

# FRESNO



## Fresno General Plan Update

## Noise and Safety

**PRELIMINARY  
WORKSHOP  
DISCUSSION  
DRAFT**

January 2013

Development and Resource  
Management Department

City of  
**FRESNO** 

# 9

## Noise and Safety

### Preliminary Workshop Discussion Draft of the City of Fresno General Plan Update

The Noise and Safety Chapter is one of the many Elements noted below that when combined will ultimately comprise the Draft Fresno General Plan Update, anticipated to be released as a comprehensive document for public review and formal comments in March-April 2013.

- Urban Form, Land Use, and Design Element
- Mobility & Transportation Element
- Parks, Open Space and Schools Element
- Healthy Communities Element
- Historic and Cultural Resources Element
- Resource Conservation and Resilience Element
- Public Utilities Element and Services Element
- Noise and Safety Element
- Economic Development and Fiscal Sustainability element
- Implementation Element
- Housing Element<sup>1</sup>

This version of the Noise and Safety Element is a **Preliminary Workshop Discussion Draft of the City of Fresno General Plan Update**, intended for introduction to the public, with a request for public review and comments to be received via emails, letters, and oral presentations as part of a series of workshops with the City of Fresno Planning Commission and other community engagement meetings scheduled through February – March of 2013.

The purpose of the Noise and Safety Element is to identify the natural and man-made public health and safety hazards that exist within the city, and to establish preventative and responsive objectives and policies and programs to mitigate their potential impacts.

More specifically the Noise section identifies existing noise sources within the city and establishes policies, standards and programs to mitigate potential

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<sup>1</sup> The City has already updated and approved the Housing Element as required by State law. Although not currently scheduled for preliminary workshop review, the Housing Element will be addressed in the Draft Fresno General Plan Update and the current version is available for public review. Technical amendments to the Housing Element needed for General Plan consistency will be addressed in the Draft Fresno General Plan Update as appropriate. The Housing Element's goals, objectives, policies and programs will be included in the General Plan, with any proposed technical amendments clearly indicated

impacts through design and performance measures. This element contains policies that guide the location of industrial land uses and transportation facilities, since they are common sources of excessive noise levels, as well as the location of noise sensitive uses, such as residences, schools, churches, and hospitals.

This Element also addresses safety issues, including seismic and geologic hazards, flood hazards, wildfire hazards, hazardous materials, airport safety, emergency response, and safety services. It includes policies on natural hazards mitigation planning, which respond to the Federal Disaster Mitigation Act of 2000 and the Federal Emergency Management Agency's implementing regulations and support the County's Multi-Jurisdictional Local Hazard Mitigation Plan, which the City has adopted.

### RELATIONSHIP TO GENERAL PLAN GOALS

The Noise and Safety Element provides objectives and policies that support the following General Plan goals:<sup>2</sup>

9. Promote a city of healthy communities and improve quality of life in existing neighborhoods.

*Emphasize supporting existing neighborhoods in Fresno with safe, well maintained, and accessible streets, public utilities, education and job training, proximity to jobs, retail services, and health care, affordable housing, youth development opportunities, open space and parks, transportation options, and opportunities for home grown businesses.*

16. Protect and improve public health and safety.

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<sup>2</sup> The commentary in italics following certain goals is not part of the goal itself, but is instead advisory and informational language intended to further discussion, clarify the goal, and help guide the objectives of the General Plan.

## NOISE

California Government Code Section 65302(f) requires that general plans contain a Noise Element to identify and quantify potential noise problems and to provide effective policies for noise control and mitigation.

### NOISE CHARACTERISTICS AND MEASUREMENT

Noise is commonly defined as undesirable or unwanted sound. Noises vary widely in their scope, source, and volume, ranging from individual occurrences such as leaf blowers, to the intermittent disturbances of overhead aircraft, to the fairly constant noise generated by traffic on freeways. Three aspects of community noise are used in assessing the noise environment:

- *Level* (e.g., magnitude or loudness). Sound levels are measured and expressed in decibels (dB) with 10 dB roughly equal to the threshold of hearing. **Figure NS-1** shows the decibel levels associated with different common sounds. Transient noise events may be described by their maximum A-weighted noise level (dBA).
- *Frequency* composition or spectrum. Frequency is a measure of the pressure fluctuations per second, measured in units of hertz (Hz). The characterization of sound level magnitude with respect to frequency is the sound spectrum, often described in octave bands, which divide the audible human frequency range (e.g., from 20 to 20,000 Hz) into ten segments.
- *Variation* in sound level with time, measured as noise exposure. Most community noise is produced by many distant noise sources that change gradually throughout the day and produce a relatively steady background noise having no identifiable source. Identifiable events of brief duration, such as aircraft flyovers, cause the community noise level to vary from instant to instant. A single number called the equivalent sound level or  $L_{eq}$  describes the average noise exposure level over a period of time. Hourly  $L_{eq}$  values are called Hourly Noise Levels.

Measuring and reporting noise levels involves accounting for variations in sensitivity to noise during the daytime versus nighttime hours. Noise descriptors used for analysis need to factor in human sensitivity to nighttime noise when background noise levels are generally lower than in the daytime and outside noise intrusions are more noticeable. Common descriptors include the Community Noise Equivalent Level (CNEL) and the Day-Night Average Level (DNL). Both reflect noise exposure over an average day with weighting to reflect the increased sensitivity to noise during the evening and night. The two descriptors are roughly equivalent. The CNEL descriptor is used in relation to major continuous noise sources, such as aircraft or traffic, and is the reference level for the Noise Element under State planning law.

Knowledge of the following relationships is helpful in understanding how changes in noise and noise exposure are perceived:

- Except under special conditions, a change in sound level of 1 dB cannot be perceived;

- A 3 dB change is considered a just-noticeable difference;
- A 5 dB change is required before any noticeable change in community response would be expected. A 5 dB increase is often considered a significant impact; and
- A 10 dB increase is subjectively heard as an approximate doubling in loudness and almost always causes an adverse community response.

Forty-five dBA is usually set as the limit on indoor noise detectable from outdoor sound sources. Sixty dBA is considered to be the sound level of normal conversation and is often used as a limit on outdoor ambient noise levels for suburban residential areas because it is felt that people should be able to hear conversation in their own back yards. Outdoor ambient noise levels are permitted to be higher for urban areas and commercial sites, and higher still for industrial areas.

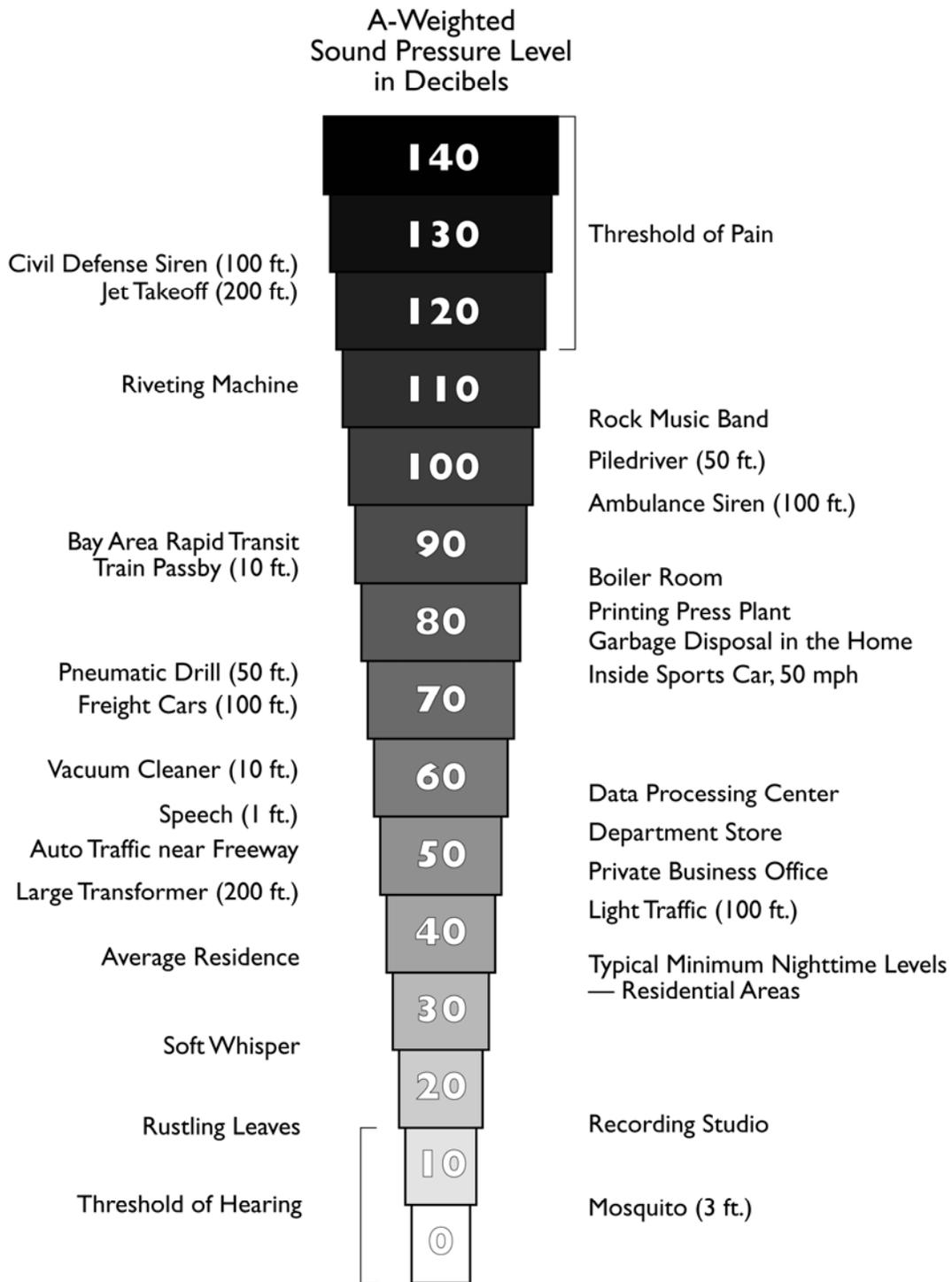
## **NOISE GENERATION IN FRESNO**

In the urban environment, noise generators, such as transportation corridors and industrial uses, occur in close proximity to sensitive noise receivers, such as residential and institutional uses. Some land uses potentially constitute both a noise generator and a simultaneous noise receiver, e.g., recreational sites. Fresno has special noise considerations because it has grown up around two major rail corridors, and many freight trains run through the heart of the city daily. Fresno contains three public airports, and has four State highways running through it, as well as major streets at half-mile and one-mile grid intervals, carrying large volumes of passenger vehicle and truck traffic. Industrial and public facilities in and around the city also generate noise from processing materials and from the operation of equipment such as large pumps and backup generators. Residential and commercial uses also contribute noise from smaller equipment, such as swimming pool pumps, air conditioning units, and compressors for refrigeration.

Longstanding City policy for stationary sources has been to require enclosure, muffling and/or extra setbacks so that adjacent properties are not exposed to excessive noise levels. Nuisance noise abatement has been accomplished through the City's Noise Ordinance. Noise from transportation facilities has been controlled primarily by State and federal standards but also by distancing sensitive uses from these facilities, and by use of sound-proofing construction measures, such as masonry walls and sealed buildings.

