners. The Bay Area Urban Area Security Initiative is tasked with helping 10 counties in the region to prepare for all hazards, natural or man-made, through a collaborative approach. The ability for multiple cities and counties to work together provides a significant advantage in the development of these communication networks leveraging infrastructure, knowledge and funding sources as a region.

There are four major components to this interoperability effort:

- Radio/voice communications
- Information sharing
- Broadband technology
- Digital microwave connectivity through the 10 bay area counties

Future challenges include upgrading of the Public Safety Department's CAD (Computer Assisted Dispatch) system and trends towards Public Safety Answer Point/Dispatch consolidation. Additionally, it is anticipated that an aging population will continue to increase demands upon the Dispatch Center for response to medical emergencies. Lastly, costly maintenance and upgrading of critical infrastructure will need to remain a priority to ensure that the highly trained dispatchers and first responders have all of the tools necessary to receive and respond to calls for service at all times including during critical events, disasters and acts of terrorism.

POLICY SN-7.1 PROVIDE EMERGENCY COMMUNICATIONS SERVICES
24 HOURS A DAY 100 PERCENT OF THE TIME. *(Previously Support Services Policy 4.3D.1)*



CHAPTER 6

SAFETY AND NOISE

The Safety and Noise chapter contains information on the following topics:

- **Hazards and disaster preparedness and response** - information on existing natural and manmade hazards and policies and plans to mitigate these hazards and prepare for disasters.
- **Police, fire and emergency services** - information on police, fire and emergency services and policies and plans to continue to improve these services.
- **Noise** - information on existing and projected noise conditions with policies and programs to maintain or reduce noise from transportation, land use operations and single-event noise.



HAZARDS AND DISASTER PREPAREDNESS AND RESPONSE

GOAL SN-1 ACCEPTABLE LEVELS OF RISK FOR NATURAL AND HUMAN-CAUSED HAZARDS

ENSURE THAT NATURAL AND HUMAN-CAUSED HAZARDS ARE RECOGNIZED AND CONSIDERED IN DECISIONS AFFECTING THE COMMUNITY AND THAT LAND USES REFLECT ACCEPTABLE LEVELS OF RISK BASED ON IDENTIFIED HAZARDS AND OCCUPANCY.

Consideration of natural and manmade hazards in land use decisions is a critical component of the City's planning process. By carefully balancing the community's need for safety with other needs such as housing, employment and transportation, the City can ensure that the knowledge of existing safety hazards are reasonably considered in all planning and development review processes.

Among the hazards that should be considered are seismic, flood, fire, hazardous materials and aviation hazards. An important consideration is also the protection of vital City lifelines from hazards. Hazards and lifelines are discussed in more detail below.

POLICY SN-1.1 EVALUATE AND CONSIDER EXISTING AND POTENTIAL HAZARDS IN DEVELOPING LAND USE POLICIES. MAKE LAND USE DECISIONS BASED ON AN AWARENESS OF THE HAZARDS AND POTENTIAL HAZARDS FOR THE SPECIFIC PARCEL OF LAND.

Seismic Hazards

Damaging earthquakes are infrequent; however, they pose the most significant threat in relation to the destruction they may cause to the City.

Sunnyvale is located between two active earthquake faults. (See Figure 6-1, San Francisco Bay Region Earthquake Probability Map.) Scientists have identified four fault segments on which they believe large earthquakes are most likely to occur. The USGS estimated that there is a 63 percent chance for at least one earthquake of magnitude 6.7 or larger to strike in the San Francisco Bay Area before the year 2037. An earthquake of this size could strike at any time.

The City has taken significant steps to reduce the risk of seismic hazards. To improve the seismic safety of buildings in the less stable soil areas of the City, geotechnical reports are now required for all developments in the City. New Building Code requirements and the continuing modernization of the City have greatly reduced the number of structures most

See www.sunnyvale.ca.gov for Santa Clara County Local Hazard Mitigation Plan for more information about likely hazards and mitigations.

vulnerable to seismic events. The City actively participates in the State of California Seismic Hazards Mapping Program. In addition, the seismic safety of City buildings has received considerable attention. Many City buildings have been designated as "Essential Services Buildings." Seismic retrofitting of the Community Center, City Hall Annex, Library, Corporation yard (stores section) has been completed, along with all six fire stations.

Other hazards of a seismic event include flooding and fire hazards. A local major earthquake could cause the failure of parts of the levee system in the San Francisco Bay and such a failure could lead to flooding in the northern parts of the City that are below sea level. Fire in the aftermath of an earthquake could also pose serious problems in Sunnyvale. Major variables that could intensify the situation include water system damage, multiple fires and isolation of some areas due to roadway over crossing failures. The following sections discuss flood hazards and fire hazards and mitigations to these effects.

Flood Hazards

Santa Clara Valley is classified as an active flood plain that has been severely altered by human activity. Approximately 1,800 acres of Sunnyvale has been designated by the Federal Emergency Management Agency (FEMA) as Special Flood Hazard Areas (SFHA). The SFHA show areas in Sunnyvale susceptible to flooding (See Figure 6-2, FEMA Flood Hazard Map). In Sunnyvale, SFHAs are generally located in the northeast portion of the City. Flood events are generally caused by a creek topping its banks, clogged catch basins or storm drains.

The City has been a participant in the FEMA Community Rating System (CRS) since 1998. In May 2003, the City of Sunnyvale was granted a Class 7 community rating by FEMA, enabling Sunnyvale citizens and businesses to obtain discounts on their flood insurance premiums. This rating is granted based on the community's participation in public information activities, mapping and regulating activities and flood preparedness and damage reduction activities. Sunnyvale's program addresses flood hazards with a combination of infrastructure projects and building code requirements.

Current Flood Control Infrastructure

Creeks and Flood Control Channels - The Santa Clara Valley Water District (SCVWD or Valley Water) maintains Calabazas Creek, Stevens Creek and the Sunnyvale East and West flood control channels. These channels, coupled with the City's storm drains take the majority of surface run-off to the San Francisco Bay. The East and West Channels and Calabazas Creek were built to contain a 1 percent annual chance flood.

Storm Drain System - The City of Sunnyvale owns and operates approximately 3,200 storm drain inlets, two pump stations and 150 miles of storm drains. Surface runoff from paved areas enters the storm drain system through storm drain inlets, which discharge directly to the Bay. The two pump stations collect runoff from low lying urban areas and discharge the runoff to creeks and sloughs. Since these pump stations are at a higher elevation, gravity flow conveys the stormwater to the Bay.

A 1 percent flood, also known as a 100 year flood, has a 1 percent probability to being equaled or exceeded in any given year.

See the Environmental Management Chapter for more information on the storm drain system.

