Public Safety & Community Health

reduces risk of public harm, property damage, and economic impacts from natural hazards, public safety and emergency evacuation measures, and overall community health and wellness.

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SECTION 7. PUBLIC SAFETY AND COMMUNITY HEALTH ELEMENT

The City of Shasta Lake is a vibrant and diverse community that strives to provide safety and access to healthy lifestyles to its residents. This element identifies potential hazards and pollution sources, discusses important public safety issues, and highlights other community health, wellness, and safety priorities. The element provides goals, policies, and implementation actions to mitigate and protect the community against associated impacts. Specific topics covered in this element include:

- Public Safety and Emergency Response
- Natural Hazards
- Community Health and Wellness
- Environmental Quality (Noise and Air Quality)

General plans must include a safety element that covers protection from risks associated with the effects of natural hazards, especially on individuals with access and functional needs. General plans must also include a noise element prepared in accordance with guidelines adopted by the California Office of Noise Control that identifies and appraises noise issues from specified sources, such as high-volume roadways. In this element, noise is addressed under the Environmental Quality section (Section 7.5) along with air quality, which must also be addressed in general plans but is not required to be a standalone element. Although community health is not by itself a state-mandated general plan topic, wellness is a top priority for the City of Shasta Lake and the Cal. Gov't Code § 65303 allows local municipalities to adopt additional elements and topics to those required by state law when they relate to the physical development of the jurisdiction.

Many Public Safety and Community Health Element policies are interrelated with topics in the Land Use, Circulation, Conservation, Housing, and Open Space Elements. For example, land use maps seek to minimize future development in hazardous areas and to separate sensitive land uses, such as schools, from pollutant-producing uses like industrial and high-volume roadways. It is important to remember, however, that policies in the Public Safety and Community Health Element are tailored to address health- and safety-related issues.

The Public Safety and Community Health Element is also closely related to the City of Shasta Lake's Hazard Mitigation Plan (HMP), which plans for mitigation of hazards in more detail and is required for access to federal and state financial assistance programs. The HMP and this element discuss specific hazards with a high likelihood of occurrence or high impact severity that could potentially affect the City of Shasta Lake, including wildfire, flood, climate change, and geologic hazards. For these reasons, the most recent HMP is incorporated as part of the Public Safety and Community Health Element by reference.

7.1 Why Are Public Safety and Health Important?

Planning for growth and development requires consideration of a wide range of public health and safety issues. Many safety hazards are naturally induced, like seismic and geologic hazards, while some hazards are exacerbated by human activity and alteration of the natural environment, such as development in sensitive areas like floodplains. Other safety hazards are human-caused, including climate change and hazardous materials releases. Regardless of the specific hazard, hazard events have the potential to cause loss of life, injury, damage to property and infrastructure, or economic disruption. In order to mitigate these potential impacts, or avoid them altogether, planning and preparation are key.

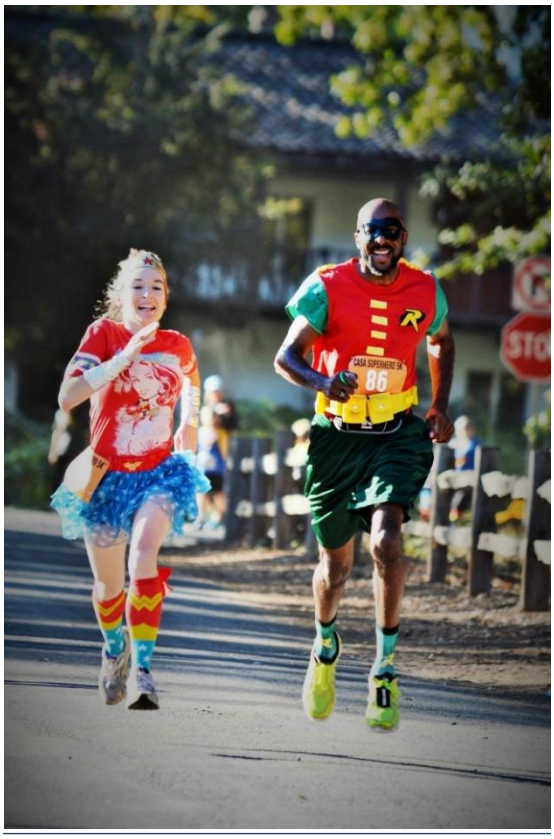

Figure 7-1: Participants in the Annual CASA Superhero Run

Source: Healthy Shasta Facebook page

The planning process for future growth and development should also account for issues related to overall community health and wellness. The health of a community is highly dependent on the availability of healthy foods and exercise and multitude of other environmental and socioeconomic factors. Planning, designing, and building a community that promotes both physical health and mental wellbeing through thoughtful consideration of these factors can improve the quality of life for all who live, work, or play there.

Many of the health and safety risks associated with development can be avoided through locational decisions made at the planning stages of development, while others may be lessened through the use of mitigation measures in the environmental review and land use regulation process. This element outlines the City of Shasta Lake's strategies for ensuring the maintenance of a healthy and safe physical environment.

7.2 Public Safety and Emergency Response

The public health, safety, and general welfare of the community are of primary importance to the City of Shasta Lake. Preparation for emergencies and disasters require planning and community-wide organization. Cooperation and coordination with Shasta County, neighboring jurisdictions, and local agencies that provide public services is essential to ensuring a comprehensive preparedness and response to emergencies and disasters.

Click for Public Safety goals, policies, and implementation actions.

The two primary avenues for promoting community safety are through support of essential emergency services and through community awareness and engagement. This section also discusses a third community safety and protection prong: safety through design of the built environment.

7.2.1 EMERGENCY SERVICES

Fire protection for fire emergencies within city boundaries, including structures and vehicles, is the responsibility of the Shasta Lake Fire Protection District. For law enforcement services, Shasta Lake contracts with the Shasta County Sheriff's Office to protect citizens and property within the city.

Along with the below primary emergency services, the City of Shasta Lake utilizes various resources to ensure that residents and businesses are prepared in the event of an emergency, natural disaster, or multi-casualty incident, including the Shasta County Health and Human Services Agency, Sheriff's Office, and Office of Emergency Services. These partner agencies provide emergency preparedness lists, emergency plan workbooks, and Homeland Security's Advisory System recommendations.

7.2.1.1 Shasta Lake Fire Protection District

The Shasta Lake Fire Protection District serves as the first responder in the event of a medical or fire emergency within the City of Shasta Lake. The District has three stations served by full time staff consisting of one Fire Chief, two Battalion Chiefs, three Captains, three Engineers, and multiple volunteers. It is estimated that the District runs an average of 1500 calls per district per year categorized as medical, fire, and other incidents. Most calls received annually are medical. The District also maintains an Insurance Services Offices (ISO) rating of 4 and has one of the lowest losses per incident ratios in the area.

7.2.1.2 Medical Services

Hospitals and medical centers serving Shasta Lake are located within Redding and include Dignity Health's Mercy Medical Center, Patients' Hospital of Redding, and Shasta Regional Medical Center. Additionally, Shasta Community Health Center and Central Valley Healthcare provide urgent care and clinic services in the City of Shasta Lake. For ground ambulatory services, American Medical Response (AMR) Shasta County provides emergency medical transport services for southwestern Shasta County, including Shasta Lake. AMR Shasta County handles an average of 10,000 calls annually and employs approximately 60 paramedics and Emergency Medical Technicians (EMTs). AMR Shasta County also works closely with local emergency and public health agencies on community disaster preparedness. Emergency medical aircraft transport services are provided by California Highway Patrol, PHI Air Medical, and REACH 5 out of Redding.

7.2.1.3 Law Enforcement

The City of Shasta Lake contracts with the Shasta County Sheriff's Office to protect residents and property within city limits. The Shasta Lake Station, located on Red Bluff next to City Hall, primarily serves incorporated Shasta Lake and is comprised of one Lieutenant, two Sergeants, 10 Deputies, one Community Service Officer, and two Cadets who are responsible for maintaining a safe and secure environment for community members and visitors through crime prevention, law enforcement, and maintaining order. Local Sheriff's Deputies focus on safeguarding the public and contributing to quality of life in Shasta Lake. (Shasta County Sheriff's Office, n.d.)

The County Sheriff's Office also operates the Lake Shasta Boating Safety Unit, Shasta County Jail, Shasta County Coroner's Office, and the Office of Emergency Services and provides investigative services for

homicide, sexual assault, or robbery. Dispatch responsibilities are assumed by the county for both emergency and non-emergency requests for service, including for Search and Rescue, K-9, Bomb Squad, Dive Team, Special Weapons and Tactics (SWAT), and Air Support. (*Id.*)

7.2.1.4 Emergency Operations

The Shasta County Office of Emergency Services (OES), located south of the City of Shasta Lake in Redding, coordinates with local agencies and jurisdictions, as well as state and federal agencies, to prepare for, respond to, and recover from emergencies and disasters. The OES is responsible for maintaining and updating the Shasta County Emergency Operation Plan, which serves as a guide to ensure optimum flexibility during emergencies and is the county's all-hazards plan. The City of Shasta Lake participates in and utilizes the Shasta County Emergency Operation Plan and Emergency Alert System to transmit emergency information to the public. (*Id.*)

Shasta County OES also maintains the Emergency Operation Center (EOC) from which emergency incident responses are coordinated and supported. One of the primary responsibilities in maintaining the EOC is keeping staff trained and ready to respond quickly and efficiently in the event of an emergency. Shasta County OES works closely and assists other local agencies in emergency preparedness plans and disaster training.