Title 24 of the California Building Code sets out energy conservation requirements, which have also greatly helped mitigate indoor noise levels by requiring dual-pane windows and additional insulation in buildings. Federal Aviation Administration regulations for airports have supported planning and zoning designations, which have kept sensitive uses away from the noise attendant upon flight paths. Specific plans for the three airports in Fresno each have their own noise policies and land use compatibility criteria, which are incorporated in this General Plan.

Figure NS-1: Typical Sound Levels



(n ft.) = Distance in feet between source and listener

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Workshop Discussion Draft

## Existing Noise Levels

The existing noise conditions in Fresno were measured at nine locations from May 30 to June 1, 2012. Noise monitoring sites were selected to be representative of typical residential, commercial, and industrial sites within the Planning Area, as well as arterial roadways, elevated and below-grade freeways, and railroad crossings with and without train horn soundings. At each of the nine long-term 24-hour noise monitoring sites, day-night statistical noise level trends were recorded to develop DNL values. Descriptions of each location and the measured noise levels (normalized to a distance of 100 feet from the major noise source) are listed in Table NS-1.

**TABLE NS-1: MEASURED EXISTING NOISE LEVELS<sup>1</sup>**

	<i>DNL (dB) at 100 feet from Major Noise Source Centerline</i>
Railroad crossing at Shields Avenue	84
Along Railroad near W Barstow Avenue	74
SR 41 between W Barstow Avenue and W Shaw Avenue	76
SR 180 near N Peach Avenue	76
E Shaw Avenue near N Cedar Avenue	72
N Blackstone Avenue near E Ashlan Avenue	70
S Elm Avenue near E Jensen Avenue	68
N Valentine Avenue between W Ashlan Avenue and W Holland Avenue	67
S Fruit Avenue north of Church Avenue	65

<sup>1</sup> Values provided have been normalized to the reference distance of 100 feet.

Existing noise levels in the city are principally generated by transportation noise sources. Vehicular traffic noise is the dominant source in most areas. However, aircraft and rail activity are also significant sources of environmental noise in the local areas surrounding these operations. In several locations, industrial noise was clearly audible. However, overall average daily noise levels at existing nearby noise-sensitive receptors (e.g., residential areas) typically consist of traffic noise primarily and industrial noise secondarily. New noise-sensitive developments in close proximity to industrial land uses could be exposed to greater industrial noise levels. Existing noise levels generated by roadways are shown on **Figure NS-2**.

## Traffic Noise

The level of highway traffic noise depends on three factors: (1) the volume of the traffic, (2) the speed of the traffic, and (3) the number of trucks in the flow of traffic. Vehicle noise is a combination of the noises produced by the engine, exhaust, tires, and wind generated by taller vehicles. Other factors that affect the perception of traffic noise include: distance from the highway, terrain, vegetation, and natural and structural obstacles. While tire noise from autos is

generally located at ground level, truck noise sources can be located as high as 10 to 15 feet above the roadbed due to tall exhaust stacks and higher engines.

Future noise exposure contours for Fresno's major roadways were modeled by applying the Federal Highway Administration's noise modeling procedure, using roadway, speed, and traffic mix data from the City of Fresno and projected traffic volumes based on anticipated buildout under the General Plan, as calculated by the transportation planning and engineering firm of Fehr & Peers.

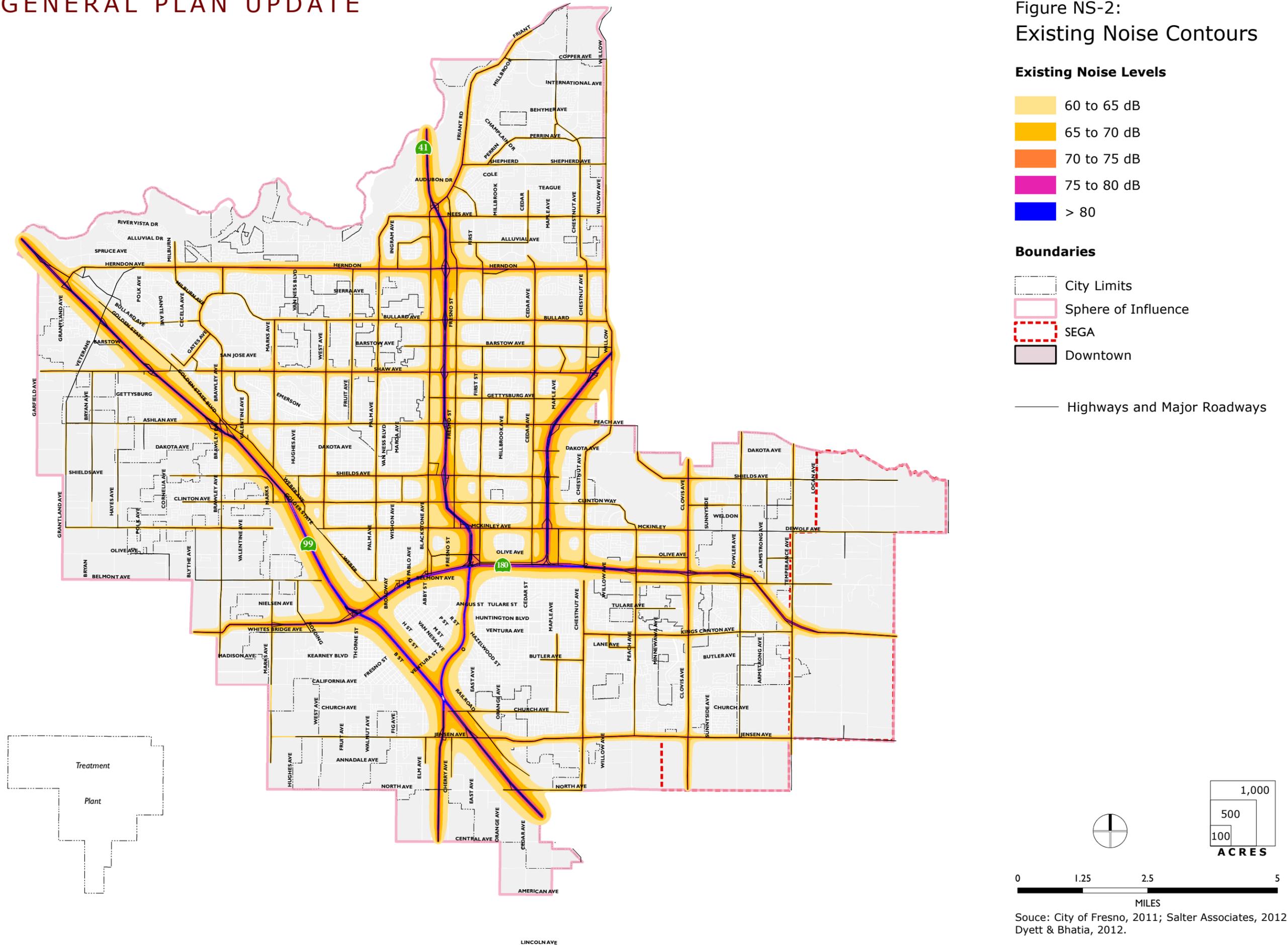
In establishing noise contours for land use planning, it is customary to ignore noise attenuation afforded by buildings, roadway elevations, and depressions, and to minimize the barrier effect of natural terrain features. The result is a worst-case estimate of the existing and future (projected) noise environment. The assumption is that it is more desirable to overestimate the potential noise at a future noise-sensitive development site than to underestimate the noise environment and allow for potentially incompatible land-use development. The developed noise contours for the City of Fresno are conservative, meaning that the contours are modeled with minimal noise attenuation by natural barriers, buildings, with the exception of significantly depressed sections of highways.

Future development within the Planning Area will result in increased traffic volumes, thus increasing noise levels somewhat in some areas. Future noise levels along highways are projected to increase by two to five decibels. Future noise levels along most existing roadways are projected to increase by one to five decibels. New roadways, significantly expanded roadways, or sparsely populated areas where significant new development is expected may see noise levels increase by more than five decibels. Future noise contours are illustrated in **Figure NS-3**.

Increases in traffic levels can be counteracted by the implementation of alternate forms of transportation and land use design that factor in noise concerns. Locating noise-sensitive uses away from high-noise areas (e.g., major transportation routes) and buffering noise levels through design and landscaping features will help minimize future noise-related land use conflicts. Policies in this element establish review criteria for certain land uses to ensure that future noise levels will not exceed acceptable levels near noise-sensitive land uses.

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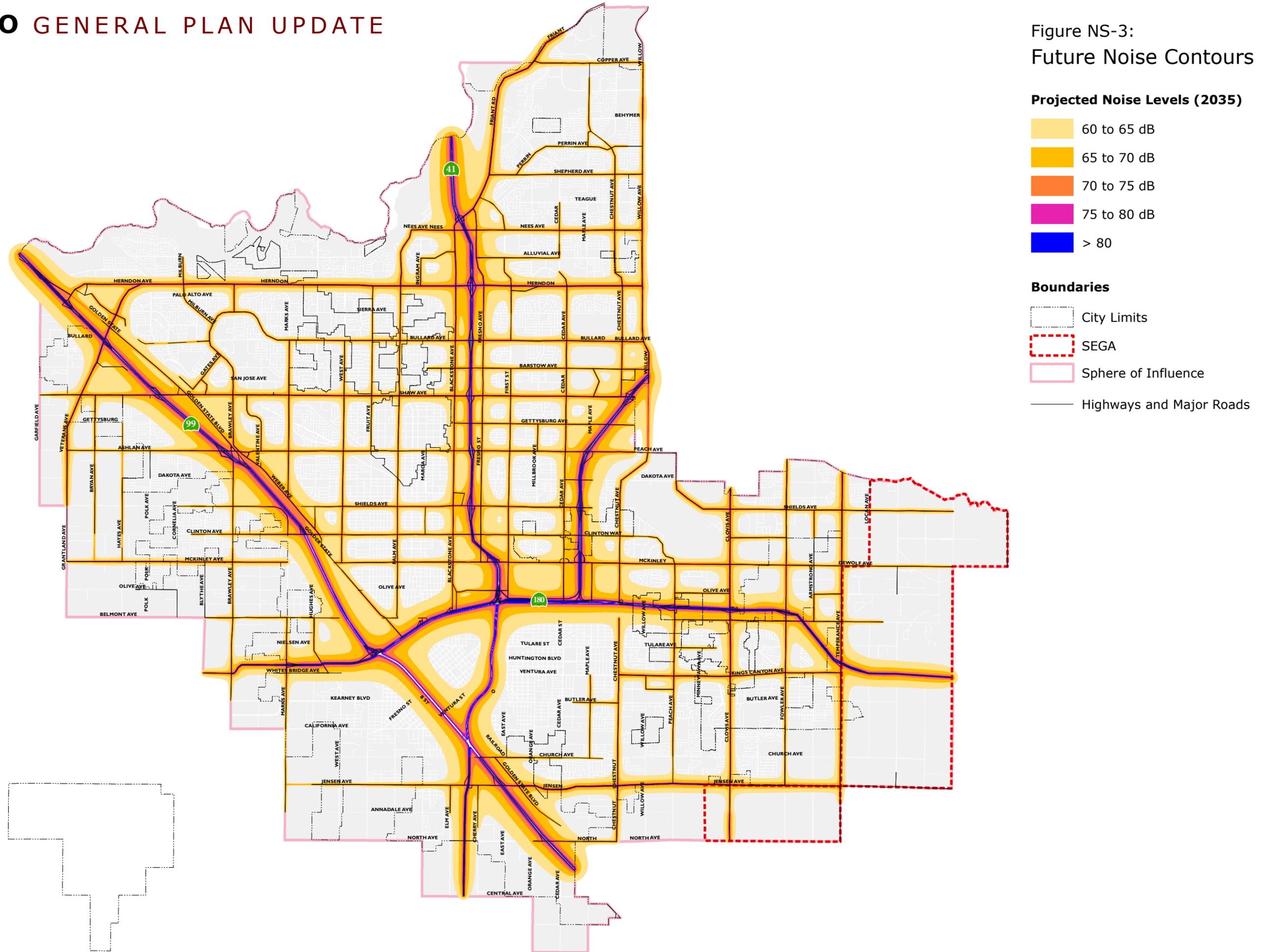
Figure NS-2:  
Existing Noise Contours



Source: City of Fresno, 2011; Salter Associates, 2012; Dyett & Bhatia, 2012.