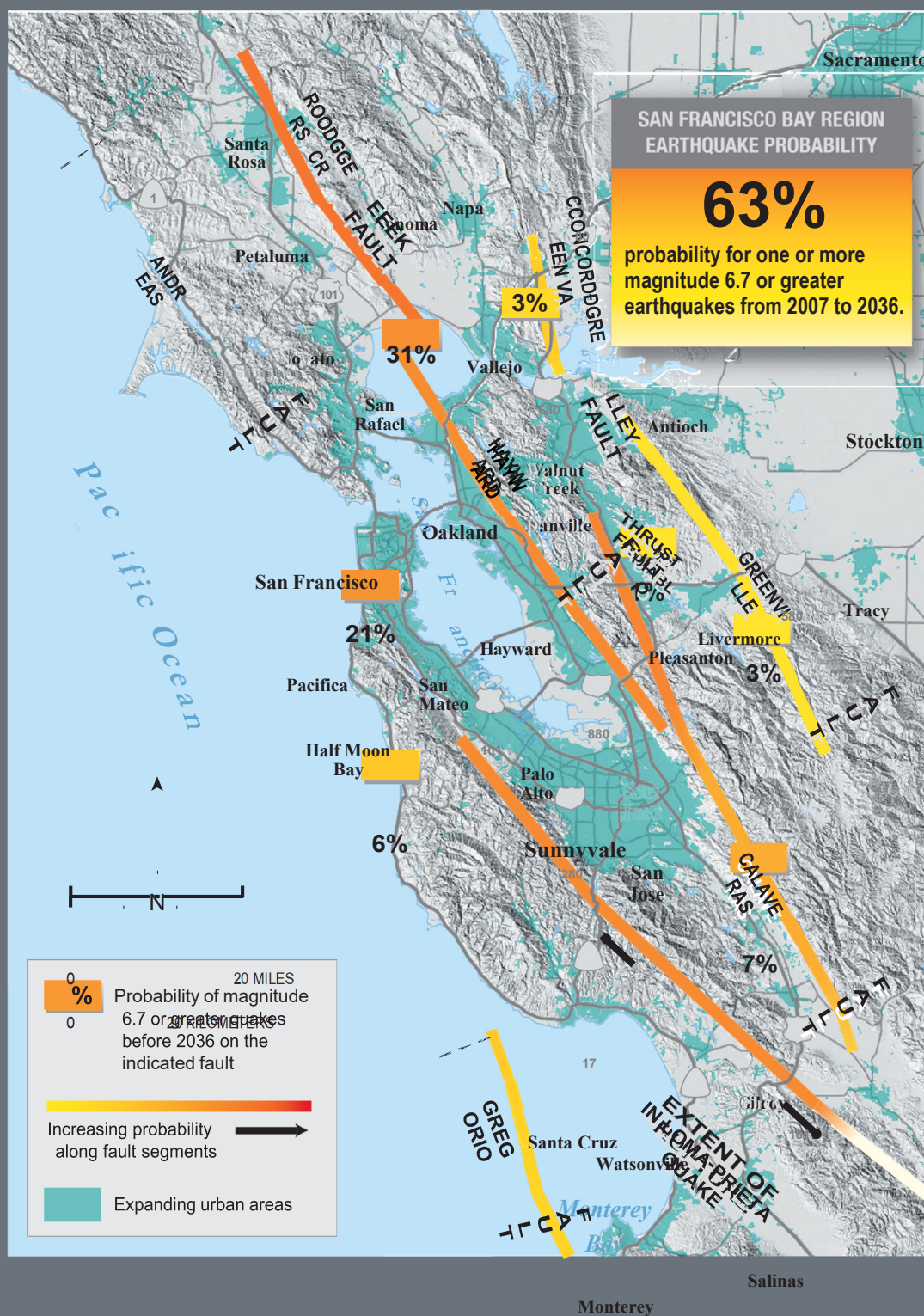


Figure 6-1: San Francisco Bay Region Earthquake Probability

Source: United States Geographic Service (USGS), 2008

For detailed information, refer to Sunnyvale Municipal Code Chapter 16.62 and the Flood Insurance Rate Map on file in the Public Works Department.

Levees and Dikes – Dike and levee systems have been constructed along the San Francisco Bay, originally to form and protect the salt evaporators and concentrators that ring the southernmost arm of the bay, not as a barrier to prevent flooding a populated area. The dikes are constructed of weak, locally-derived Bay materials that are constantly undergoing settlement, erosion by the elements and damage by burrowing animals.

Without the present system of dikes and levees, a part of Sunnyvale normally would be subjected to flooding by tides. It assumed that this would still be the case if these dikes were to be topped breached or failed. To allow use of land that was subject to tidal flooding and subsidence, the levee systems have been extended and strengthened to protect these low-lying lands.

Dams – Stevens Creek Dam, located on Stevens Creek 2.5 miles south of the City of Sunnyvale's boundary, is an earthen dam approximately 135 feet in height. Constructed in 1936, the dam's principal purpose is water supply. The waters impounded in the reservoir are released at a rate such that the waters will percolate into the ground, thus recharging the ground water aquifer.

Building Code Requirements — Sunnyvale has enforced specific building code requirements in the flood prone areas to minimize potential property damage from flooding. Specific requirements for development in these areas to reduce flood hazards include minimum foundation pad heights above the projected flood depth as specified on the Flood Insurance Rate Map.

Future Flood Control Activities

There are four sources of flooding that can threaten Sunnyvale:

Excessive Precipitation – The areas in Sunnyvale that will flood as a result of heavy rains and the resulting surface runoff border Calabazas Creek and the East and West Flood control channels. Specific street flooding will also occur from clogged storm drains and low places in some roadways.

Storm drain inlets are routinely inspected prior to the rainy season each year and cleaned, if necessary, to prevent flooding, alleviate odors and/or prevent mosquitos from breeding. Maintenance crews also clean inlets in response to citizen and business complaints. The majority of the inlets are shallow (less than three feet deep) and debris is removed manually. Deeper inlets are cleaned using a vacuum truck and flushed with water to eliminate remaining debris.

Three significant flooding events have occurred in Sunnyvale since the 1993 writing of the Seismic Safety and Safety Sub-element. These events occurred in 1995, 1997 and the *El Nino* flooding of 1998. These were all declared disasters throughout Santa Clara County. In the years following these storms, the SCVWD, as the agency that maintains and improves the flood control channels in SCVWD completed a project to construct wing walls along Calabazas Creek several feet higher than they were. Additional channel openings, called "boxes", were also installed under Homestead Road, Vireo Avenue and Lochinvar Avenue, expanding the creek size under these streets. As a result of this improvement, in 2009, City and SCVWD staff worked together to petition FEMA to remove more than 200



Figure 6-2: FEMA Flood Hazard Map

acres of flood zone properties in Sunnyvale along Calabazas Creek, in the vicinity of both Vinemaple Avenue and Oakmead Parkway.

The District is also in the planning and design stage of two capital projects to improve the capacity of the Sunnyvale East and West Channels. The two projects were part of the 2000 voter-approved Clean, Safe Creeks Program (Measure B). Once completed, the projects will provide 100-year flood protection to 1,600 parcels along the Sunnyvale East Channel and 47 acres of industrial lands along the Sunnyvale West Channel. In August 2010, the District Board approved the Planning Study Report and its recommendation for flood protection. Currently the project is in the design phase. Construction is expected to commence in spring of 2014.

Subsidence — Subsidence is the motion of a surface (usually, the Earth's surface) as it shifts downward relative to a fixed point such as sea-level. The opposite of subsidence is uplift, which results in an increase in elevation. Subsidence can occur when too much groundwater is pumped out, causing the land above to sink.

Tidal and Tsunamis — Earthquakes may generate flooding from a tsunami (sea wave caused by an earthquake), seiche (wave generated in an enclosed body of water), or dam failure. A tsunami off the San Francisco coast could cause Bay water to top local levees, especially if it arrived at high tide. Tidal flooding could occur if the system of dikes and levees failed or their banks overflowed. Local earthquakes could cause failure in parts of the levee system which would create problems if a tsunami were to happen as well. The Santa Clara Valley Water District's system is put in place to help reduce damage done by all hazards discussed above whether they happen individually or simultaneously.