For large-scale emergencies and disasters, mutual aid from neighboring jurisdictions and agencies may be necessary. As part of the Shasta Operational Area, the City of Shasta Lake is located within Office of Emergency Services Region III and requests aid through this region. The Shasta County OES is the Law Enforcement Mutual Aid Coordinator for Region III. The OES provides technical advice and assistance to the Sheriff's Office on local emergency declarations and can work directly with the California Governor's Office of Emergency Services to obtain Presidential proclamations for major incidents.

7.2.2 COMMUNITY AWARENESS AND ENGAGEMENT

Community engagement is the process of working collaboratively with groups of people to address issues affecting those people. Public outreach to Shasta Lake residents to engage and inform them on safety issues benefits the community as a whole and promoting awareness about the city's law enforcement in coordination with Shasta County Sheriff's Office and emergency response efforts builds better partnerships between agencies and community members.

Sponsoring neighborhood watch programs gives residents means to organize and strengthen the social and economic fabric on the community. Citizen police academy programs are another effective outreach strategy that work to educate residents about the intricacies of law enforcement and emergency response services. This type of program can take different forms, generally a city-organized program giving interested residents a glimpse into emergency response operations and the laws that govern emergency response. Ride-along programs, such as the one offered by the Shasta County Sheriff's Office, are an example of how to spread community awareness about law enforcement efforts.

For years, the City of Shasta Lake has hosted a National Night Out event in partnership with the Shasta Lake Sheriff's Office. National Night Out is observed on the first Tuesday in August and serves to increase awareness about law enforcement programs and community partnerships in the city. The event informs

residents about crime prevention, safety, general health, and the importance of building a strong community. See Figure 7-2.

Similar to a citizen police academy, the Shasta County Sheriff's Office established a Citizen Volunteer Patrol (CVP) program in 1996. This community-based crime prevention program exercises proactive law enforcement principles and is designed to provide supplemental detection and reporting of criminal activity to the Sheriff's Office. The CVP is made up of volunteer residents of Shasta County who wish to take an active role in serving their community. (Shasta County Sheriff's Office, n.d.)

An adjacent program to the CVP is the Law Enforcement Explorer Program, which is aimed at community members ages 14 to 21. Participants in this County Sheriff's Office program receive hands-on training in domestic violence, hostage negotiation, traffic stops and collisions, use of force, CPR and First Aid, and other topics. (*Id.*)

To spread awareness of fire threats and ways to reduce fire risk in the community, the Shasta Lake Fire Protection District offers a smoke detector program and wildfire mitigation guidance. CPR and First Aid courses are also offered on a regular basis.

Figure 7-2: National Night Out, 2019

Source: City of Shasta Lake Facebook page

7.2.3 SAFETY THROUGH DESIGN

Land use decisions have a direct impact on emergency operations, access, and evacuation in the event of a major disaster. Poor planning, site and building design, and maintenance of road networks and other critical facilities can severely hinder both emergency response and resident evacuation. A properly-designed and well-maintained street network that considers existing population densities and projected future growth is integral to saving lives, preventing property damage, and minimizing economic and social disruptions from disasters.

7.2.3.1 Emergency Evacuation

The City of Shasta Lake strives to be prepared for natural disasters or other emergency events requiring evacuation in partnership with the Shasta Lake Fire Protection District and Shasta County OES. The City continues to assess and improve evacuation capacity, safety, and viability under a range of emergency evacuation scenarios, including through mitigation actions in the HMP. The primary evacuation routes for the City of Shasta Lake funnel traffic to Interstate 5, which generally runs north-south along the city's eastern boundary. Figure 7-3 displays Interstate 5 (I-5) and the City of Shasta Lake's other main evacuation routes and intersections.

Lake Boulevard is a key north-south egress route for the western portion of the city and especially for recreation areas located around Shasta Dam. Between Interstate 5 and Lake Boulevard, which exits the city limits along the southwestern boundary towards the City of Redding, Shasta Dam Boulevard and Pine Grove Avenue are the other main evacuation routes. Pine Grove Avenue serves the southern portion of the city to direct traffic east or west, while Shasta Dam Boulevard does the same for the population located in the northern half of the city. However, there is a pinch-point for large vehicle traffic where Shasta Dam Boulevard passes under the Union Pacific Railroad tracks at a substandard clearance. For this reason, Ashby Road is a critical local road for egress from the downtown area to Pine Grove Avenue and out of the city. Cascade Boulevard (parallel to Interstate 5) and Akrich Street (east of Interstate 5) are also key evacuation routes for residents in the Pine Grove area of the city. Due to the city's origins as five separate boomtowns, there are a limited number of other local streets that can be used to evacuate people from Shasta Lake to access broader connections outside of the city limits.

Evacuation Zones

Shasta County OES utilizes pre-identified evacuation zones for unincorporated Shasta County, including areas around the City of Shasta Lake. These zones help emergency management staff effectively coordinate evacuation efforts on a neighborhood scale to warn residents and businesses of the need to prepare to or actively retreat from a threat, most likely to be wildfire. Zones are identified based on area-specific characteristics and constraints, which may consider the location and density of development, number and condition of available egress routes, emergency resource access and availability, and vulnerability of those populations within the area, among other factors. The City may also adopt evacuation zones to aid in emergency coordination and response efforts.

Wildfire Evacuation Scenario

The threat of wildfire for the City of Shasta Lake is of great concern, as evidenced by the historic wildfires that have occurred in and around the city (discussed in the city's HMP) and as detailed in the Wildfire Hazard section of this element (Section 7.3.1).The wildfire return interval in this area is 10 years or less and the city is surrounded by state and federal lands within Very High Fire Hazard Severity Zones that the city has no control over (see Figure 7-7). Also, as discussed in more detail in Section 7.3.1, there are existing developed subdivisions within the city that are currently limited to only one egress route. For these reasons, being prepared for a significant wildfire event is a top priority for the City of Shasta Lake and coordinating agencies.

A wildfire event could occur on the west, south, north, or east boundaries of the city because the city is surrounded by heavily forested areas where there is a large volume of fuel available. However, it is most likely that an emergency evacuation would funnel traffic south towards the City of Redding using either Lake Boulevard or I-5. Figure 7-3 highlights the main evacuation routes within the city limits and identifies the number of lanes available. All evacuation routes are city- or state-owned and maintained with at least two lanes. Additional assessment of evacuation capacity, safety, and viability under a range of emergency evacuation scenarios will be conducted in the future, as identified in the HMP.