# FRESNO GENERAL PLAN UPDATE

Figure NS-3:  
Future Noise Contours



## Railroad Operations Noise

Railroad activity in Fresno occurs along two rail corridors. Warning horns generally are signaled within one-quarter mile of a grade crossing, although the area around City Hall has been designated as a quiet zone. Where grade crossings exist, and warning horns and crossing alarms are signaled, individual single event noise levels associated with a train generally reach 105 dBA to 110 dBA at a distance of 100 feet from the track centerline. Away from grade crossings, train passby noise levels are lower, typically 85 dBA to 90 dBA at a distance of 100 feet.

## Airport Noise

Fresno contains one commercial airport, Fresno Yosemite International Airport, and two general aviation airports, Chandler Executive and Sierra Sky Park. The Fresno County Airport Land Use Commission (ALUC) must prepare an Airport Land Use Compatibility Plan (ALUCP) as required by the Caltrans Division of Aeronautics. ALUCPs guide local jurisdictions in determining appropriate compatible land uses with detailed findings and policies; this General Plan and all other City land use plans must be compatible with the adopted ALUCP, which among other objectives strives to minimize the effects of aircraft noise on communities adjacent to airports.

## Major Stationary Noise Sources

Noise can result from many industrial processes, even when the best available noise control technology is applied. Noise exposures within industrial facilities are controlled by federal and state employee health and safety regulations set by the Occupational Safety and Health Administration (OSHA) and Cal-OSHA, but exterior noise levels may exceed locally acceptable standards. Commercial, recreational and public service facility activities can also produce noise that affects adjacent sensitive land uses. These noise sources can be continuous and may contain tonal components that may be annoying to individuals who live nearby. In addition, noise generation from fixed noise sources may vary based upon climatic conditions, time of day and existing ambient noise levels.

Industrial uses in Fresno are typically located in industrial districts near freeways and commercial uses, away from residences and other sensitive noise receptors. Noise sources associated with service commercial uses such as automotive repair facilities, wrecking yards, tire installation centers, car washes, loading docks, etc., are found at various locations within the city. The noise emissions of these types of uses are dependent on many factors and are therefore difficult to quantify precisely. Nonetheless, noise generated by these uses contributes to the ambient noise environment in the immediate vicinity of these uses and should be considered where either new noise-sensitive uses are proposed nearby or where similar uses are proposed in existing residential areas.

Another major source of noise around Fresno is agricultural operations from tractors and other mechanized equipment, crop dusters, and sometimes livestock. All of the agricultural land within the Planning Area is anticipated to convert to urbanized uses during the General Plan horizon, although the development process will continually place new development adjacent to existing agricultural uses.

There are numerous park and school uses within the city. Noise generated by these uses depends on the age and number of people utilizing the respective facility at a given time and the types of activities they are engaged in. School playing field activities tend to generate more noise than those of neighborhood parks, as the intensity of school playground usage tends to be higher. At a distance of 100 feet from an elementary school playground being used by 100 students, average and maximum noise levels of 60 and 75 dB, respectively, can be expected. At organized events such as high-school football games with large crowds and public address systems, the noise generation is often significantly higher. As with service commercial uses, the noise generation of parks and school playing fields is variable.

### **NOISE CONTROL - MAXIMUM NOISE LEVEL STANDARDS**

With the proposed intensification of land uses in the city, noise control will be an increasing consideration for infrastructure and new development, particularly for infill residential projects. Major cities in California commonly consider maximum noise levels of 65 dB to be considered “normally acceptable” for unshielded residential development including outdoor space in an urban environment; suburban communities, by contrast, prefer a 60 dB threshold. Noise levels from 65 dB to 70 dB fall within the “conditionally unacceptable” range, and those in the 70 to 75 dB range are considered “normally unacceptable.”

The General Plan is consistent with noise control practice in urban areas, employing 65 dB as the beginning of the “normally acceptable” range. This policy supports the development of infill residential projects, as well as non-residential infill projects by setting a realistic, achievable threshold of impact for new development.

Section 10-101 of City’s Municipal Code contains the City’s noise ordinance, which establishes exterior and interior noise level standards. Standards are set for ambient noise based on district type (residential, commercial, and industrial) and time of day.

The ambient noise levels in the Noise Ordinance will be updated to be consistent with the General Plan after adoption. This update will need to increase the threshold in residential districts to 65 decibels and also provide standards for mixed-use districts, civic and institutional uses, and parks and open space. It should also specify maximum hourly noise levels of outdoor activity areas and indoor spaces for specified land use types; measurement standards; required noise mitigation standards for new residential development in noise-impacted environments; uniform guidelines for acoustical studies based on current professional standards; and enforcement procedures.

Finally, the Noise Ordinance should establish performance standards for noise reduction for new housing that may be exposed to community noise levels above 65 dB CNEL, as shown on the Noise Contour Maps, based on the target acceptable noise levels for outdoor activity levels and interior spaces in Tables NS-2 and NS-3. Noise mitigation measures that may be considered to achieve these noise level targets include but are not limited to the following:

- All façades must be constructed with substantial weight and insulation;
- Sound-rated windows with enhanced noise reduction for habitable rooms;
- Sound-rated doors with enhance reduction for all exterior entries at habitable rooms;
- Minimum setbacks and exterior barriers;
- Acoustic baffling of vents is required for chimneys, attic and gable ends;
- Installation of a mechanical ventilation system affording comfort and fresh air under closed window conditions is required.

Alternative acoustical designs that achieve the prescribed noise level reduction may be approved, provided a qualified Acoustical Consultant submits information demonstrating that the required reductions to meet the specific targets for outdoor activity areas and interior spaces can be achieved and maintained.

**TABLE NS-2: TRANSPORTATION (NON-AIRCRAFT) NOISE SOURCES**

<i>Noise-Sensitive Land Use<sup>3</sup></i>	<i>Outdoor Activity Areas<sup>1</sup></i>	<i>Interior Spaces</i>	
	<i>DNL/CNEL, dB</i>	<i>DNL/CNEL, dB</i>	<i>L<sub>eq</sub> d2<sup>3</sup></i>
Residential	65	45	---
Transient Lodging	65	45	---
Hospitals, Nursing Homes	65	45	---
Theaters, Auditoriums, Music Halls	---	---	35
Churches, Meeting Halls	65	---	45
Office Buildings	---	---	45
Schools, Libraries, Museums	---	---	45

Notes:

<sup>1</sup> Where the location of outdoor activity areas is unknown or is not applicable, the exterior noise level standard shall be applied to the property line of the receiving land use.

<sup>2</sup> As determined for a typical worst-case hour during periods of use.

<sup>3</sup> The Planning and Development Director, on a case-by-case basis, may designate land uses other than those shown in this table to be noise-sensitive, and may require appropriate noise mitigation measures.

**TABLE NS-3: STATIONARY NOISE SOURCES<sup>1</sup>**

	<i>Daytime (7:00 a.m. - 10:00 p.m.)</i>	<i>Nighttime (10:00 p.m. - 7:00 a.m.)</i>
Hourly Equivalent Sound Level (L <sub>eq</sub> ), dBA	50	45
Maximum Sound Level (L <sub>max</sub> ), dBA	70	65

Note:

<sup>1</sup> As determined at outdoor activity areas. Where the location of outdoor activity areas is unknown or not applicable, the noise exposure standard shall be applied at the property line of the receiving land use. When ambient noise levels exceed or equal the levels in this table, mitigation shall only be required to limit noise to the ambient plus five (5) dB

## OBJECTIVE

- NS-1 Protect the citizens of the city from the harmful and annoying effects of exposure to excessive noise.

## IMPLEMENTING POLICIES

- NS-1-a **Desirable Exterior Noise Environment.** For defined usable exterior areas of residential and noise sensitive uses it is desirable that the average exterior noise level be less than or equal to 60dB LDN or CNEL for noise generated by motor vehicle traffic utilizing planned streets depicted by Circulation Diagram, Figure MT-1 and from railroad transportation sources.
- NS-1-b **Exterior Noise Receptor Areas.** The defined usable exterior areas for single family and multiple family residential and noise sensitive uses includes rear yards and other outdoor areas intended to accommodate leisure or active use and would not typically include front or side yard areas, front or side porches and balconies or roof decks.
- NS-1-c **Generally Acceptable Noise Exposure Range.** The generally acceptable average noise exposure level threshold for usable exterior areas of residential and other noise sensitive uses is less than or equal to 65dB LDN or CNEL for noise generated by transportation sources noted in Policy NS-1-a. Pro forma property development standards may be established to accomplish the generally acceptable or desirable noise environments for residential and noise sensitive uses proposed to be located where the projected noise exposure level would be equal to or less than 65dB LDN or CNEL.
- NS-1-d **Conditionally Acceptable Noise Exposure Range.** The conditionally acceptable noise exposure level range for residential and other noise sensitive uses is 65 to 75dB for noise generated by motor vehicle traffic utilizing planned streets depicted by Circulation Diagram, Figure MT-1 and from railroad transportation sources. Appropriate noise reducing mitigation measures shall be required as conditions of permit approval for residential and noise sensitive uses.
- NS-1-e **Generally Unacceptable Noise Exposure Range.** Exterior noise exposure of greater than 75dB LDN or CNEL is generally unacceptable for residential and other noise sensitive uses for noise generated by motor vehicle traffic utilizing planned streets depicted by Circulation Diagram, Figure MT-1 and from railroad transportation sources. Appropriate extraordinary noise reducing mitigation measures shall be required as conditions of permit approval for residential and noise sensitive uses.

NS-1-f **Allowable Exterior Noise Environment for Mixed Use Residential and the Downtown Neighborhoods Community Plan.** Residential and noise sensitive uses located along the designated and future proposed Bus Rapid Transit (BRT) corridors or within activity centers identified by the Conceptual Urban Form Organizing Elements Diagram, Figure UF-1, may not be required to comply with policies NS-1-a through NS-1-e where it is determined application of noise mitigation measures will be detrimental to the realization of mixed use, multi-modal oriented objectives.

NS-1-g **Update Noise Ordinance.** Update the Noise Ordinance to ensure that noise exposure information and specific standards and measure criteria are consistent with this General Plan and with changing conditions within the city and with noise control regulations or policies enacted after the adoption of this element.