The problem of dike vulnerability has been compounded by the general lowering of the ground surface in this part of Santa Clara County — six to eight feet from 1916 to 1966 in the northern areas of the City. During the same time frame the ground subsided three to four feet in the areas along El Camino Real. Until ground water recharge methods were initiated in the late 1960s, the amount of freeboard on the dikes was constantly being diminished by an accelerated subsidence rate caused by groundwater withdrawal. Although human-caused subsidence has been minimal since 1967, a certain amount of subsidence is happening naturally due to regional tectonic movements, peat decay and a three inch rise in the sea level during the last 50 years.

A Capital Improvement Project was completed by the Department of Public Works in 2006 to repair and strengthen the levees surrounding the ponds, reducing the chance that the levees would fail in the event of a major earthquake.

Freeboard — a vertical distance, or clearance, from a 1 percent flood incident. Standards set by the FEMA and the Army Corp of Engineers call for a minimum three foot freeboard.

Dam Failure — Failure of the Stevens Creek Reservoir dam caused by an earthquake could also affect the City of Sunnyvale. Most significantly affected would be the southwest part of the City south of Remington and west of Sunnyvale-Saratoga Road. This estimated flood inundation area is based upon the maximum 3,700 acre-feet storage capacity of the reservoir. Depending upon the quantity of water released, the depth of flooding could vary from several inches to several feet. For any large release of water Interstate-280 would act as a barrier to keep some water out of Sunnyvale.

Safety improvements to the reservoir and the dam were made in the mid-2000s. The reservoir and the dam were engineered to withstand an earthquake on the San Andreas Fault of a magnitude 8.25 on the Richter scale. Upstream and downstream berms were built and the dam was raised 10 feet. The contour of gentle slopes surrounding the dam, plus the compacted earth along the sides and the face of the dam, were designed to encourage run-off and the collection of water and to discourage landslides. The spillway

was also upgraded to be capable of withstanding a flow of 15,600 cubic feet per second. As an added precaution, safety inspections are done after all earthquakes of 5.0 or greater magnitude.

Climate-Related Hazards - Global climate change is exacerbating the frequency and intensity of extreme weather events and hazards cities worldwide will face. Climate change impacts include rising sea levels, more frequent and intense storms, and drier conditions that catalyze wildfires. Although changes in sea level have been gradual and constant over the past 5,000 years, the rate of sea level rise in the past 100 years has almost doubled during the past several decades due to climate change. A rise in sea level could cause significant problems in the future: flooding, shoreline erosion and saltwater intrusion into freshwater streams and aquifers. Although subsidence is now controlled by groundwater recharge and management of pumped aquifers, it may not be feasible to control the effects of global warming on rising sea levels.

To mitigate climate impacts, the City adopted an initial Climate Action Plan (2014) and later the Climate Action Playbook (2019), a long-term roadmap to reducing greenhouse gas emissions. The Climate Action Playbook includes “Strategy 6: Adapting to a Changing Climate,” which specifically focuses on how the City can better prepare to address climate-related hazards.

Sunnyvale adopted the Santa Clara County Local Hazard Mitigation Plan (2017), a multi-jurisdictional planning document for hazard mitigation. This plan includes climate resiliency measures to adapt and prepare for climate change.

POLICY SN-1.2 TAKE MEASURES TO PROTECT LIFE AND PROPERTY FROM THE EFFECTS OF A 1 PERCENT (100 YEAR) FLOOD.

- **SN-1.2a** Encourage the Santa Clara Valley Water District to reevaluate the capacity of Stevens Creek, Calabazas Creek, Sunnyvale East, West and El Camino Flood Control Channels in relation to a 1 percent (100 year) flood.
- **SN-1.2b** Encourage SCVWD to maintain their dikes and levees at least 3 ft. above the 1 percent flood level and to provide continued inspection and repair from damage caused by burrowing animals.

POLICY SN-1.3 OPERATE AND MAINTAIN THE STORM DRAINAGE SYSTEM AT A LEVEL TO MINIMIZE DAMAGES AND ENSURE PUBLIC SAFETY.

- **SN-1.2c** Participate in the National Flood Insurance Program.

No landslides on any of the county's dams have occurred in the past decade, not even in the 1995, 1997 and 1998 “El Nino” storms or after the 1989 earthquake.

POLICY SN-1.4 MONITOR AND PLAN FOR HYDRAULIC CHANGES DUE TO GLOBAL WARMING, EARTHQUAKES AND/OR SUBSIDENCE.

- **SN-1.4a** Budget for and construct additional storm drainage detention and pumping facilities as needed, to assure the continued ability to discharge urban runoff and stormwater into channels, creeks and San Francisco Bay.
- **SN-1.4b** When designing structures along shorelines, consider future sea level changes.

POLICY SN-1.5 (EJ) INCREASE THE RESILIENCE OF FLOOD CONTROL INFRASTRUCTURE WITHIN AND NEAR FEDERAL EMERGENCY MANAGEMENT AGENCY-DESIGNATED FLOOD ZONES TO PROTECT COMMUNITIES FROM EXISTING FLOOD IMPACTS AND PROJECTED CLIMATE VULNERABILITIES.

Fire Hazards

Sunnyvale has a relatively low risk factor for fire loss and past fire experience has demonstrated Sunnyvale to be a relatively fire-safe community. However, as in any City, the potential for serious fire events is ever present. A trained and well-equipped fire service must be ready to respond to fires and other incidents. While the potential for extraordinary disaster always exists, and while the aging process of the City and its buildings will have some adverse impact on fire loss, the overall environment is comparatively fire-safe.

Because Sunnyvale is a relatively new community and because the City has a strong facilities inspection and fire education program, the incidence of fire is low. Each year, inspections are completed at all commercial facilities, apartments, hotels and schools with an emphasis on prevention. Additionally, fire station-based education programs target school children, while the Crime Prevention Unit provides more advanced public education programs to businesses and neighborhoods.

The majority of fires experienced in Sunnyvale are kitchen fires caused by inattention while cooking. Future public education will focus on residential kitchen fires to raise awareness and provide the community with information that will help to reduce the incidence of these types of fires.

See Goal SN-5 (Effective Fire Response System) for further information and policies on fire risk and response.

Hazardous Materials

For decades, Sunnyvale has been home to many innovative high tech companies. New and emerging technology companies (e.g. solar cell companies and LED light manufacturers) whose presence here is vital to a thriving and diverse business community, require the use of a large variety of hazardous materials, including highly toxic compressed gases. The highest hazard facilities, those with larger quantities of hazardous materials or materials having greater toxicity, are located in the industrial area in the northern part of the City.

As of 2010, more than 900 businesses in the City of Sunnyvale store or use hazardous materials in quantities requiring a permit. By serving as a Certified Unified Program Agency (CUPA) the City's Department of Public Safety is able to conduct inspections of hazardous materials facilities and to review and certify risk management plans to prevent accidental releases of hazardous materials. The City also maintains a hazardous materials response team, which is specially trained and equipped to mitigate emergencies that result in hazardous materials spills, releases and discharges. This team is relied upon to maintain the safety of all citizens when confronted with an emergency involving hazardous materials. The City has also improved Hazardous Materials response by maintaining a Type II HazMat Response Unit.