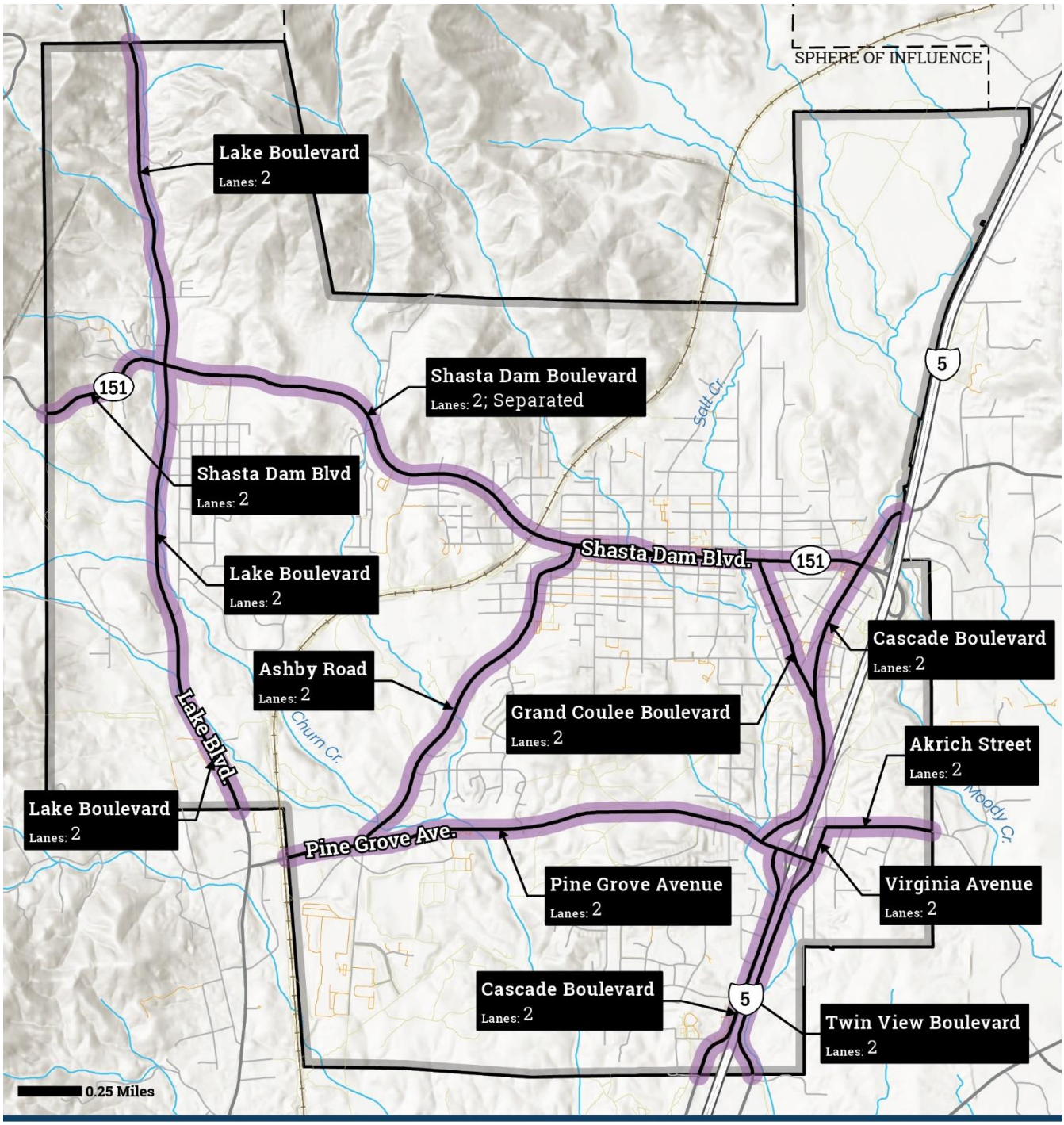

Figure 7-3: Evacuation Routes

7.2.3.2 Private Site Access

Streets are complex places that serve multiple and, at times, competing needs. Residents expect a place that is relatively quiet, that connects rather than divides their neighborhood, where they can walk the street easily and safely, and where vehicles move at reasonable speeds. Other users, including emergency service providers, solid waste collectors, and delivery trucks, expect access that can be safely and efficiently used to perform their services. The community recognizes balancing the needs of these different users is a challenging task. The Land Use and Circulation Elements provide additional detail on this topic, and this discussion is focused on private access design.

Development in the City of Shasta Lake is designed to accommodate emergency access and facilitate evacuation in the event of an emergency, where feasible. Incorporating emergency access and evacuation into site design includes designing access roads and future rights-of-way to facilitate access and turnaround space for large emergency vehicles, such as fire apparatus, while also accommodating compact, pedestrian safe access design. There are a variety of ways to design rights-of-way to accommodate emergency vehicles.

The City also uses minimum design standards for emergency vehicle ingress, turnarounds, and egress on private property that accommodate access and maneuvering space for large fire apparatus. These designs for private driveways and parking areas help ensure that emergency vehicles and personnel can approach residences and other structures, perform necessary emergency procedures, and then exit the property safely and quickly.

7.2.3.3 Emergency Water Supply

Water supply adequate for fire suppression is an important design component in new or rehabilitated development. Water supply for fire suppression must comply with California Code of Regulations, Title 24 (Building Code) and should be available at flows appropriate for all developable areas over and above normal community water uses. The Shasta Lake Fire Protection District reviews specific fire suppression plans for new development, including the need for automatic sprinkler systems in multi-family and single-family residential developments. The District also provides input on the design of additional above- or below-ground emergency water storage to ensure capacity for required periods of fire flow if they cannot be obtained with the city's water system.

7.2.3.4 Crime Prevention

Proper design of the built environment can assist in reducing crime and increasing both the sense and reality of safety. An effective deterrent to criminal activity is the risk of being caught. Design of public spaces that creates natural surveillance, can create safer environments with more eyes on the street.

Strategies for Crime Prevention Through Environmental Design (CPTED) include increasing pedestrian and bicycle traffic, locating windows to overlook sidewalks and parking lots, and installing fencing, landscaping, or lighting to control access around public spaces and common areas. Figure 7-4 displays the elements of CPTED. The physical condition and maintenance of properties can signal whether an area is cared for or neglected; good property maintenance can in turn deter criminal activity. Programs to address community conditions may include graffiti removal, litter clean ups, and beautification. (International CPTED Association, 2020).

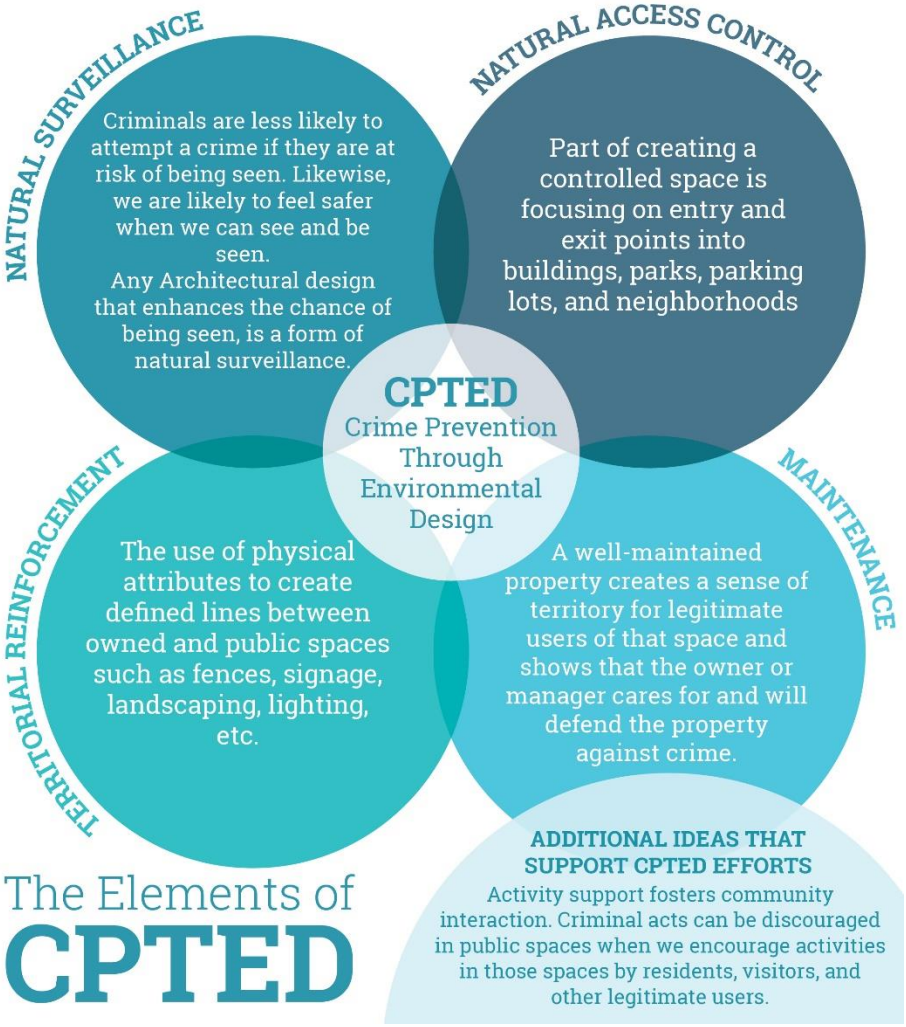

Figure 7-4: Elements of Crime Prevention Through Environmental Design (CPTED)

Source: DP+S, adapted from City of Albany, OR website (cityofalbany.net)

7.3 Natural Hazards

One of the primary goals of this Public Safety and Community Health Element is to address natural hazards that present risks to the City of Shasta Lake. The policies and implementation actions in this section seek to identify ways to reduce any potential for short- and long-term risk of injury, loss of life, property damage, and socioeconomic impacts from natural hazard events to which the city is vulnerable.

Click for Natural Hazard goals, policies, and implementation actions.

The City of Shasta Lake Hazard Mitigation Plan (HMP) provides additional detail and background information and describes implementation strategies to support the hazard-related goals and policies in this element. The HMP and this element provide for effective, comprehensive strategies to mitigate the effects of natural hazards and recover from events quickly with fewer impacts to people, property, and infrastructure.

The HMP identifies resources, information, and strategies to reduce risk, and it provides a tool to measure success of mitigation implementation on a continual basis. The strategies identified in the HMP were developed with the following intentions:

- Risk reduction from natural hazards through a set of defined mitigation actions.
- Establishment of a basis for coordination and collaboration among participating agencies and the community.
- Assist in meeting the requirements of federal assistance programs.

The HMP and this element discuss specific hazards with a high likelihood of occurrence or high impact severity that are located within or could potentially affect the City of Shasta Lake, including wildfire, flood, climate change, and other hazards. ***The most recent update of the HMP is incorporated as part of the Public Safety and Community Health Element by reference.***

7.3.1 WILDFIRE HAZARD

The City of Shasta Lake generally faces a wildfire threat annually, and a significant portion of the population, property, land uses, facilities, and infrastructure within the city are exposed to this hazard. The California Department of Forestry and Fire Protection (CAL FIRE) identifies areas of greatest risk, known as Very High Fire Hazard Severity Zones (VHFHSZ), based on data and models of potential fuels over a 30- to 50-year time horizon, expected fire behavior, and expected burn probabilities to quantify the likelihood and nature of fire exposure. (CAL FIRE, n.d.) The City of Shasta Lake uses the most current mapping and data available in this element and the HMP to accurately identify wildfire risk and exposure.

Click for Wildfire goals, policies, and implementation actions.

Wildfires can be ignited by lightning or by human activity, such as smoking, campfires, equipment use, and arson. While some wildfires are allowed to burn naturally in order to maintain or restore the health of forest lands, out of control wildfires need to be prevented through cooperative, community, and land management planning. (United States Forest Service, n.d.)