NS-1-h **Performance Standards.** Implement performance standards for noise reduction for new residential and noise sensitive uses which may be exposed to community noise levels above 60 dB DNL/CNEL, as shown on Figure NS-3, Future Noise Contours, or as identified by subsequent required project specific acoustic study based on the target acceptable noise levels for outdoor activity areas and interior spaces in Tables NS-2 and NS-3 and/or Policies NS-1-a through NS-1-f. Noise mitigation measures which may be considered to achieve these noise level targets include but are not limited to the following:

- Construct façades with substantial weight and insulation;
- Use sound-rated windows for primary sleeping and activity areas;
- Use sound-rated doors for all exterior entries at primary sleeping and activity areas;
- Use minimum setbacks and exterior barriers;
- Use acoustic baffling of vents for chimneys, attic and gable ends;
- Install a mechanical ventilation system that provides fresh air under closed window conditions.

Alternative acoustical designs that achieve the prescribed noise level standards may be approved, provided that a qualified Acoustical Consultant submits information demonstrating that the alternative designs will achieve and maintain the specific targets for outdoor activity areas and interior spaces.

NS-1-i **Interior Noise Level Requirement.** Comply with the State Code requirement that any multifamily residential, hotel, or dorm building exposed to exterior noise levels above DNL 60 dB must be designed to incorporate noise reduction measures to meet the 45 dB LDN interior noise criterion and apply this standard to all residential and noise sensitive uses.

NS-1-j **Mitigation by New Development.** Where new development of industrial, commercial or other noise generating land uses (including roadways, railroads, and airports) may result in noise levels that exceed the noise level exposure criteria established by Tables NS-2 and NS-3, require a noise study to determine impacts, and require developers to mitigate these impacts in conformance with Tables NS-2 and NS-3 as a condition of permit approval through appropriate means.

*Commentary*<sup>3</sup>: *Noise mitigation measures may include but are not limited to:*

- *Screen and control noise sources, such as parking and loading facilities, outdoor activities, and mechanical equipment;*
- *Increase setbacks for noise sources from adjacent dwellings;*
- *Retain fences, walls, and landscaping that serve as noise buffers;*
- *Use soundproofing materials and double-glazed windows;*
- *Use open space, building orientation and design, landscaping and running water to mask sounds; and*
- *Control hours of operation, including deliveries and trash pickup, to minimize noise impacts.*

*Alternative acoustical designs that achieve the prescribed noise level reduction may be approved, provided a qualified Acoustical Consultant submits information demonstrating that the alternative designs will achieve and maintain the specific targets for outdoor activity areas and interior spaces. As a last resort, developers may propose to construct noise walls along state highways and arterials when compatible with aesthetic concerns and neighborhood character. This would be a developer responsibility, with no City funding.*

NS-1-k **Significance Threshold.** Establish, as a threshold of significance for environmental review, that a significant increase in ambient noise levels is assumed if the project increases noise levels by 5 dB or more.

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<sup>3</sup> The commentary in italics following certain policies is not part of the policy itself, but is instead advisory and informational language intended to further discuss and clarify the policy to help guide the understanding and relevancy of the General Plan.

*Commentary: When an increase in noise would result in a “significant” impact to residents or businesses, then mitigation is required to reduce noise exposure. If the increase is five dBA or more, the change in noise is discretionary. If the increase in noise is four dBA or less, then the noise impact is considered insignificant and no mitigation is needed.*

*By setting a specific threshold of significance in the General Plan, this policy facilitates making a determination of environmental impact, as required by the California Environmental Quality Act. It helps the City judge whether (1) the potential impact of a development project on the noise environment warrants mitigation, or (2) a statement of overriding considerations will be required.*

NS-1-l **Proposal Review.** Review all new public and private development proposals that may potentially be affected by or cause a significant increase in noise levels, per Policy NS-1-e, to determine conformance with the policies of this Noise Element. Require developers to reduce the noise impacts of new development on adjacent properties through appropriate means.

NS-1-m **Enforcement.** Continue to enforce applicable State Noise Insulation Standards (California Administrative Code, Title 24) and Uniform Building Code (UBC) noise requirements, as adopted by the City.

NS-1-n **Transportation Projects.** Mitigate noise created by new transportation and transportation-related stationary noise sources, including roadway improvement projects, so that resulting noise levels do not exceed the adopted standards for noise-sensitive land uses.

NS-1-o **Best Available Technology.** Require new noise sources to use best available control technology (BACT) to minimize noise emissions.

*Commentary: Noise from mechanical equipment can be reduced by soundproofing materials and sound-deadening installation; controlling hours of operation also will reduce noise impacts during the morning or evening.*

NS-1-p **Sound Wall Guidelines.** Develop, distribute, and enforce standard guidelines on heights, materials, and aesthetic design for sound walls and other noise barriers, within two years of General Plan adoption. These guidelines will include variable heights for noise barriers that lower in height as the distance increases from roadways, including elevated freeways, and other noise sources with a maximum allowable height of 15 feet.

*Commentary: Having guidelines on prototypical mitigation measures for various situations and context that can be readily implemented can facilitate infill and other development.*

NS-1-q **Airport Noise Compatibility.** Implement the land use and noise exposure compatibility provisions of the adopted Fresno Yosemite International Airport Land Use Compatibility Plan, the Fresno-Chandler Downtown Airport Master and Environs Specific Plan and the Sierra Sky Park Land Use Policy to assess noise compatibility of proposed uses and improvements within airport influence and environs areas.

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## SEISMIC AND GEOLOGIC HAZARDS

### SEISMICITY

Fresno is in one of the more geologically stable areas of California and does not lie within a known active earthquake fault zone. Although a number of faults are located within the Sierra Nevada Mountain Range, none are considered active. The nearest active fault is located by Independence, CA, approximately 100 miles to the east along the Fresno County-Inyo County boundary. Overall, seismic-related concerns (including liquefaction and subsidence) are considered fairly minor for the Planning Area. The city is not located in an Alquist-Priolo Special Fault Study Zone, that is, it has not been identified as a zone of special study around active faults. Hidden faulting in Western Fresno County did manifest itself in the Coalinga Earthquake of 1983, causing ground shaking in Fresno, but minimal damage.

In the future, Fresno could be affected by major seismic events from the following active fault systems in other regions of California:

- The San Andreas Fault paralleling the Coast Ranges in western Fresno County;
- The Owens Valley Fault system in the Eastern Sierra Region of California;
- The White Wolf Fault paralleling the Tehachapi range southeast of Bakersfield
- Hidden thrust fault(s) in the west side of the San Joaquin Valley; and
- The Long Valley Caldera, a seismic and volcanic area in the Eastern Sierra that lies between Mono Lake and Crowley Lake.

The principal potential earthquake hazard for Fresno is ground shaking which could cause damage to buildings and infrastructure elements such as bridges and pipes. The distance between Fresno and major faults minimizes this potential.

### SOIL HAZARDS

Expansive soils, soil erosion, and water infiltration are issues that can cause safety concerns in Fresno.

Expansive soils are largely comprised of clays, which expand in volume when water is absorbed and shrink as the soil dries. Expansion is measured by shrink-swell potential, which is the volume change in soil with a gain in moisture. If the shrink-swell potential is rated moderate to high, then damage to buildings, roads, structural foundations, and pipes can occur. In the northern portion of Fresno's SOI, there are some areas of expansive clay soil which require special construction standards for foundations and infrastructure. Expansive clay problems can be surmounted by appropriate engineering design and construction techniques.

Highly erodible soils are those that are easily carried by water and, to a lesser extent, by wind. Surface erosion is more commonly visible, but subsurface erosion can lead to damage to pipes, roads, foundations, and other structural elements. Soil erosion potential is identified by a specific soil's "K Factor". The K-Factor provides an indication of a soil's inherent susceptibility to erosion, absent of slope and groundcover factors. Values of K range from 0.05 to 0.43. The higher the value, the more susceptible the soil is to sheet erosion by water. The addition of weight, such as pools and decks, onto susceptible soil as well as private irrigation systems and the action of burrowing rodents are factors that may aggravate land slippage. Fresno is not susceptible to soil erosion with the exception of the San Joaquin River Bluffs. The Bluffs' steep slopes and soil composition predispose it to instability and erosion.

Soils are also defined by their rainfall runoff potential, that is, the degree to which soil allows or disallows rainfall water to infiltrate and transmit down to the groundwater table. Groups of soils having similar runoff potential under similar storm and cover conditions absent of slope are placed into one of four hydrologic group classifications A, B, C or D. Definitions of the classes are as follows:

- **Soil Group A. High Infiltration (Low runoff potential)**—Soils having high infiltration rates, even when thoroughly wetted and consisting chiefly of deep, well drained sands or gravels. These soils have a high rate of water transmission.
- **Soil Group B. Moderate Infiltration**—Soils having moderate infiltration rates, even when thoroughly wetted and consisting chiefly of moderately deep to deep, moderately fine to moderately coarse textures. These soils have a moderate rate of transmission.
- **Soil Group C. Slow Infiltration**—Soils having slow infiltration rates, even when thoroughly wetted and consisting chiefly of soils with a layer that impedes downward movement of water, or soils with moderately fine to fine textures. These soils have a slow rate of transmission.
- **Soil Group D. Very Slow Infiltration (High runoff potential)**—Soils having very slow infiltration rates, even when thoroughly wetted and consisting chiefly of clay soils with a high swelling potential, soils with a permanent high water table, soils with a clay pan or clay layer at or near the surface, and shallow soils over nearly impervious material. These soils have a very slow rate of water transmission.

Hydrological groups are used in equations that estimate runoff from rainfall. These estimates are needed for solving hydrologic problems that arise in planning watershed-protection and flood prevention projects and for designing structures for the use, control, and disposal of water.

## OBJECTIVE

NS-2 Minimize risks of property damage and personal injury posed by geologic and seismic risks.

## IMPLEMENTING POLICIES

NS-2-a **Seismic Protection.** Ensure seismic protection for new and existing construction, consistent with city codes and ordinances.

NS-2-b **Soil Analysis Requirement.** Identify areas with potential geologic and/or soils hazards, and require development in these areas to conduct a soil analysis and mitigation plan by a registered civil engineer (or engineering geologist specializing in soil geology) prior to allowing on-site drainage or disposal for wastewater, stormwater runoff, or swimming pool/spa water.

NS-2-c **Landfill Areas.** Require that proposed land uses on or near landfill areas be designed and maintained to comply with California Code of Regulations, Title 27, Section 21190, Post Closure Land Use.

NS-2-d **Bluff Preservation Overlay Zone.** Maintain the requirements of the Bluff Preservation Overlay Zone District, which will include provisions to:

- Require proposed development within 300 feet of the toe of the San Joaquin River bluffs to undertake an engineering soils investigation and evaluation report that demonstrates that the site is sufficiently stable to support the proposed development, or provide mitigations to provide sufficient stability; and
- Establish a minimum setback of 30 feet from the San Joaquin River bluff edge for all future structures and rear yards.

## STORM DRAINAGE AND FLOOD CONTROL

Fresno's precipitation comes in episodic storm events, which may be severe and may cause localized flooding. The Fresno area receives inflows of regional runoff from a large watershed to the east, and is in the path of natural drainage from the valley floor, foothills and Sierra Nevada range. The San Joaquin River, confined between bluffs, comprises the northern boundary of Fresno. **Figure NS-4** shows the locations of 100-year and 200-year floodplains in the Planning Area, as mapped by FEMA's National Flood Insurance Maps.