New hazardous materials threats continue to emerge in research and development activities, as well as terrorist initiated use of chemical, biological, radiological, nuclear and explosive (CBRNE) (also known as weapons of mass destruction (WMD)) agents. The City will continue to evaluate the need for collaborating between hazardous materials inspectors and first responders.

The State of California recognized and responded to the need for increased sharing of hazardous materials information by passing Assembly Bill 2286 which requires all businesses handling regulated quantities of hazardous material to electronically report inventories and site maps to the jurisdiction by 2013. Similarly, the City will be required to report hazardous materials inventories and compliance inspection data to the state by 2013.

Certified Unified Program Agency —
A certification awarded by the California Environmental Protection Agency that allows the City to implement several important state environmental programs locally.

POLICY SN-1.6 PROMOTE A LIVING AND WORKING ENVIRONMENT SAFE FROM EXPOSURE TO HAZARDOUS MATERIALS.

- **SN-1.6a** Maintain the City's status as a Unified Program Agency as certified by the Environmental Protection Agency.

POLICY SN-1.7 (EJ) COORDINATE WITH STATE AND COUNTY AGENCIES TO PRIORITIZE HAZARDOUS SITE CLEANUP AND REMEDIATION ACTIVITIES IN LOW-INCOME AND HIGH POLLUTION BURDEN BEARING COMMUNITIES.

POLICY SN-1.8 OPERATE A RESPONSE SYSTEM THAT WILL PROVIDE EFFECTIVE CONTROL AND INVESTIGATION OF HAZARDOUS MATERIALS EMERGENCIES.

- **SN-1.8a** Provide a specially trained and equipped response team capable of mitigating emergencies resulting from hazardous materials leaks, spills and discharges and conduct related inspections and permit activities.
- **SN-1.8b** Consider electronic technology to provide Hazardous Materials Management Plan (HMMP) information "on-line" at emergency scenes.
- **SN-1.8c** Consider regional hazardous materials response system.
- **SN-1.8d** Study potential impacts of emerging bio-technology on response capabilities and related inspection and permit activities.

Aviation Hazards

Sunnyvale lies in the landing pattern of Moffett Federal Airfield and, during south winds, planes take off over heavily-developed areas. Risk of future accidents exists even though the Navy's usage of Moffett Field as a Naval Air Station ended in 1994.

Compatible land uses for and around NASA Ames/Moffett Field have been the subject of intense debate for many years. Other than the potential of aircraft accidents, noise is the most significant concern of area residents. The noise levels at Moffett Federal Airfield have dropped significantly since the Navy was operating the field. Stage III aircraft are now required for aircraft landing at Moffett. This is the lowest level for both noise and emission levels. Both the level of activity and noise levels are more closely examined in the Noise subsection of this chapter.

In 2012, the Santa Clara County Airport Land Use Commission (ALUC) has completed a Comprehensive Land Use Plan (CLUP) for Moffett Federal Airfield, which is intended to be used to safeguard the general welfare of the inhabitants within the vicinity of an airport. CLUP estimates 24,000 annual aircraft flight operations occur at Moffett Airfield until at least 2022. Close monitoring of future increase in flight operations and potential growth of Moffett Field is important. While Sunnyvale has no direct authority over NASA/Ames, NASA has been responsive to the cities of Sunnyvale and Mountain View regarding noise/traffic levels.

See Goal SN-10 (Maintained or Reduced Transportation Noise) for further discussion and policies about Moffett Field noise.

Further policies addressing NASA Ames/Moffett Field are available in the Council Policy Manual, available at www.sunnyvale.ca.gov

POLICY SN-1.9 MAKE PLANNING DECISIONS THAT ESTABLISH AND/OR MAINTAIN A SAFE MIX OF AVIATION AND LAND USE FOR THE AREAS AFFECTED BY MOFFETT FEDERAL AIR FIELD.

- **SN-1.9a** Oppose any effort to promote Moffett Federal Air Field for civil/general aviation.

Lifelines

Lifelines are essential services that are necessary for the continued functioning of the community following a disaster. They include utilities (gas, electricity, water, sewer and communications), City streets, major highways, bridges and railways lines. Information on age, service, condition and location help emergency preparedness planners assess the likelihood of failure.

Electric Power – PG&E provides the natural gas and electrical power for Sunnyvale. The severity of damage to these utilities resulting from an earthquake and what effects it will have is very difficult to forecast. PG&E has three electrical sub-stations in the Sunnyvale area – along with a backup power supply network comprised of multiple transmission lines. If power is interrupted, service from other sources can be obtained.

Water Service – Sunnyvale has four sources of potable water in the City: San Francisco's Hetch Hetchy system, the Santa Clara Valley Water District (SCVWD), 10 City wells and Cal Water. This system supplies both domestic and emergency water for the City. Projects were completed in the 1990's that provide the grid connections in Sunnyvale's water delivery system that will allow water from any supply source to be distributed to any area of the City, along with additional backup supply sources.

Sanitary Sewer – The Water Pollution Control Plant (WPCP) is a large facility that processes all of the City's sewage. The WPCP has two separate generators normally used every day that supply approximately 90 percent of the electrical needs of the plant. Operators of the plant have participated in a thorough training program in plant operations and emergency incidents (including chemical spills, leaks and containment procedures).

Roadways and Overcrossings – Sunnyvale has 46 major roadway over-crossings and bridges on streets and freeways within City limits. Sunnyvale has completed seismic retrofitting for all over-crossings in the City of Sunnyvale. The Mathilda overcrossing at Evelyn is scheduled for modernization and widening to be completed with the most recent seismic safety standards by 2011.

See EM-1, EM-2, EM-3 and EM-4 (Water Supply) for further discussion and policies in the Environmental Management Chapter.

POLICY SN-1.10 MAINTAIN LIFELINES IN GOOD OPERATING CONDITION TO LESSEN DAMAGE AND INCREASE SURVIVABILITY AFTER A MAJOR DISASTER.

For more information about the levee system, see the Flood Hazards discussion.

- **SN-1.10a** Study, evaluate and fund the improvements needed to the levee system at the Water Pollution Control Plant to increase its ability to survive a major earthquake.
- **SN-1.10b** Actively pursue funding for the undergrounding of utilities in accordance with the principals and guidelines of Public Utilities Commission and PG&E Tariff Rule 20-A.

**GOAL SN-2
EFFECTIVE DISASTER PREPAREDNESS**

ENSURE THAT THE CITY, ITS COMMUNITY MEMBERS, BUSINESS, FAITH-BASED ORGANIZATIONS, COMMUNITY ORGANIZATIONS AND SPECIAL NEEDS POPULATIONS ARE PREPARED TO EFFECTIVELY RESPOND AND RECOVER FROM MAJOR DISASTERS AND EMERGENCIES.

There is a difference between the day-to-day response to emergencies and the response needed to meet the demands of a disaster. City Departments respond to the routine emergencies of the community. However, disasters pose a different set of demands that the normal resources and established levels of service cannot meet. In general terms, a disaster is defined as an emergency event which exceeds the capacity of the City to handle it in the same manner as it handles the day-to-day emergencies. Effective disaster management requires the

City to use all of its resources to meet emergency needs.

The overall strategy of disaster management is to provide for an integrated approach to preventing, planning, responding, preparing and mitigating disasters.