Wildfires endanger community health and wellness, can result in injury and death, and can lead to longer-term trauma. Wildfires are also costly, putting property at risk and compromising rivers and watersheds, open space, recreational opportunities, wildlife habitats, endangered species, historic and cultural assets, scenic assets, and local economies. Vulnerability to flooding increases following a wildfire due to the destruction of forest and ground cover within watersheds. The potential for significant damage to life and property increases in areas where development is adjacent to densely-vegetated areas, known as the wildland-urban interface (WUI). (FEMA, 2020)

Historically, there have not been many resident groups formed for the purposes of wildfire prevention. Fire Safe Councils, for instance, have been nonexistent. This is slowly changing, with the recent establishment of the Shasta County Fire Safe Council (SCFSC). The SCFSC provides resources for coordination, communication, and support to decrease catastrophic wildfire throughout Shasta County. In addition, the 2019 City of Shasta Lake Wildfire Mitigation Plan for the City's Electric Department and the 2016 Shasta County Community Wildfire Protection Plan (CWPP) outline several priorities for the City. The 2016 County CWPP is currently undergoing updates. These efforts could result in the City of Shasta Lake's first Community Wildfire Protection Plan. The City of Shasta Lake continues to work on wildfire mitigation through on the ground defensible space projects in partnership with local agencies like Western Shasta Resource Conservation District, and through planning documents such as the hazard mitigation plan and wildfire mitigation planning for the city's electric utility.

As discussed and mapped in more detail in the HMP, the City of Shasta Lake has experienced several wildfires in recent history. The largest recent wildfire event was the Carr Fire in 2018, which burned around Shasta Lake near the city's western border in Shasta and Trinity Counties. The Carr Fire lasted for 37 days, burned a total of 229,651 acres, destroyed 1,614 structures, and caused three fatalities.

Figure 7-5: Fawn Wildfire Smoke Seen from the City of Shasta Lake

Source: City of Shasta Lake

September of 2021 brought another wildfire to the City's doorstep. The Fawn Fire (Figure 7-5) was ignited by arson on September 22, 2021 and burned over 8,500 acres northeast of the city and along the Shasta Lake shoreline. The Fawn Fire was completely contained as of October 2, 2021.

7.3.1.1 Local Conditions

The City of Shasta Lake lies at an elevation of 670 - 2,000 feet above sea level and includes oak woodland fuels and a high combination of brush fuels, much of which is at least 50 years old and laden with sufficient dead and fine fuels to sustain large and damaging fires. (Shasta County CWPP, 2016) The hilly and mountainous terrain on the north and west sides of the city strongly influences both wildland fire behavior and fire suppression challenges. Wind is also a significant factor in the spread of fire, as fires spread faster and burning embers are carried with the wind to adjacent exposed areas. A related concern in built-out areas is the relative density of vegetative fuels that can serve as sites for new spot fires within the urban core and spread to adjacent structures.

The City of Shasta Lake has dry summers where little rain falls from early June through late October. Depending on the location, elevation, and weather patterns, the declared fire season typically lasts from early June to mid or late October. The fire season is a time of increased risk to residential and other development within the city and neighboring areas.

7.3.1.2 Wildfire Protection Responsibility

Local, state, tribal, and federal organizations all have legal and financial responsibility for wildfire protection. In many instances, two fire organizations have dual primary responsibility on the same parcel of land, one for wildfire protection and the other for structural fire protection. To address wildfire jurisdiction responsibilities, in 1981 the California State Legislature outlined various wildfire responsibility areas.

Federal Responsibility Areas (FRAs) are fire-prone wildland areas that are owned or managed by a federal agency, such as the United States Forest Service, Bureau of Reclamation, National Park Service, Bureau of Land Management, Fish and Wildlife Service, or Department of Defense. Primary financial and rule-making jurisdiction authority rests with the federal land agency; because of this, FRAs are not given wildfire severity rankings by CAL FIRE. In many instances, FRAs are interspersed with private land ownership or leases. Fire protection for developed private property is usually the responsibility of the relevant local government agency, not the relevant federal land management agency. Some areas surrounding Shasta Lake are FRAs.

State Responsibility Areas (SRAs) are lands in California where CAL FIRE has legal and financial responsibility for wildfire protection. CAL FIRE administers fire hazard classifications and building standard regulations in these areas, which are defined as unincorporated county areas not federally-owned that have watershed, range, or forage values. CAL FIRE adopts SRA boundaries and updates them every five years. Where SRAs contain structures or development, the relevant local government agencies have fire protection responsibility for those improvements. Some areas surrounding Shasta Lake are SRAs.

Local Responsibility Areas (LRAs) include land in cities, cultivated agriculture lands, unincorporated non-flammable areas, and other lands that do not meet the criteria for SRA or FRA. LRA fire protection is

typically provided by city or county fire departments, fire protection districts, or by CAL FIRE under contract to local governments. LRAs may still include areas of flammable vegetation and the WUI. The City of Shasta Lake is an LRA aside from a few federal properties located within the City.

Figure 7-8 and Figure 7-7 show the acres of land within each responsibility area and the distribution of wildfire protection responsibility in and around the City of Shasta Lake. One of the city's top priorities is to improve coordination within FRAs and SRAs to reduce wildfire risk surrounding the city. Fuel reduction projects are ongoing on federal, state, and private lands in the City of Shasta Lake. Such projects include vegetation management, broadcast burning, pre-commercial thinning, and the removal of dead, dying, and diseased trees.

Wildfire protection responsibility is also shared with local emergency services. The Shasta County Office of Emergency Services (OES), located in Redding, coordinates with local agencies and jurisdictions, as well as state and federal agencies, to prepare for, respond to, and recover from emergencies and disasters, including wildfires. The OES is responsible for maintaining and updating the Shasta County Emergency Operation Plan, which is the county's all-hazards plan and serves as a guide to ensure optimum flexibility during emergencies. The Shasta Lake Fire Protection District is also responsible for wildfire protection within or around the City of Shasta Lake, as shown in Figure 7-7.

Greenbelts as Wildfire Protection Buffers

The most direct threat to the City of Shasta Lake are the acres of thick, unmitigated wildland forest within VHFHSZs surrounding the city, especially to the west, north, and east of the city. Winter storms and high wind events can down trees and break limbs, increasing both ground and ladder fuels that feed wildfires. More frequent droughts and increasingly hot summers also contribute to this escalating threat by straining and drying vegetation. The city is vulnerable to extreme wildfire events approaching from FRAs and SRAs beyond the city limits, even as the City works towards defensible space in city boundaries and requires such on private property to remove and separate fuel sources. A potential solution to help address this issue is the creation of greenbelts in strategic locations around development areas.

Greenbelts are broadly defined as open space, parks, preserves, or agricultural lands where development is limited or prohibited altogether. Although most people are familiar with greenbelts as nature preserves, they can be recreational in nature, including play fields, golf courses, and bicycle or pedestrian paths, or they can be working lands, such as orchards and farms. These greenbelt areas play a critical role in reducing losses during wildfire events due to several core characteristics, including:

- Separating wildlands from and buffering developed areas;
- Serving as strategic locations for wildfire defense;
- Reducing fuel sources through land management and stewardship; and
- Conserving biodiversity and supporting overall ecological health. (Greenbelt Alliance, 2021)

To be effective buffers against wildfire, greenbelts must be consistently managed. Land stewardship that aims to protect biodiversity alongside reducing wildfire risk can result in healthier fire-prone and fire-dependent ecosystems and contribute to overall resilience. Ongoing adaptive management for these lands may include prescribed or cultural burns, targeted removal of dead vegetation, and creation of strategic fuel breaks. Greenbelt size parameters should be site-specific, but the most cost-efficient and

effective range is an area of 300 feet to a quarter-mile wide adjacent to developed areas and communities. (*Id.*) For context, a quarter-mile buffer around the city is shown in Figure 7-7.

Even when they do not stop a wildfire, well-managed greenbelts reduce fire intensity and slow spread, providing more time for evacuation and setup of firefighting resources. Recreational greenbelts, especially those with roads or established trail systems, offer access and space for staging equipment, allowing emergency personnel to deploy defensive measures, such as digging firebreaks or setting backfires. The 2019 Kincade Fire in Sonoma County offered a dramatic example of this function where firefighters were able to pre-position teams within a 211-acre regional park bordering the Town of Windsor, saving lives and homes, as shown in Figure 7-6.

Figure 7-6: Kincade Fire Greenbelt Burn Area

Source: Tom Rennie, courtesy of Greenbelt Alliance

7.3.1.3 Existing and Future Development

The majority of land within VHFHSZs has been and will be developed for residential uses. See Figure 7-9 and Figure 7-10 for details on acres and locations of different future land uses within VHFHSZs.

The City of Shasta Lake Municipal Code supports reducing wildfire risks by requiring defensible space standards to be maintained for development in fire-prone areas, per the Cal. Pub. Res. Code § 4291. These include requirements for pre-development review of major projects, as well as a landscape documentation package. (§ 12.36.062 and § 15.10.050 of the Municipal Code) Strengthening standards for site access for emergency vehicles and emergency water supply, both on individual properties and for subdivisions, would reduce risk further and aid in firefighting efforts.

Subdivisions developed before the City of Shasta Lake incorporated are at increased risk from wildfire since they often have narrow, one-lane roads with limited or no emergency community water supplies. They also often only have a single access road for ingress and egress. Some subdivisions were developed to include emergency access roads; however, many of these roads have not been adequately maintained and are overgrown to the extent that they are impassable. (Shasta County CWPP, 2016) An inventory of existing subdivisions without adequate emergency access or water supplies is necessary to fully understand the magnitude of this problem and will assist the City of Shasta Lake in identifying potential area-specific solutions with input from affected community members.