The Fresno Metropolitan Flood Control District (FMFCD) is responsible for flood control and storm water planning and management. It was authorized as a "special act" district and established by voter approval in 1956 to serve a 54-square mile area. Since its creation the district boundaries have been expanded several times and now include approximately 400 square miles—almost the entire portion of the metropolitan area, with the exception of 6.5 square miles of SEGA which has yet to be annexed to the District. Once all of SEGA is annexed, FMFCD will develop and adopt Storm Water Master Plans for SEGA based on this General Plan.

The District was formed for the purpose of acquiring and constructing flood control and drainage facilities to safely convey, discharge, store and conserve storm water received on land) within the District boundaries or which flows through the District. Eight flood control reservoirs and major basin facilities have been constructed along the Big Dry Creek, Redbank Creek, Dog Creek, Pup Creek and Fancher Creek comprising the Fresno Stream Group. The District also serves as the local sponsor of the U.S. Army Corps of Engineers for five the flood control facilities within the Redbank-Fancher Creeks Flood Control Project.

The urban storm water drainage program provides a system comprised of storm drainage collection, conveyance, detention and retention serving planned urban and rural areas within the Fresno-Clovis environs. The adopted Storm Drainage and Flood Control Master Plan divides the service area into 163 local drainage areas. Collectively, the system has in excess of 600 miles of storm drainage pipeline and 154 local stormwater management basins together with ancillary facilities such as storm water lift pump stations.

This system expands as the area of urbanization expands. Facilities are funded and constructed by owners/developers of properties pursuant to the City's Drainage Fee Ordinance or constructed by the District under publicly awarded contracts. The City's grading ordinance requires drainage to be directed to public streets, so that storm water travels along paved surface areas to inlets. The inlets accept the water into the storm drainage pipelines which convey water to stormwater management basins. The pipeline system is designed with a peak flow capacity to accommodate a two-year intensity storm event (50 percent probability of occurring in any given year). The basin capacity utilizes the percentage of runoff from the two-year pipeline data, but with a volume from six inches of rainfall. All basins are designed with relief systems so that additional capacity can be created by dewatering between rainfall events. The District's drainage services program includes topographic mapping; master plan

engineering and facility design; system construction, and operation and maintenance.

Any infill project that increases the amount of impervious surfacing, changes the existing drainage pattern(s), and/or generates storm flows faster or greater than the existing condition could result in the existing pipeline collection system being overburdened. Typically, infill projects are required to mitigate any increase in runoff to either increase the capacity of the existing system (i.e., build more infrastructure) or hold storm runoff on site to ensure offsite runoff does not increase.

As the owner and operator of the storm water drainage system, the District has primary responsibility for implementing the U.S. Clean Water Act requirements through a National Pollutant Discharge Elimination System discharge permit issued by the Regional Water Quality Control Board (RWQCB). This program is comprised of pollutant removal achieved in the stormwater basins and education to avoid storm water pollution; best management practices for commercial, industrial and new development storm water quality control; monitoring to assess storm water impacts upon the quality of receiving water; and, the preparation of ordinances for adoption by local governments to enforce storm water quality control measures.

The District's programs include water conservation efforts through its design and operation of storm water drainage facilities to detain and retain water from storm events as well as receive dry season surface water supplies for groundwater recharge. Approximately 90 basins are intertied with Fresno Irrigation District (FID) canals and receive surface water through contracts with the irrigation district and the cities of Fresno and Clovis. Storm water drainage basins serving primarily residential areas are also designed to accommodate passive and active recreational activities. Recreational use of 27 basins has been accommodated by improvements including baseball and play-ground areas and two basins have been specifically designed to accommodate use by physically challenged citizens and a third as a high quality little league baseball facility. District flood control and drainage facilities also provide important open space in the urban area and areas for wildlife habitat. Through a memorandum of understanding, which serves as a Section 1601 Master Streambed Alteration Agreement with the California Department of Fish and Game, restoration and protection of rural streams for flood control purposes also accomplish long term net benefits for fish, wildlife, water quality, native plants and stream habitat.

## OBJECTIVE

- NS-3 Minimize the risks to property, life, and the environment due to flooding and stormwater runoff hazards.

## IMPLEMENTING POLICIES

- NS-3-a **Stormwater Drainage and Flood Control Master Plan.** Support the full implementation of the Fresno Metropolitan Flood Control District (FMFCD) Storm Drainage and Flood Control Master Plan, the completion of planned flood control and drainage system facilities, and the continued maintenance of stormwater and flood water retention and conveyance facilities and capacities. Work FMFCD to make its Storm Drainage and Flood Control Master Plan consistent with General Plan.

*Commentary: This support includes continued enforcement of the City's Drainage Fee Ordinance.*

- NS-3-b **Curb and Gutter Installation.** Coordinate with FMFCD to install curbing and gutters and other drainage facilities consistent with the Storm Drainage and Flood Control Master Plan.

- NS-3-c **Dual Use Facilities.** Support multiple uses of flood control and drainage facilities as follows:
- Utilize, wherever practical, FMFCD facilities for groundwater management and recharge.
  - Promote recreational development of ponding basin facilities located within or near residential areas, compatible with the stormwater and groundwater recharge functions.

- NS-3-d **Landscaped Buffer.** Require the perimeter of all permanent stormwater ponding basins to have a landscaped buffer.

- NS-3-e **Pollutants.** Work with FMFCD to prevent and reduce the existence of urban stormwater pollutants pursuant to the requirements of the National Pollution Discharge Elimination Systems Act.

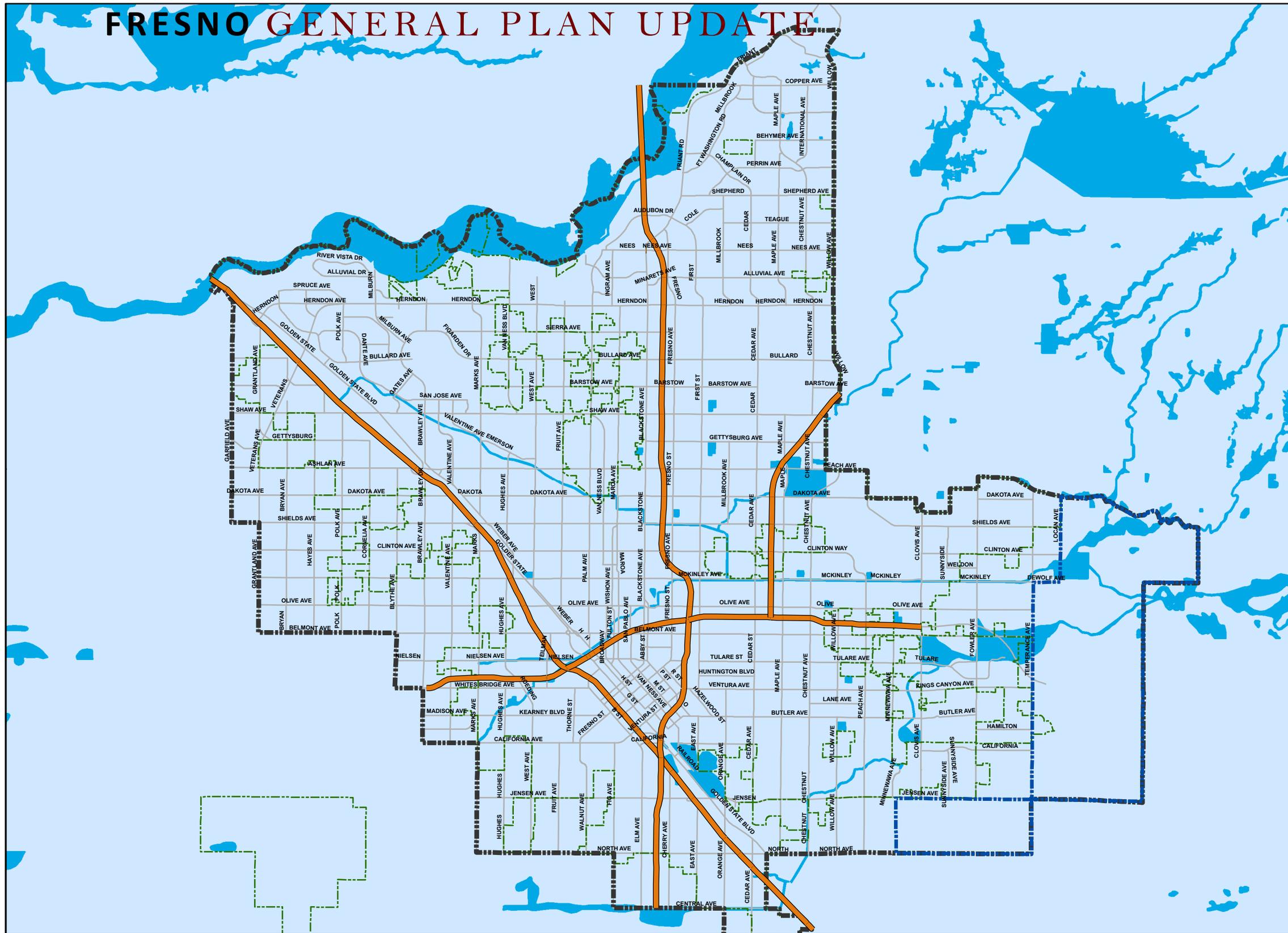
- NS-3-f **Flooding Emergency Response Plans.** Work with responsible agencies to update emergency dam failure inundation plans, evacuation plans and other emergency response plans for designated flood-prone areas, including the San Joaquin riverbottom.

- NS-3-g **Essential Facilities Siting Outside of Floodplains.** Avoid siting emergency response and essential public facilities, such as fire and police stations, within a 100-year floodplain, unless it can be demonstrated that the facility can be safely operated and accessed during flood events.
- NS-3-h **Runoff Mitigation.** Ensure implementation of grading regulations and related development policies which protect area residents from flooding caused by urban runoff produced by events which exceed the capacity of the Storm Drainage and Flood Control Master Plan system of facilities. All placements of structures and/or flood-proofing must be done in a manner that will not cause floodwaters to be diverted onto adjacent property, increase flood hazards to other property, or otherwise adversely affect other property.
- NS-3-i **New Development Must Mitigate Impact.** Ensure that new development does not impact the existing storm drainage and flood control system through onsite mitigation measures approved by FMFCD or paying for off-site measures stipulated by FMFCD.
- NS-3-j **Federal Flood Insurance Program.** Continue to participate in the National Flood Insurance Program by ensuring compliance with applicable requirements. Periodically review NFIP maps to determine if areas subject to flooding have been added or removed and make adjustments to the Land Use Diagram (Figure LU-1) as necessary.
- NS-3-k **100-Year Floodplain Policy.** Require developers of residential subdivisions to preserve those portions of development sites as open space that may be subject to 100-year flood events, unless the flood hazard can be substantially mitigated by development project design.
- NS-3-l **200-Year Floodplain Protection.** Promote flood control measures that maintain natural conditions within the 200-year floodplain of rivers and streams and, to the extent possible, combine flood control, recreation, water quality, and open space functions. Discourage construction of permanent improvements that would be adversely affected by periodic floods within the 200-year floodplain, particularly in the San Joaquin riverbottom.
- NS-3-m **Flood Risk Public Awareness.** Continue public awareness programs to inform the general public and potentially affected property owners of flood hazards and potential dam failure inundation. Periodically remind households and businesses located in flood-prone areas of opportunities to purchase flood insurance.

NS-3-n **Precipitation changes.** Work with FMFCD to evaluate the planned and existing stormwater conveyance system in light of possible changes to precipitation patterns in the future.