Isolation after a Disaster

Neighborhood and/or community isolation after a disaster such as a major earthquake is likely as some normal transportation routes and communication lines may be damaged during such an event. Internal isolation occurs when the City's ability to receive reports of emergencies, relay emergency information and respond to citizen's requests for help is limited by destroyed or damaged lifelines. External isolation occurs when the City's ability to communicate emergency conditions and the ability to request or receive outside emergency resources is lost due to destroyed or damaged lifelines. When these effects delay or prevent the delivery of emergency services into affected areas it increases the level of risk to persons and property.

Emergency Planning and Coordination

Responsibility for preparing for emergencies lies both with the City and the members of the community. No government agency has all the resources needed to respond to all the needs of its community members in or after a disaster. The City has established an emergency management program to coordinate emergency planning for neighborhoods, schools and businesses. When City resources are exhausted and a local emergency has been declared, outside assistance can be requested through an established network of local, operational area, regional, state and federal mutual aid.

Community and Staff Notification Systems

Public Safety has automated a notification system that uses two different methods to rapidly notify personnel for emergencies. The first method is the rapid, automatic notification of specific groups of staff members identified as having certain needed skills sets, such as SWAT, Hazardous Materials, Accident Investigation teams and DPS administration. Santa Clara County also has a Web base that allows any subscriber in the county to enter their phone number, usually cell number, and e-mail address. Santa Clara County implemented a system which includes this Web-based "reverse 911" type system in 2010.

Community Resources

One of the City's greatest resources is its people. When a disaster – natural or man-made – strikes a community, spontaneous, unaffiliated volunteers – neighbors and residents – often arrive on-site at a disaster ready to help. As seen in previous disasters (e.g. Loma Prieta Earthquake, September 11 tragedy, Hurricane Katrina, etc.) affiliated and unaffiliated volunteers willingly and in unprecedented numbers, will do anything to provide assistance in recovery efforts including office work, treating the injured, looking for the missing, making signs, removing debris from collapsed structures and interviewing other volunteers. In Santa Clara County, specifically in Sunnyvale, the City is providing the means beforehand to identify and train affiliated volunteers and have in place an Emergency Volunteer Plan to address the needs of unaffiliated volunteers.

Unaffiliated volunteers are not part of a recognized voluntary agency and often have no formal training in emergency response. They are not officially invited to become involved but are motivated by a sudden desire to help others in times of trouble. They come with a variety of skills. They may come from within the affected area or from outside the area.

Volunteer and resource programs include:

- **Sunnyvale Neighborhoods Actively Prepare (SNAP)** - a program to educate and train our residents to take care of themselves in the aftermath of a major disaster.
- **Project Ark** - a disaster shelter program that involves emergency containers called "ARKS" placed at eight school sites around the City.

Affiliated volunteers are attached to a recognized voluntary organization and are trained for specific disaster response activities. Their relationship with the organization precedes the immediate disaster and they are invited by that organization to become involved in a particular aspect of emergency management. An example of affiliated volunteers is Sunnyvale Amateur Radio Emergency Services (SARES).

- **Sunnyvale Amateur Radio Emergency Services (SARES)** - an organization of more than 100 amateur radio operators in the community that provide assistance to the City at both routine special events, when additional radio communications are needed and during emergencies/disasters.
- **Volunteer Emergency Response Team (VERT)** - a team created by the City of Sunnyvale to organize emergency volunteers.
- **Volunteer Center** - a countywide workgroup sponsored by the Volunteer Center of Silicon Valley and the Emergency Manager's association to plan and coordinate volunteers during a major disaster or emergency.
- **City Disaster Workers (DSW)** - a training given to all City employees to enable them to remain at, or report back to work in the event of a disaster.
- **Other City Volunteering Efforts** - the City allows employees to volunteer for disaster relief efforts during normal work hours with City approval.

Post Disaster Recovery

The recovery from a disaster needs to be as well planned as the initial emergency response. When a community has been devastated by a disaster, pressure from displaced businesses and families to rebuild as quickly as possible can be overwhelming for the local Planning Commission and City Council. If this happens, little thought will be given to correcting past mistakes, evaluating changes in land usage and their long-range effects on a community. A community can effectively plan to recover from a disaster and with thoughtful planning; those strategies will provide a framework for the recovery.

Local Hazard Mitigation Plan

In 2005, ABAG received grant funds to assist local agencies to comply with the Disaster Mitigation Act of 2000 requirements. ABAG invited local agencies to participate and complete the detailed planning necessary to create a pre-disaster mitigation plan. ABAG completed a regional plan for the nine Bay Area counties which was adopted by ABAG on March 17, 2005 after being approved by FEMA. Local agencies were given the opportunity to partner with ABAG to reduce the staff time required to complete a plan. Sunnyvale staff participated with ABAG and completed a FEMA approved Local Annex to the approved ABAG Plan in 2005. The plan is part of an overall strategy to reduce or eliminate long term risk to life and property from a natural hazard event. Adoption of the "Local Annex" as a part of the overall plan better prepares Sunnyvale for future emergencies and allows the City to apply for FEMA grant funds to mitigate existing risks. Sunnyvale's first Local Hazard Mitigation Plan (LHMP) was adopted in 2005.

Sunnyvale's 2005 Local Hazard Mitigation Plan (LHMP) Annex focuses on the nine likely hazards to occur in the Bay Area. The nine hazards are five earthquake related hazards – faulting, shaking, landslides, liquefaction and tsunamis; and four weather related hazards – flooding, landslides, wildfires and drought.) The LHMP continues to be examined and analyzed for future needed changes that may develop in the area of recovery. In 2017, Sunnyvale adopted the Santa Clara County Local Hazard Mitigation Plan, which provides an updated multi-jurisdictional hazard mitigation plan for all incorporated cities in the County. This plan includes mitigation measures to prevent and reduce hazard loss; protect people, properties, and natural resources; improve public awareness and emergency response services; and minimize the impacts of climate change. This plan will be updated periodically.

For more information on the City's emergency preparedness and volunteer programs and other resources, see www.sunnyvale.ca.gov

See Goal SN-1 (Recognition of Natural and Human-Caused Hazards) for further discussion and policies on hazards and the Local Hazard Mitigation Plan (LHMP) see. www.sunnyvale.ca.gov.

POLICY SN-2.1 CONSTRUCT OR MAINTAIN CITY FACILITIES UTILIZED FOR EMERGENCY RESPONSE TO ESSENTIAL SERVICES BUILDINGS, SO THAT THEY REMAIN OPERABLE AFTER A MAJOR SEISMIC EVENT.

POLICY SN-2.2 PROVIDE FOR THE EMERGENCY MANAGEMENT OF THE CITY IN ORDER TO RESPOND EFFECTIVELY AND TO ASSURE LIFE AND PROPERTY SAFETY IN THE EVENT OF A DISASTER.

- **SN-2.2a** Develop an alternate Emergency Operations Center site, in the event of loss of the primary site.

POLICY SN-2.3 PROVIDE AN INTEGRATED APPROACH TO PLANNING AND MANAGEMENT FOR EMERGENCIES AND DISASTERS.

POLICY SN-2.4 PROVIDE INFORMATION, ASSISTANCE AND ENCOURAGEMENT TO COMMUNITY MEMBERS, PUBLIC/PRIVATE SCHOOLS, DAY CARE CENTERS, BUSINESS AND INDUSTRY TO ASSIST IN THEIR PLANNING AND PREPAREDNESS FOR EMERGENCIES AND DISASTERS.