For new subdivisions in high fire hazard zones, neighborhood fire protection and hazardous fuel reduction plans should be required to analyze risk and emergency response capabilities, identify safety requirements and mitigation measures for new construction, as well as promote public education. Ongoing implementation of such plans should be required and funded by new development. Strengthening the city's emergency access, emergency water supply, and defensible space standards for new development, including for the long-term maintenance of infrastructure, will also reduce risk in these fire-prone areas.

7.3.1.4 Public Facilities and Infrastructure

There are a significant number of critical and sensitive facilities, utilities, and lifelines located within the VHFHSZ and exposed to a greater risk from wildfire, as shown in Figure 7-11, Figure 7-12, and Figure 7-13. In addition, emergency service facilities are spread out across the city and may not provide adequate coverage to all current or future development within high severity zones. The future placement of such facilities should consider existing gaps in response capabilities as well as risk exposure. Other critical facilities and infrastructure should be located outside of high-risk areas, to the extent feasible, to minimize impacts to and disruption of essential services.

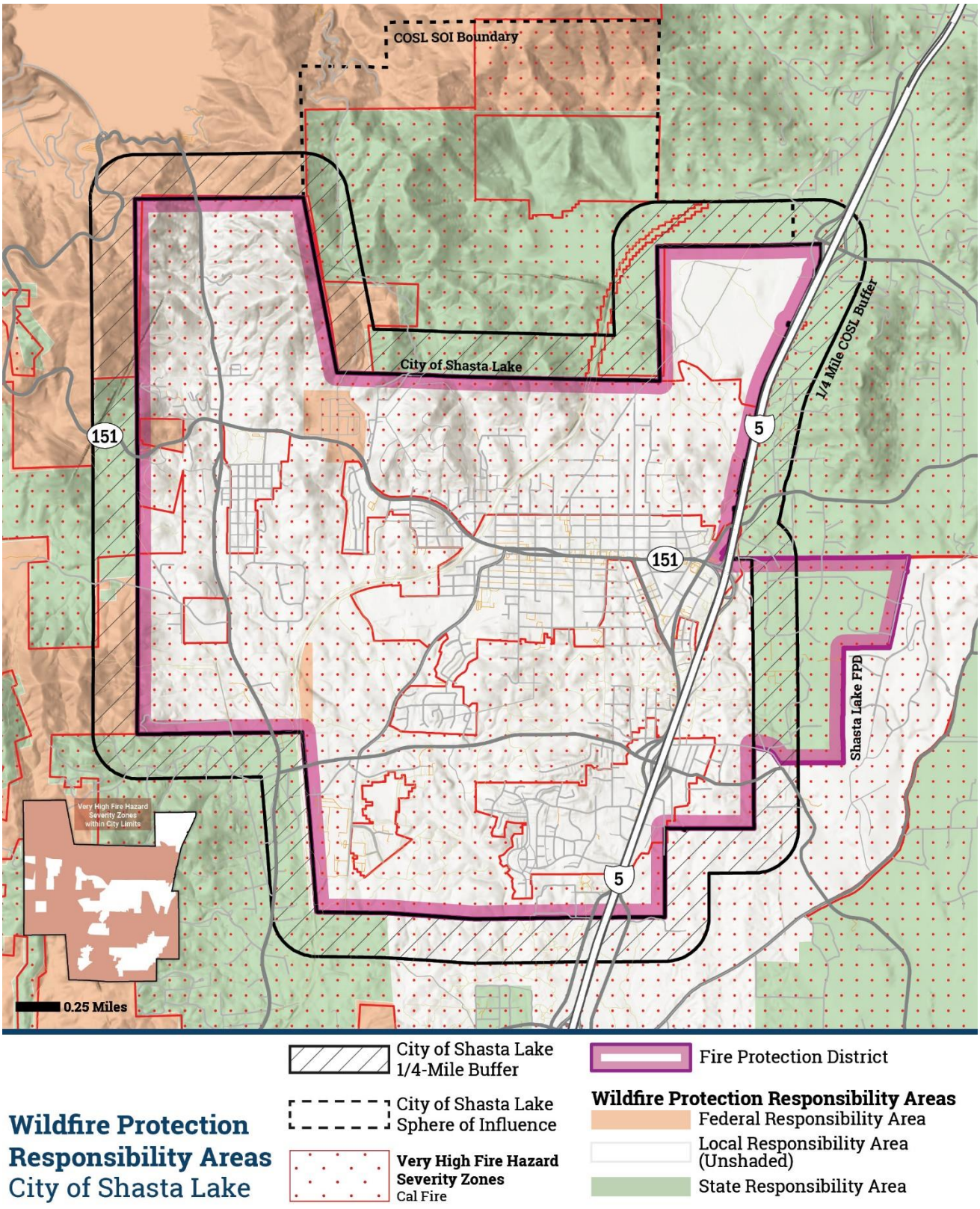

Figure 7-7: Wildfire Protection Responsibility Areas with Quarter-Mile Buffer

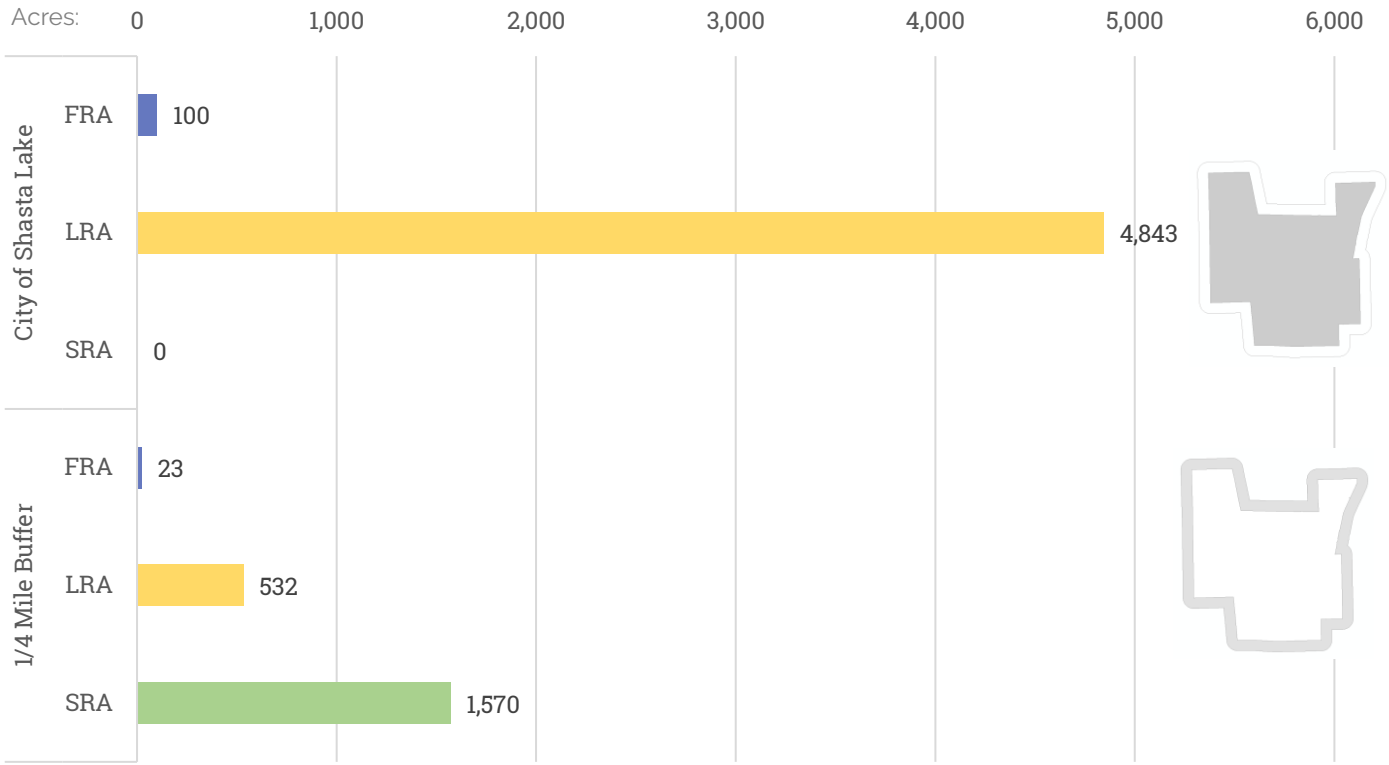

Figure 7-8: Acreage of Responsibility Areas within Very High Fire Hazard Severity Zones