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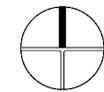
# FRESNO GENERAL PLAN UPDATE



**Figure NS-4 Floodplains**

## 100 Year Flood Zone

-  Sphere Of Influence
-  City Limits
-  SEGA
-  100 Year Flood Zones
-  No
-  Yes



0 0.5 1 2 3 Miles

Source: Boundaries, City of Fresno, 2012, This map service represents Flood Insurance Rate Map (FIRM) data important for floodplain management, mitigation, and insurance activities for the National Flood Insurance Program (NFIP). The National Flood Hazard Layer (NFHL) data present the flood risk information depicted on the FIRM in a digital format suitable for use in electronic mapping applications. The NFHL database is a subset of the information created for the Flood Insurance Studies (FIS) and serves as a means to archive a portion of the information collected during the FIS. The NFHL data incorporates Digital Flood Insurance Rate Map (DFIRM) databases published by Federal Emergency Management Agency (FEMA). The 100-year flood is referred to as the 1% annual exceedance probability flood, since it is a flood that has a 1% chance of being equaled or exceeded in any single year.

## WILDLAND FIRE HAZARDS

Fresno's high summer temperatures, intense sunlight, and low rainfall could encourage wildland fires by drying and pre-heating combustible material and fostering spontaneous combustion of flammable material. Fresno's estimated maximum wind speed is 70 mph, which could fan blazes to a high intensity. Fire hazards are typically highest in heavily wooded areas as trees are a great source of fuel, as are grasslands. Given that the Planning Area is largely urbanized or working agricultural land and lacks steep topographies, wildfire threats are minimal. Although Fresno is proximate to high and very high fire hazard designated areas, the city is largely categorized as little or no threat or moderate fire hazard which is largely attributed to paved areas. Small areas along the San Joaquin River Bluff area in northern Fresno are prone to wildfire due to relatively steep terrain and vegetation and are classified as high fire hazard.

Policies related to fire protection and response are located in the Public Utilities and Services Element.

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## HAZARDOUS MATERIALS

A material is considered hazardous if it appears on a list of hazardous materials prepared by a federal, state, or local agency, or if it has characteristics defined as hazardous by such an agency. The California Code of Regulation defines a hazardous material as a substance that, because of physical or chemical properties, quantity, concentration, or other characteristics, may either (1) cause an increase in mortality or an increase in serious, irreversible, or incapacitating, illness, or (2) pose a substantial present or potential hazard to human health or environment when improperly treated, stored, transported or disposed of, or otherwise managed. Hazardous materials have been and are commonly used in commercial, agricultural, and industrial applications and, to a limited extent, in residential areas.

Hazardous wastes are defined in the same manner. Hazardous wastes are hazardous materials that no longer have practical use, such as substances that have been discarded, discharged, spilled, contaminated, or are being stored prior to proper disposal. Hazardous materials and hazardous wastes are classified according to four properties: toxic (causes human health effects), ignitable (has the ability to burn), corrosive (causes severe burns or damage to materials), and reactive (causes explosions or generates toxic gases).

Sites previously contaminated by hazardous materials are required to be identified and cleaned up. These contaminated sites are largely associated with leaking underground storage tanks and are predominately clustered south of Downtown, near Fresno Yosemite International Airport and Palm Bluffs Corporate Center (northwest Fresno), and along the Union Pacific Railroad Tracks. **Figure NS-5** shows the locations of known leaking underground storage tanks and known hazardous waste sites requiring cleanup under federal or State direction.

Releases, leaks, or disposal of chemical compounds, such as petroleum hydrocarbons, on or below the ground surface can lead to contamination of underlying soil and groundwater. Depending of the conditions and intensity of the release, groundwater contamination can migrate beyond the property boundary of the original release site. Disturbance of a previously contaminated area through grading or excavation operations could expose the public to health hazards from physical contact with contaminated materials or hazardous vapors. Improper handling or storage of contaminated soil and groundwater can further expose the public to these hazards, or potentially spread contamination through surface water runoff or air-borne dust. In addition, contaminated groundwater can spread down gradient, potentially contaminating subsurface areas of surrounding properties.

In addition, contaminated groundwater can spread down gradient, potentially contaminating subsurface areas of surrounding properties. This also poses a threat due to the high number of private water wells and the city's reliance on groundwater which is the city's principal potable water source. Groundwater quality is discussed in the Public Utilities and Services Element.

## OBJECTIVE

- NS-4 Minimize the risk of loss of life, injury, serious illness, and damage to property resulting from the use, transport, treatment, and disposal of hazardous materials and hazardous wastes.

## IMPLEMENTING POLICIES

- NS-4-a **Processing and Storage.** Ensure safe processing and storage of hazardous materials consistent with the California Building Code and the Uniform Fire Code.
- NS-4-b **Coordination.** Maintain a close liaison with the Fresno County Environmental Health Department, Cal-EPA Division of Toxics, and the State Office of Emergency Services to assist in developing and maintaining hazardous material business plans, inventory statements, risk management prevention plans, and contingency/emergency response action plans.
- NS-4-c **Soil and Groundwater Contamination Reports.** Require an investigation of potential soil or groundwater contamination whenever justified by past site uses. In the event soil or groundwater contamination is identified or could be encountered during site development, require mitigation as appropriate as a condition of project approval.
- NS-4-d **Site Identification.** Continue to aid federal, State, and County agencies in the identification and mapping of waste disposal sites (including abandoned wastes), and to assist in the survey of the kinds, amounts, locations, etc., of hazardous wastes.
- NS-4-e **CUPA Compliance.** Ensure that the production, use, storage, disposal, and transport of hazardous materials conform to the standards and procedures established by the County Division of Environmental Health. Require compliance with the County's Hazardous Waste Generator Program, including the submittal and implementation of a Hazardous Materials Business Plan, when applicable.
- NS-4-f **Hazardous Materials Facilities.** Require that facilities that handle hazardous materials or hazardous wastes be designed, constructed, and operated in accordance with applicable hazardous materials and waste management laws and regulations.
- NS-4-g **Hazmat Response.** Include procedures and policies appropriate to hazardous materials in the City's disaster and emergency response preparedness and planning, coordinating with implementation of the County's Hazardous Materials Incident Response Plan.

- NS-4-h **Household Collection.** Continue to support and assist with the County’s special household hazardous waste collection activities, to reduce the amount of this material being improperly discarded.
- NS-4-i **Public Information.** Continue to assist in providing information to the public on hazardous materials.

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*INSERT Figure NS-5: Hazardous Waste Sites*

*Note: This map is forthcoming and will be a part of the Final Hearing Draft of the Fresno General Plan Update*

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## AIRPORT SAFETY

Airports may impact public safety due to the potential for aircraft crashes. Policies in this section are designed to minimize public exposure to risks associated with airport operations and to minimize the siting of land uses near airports that might interfere with airport operations.

There are two public airports in the Planning Area: Fresno-Yosemite International Airport and Chandler Executive Airport; and one private airport open to public use: Sierra Sky Park. In conjunction with Fresno-Yosemite International Airport, the Air National Guard maintains an airbase for military flight and training operations. Each airport has its own airport land use plan designed to provide for public safety. The Fresno County Airport Land Use Commission (ALUC) provides guidance to local jurisdictions on adjacent land uses through Airport Land Use Compatibility Plans (ALUCPs). This General Plan and all other City land use plans must be compatible with the ALUCPs.

### OBJECTIVE

NS-5 Protect the safety, health, and welfare of persons and property on the ground and in aircraft by minimizing exposure to airport-related hazards.

### IMPLEMENTING POLICIES

NS-5-a **Land Use and Height.** Incorporate and enforce all applicable Airport Land Use Compatibility Plans through land use designations, zoning, and development standards to support the continued viability and flight operations of Fresno's airports and to protect public safety, health, and general welfare.

- Limit land uses in airport safety zones to those uses listed in the applicable ALUCPs as compatible uses, and regulate compatibility in terms of location, height, and noise.
- Ensure that development, including public infrastructure projects, within the airport approach and departure zones complies with Part 77 of the Federal Aviation Administration Regulations (Objects Affecting Navigable Airspace), particularly in terms of height.

NS-5-b **Airport Safety Hazards.** Ensure that new development, including public infrastructure projects, does not create safety hazards such as glare from direct or reflective sources, smoke, electrical interference, hazardous chemicals, fuel storage, or from wildlife, in violation of adopted safety standards.

NS-5-c **Avigation Easements.** Employ avigation easements in order to secure and protect airspace required for unimpeded operation of publicly owned airports.

*Commentary: Avigation easements are established in the form of land use covenants and are binding upon present and subsequent property owners.*

NS-5-d **Disclosure.** Enforce required State Department of Real Estate Disclosure Statements prepared by sellers to notify property buyers of noise and safety issues related to airport operations.

NS-5-e **Planned Expansion.** Allow for the orderly expansion and improvement of publicly-owned airports, while minimizing adverse environmental impacts associated with these facilities.

- Periodically update airport facility master plans in accordance with FAA regulations.
- Require land use within the boundaries of the Fresno-Yosemite International Airport and Chandler Downtown Airport to conform to designations and policies specified in adopted City of Fresno Compatible Land Use Plans.
- Provide local jurisdictions surrounding the city's publicly owned airports with specific guidelines for effectively dealing with the presence and operation of these airports.

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## EMERGENCY RESPONSE

Police and fire protection services are addressed in the Public Utilities and Services Element.

### EMERGENCY PLANNING

The California Emergency Services Act requires cities to prepare and maintain an Emergency Plan for natural, manmade, or war-caused emergencies that result in conditions of disaster or in extreme peril to life. The City does have an adopted Emergency Operations Plan (EOP). The EOP does not designate evacuation routes, which may not be necessary since Fresno does not face any expected natural hazards from likely sources or locations.

### LOCAL HAZARD MITIGATION PLANNING

The purpose of a Local Hazard Mitigation Plan is to reduce or eliminate long term risk to human life and property resulting from hazards, by identifying risks before they occur and putting together resources, information, and strategies for emergency response. Fresno County is the lead agency on the Multi-Jurisdictional Local Hazard Mitigation Plan (MHMP) for the county. On December 1, 2009, the Fresno County Board of Supervisors approved Resolution No. 09-503 to adopt the Fresno County Multi-Jurisdictional Hazard Mitigation Plan. The Multi-Hazard Mitigation Plan was developed by several County departments, cities, and special districts with oversight from the Fresno County Office of Emergency Services.

The MHMP was prepared pursuant to the requirements of the Disaster Mitigation Act of 2000 (DMA). A federally-approved hazard mitigation plan enables the County to apply for Federal pre-disaster hazard mitigation grant funds to support mitigation projects. The DMA establishes a national hazard mitigation program to reduce the loss of life and property, human suffering, economic disruption and disaster assistance costs resulting from natural disasters. The DMA also provides a source of pre-disaster hazard mitigation funding to assist local governments in implementing effective hazard mitigation measures to ensure the continued functionality of critical services and facilities after a natural disaster.

The MHMP, approved by FEMA on January 9, 2009, is in compliance with Government Code Section 65302.6(a). The plan includes a City of Fresno annex which lists information most relevant to Fresno in the areas of health, infrastructure, housing, government, environment, and land use.

## OBJECTIVE

NS-6 Foster an efficient and coordinated response to emergencies and natural disasters.

## IMPLEMENTING POLICIES

NS-6-a **County Multi-Jurisdiction Hazard Mitigation Plan.** Consider adopting the Fresno County Multi-Jurisdiction Hazard Mitigation Plan and City of Fresno Local Hazard Mitigation Plan Annex.