POLICY SN-2.5 PROVIDE EMERGENCY RADIO OR OTHER COMMUNICATION DEVICES FOR COORDINATION OF EMERGENCY RESPONSE AND THE CAPABILITY TO COMMUNICATE WITH OUTSIDE AGENCIES AND COMMUNITY MEMBERS.

POLICY SN-2.6 ACTIVELY SEEK AND APPLY FOR GRANT FUNDING FROM AVAILABLE GOVERNMENTAL AND PRIVATE SOURCES THAT WOULD ENHANCE EMERGENCY PREPAREDNESS.

POLICY SN-2.7 PROVIDE FOR THE CONTINUATION OF CITY GOVERNMENT AND SERVICES FOLLOWING A MAJOR DISASTER AS QUICKLY AS FEASIBLE.

POLICY SN-2.8 ENCOURAGE COMMUNITY MEMBERS AND BUSINESS/INDUSTRY TO PLAN FOR RECOVERY FROM DISASTERS AS QUICKLY AS FEASIBLE.

POLICE, FIRE AND EMERGENCY SERVICES

GOAL SN-3 SAFE AND SECURE CITY

ENSURE A SAFE AND SECURE ENVIRONMENT FOR PEOPLE AND PROPERTY IN THE COMMUNITY BY PROVIDING EFFECTIVE PUBLIC SAFETY RESPONSE AND PREVENTION AND EDUCATION SERVICES (*Previously Law Enforcement Goal 4.1A and 4.1B/ Adopted in 1995*)

Community safety is the top priority for the City. The community, both residents and visitors, must feel fundamentally safe while living, working or conducting daily activities within the City of Sunnyvale. This is accomplished in many ways; from prevention of the crime before it occurs, to patrol response to the emergency, to investigation of the crime once the initial report has been written. In addition to crime prevention and investigation, there are non-criminal emergencies as well as traffic related community safety concerns.

The City's crime prevention function has two aspects: Eliminating the desire and eliminating the opportunity to commit crime. While it may be more difficult to eliminate one's desire to commit a crime, the City can lessen the desire by taking away the opportunities. Current crime prevention techniques include the environmental design of residential and commercial developments, neighborhood watch programs, community

education in sexual assault awareness and robbery prevention and high visibility patrol.

One of the key elements of any successful crime prevention program is community involvement. This is accomplished by reaching out to citizens of all ages and socio-economic background. The City has forged these relationships in the schools, neighborhood groups and fraternal organizations and within the business community.

Over the last several years Public Safety has utilized the Problem Oriented Policing model for identifying potential trouble spots within the City and expending available resources to help clean the area up and avoid having a rising crime rate. The addition of the Neighborhood Preservation Unit (NP) and the Neighborhood Enhancement Action Team (NEAT) are two such resources that assist with identifying areas of the City which may turn into problem areas. NP and NEAT pro-actively survey neighborhoods and help rid them of blight like overgrown weeds, graffiti, broken windows and general run-down residential and commercial properties. NEAT works with the residents, landlords and business owners to address property appearance, crime within the neighborhood and quality of life issues. Addressing and correcting these issues makes for a safer, friendlier environment.

When the desire for crime continues to exist, the need for fundamentally sound patrol response and skilled investigative follow up become key elements. These two key elements help keep the overall crime rate low, which routinely places the City of Sunnyvale as one of the top 10 safest cities in America with a population greater than 100,000. These crime rates are derived from the Uniformed Crime Report that is published yearly by the Federal Bureau of Investigation. The report is based on crime statistics provided from police departments across the nation.

Technology and Public Safety

As technology around the world continues to develop, the City keeps its pace and worked with private sector vendors to increase its technological capabilities. In fiscal year 2010/11, a third generation Mobile Dispatch Terminal called Mobilcom was installed in police and fire apparatus. This new technology will enable dispatch to send the closest unit(s) to an emergency call, thereby further reducing our response times. Mobilcom also allows the in-field end users access to information on local, state and federal data bases as well as internet links such as Google Earth to assist with the investigation of crimes.

Other technological advances being pursued and implemented are shared statewide Records Information Systems (RMS). These systems allow for input and retrieval of suspect, vehicle, stolen property and other pertinent information that assists to the apprehension of criminals within our communities.

Within Public Safety's own databases are technological tools for the officers and citizens that provide real time crime information. All of these technology tools are utilized by the Crime Analyst to track crime trends by types of crimes, the areas where they are occurring, day of the week and time of day. The Crime Analyst also compiles suspect data from the crime reports to assist the officers with identifying gang activity within the City.

See Goal SN-4 (Public Confidence in Police Services) for further information on community relationships, including Neighborhood Resource Officers and Challenge Team Sunnyvale.

See General Plan Community Vision Chapter for yearly crime statistics as part of Community Condition Indicators.

See Goal HE-2 (Maintain and Enhance the conditions and Affordability of Existing Housing) for further information and policies on neighborhood preservation and rehabilitation programs.

For more information
about the Department of
Public Safety's programs,
see www.sunnyvale.ca.gov

In the future we can look forward to further technological advances in tracking crime trends as well as interoperability between jurisdictions with RMS and communications systems.

POLICY SN-3.1 PROVIDE RAPID AND TIMELY RESPONSE TO ALL EMERGENCIES. *(Previously Law Enforcement Policy 4.1A.1)*

POLICY SN-3.2 CONTROL CONDUCT RECOGNIZED AS THREATENING TO LIFE AND PROPERTY. *(Previously Law Enforcement Policy 4.1A.2)*

POLICY SN-3.3 PROVIDE INVESTIGATIVE SERVICES DIRECTED TOWARD SUCCESSFUL PROSECUTION AND CONVICTION OF CRIMINAL OFFENDERS. *(Previously Law Enforcement Policy 4.1A.3)*

POLICY SN-3.4 REDUCE CRIME AND FEAR BY STRENGTHENING THE POLICE/COMMUNITY PARTNERSHIP. *(Previously Law Enforcement Policy 4.1A.4)*

POLICY SN-3.5 FACILITATE THE SAFE MOVEMENT OF PEDESTRIANS, BICYCLISTS AND VEHICLES. *(Previously Law Enforcement Policy 4.1A.5)*

POLICY SN-3.6 AID THOSE WHO CANNOT CARE FOR THEMSELVES (INTOXICATED, ADDICTED, MENTALLY ILL, PHYSICALLY DISABLED, THE YOUNG, THE OLD). *(Previously Law Enforcement Policy 4.1B.1)*

POLICY SN-3.7 PROVIDE CRISIS INTERVENTION, CONFLICT MANAGEMENT AND RESOLUTION. *(Previously Law Enforcement Policy 4.1B.2)*

GOAL SN-4 PUBLIC CONFIDENCE IN POLICE SERVICES

INCREASE AND MAINTAIN PUBLIC CONFIDENCE IN THE ABILITY OF THE PUBLIC SAFETY DEPARTMENT TO PROVIDE QUALITY POLICE SERVICES *(Previously Law Enforcement Goal 4.1C / Adopted in 1995)*

Public confidence is the cornerstone of a successful law enforcement organization. A police agency that is disengaged from the community cannot possibly meet the demands of modern day law enforcement operations and the expectations of today's society. As an agency builds the confidence of the community, the public often feels comfortable contacting law enforcement to request assistance or to relay information. The agency that quickly responds to this contact with a professional, well trained and well equipped police force, stands to further build trust with the community that ultimately leads to an enhanced quality of service. A professional organization that approaches each community contact as an opportunity to establish a deep connection with the citizen will likely be rewarded with information that can be utilized to effectively and efficiently provide the needed services, whether that is the investigation of a homicide or the resolution of a neighborhood dispute.