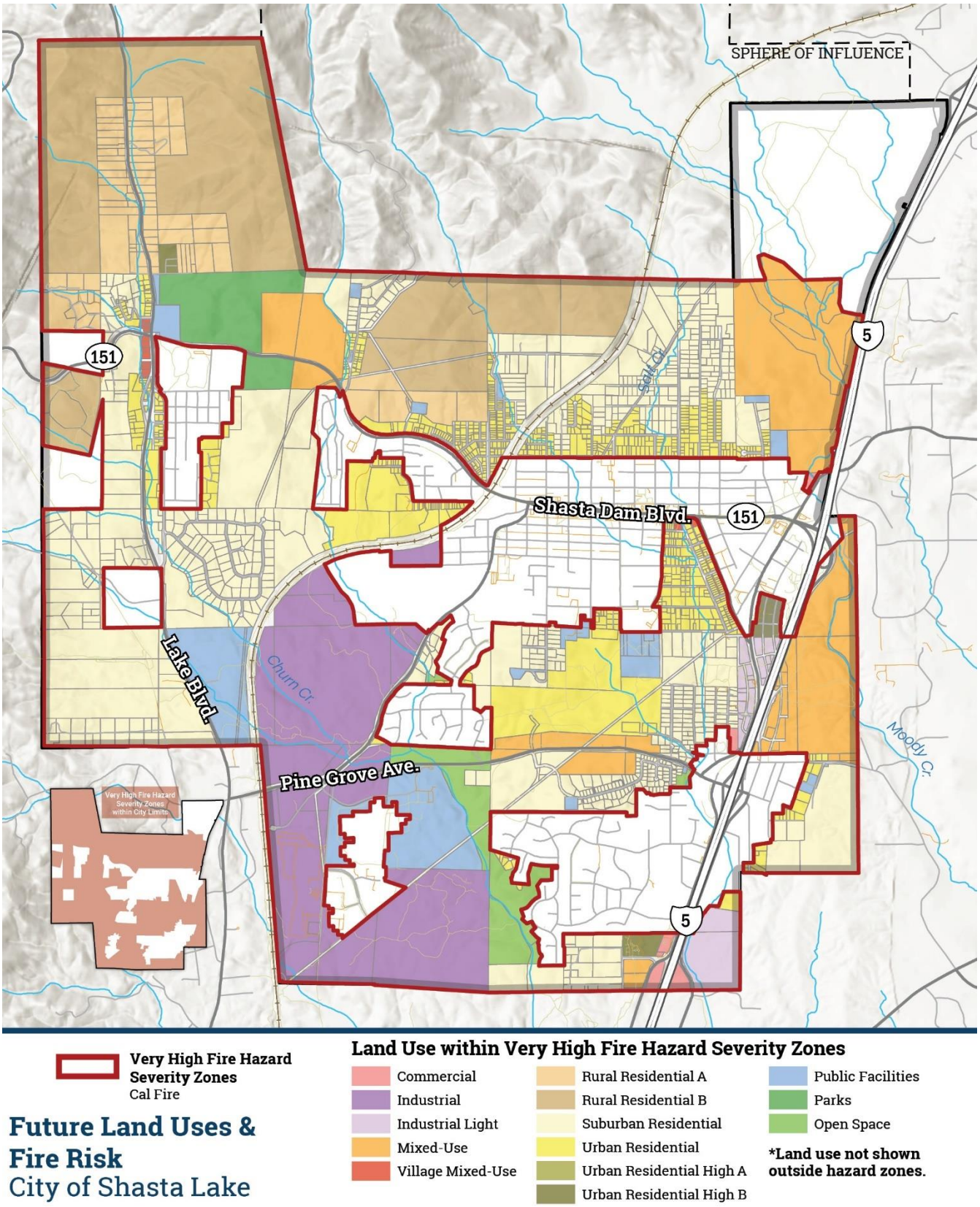

Figure 7-9: Land Uses within Very High Fire Hazard Severity Zones

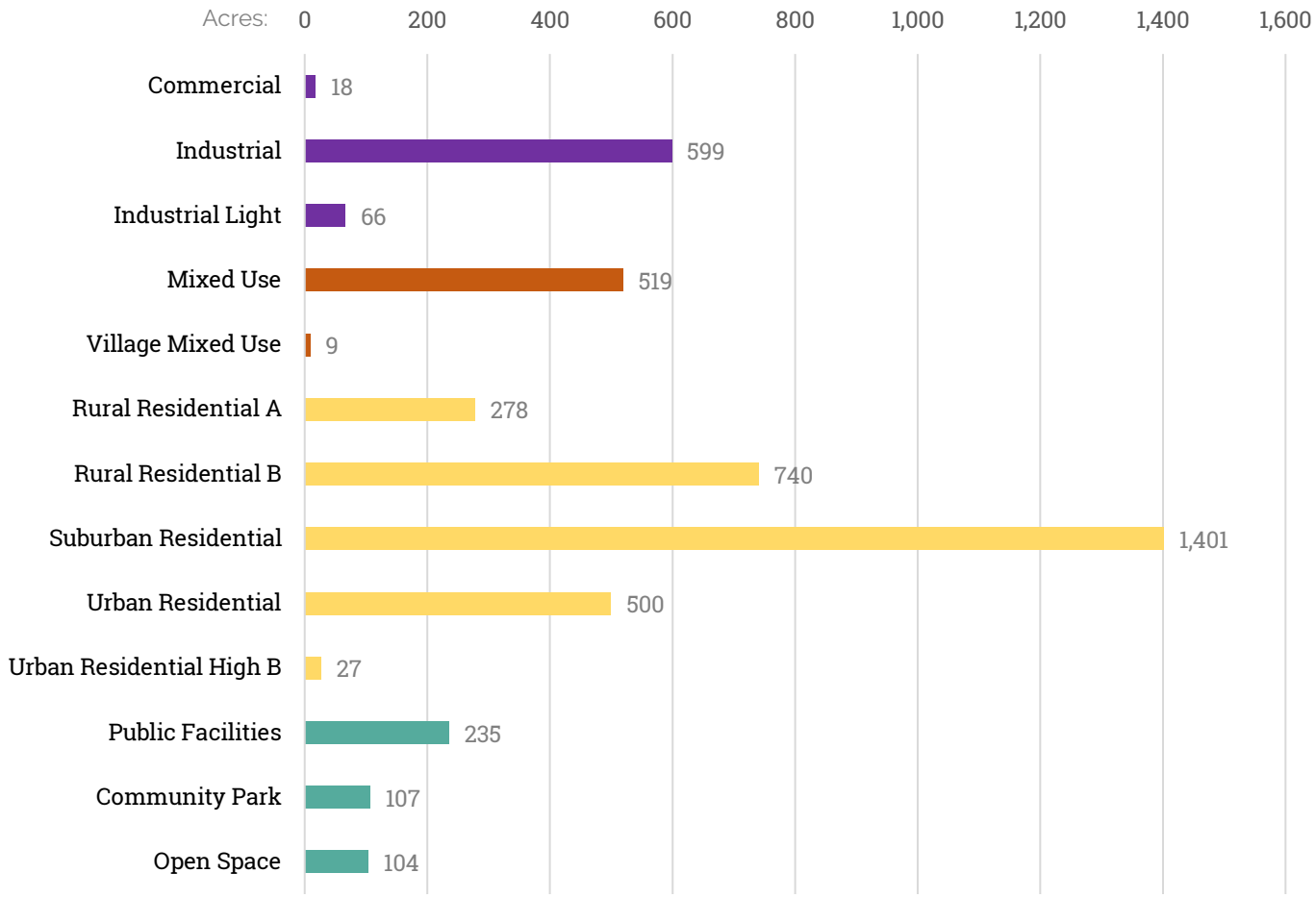

Figure 7-10: Acreage of Land Uses within Very High Fire Hazard Severity Zones

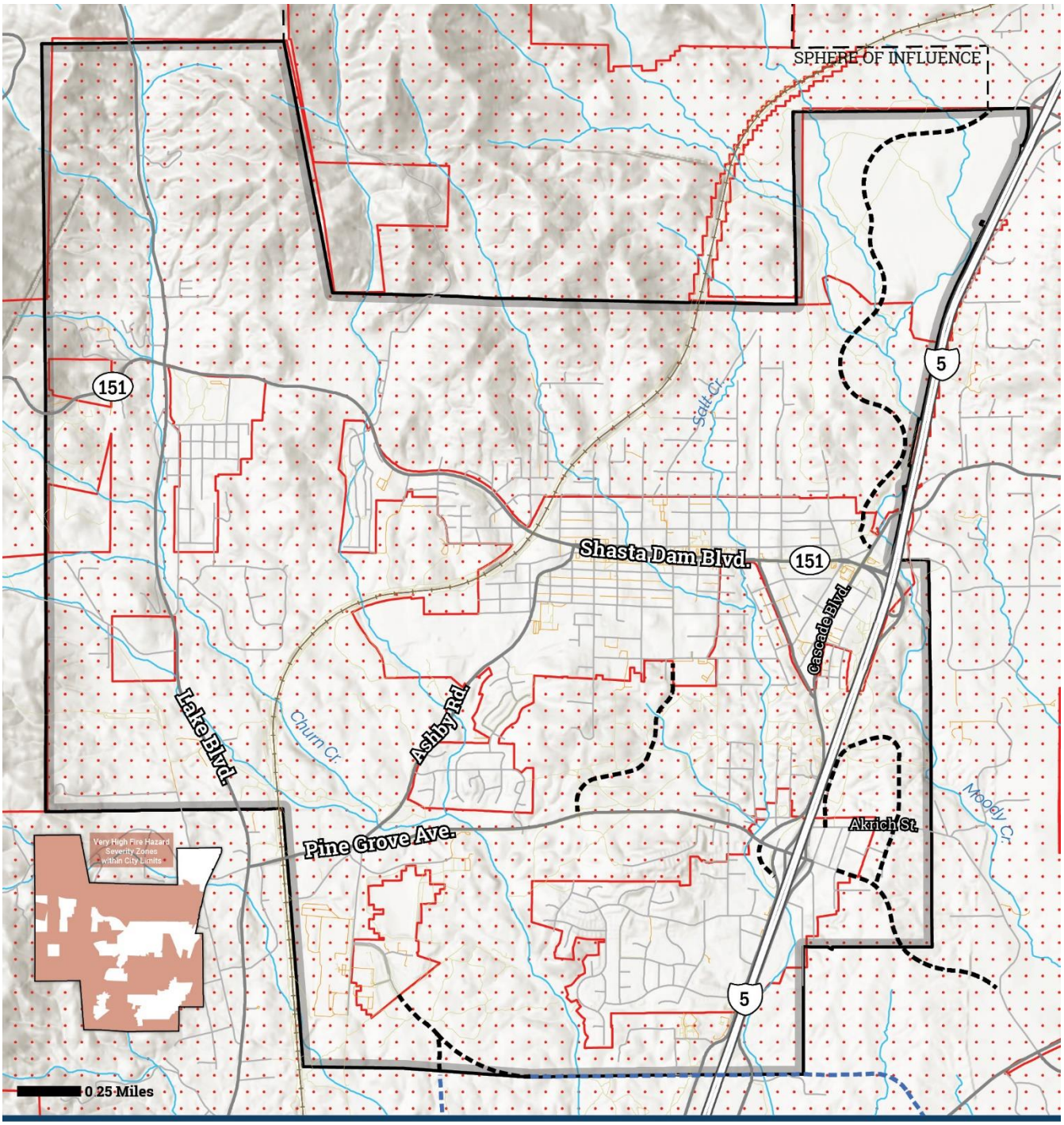

Figure 7-11: Roads within Very High Fire Hazard Severity Zones

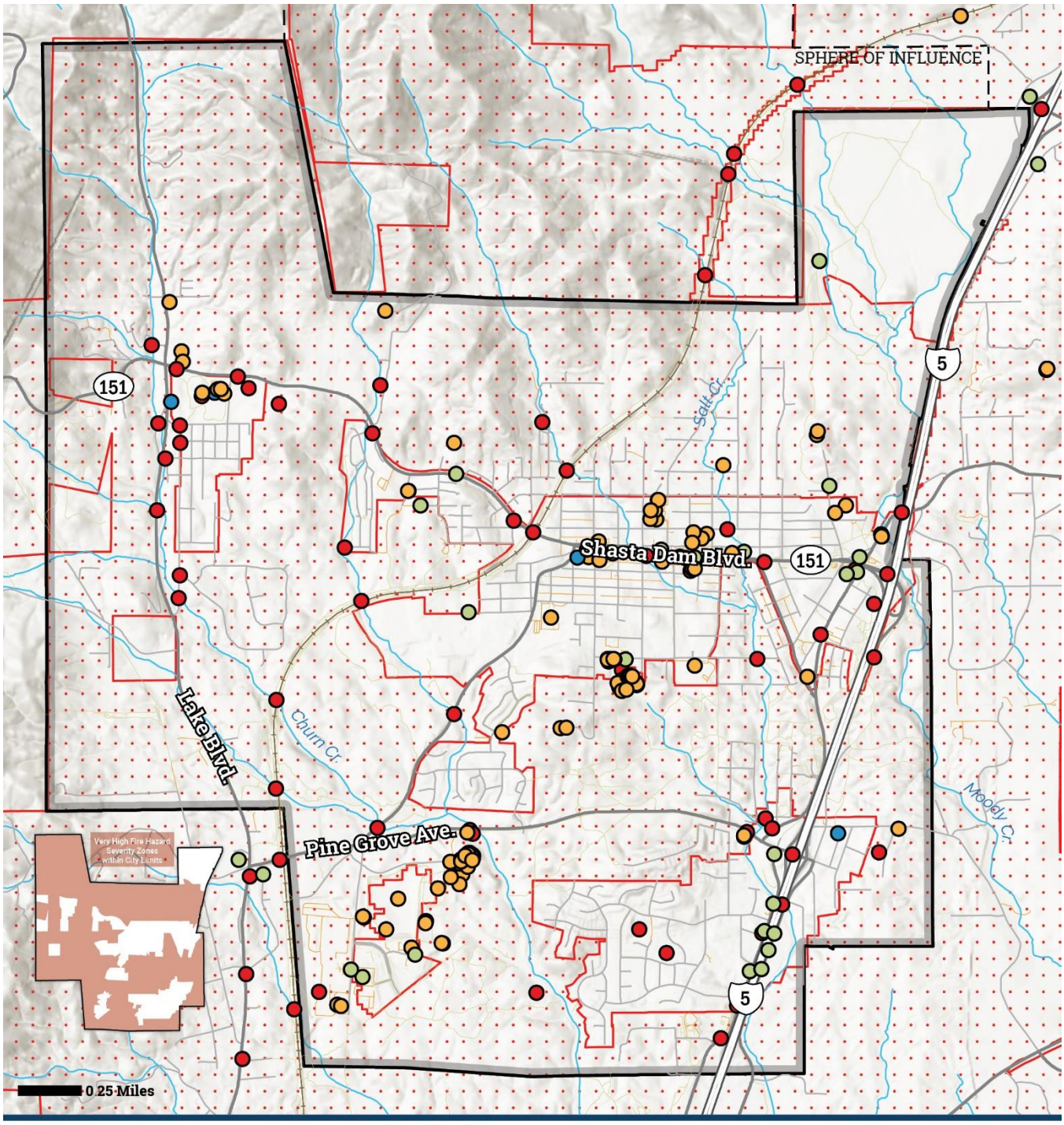

Figure 7-12: Critical Infrastructure within Very High Fire Hazard Severity Zones

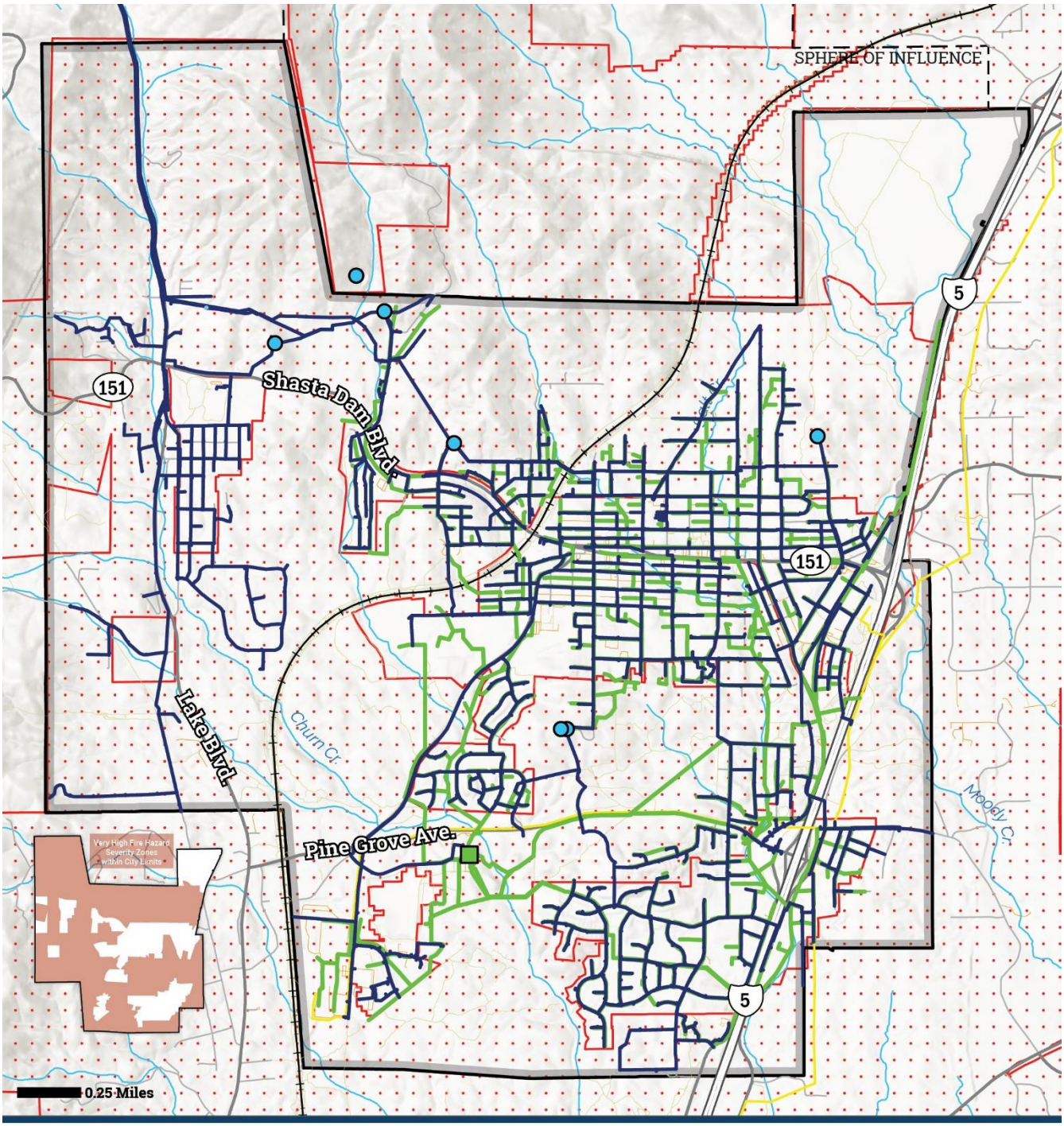

Figure 7-13: Utilities/Lifelines within Very High Fire Hazard Severity Zones

7.3.2 FLOOD HAZARD

Flood and severe rain events occur regularly in the City of Shasta Lake, and people, properties, and infrastructure located within the floodplain or near waterways are particularly vulnerable to this hazard. Flooding can also occur in or around stormwater drainage facilities or in low-lying, non-draining areas during intense rainstorms. The primary cause of flooding is extreme weather and excessive rainfall, either in the flood area or an upstream reach, with dozens of flood or flash flood events over the past twenty years.