*Commentary: The federal Disaster Mitigation Act of 2000 requires that cities, counties, and special districts have a Local Hazard Mitigation Plan to be eligible to receive FEMA hazard mitigation funds. Cities and counties can adopt and use all or part of a regional multi-jurisdictional plan, such as the one prepared by Fresno County, in lieu of preparing all or part of a Local Hazard Mitigation Plan.*

NS-6-b **Disaster Response Coordination.** Maintain coordination with other local, State, and Federal agencies to provide coordinated disaster response.

NS-6-c **Emergency Operations Plan.** Periodically update the City's Emergency Operations Plan.

NS-6-d **Evacuation Planning.** In consultation with the Police and Fire departments and other emergency service providers, maintain an emergency evacuation plan showing potential evacuation routes and a list of emergency shelters to be used in case of catastrophic emergencies.

*Commentary: The evacuation plan can be flexible in order to consider many scenarios and multiple modes of transportation beyond private automobiles. It should provide special provisions for disadvantaged populations, such as those with physical handicaps or those with low or very low incomes, and for areas with fewer resources through neighborhood emergency preparedness programs.*

NS-6-e **Critical Use Facilities.** Ensure critical use facilities (the City Hall, Police and Fire stations, schools, hospitals, public assembly facilities, transportation services) and other structures that are important to protecting health and safety in the community remain operational during an emergency.

- Site and design these facilities to minimize their exposure and susceptibility to flooding, seismic and geological effects, fire, and explosions.

- Work with the owners and operators of critical use facilities to ensure they can provide alternate sources of electricity, water, and sewerage in the event that regular utilities are interrupted in a disaster.

NS-6-f **Emergency Vehicle Access.** Require adequate access for emergency vehicles in all new development, including adequate widths, turning radii, hard standing areas, and vertical clearance.

NS-6-g **Emergency Preparedness Public Awareness Programs.** Continue to conduct programs to inform the general public of the City's emergency preparedness and disaster response procedures.

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## APPENDIX A - DEFINITION OF TERMS AND CONCEPTS - FRESNO GENERAL PLAN RESOURCE CONSERVATION AND RESILIENCE ELEMENT

Activity Center: A type of urbanized development that can occur at multiple scales based upon its planned density, intensity, and location. They include a close proximity of buildings with mixed land uses and are typically integrated with and connected by multiple modes of transit including walking, biking and public transit, providing a single destination where people can live, work, and shop. *An umbrella definition for a variety of types of activity centers (should also be defined) such as Regional, Urban, Neighborhood, Suburban, etc. which are characterized based upon the intensity, location, and mix of uses.*

Best Management Practices: will define

Bus Rapid Transit (BRT) and BRT Corridor priority transit routes, pedestrian activities and linkages, “high frequency transit”. Will define

City of Fresno or City: Refers to the municipal entity and its functions as a government entity. Use of the term “city” typically refers to the area, population or activities occurring within the Fresno Plan Area.

Citywide: References to “Citywide” are in relation to a characteristic, regulation or other factor that occurs within the incorporated boundaries of the City of Fresno while “citywide” may refer to occurrences within the Fresno Planning Area (FPA).

Citywide Development Code: Refers to the proposed City of Fresno Municipal Code, Chapter 15, Citywide Development Code which is proposed to be the new planning, zoning and development implementing code.

Climatized Plants: will define

Community Plan: A refinement of the general plan for a component geographic area of the general plan. A community plan shall advance the provisions of the general plan to a more precise level of detail and shall contain goals, policies, maps, and standards that implement the recommendations of the general plan. A community plan shall contain those plan elements which are essential to the implementation of the general plan and may contain additional components, including specific plans, which are necessary to the development of the goals, policies, and standards for the community plan area. A community plan shall be adopted, amended, or repealed by resolution of the Council.

Community Facilities District: will define

*Complete Neighborhood and “elements” of Neighborhood, District, mixed-use urban districts, compact neighborhoods, suburban areas, transit-oriented mixed use corridors, Mixed Use Urban Corridors, activity centers, community centers, neighborhood centers, residential districts, main street, multi-modal corridors and centers, Holistic Neighborhood Planning-“Adopt development regulations that require ‘major’ new subdivisions be designed as compact pedestrian and transit-oriented communities” (UF-14-1, S-134, s-135)*

Criteria pollutants: will define

Density and Intensity: General description of land use characteristics where Residential Density or Density generally refers to the ratio of residential dwelling units to acre (43,560 square feet) of land which is

calculated by dividing the number of existing or proposed residential dwelling units by the area of the subject property.

Intensity generally refers to the relative magnitude of the use or activity which may occur upon a given property or area of land and is typically reflected by the ratio of building area to land area calculated as floor area ratio (ie the building area divided by the land area). Intensity may also be measured by other characteristics such as the rate at which the uses of a property generate demand for water consumption, demand for wastewater disposal or generates demand for travel such a private vehicle, public transportation, bicycling or walking.

Drought-Resistant Plants: will define

Environmental justice: will be defined

Fresno-Clovis Metropolitan Area (FCMA) and Fresno Metropolitan Area: These terms have been used in the past to refer to one or both of the City of Fresno and the City of Clovis and the immediately surrounding environs the boundaries of which were defined by US Census Tracts. This term was widely used in the past and referred to a geographic area previously defined by the US Census Bureau. The Fresno Metropolitan Area was referred to and the boundary depicted in Exhibit 4 of the Amended and Restated Memorandum of Understanding between the County of Fresno and the City of Fresno January 6, 2003. The area included within the FMA is larger than the SOI and the FPA.

Fresno's City Limits: Refers to the incorporated boundaries of the City of Fresno.

Fresno Production-Consumption Region: will be defined

Fresnans: Refers generally to persons living within the City of Fresno's planning area.

General Plan: Use Municipal Code Definition 12-105-G-6.1: Shall mean an integrated, internally consistent, comprehensive, and long-range set of goals and policies for the general physical development of the city and any land outside the city's boundaries which bears relation to the city's planning. The general plan shall include diagrams which identify the general locations and types of land uses that are consistent with the goals and policies of the plan. The general plan and its recommendations shall address physical, social, economic, environmental, design, and public service delivery system issues that have a bearing on the growth and change of the city. The general plan shall contain the mandatory elements prescribed by State Planning and Zoning Law (Title 7, Division 1, commencing with Section 65000, of the California Government Code), which may be combined where appropriate. The general plan may also include any other elements or address any other subjects which, in the judgment of the Council, are needed for the appropriate physical development of the city.

Goal: A goal is a general direction-setter. It is an ideal future end related to the public health, safety or general welfare. A goal is a general expression of community values and, therefore, may be abstract in nature and is generally not quantifiable or time-dependent.

Objective: An objective is a specified end, condition, or state that is an intermediate step toward attaining a goal. It should be achievable, and preferably measurable.

Policy: A policy is a specific statement that guides decision-making and indicates a commitment of the local legislative body to a particular course of action to accomplish goals and objectives.

Implementation Measure: An implementation measure is an action, procedure, program or technique that carries out general plan policy. (State of CA, GP Guidelines, OPR)

Green building rating system: will be defined

Green Enterprise: will be defined

Green technology: will be defined

Greenways: Greenways is a long, narrow piece of land, where vegetation is encouraged, which is managed for public recreation and slow travel.

Groundwater: will be defined

Graywater: will define

Growth or Urban Growth Area: Urban growth is development of properties over a period of time with uses and improvements which are intensive and urban in character. Urban growth areas are typically specifically defined geographic areas within which urban development may be managed through the application of policies and implementation measures to assure that commensurate urban public facilities and improvements are provided as necessary to accommodate the planned development.

Healthy Communities strategy: will define

Higher-intensity development: will define

Infill or Urban Infill Area: Infill or urban infill areas typically refers to properties and improvements which are largely vacant, underdeveloped or developed with uses and structures which are antiquated or harmful given the site's location and surrounding uses. Infill development typically refers to the reuse or redevelopment of such properties to accommodate activities which are more viable and compatible with the location and surroundings. Infill land is generally surrounded by developed land. Infill generally uses pre-existing public road and utility infrastructure, but may require site cleanup and may tax the existing utility infrastructure to the point that existing distribution piping may need to be upgraded.

Infill opportunity areas and Infill Priority Zone: General or specifically defined geographic areas for which policies and implementation measures are established to promote development or planned land uses.

Integrated Pest Management: will be defined

“Leap frog” development: will define

Lighting and Landscaping District: will define

Low Impact Design: will define

Low-Intensity Agricultural Activities: will define

Master Plan or Master Planning (S45), master public facility plan, Sub-area Master Planning for BRT transit corridors and growth areas designed (designated) by the General Plan to include urban design principles (page 3-21,S126) (page 3-22,S127 & S128 requiring Master Plans and Sub-Area Master Plans), subsequent specific or master plans, (page 3-5, S23, 24)“subsequent specific plans for identified growth areas and certain larger infill areas are subsequent projects”, “precise development plan” to be allowed by Development Code (page 3-32). To be defined in glossary.

Sub-area Master Plan: Typically refers to a land use and circulation plan refinement for an area which is 160-acres or less in size and provides for a mix of land use proportionate to those identified by the Fresno General Plan Land Use Diagram and is prepared and adopted as provided by the City of Fresno's Development Code.

Mixed-Use: A development type consisting of a diversity of both residential uses and nonresidential uses, which may include but are not limited to office, retail, public, or entertainment, in a compact urban form with a strong pedestrian orientation.

Vertical Mixed-Use: A development that contains at least one multistory mixed-use building.

Horizontal Mixed-Use: An integrated mixed-use development consisting of adjacent residential and non-residential uses.

Passive Water Storage: will define

Parkway: will define

Planning Area: Referred to as the Fresno Planning Area (FPA) which is the geographic area defined by the boundary depicted in FGP Land Use Element Figure 2. It is consistent with the expanded SOI boundary depicted by the Amended and Restated Memorandum of Understanding between the County of Fresno and the City of Fresno, January 6, 2003 with the addition of the entirety of the Fresno-Clovis Regional Wastewater Reclamation Facility. The FPA includes properties which are within the City of Fresno incorporated boundaries as well as those which are located within the unincorporated area.”

Renewable energy: will be defined

Riparian: will define

Solar power: will be defined.

Special Purpose Recreation Facility: will define

Specific Plan: Use Municipal Code Definition 12-105-S-20.1: shall mean a precise plan or redevelopment plan based on, and consistent with, the general plan and the community plan within which it is located, and shall contain precise land use designations, regulations, programs, and legislation that are required for the systematic implementation of the general plan and community plan.

Sphere of Influence (SOI): The City of Fresno’s SOI is defined as the geographic area within the boundaries depicted by the Fresno General Plan Land Use Diagram, Figure -, which are consistent with the boundaries as approved by the Fresno Local Agency Formation Commission (LAFCo) as of September 1, 2012. The expanded SOI boundary as identified by the Amended and Restated Memorandum of Understanding between the County of Fresno and the City of Fresno, January 6, 2003 includes the remaining portion of the 2025 Fresno General Plan’s North Growth Area which has not been included within the LAFCo approved SOI as of September 1, 2013.