Professional Standards and the Public Safety Assurance of Quality Control

In order to sustain the successes of community confidence building efforts, an agency must provide feedback to the community about investigations of criminal acts or complaints related to the conduct of officers, to the degree possible. The public must know that the information that is provided to the police is actually being utilized to solve the crime that they reported or to improve the service delivered to the community. Often times this type of community confidence is enhanced through mandatory reporting requirements currently utilized by all agencies in Santa Clara County. Public Safety participates in all County level sub-committees charged with creating and reviewing county reporting protocols and the mandatory reporting requirements contained within them.

Citizen commendations and complaints provide the City with valuable information for evaluating employee performance, identifying areas of police misconduct, monitoring police relations with the public and identifying the need for new or revised policies or improved training. For these reasons, citizens are encouraged to report both commendations and matters of misconduct to the City.

Neighborhood Resource Officers

The Department of Public Safety takes pride in being connected to community. More than 30 years ago, the Neighborhood Resource Officer position was created. The primary focus of these officers is to be in schools connecting with children and teachers. Additionally, these officers provide service to neighborhoods and the business community in the form of crime prevention tips and neighborhood conflict resolution. This direct contact will sustain and enhance public trust now and into the future.

Challenge Team Sunnyvale

In 2007, Public Safety created the "Challenge Team Sunnyvale." Monthly, members of the community meet at Public Safety Headquarters to discuss youth and community issues. These community members represent the business community, nonprofit organizations, health care professionals, faith base organizations, judicial representatives and law enforcement. The team has brought resources together to sponsor youth activities, mentoring programs and the group is currently working towards a public/ private collaboration that will be designed to bring youth services to underserved areas of the community. It is this deep connection that will sustain community confidence and enhance public trust into the future.

Continuously Enhancing Community Connections

In 2004, the City requested the assistance of the Police Executive Research Forum (PERF) to evaluate our community outreach efforts and provide suggestions to strengthen our valued relationship with the public. The Neighborhood Resource Officer position, as well as the entire Crime Prevention Unit in the Department of Public Safety, was highlighted as key to enhancing connections with the community and strengthening public trust.

The study determined that citizens in the City of Sunnyvale feel safe in the community and are extremely satisfied with the delivery of police services. PERF did point out several areas by which the department could create a deeper connection with the public. The study suggested enhancements to the Public Safety website and the use of the media to highlight Public Safety activities. The City of Sunnyvale has made substantive changes to the website designed to highlight services available and enhance the public's experience. In addition, the City is currently utilizing social media and an e-newsletter designed to highlight activities and bring transparency to operations.

The City will continue to explore the benefits of the utilization of social media and the use of smart phone technology to open avenues of communication with the public and provide transparency to the community. In addition to non-traditional methods, the City emphasizes connections in non-traditional settings. Connecting Public Safety Officers with other City departments, such as Economic Development and Community Services, enhances service to the public. These types of relationships break down barriers and perceptions, leading to significant enhancements of public trust.

POLICY SN-4.1 PROVIDE INSPECTION AND CONTROL OF PERSONNEL AND DEPARTMENT OPERATIONS WHICH IS RESPONSIVE TO CITIZENS' CONCERNS. *(Previously Law Enforcement Policy 4.1C.2)*

POLICY SN-4.2 PROVIDE FOR ASSESSMENT OF CHANGING COMMUNITY NEEDS AND EXPECTATIONS. *(Previously Law Enforcement Policy 4.1C.1)*

- **SN-4.2a** Identify means of measuring citizen satisfaction with police services. *(Previously Law Enforcement Action Statement 4.1C.2a)*

GOAL SN-5 EFFECTIVE FIRE SERVICE RESPONSE SYSTEM

PROVIDE A FIRE SERVICE RESPONSE SYSTEM THAT WILL CONTROL THE SPREAD OF FIRE IN BUILDINGS AND OTHER PROPERTIES AND MAINTAIN MINIMAL CASUALTIES AND PROPERTY LOSS FROM FIRE AND OTHER RELATED EMERGENCIES *(Previously Fire Services Goal 4.2A/ Adopted in 1995)*

Structure fires are the foundation for most firefighting, training, equipment and policy decisions. While representing only a small percent of total calls for service, structure fires pose the greatest threat to life, safety and high dollar property loss and a quick response to emergency incidents is essential.

A strong fire prevention program is a necessity for a safe community. An appropriate combination of building and life safety codes, ordinances, permitting processes, inspection and enforcement efforts and public education are all vital components of such a program. Providing fire safety education to buildings with greater than average fire and life hazard potential, such as schools, hotels, restaurants, nursing homes, high density housing and other public assemblies is crucial to increasing life safety and reducing property loss.

On average, the Fire Services Division responds to approximately 7,300 calls for service annually. Of those calls for service, approximately 70 percent are Emergency Medical (EMS) calls. Per year, the Division responds to approximately 620 hazardous material calls and 140 structure fires. There are six fire stations in the city, all of which were remodeled between 1998 and 1999. The stations are situated throughout the city, based on a combination of call volume and response time. The department has mutual aid and/or auto aid agreements with Santa Clara County Fire, San Jose Fire, Mountain View Fire and Santa Clara (City) Fire. These agreements cover responses to freeway incidents and

See Goal SN-1 (Acceptable Levels of Risk for Natural and Human-Caused Hazards) for additional discussion of fire hazards and response.

For more information
on the Fire Services
program, see
www.sunnyvale.ca.gov

structure fire incidents, in areas of common shared boundaries between jurisdictions.

An often-cited measure of fire suppression capability is the rating assigned to a department by the nationally recognized Insurance Services Office (ISO). The ISO is a subsidiary of a publicly traded company and acts as an advisory organization which provides information that insurance companies may use to establish premium costs. The rating is based on, among other things, fire alarm and communications systems, telephone and dispatching systems, fire equipment, staffing, training and geographic distribution of fire stations. Based on all this information, the ISO assigns a classification rating from 1-10. Sunnyvale has an ISO rating of 2, which falls within the 'superior' category.

During fiscal year 2009/2010, fifteen Fire Services vehicles were equipped with Mobile Dispatch Terminals (MDT's), with funding provided by the Assistance to Firefighters grant. The MDT's improve Fire Services response capabilities through the use of state-of-the-art technology, which provides field response data and field mapping. This technology allows fire personnel to reduce the response time to fire and EMS emergencies.

The next phase of the MDT implementation is the use of GPS-based dispatching. This technology will utilize a program called Automated Vehicle Locator (AVL). This program will allow the dispatcher's Computer Aided Dispatch (CAD) to identify the fire apparatus which is closest to the call being received and prompting the dispatch of that apparatus.

On a regional level, the issue of consolidating fire apparatus maintenance is being discussed and explored. Currently, all nine providers of fire service in the county run their own in-house maintenance unit. Developing shared maintenance facilities will most likely provide economies of scale and cost savings for participating departments, in addition to enhanced coverage of service.

POLICY SN-5.1 ASSURE THAT EQUIPMENT AND FACILITIES ARE PROVIDED AND MAINTAINED TO MEET REASONABLE STANDARDS OF SAFETY, DEPENDABILITY AND COMPATIBILITY WITH FIRE SERVICE OPERATIONS.
(Previously Fire Services Policy 4.2A.1)

POLICY SN-5.2 PROVIDE TRAINING THAT IS ADEQUATE FOR REQUIRED DUTIES. *(Previously Fire Services Policy 4.2A.2)*

POLICY SN-5.3 RESPOND TO REQUEST FOR SERVICES. *(Previously Fire Services Policy 4.2A.3)*

POLICY SN-5.4 CONDUCT FIELD OPERATIONS AND EMERGENCY SCENE MANAGEMENT IN A SAFE, EFFECTIVE AND EFFICIENT MANNER. *(Previously Fire Services Policy 4.2A.4)*

- **SN-5.4a** Maintain a system of pre-fire surveys for selected buildings and provide critical information that is immediately available to responding emergency personnel should an incident occur. Fully integrate all pre-fire surveys into apparatus-based CAD's, in order to provide pre-fire survey information "on-line" at emergency scenes. *(Previously Fire Services Action Statement 4.2A.4b)*
- **SN-5.4b** Take measures that reduce the number of false alarms. *(Previously Action Statement 4.2A.4f)*

GOAL SN-6 **EFFECTIVE EMERGENCY RESPONSE CAPABILITY**

PROVIDE EFFECTIVE RESPONSE CAPABILITY FOR EMERGENCY MEDICAL EVENTS AND OTHER NON-FIRE INCIDENTS THAT MAY DIRECTLY ENDANGER THE LIVES, PROPERTY AND WELL-BEING OF THE COMMUNITY. *(Previously Fire Services Goal 4.2B / Adopted in 1995)*

The Department of Public Safety participates in an emergency medical services (EMS) system that is integrated into the larger Santa Clara County Emergency Medical Services System. This system provides for Basic Life Support (BLS) response by Public Safety resources followed by Advanced Life Support (ALS) response by the County of Santa Clara. This tiered response system efficiently utilizes resources within a cost effective manner.

The EMS system within California is governed by county and state regulations as well as court decisions. Through this regulatory system, the County of Santa Clara holds the exclusive rights to operate the ALS paramedic transport system. The County of Santa Clara is responsible for the medical oversight of the EMS system, including the care provided by Public Safety personnel. Public Safety maintains a physician medical director to meet regulatory and statutory requirements for equipment purchases and mandatory internal quality improvement activities. Public Safety is a State of California Certifying Entity and an approved EMT-Basic Training Program and is able to train, certify and recertify our own personnel as EMT-Basic providers.

See Goal SN-1 (Acceptable Levels of Risk for Natural and Human-Caused Hazards) for a discussion of hazardous materials risks and response.

In 1996, Public Safety implemented an early defibrillation program, which allowed public safety personnel to utilize an AED to treat patients in cardiac arrest. Changes in California law provide the opportunity to add AEDs to City facilities for use by non-traditional responders and laypersons. Sunnyvale was one of the first communities in the California to implement the program. Many cardiac arrest victims have been saved by Public Safety personnel as well as residents and visitors to our City facilities through the use of these AEDs.

The County of Santa Clara contracts with a vendor to provide a fee-for-service paramedic transport system for all of Santa Clara County with the exception of the City of Palo Alto who maintains their own fire department based paramedic transport service. The Santa Clara County Paramedic Ambulance Contract sets response time standards for the vendor that applies throughout the County.

Sunnyvale is the only city in Santa Clara County that does not provide paramedic services through its own or contracted fire service provider. This provides the City little opportunity to affect change. Since the inception of paramedic services in Santa Clara County, Public Safety has brought to Council options to provide paramedic services within the Public Safety model. Public Safety will continue to monitor the County's paramedic service provision. Public Safety will evaluate the options/opportunities to deliver paramedic services within the Department of Public Safety and will periodically report to Council its findings.

Within this ongoing paramedic evaluation process, the City will utilize advances in technology to help reduce response times. Scheduled for completion in 2011 is the establishment of a link between the Public Safety Dispatch computers and County Communications to decrease the response time of paramedics. As in-vehicle GPS becomes more accessible, closest-unit dispatching will be explored to further reduce response times to medical emergencies.

POLICY SN-6.1 PROVIDE IMMEDIATE LIFE SUPPORT TO THOSE THREATENED BY SITUATIONS REQUIRING EMERGENCY MEDICAL SERVICES OR RESCUE.
(Previously Fire Services Policy 4.2B.1)

- **SN-6.1a** Study and where feasible, provide alternate methods of emergency medical service delivery when it is determined to be more efficient and beneficial to those in need. Consider EMT-P level training. *(Previously Fire Services Action Statement 4.2B.1b)*

GOAL SN-7 EFFECTIVE EMERGENCY COMMUNICATION SERVICES

PROVIDE EMERGENCY COMMUNICATIONS SERVICES (*Previously Support Services
Goal 4.3D / Adopted in 1988*)

The Sunnyvale Department of Public Safety Dispatch Center provides a public safety answer point twenty four hours a day 365 days a year. This is a critical link between the City's emergency services, first responders and its citizens, and is the primary method of coordination of Public Safety services. When a citizen has a complaint, problem, or emergency, virtually all of this information is channeled through the Public Safety Dispatch Center, which then disseminates and/or dispatches the information to Public Safety responders or allied agencies/departments. The Dispatch Center handles tens of thousands of calls for service each year, including many calls from non-English speaking citizens. With the advent of cellular phones as well as a growing population, the numbers of calls have increased dramatically and most likely will continue into the foreseeable future.

Most calls coming into the Dispatch Center are either fire or police-related. These include crimes in progress, medical emergencies and fires. The timely transmission of information to field units is critical to enabling successful outcomes. As such, training, the use of new technology and interoperability enables the communications dispatchers to effectively gather and disseminate information more efficiently.

The Department of Homeland Security has stated that interoperability is a top priority for Public Safety agencies nationwide. The purpose of this interoperability goal is to connect voice and data communications for near real-time sharing across multiple agencies, counties and regional partners. The Bay Area Urban Area Security Initiative is tasked with helping 10 counties in the region to prepare for all hazards, natural or man-made, through a collaborative approach. The ability for multiple cities and counties to work together provides a significant advantage in the development of these communication networks leveraging infrastructure, knowledge and funding sources as a region.

There are four major components to this interoperability effort:

- Radio/voice communications
- Information sharing
- Broadband technology
- Digital microwave connectivity through the 10 bay area counties

Future challenges include upgrading of the Public Safety Department's CAD (Computer Assisted Dispatch) system and trends towards Public Safety Answer Point/Dispatch consolidation. Additionally, it is anticipated that an aging population will continue to increase demands upon the Dispatch Center for response to medical emergencies. Lastly, costly maintenance and upgrading of critical infrastructure will need to remain a priority to ensure that the highly trained dispatchers and first responders have all of the tools necessary to receive and respond to calls for service at all times including during critical events, disasters and acts of terrorism.

POLICY SN-7.1 PROVIDE EMERGENCY COMMUNICATIONS SERVICES
24 HOURS A DAY 100 PERCENT OF THE TIME. *(Previously Support Services Policy 4.3D.1)*