Transit Village, Transit Oriented Development (TOD), TOD Activity Center, TOD Corridor & major TOD corridor, Major Corridor. Will define

Urban and urban area: Areas characteristic of, or constituting a city or more intensively developed community generally comprised of moderate and higher density residential development (i.e. three or more dwelling units per acre although urban areas often include estate sized lots ranging from one to five acres in area) together with office, retail commercial development, industrial, public and institutional uses. The intensity of such uses typically require the provision of public services and infrastructure including water supply system, sewage collection and treatment system, roadways and other improvements for motor vehicle and non-motorized travel, public transit, and police and fire suppression safety services.

Urban Form or Urban Design: urban form and design is concerned with the location, mass, and design of various urban components and combines elements of urban planning, architecture, and landscape architecture.

Urban Use, Commercial Use, Residential Use, agri-business or agricultural business uses versus general agricultural use. Will define if necessary but these are typically generic term at a plan level but would be specifically defined in the development code.

Zoning Ordinance and Zoning Regulations: Presently City of Fresno Municipal Code, Chapter 12, Articles 1,2,3, and 4.5 comprise the “Comprehensive Zoning Ordinance” and can be referred to as “Zoning Ordinance of the City of Fresno”. The present Zoning Ordinance and many other Articles of Chapter 12 will be repealed and replaced by updated Code provisions. Use of these terms should be in reference to old implementing tools to be replaced.

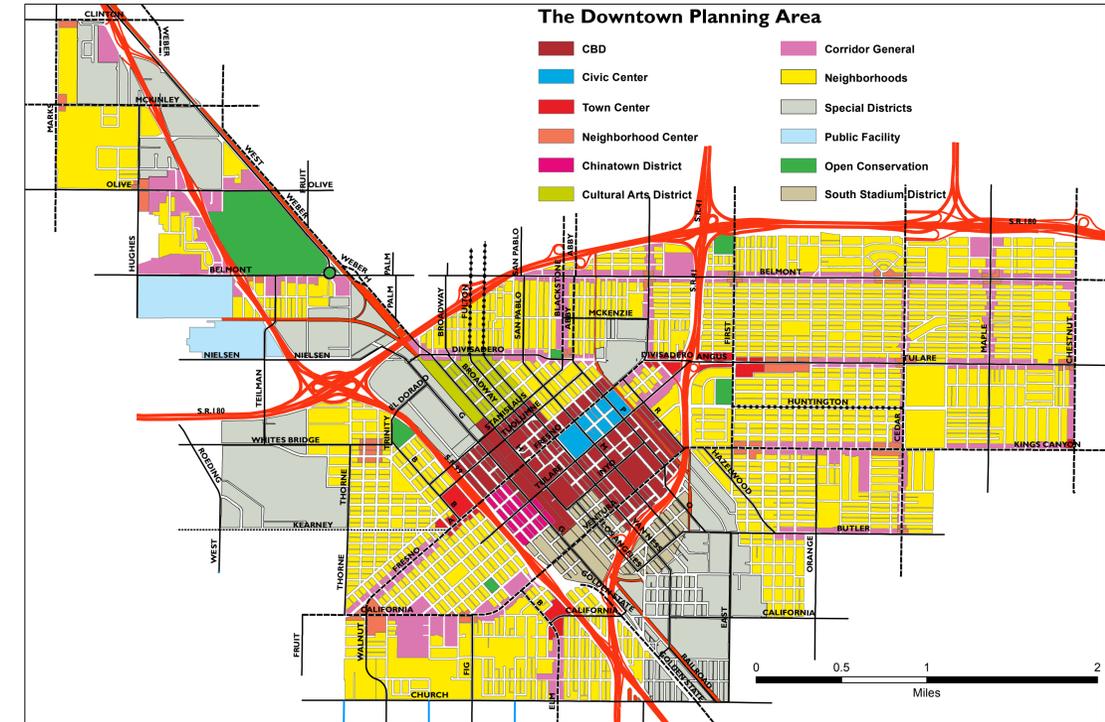
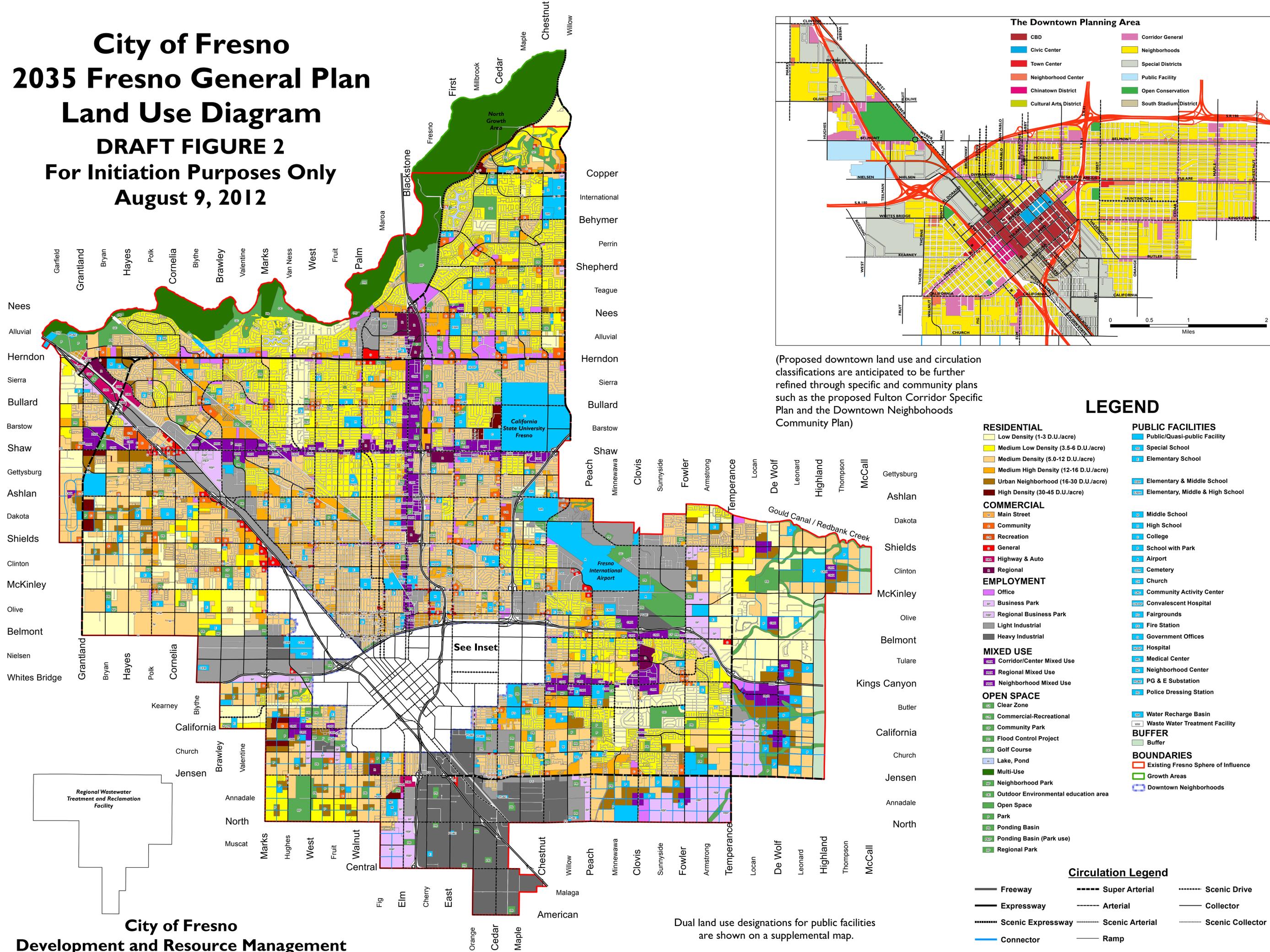
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Workshop Discussion Draft

**APPENDIX B - LAND USE DIAGRAM - FRESNO GENERAL  
PLAN**

# City of Fresno 2035 Fresno General Plan Land Use Diagram

**DRAFT FIGURE 2  
For Initiation Purposes Only  
August 9, 2012**



(Proposed downtown land use and circulation classifications are anticipated to be further refined through specific and community plans such as the proposed Fulton Corridor Specific Plan and the Downtown Neighborhoods Community Plan)

## LEGEND

- |  |  |
|--|--|
| <p><b>RESIDENTIAL</b></p> <ul style="list-style-type: none"> <li>Low Density (1-3 D.U./acre)</li> <li>Medium Low Density (3.5-6 D.U./acre)</li> <li>Medium Density (5.0-12 D.U./acre)</li> <li>Medium High Density (12-16 D.U./acre)</li> <li>Urban Neighborhood (16-30 D.U./acre)</li> <li>High Density (30-45 D.U./acre)</li> </ul> <p><b>COMMERCIAL</b></p> <ul style="list-style-type: none"> <li>Main Street</li> <li>Community</li> <li>Recreation</li> <li>General</li> <li>Highway &amp; Auto</li> <li>Regional</li> </ul> <p><b>EMPLOYMENT</b></p> <ul style="list-style-type: none"> <li>Office</li> <li>Business Park</li> <li>Regional Business Park</li> <li>Light Industrial</li> <li>Heavy Industrial</li> </ul> <p><b>MIXED USE</b></p> <ul style="list-style-type: none"> <li>Corridor/Center Mixed Use</li> <li>Regional Mixed Use</li> <li>Neighborhood Mixed Use</li> </ul> <p><b>OPEN SPACE</b></p> <ul style="list-style-type: none"> <li>Clear Zone</li> <li>Commercial-Recreational</li> <li>Community Park</li> <li>Flood Control Project</li> <li>Golf Course</li> <li>Lake, Pond</li> <li>Multi-Use</li> <li>Neighborhood Park</li> <li>Outdoor Environmental education area</li> <li>Open Space</li> <li>Park</li> <li>Ponding Basin</li> <li>Ponding Basin (Park use)</li> <li>Regional Park</li> </ul> | <p><b>PUBLIC FACILITIES</b></p> <ul style="list-style-type: none"> <li>Public/Quasi-public Facility</li> <li>Special School</li> <li>Elementary School</li> <li>Elementary &amp; Middle School</li> <li>Elementary, Middle &amp; High School</li> <li>Middle School</li> <li>High School</li> <li>College</li> <li>School with Park</li> <li>Airport</li> <li>Cemetery</li> <li>Church</li> <li>Community Activity Center</li> <li>Convalescent Hospital</li> <li>Fairgrounds</li> <li>Fire Station</li> <li>Government Offices</li> <li>Hospital</li> <li>Medical Center</li> <li>Neighborhood Center</li> <li>PG &amp; E Substation</li> <li>Police Dressing Station</li> <li>Water Recharge Basin</li> <li>Waste Water Treatment Facility</li> </ul> <p><b>BOUNDARIES</b></p> <ul style="list-style-type: none"> <li>Existing Fresno Sphere of Influence</li> <li>Growth Areas</li> <li>Downtown Neighborhoods</li> </ul> |
|--|--|

## Circulation Legend

- |   |   |   |
|---|---|---|
| <ul style="list-style-type: none"> <li>Freeway</li> <li>Expressway</li> <li>Scenic Expressway</li> <li>Connector</li> </ul> | <ul style="list-style-type: none"> <li>Super Arterial</li> <li>Arterial</li> <li>Scenic Arterial</li> <li>Ramp</li> </ul> | <ul style="list-style-type: none"> <li>Scenic Drive</li> <li>Collector</li> <li>Scenic Collector</li> </ul> |
|---|---|---|

Dual land use designations for public facilities are shown on a supplemental map.