Click for Flood goals, policies, and implementation actions.

7.3.2.1 Local Conditions

The drainage pattern in the City of Shasta Lake generally flows from northwest to southeast, and there are three major streams that begin north of the city and flow through the city before traveling south into Redding and then on to the Sacramento River. These streams include Churn Creek, Salt Creek, and Moody Creek, each of which drain sizeable areas ranging between 2,400 and 6,000 acres. Salt Creek collects runoff from the central core of Shasta Lake and converges with Churn Creek in the City of Redding. Moody Creek drains a small area in the eastern-most portions of the city. Properties located near these three streams could be prone to flooding.

Localized flooding associated with stream overflow occurs in the City of Shasta Lake when rainfall runoff volumes exceed the design capacity of drainage facilities or there is a lack of flood control structures in place. From November through May, heavy seasonal rainfall may occur and cause stream overflows and resulting in backyard flooding, flooding to garages, landscape erosion, and some street flooding. Flooding is more severe when antecedent rainfall has resulted in saturated ground conditions and often results in flooding to a number of streams. Specifically, the City of Shasta Lake's topography provides sufficient slope to expediently disperse stormwater runoff downstream; however, heavy rain events can cause critical capacities for some of these small streams from time to time.

7.3.2.2 Existing and Future Development

The best way for the City of Shasta Lake to reduce impacts from flooding is to ensure development is located outside flood-prone areas and is not increasing stormwater runoff vulnerabilities.

The City of Shasta Lake has a floodplain management ordinance (§ 15.04 of the Municipal Code) to minimize public and private losses due to flood conditions in flood hazard areas. The extent of flooding associated with a one-percent annual probability of occurrence, known as the base flood or 100-year floodplain per the Federal Emergency Management Agency (FEMA), is used as the regulatory boundary for enforcing floodplain development regulations. The 100-year floodplain helps identify the location and extent of flooding and is a convenient tool for assessing vulnerability and risk in flood-prone areas across the City of Shasta Lake. FEMA also defines the channel of the waterway and the land adjacent to it as the floodway. This zone must remain free from obstruction to ensure the 100-year floodplain flows can be conveyed downstream.

The regulations also include special attention to the management of altered natural floodplains, stream channels, and natural protective barriers, which help accommodate or channel floodwaters; the management of filling, grading, dredging, and other development which may increase flood damage;

and the prevention and regulation of the construction of flood barriers which will unnaturally divert floodwaters, or which might increase flood hazards in alternate areas.

The City's HMP includes mapping of the FEMA-designated floodplains and the identification of the applicable FEMA Flood Insurance Map (FIRM). The Open Space Element includes a natural resource overlay also depicting FEMA-designated floodplains (OS-Fig 6-1).

The city participates in the National Flood Insurance Program (NFIP), which provides flood insurance protection to owners of property located in flood-prone areas. Flood insurance is an important component of protecting properties and assists residents in recovery from severe rain and flooding.

Protecting wetlands and riparian corridors and constructing, maintaining, or enlarging drainage facilities can also reduce flooding impacts. New development can reduce flooding impacts by minimizing impervious surfaces and employing Low Impact Design elements to slow stormwater runoff. Because the City's Hazard Mitigation Plan is updated every five years, it is the best source to track existing and future development as it related to flood protection.

7.3.3 CLIMATE CHANGE HAZARD

Changes in extreme weather and climate events, such as heatwaves and droughts, are the primary way that most people experience climate change. Climate change is also expected to intensify impacts of natural hazards within Shasta Lake, namely high heat, drought, severe rain, and wildfire events. Secondary concerns include impacts to water supply, water quality, critical infrastructure, wildfire and habitats, and soil health.

Click for Climate Change goals, policies, and implementation actions.

The level of impact from these climate change-related events will vary and are beyond control of the City of Shasta Lake. Populations considered to be disadvantaged will face the greatest challenges in responding to the impacts of climate change due to low socio-economic status, language barriers, educational status, social connection, political participation, shelter security, and limited mobility.

The City's Climate Vulnerability Assessment, included as Appendix A of this Element, was conducted for each climate change-related vulnerability identified in the HMP. The HMP provides additional detail and analysis on assets and population that are most vulnerable to the impacts of climate change, including the latest data available from the Cal-Adapt data center. The Climate Vulnerability Assessment estimates the impact of climate change and the city's capacity to adapt to the predicted future impact, known as "adaptive capacity," which is the existing ability to moderate climate change impacts. Impact and adaptive capacity rankings are then combined to give the climate change vulnerability score used to prioritize mitigation actions based on vulnerability to climate change. The scoring methodology is consistent with the California Adaptation Planning Guide.

7.3.3.1 Local Conditions

The effects of climate change are varied and include extremes in precipitation and temperature. The City of Shasta Lake is already experiencing the regional impacts of climate change. Over the last 50 years, much of the U.S. has seen regional increases in prolonged periods of excessively high temperatures,

heavy downpours, severe floods, and droughts. California has also seen increased average temperatures, more extreme heat days, fewer cold nights, a lengthening of the growing season, shifts in the water cycle with less winter precipitation falling as snow, decreased summertime fog, and snowmelt running off earlier during the year. (Cal OES, 2018) Temperatures may increase as much as four to seven degrees Fahrenheit in the Shasta Lake region by the end of the 21st century. Annual precipitation will change as well. It is likely to be delivered in more intense storms, with shorter wet seasons and prolonged dry seasons. An "average" rainfall year will become less common, with a higher occurrence of extreme wet and dry years. (Houlton, Lund, 2018, p. 18).

7.3.3.2 Existing and Future Development

Because climate change is predicted to increase the severity and intensity of certain hazard events, development review and mitigation planning will need to take into consideration predicted worsening of hazard impacts from climate change. Shasta Lake has adopted the Green Building Standards Code, which exemplifies the actionable steps that the City is taking in order to set a precedent for reduced energy use, building with more sustainable materials, and employing better water conservation tactics. The City also works to address and reduce existing climate-related risks and future impacts on a holistic and programmatic level in partnership with regional entities.

Despite being a small city located in a rural environment, the City of Shasta Lake is regularly impacted by the urban heat island effect during the hot summer months. Increasing the tree canopy in the city will help reduce the urban heat island effect, as trees and other plants help cool the surrounding environment. Future development will focus landscaping efforts on increasing the tree canopy to help cool the city. Trees and vegetation are useful as a mitigation strategy when planted in strategic locations around buildings, or to shade pavement in parking lots and on streets.

7.3.4 GEOLOGIC HAZARDS

The City of Shasta Lake may be impacted by geologic hazard events such as earthquakes; slope failure such as landslides, mudslides, or erosion, nearby volcanic activity, or expansive soils. Because the probability and intensity of these hazard events is expected to be lower than wildfire, flood, or climate change-related hazards, these hazards are grouped together in this element.

Click for Geologic goals, policies, and implementation actions.

7.3.4.1 Local Conditions

Earthquake. While all of California is earthquake-prone, the City of Shasta Lake has less potential for more frequent, stronger shakes than most of California. For example, a magnitude 6.7 rupture along the Battle Creek fault, which has the highest modeled chance of producing more frequent, stronger shaking will produce moderate shaking in Shasta Lake. *See* Earthquake Shaking Potential, Figure 7-14. Moderate damage is still a concern, and this element focuses on earthquake resiliency.

Volcano. The City of Shasta Lake is susceptible to impacts from volcanic activity from Mount Shasta and to a lesser degree Lassen Peak and Medicine Lake. The most probable impact would be from tephra ash, which is small fragments of old lava that are blasted into tiny pieces and hurled into the air. Volcanic ash, the smallest tephra fragments, can travel hundreds to thousands of kilometers downwind from a volcano. Ash usually covers a much larger area and can be far more disruptive than the other more lethal

types of volcano hazards. The size of ash particles that fall to the ground and the thickness of ash fall downwind from an erupting volcano are difficult to predict in advance.

Slope Failure. Slope failure is the movement of soil, rock, or other earth materials, downhill in response to gravity. Slope failure includes rock falls and topples, debris flows and debris avalanches, earthflows, mudflows, landslides, and erosion. Shasta Lake is surrounded by considerable land with slopes exceeding twenty degrees, as shown in the Natural Resource Overlay in the Open Space Element (OS-Figure 6-1). The long-term result of slope failure is often sedimentation. The creeks and smaller streams throughout the city are subject to erosive activity, especially as climate change increases occurrences of severe rain events.

7.3.4.2 Existing and Future Development

Earthquake. New development in Shasta Lake is built with some of the strongest seismic standards in the world under the California Building Code. Historic development is more concerning, especially development that is more than half a century old. The City works to retrofit older city-owned facilities where possible, and works to support property owners with aging structures needing similar retrofits.

Volcano. The City can do little to prepare ahead of a volcanic event, but can provide important response services to those impacted. Populations more vulnerable to smoke and particulate matter, such as the elderly, young children, or those with respiratory diseases such as asthma may be more affected.

Slope Failure. The City's Grading, Erosion Control, and Hillside Development Ordinances (§ 15.08 of the Municipal Code) work to limit development on steeper hillsides, and too minimize slope failure potential and soil erosion from grading during new development.

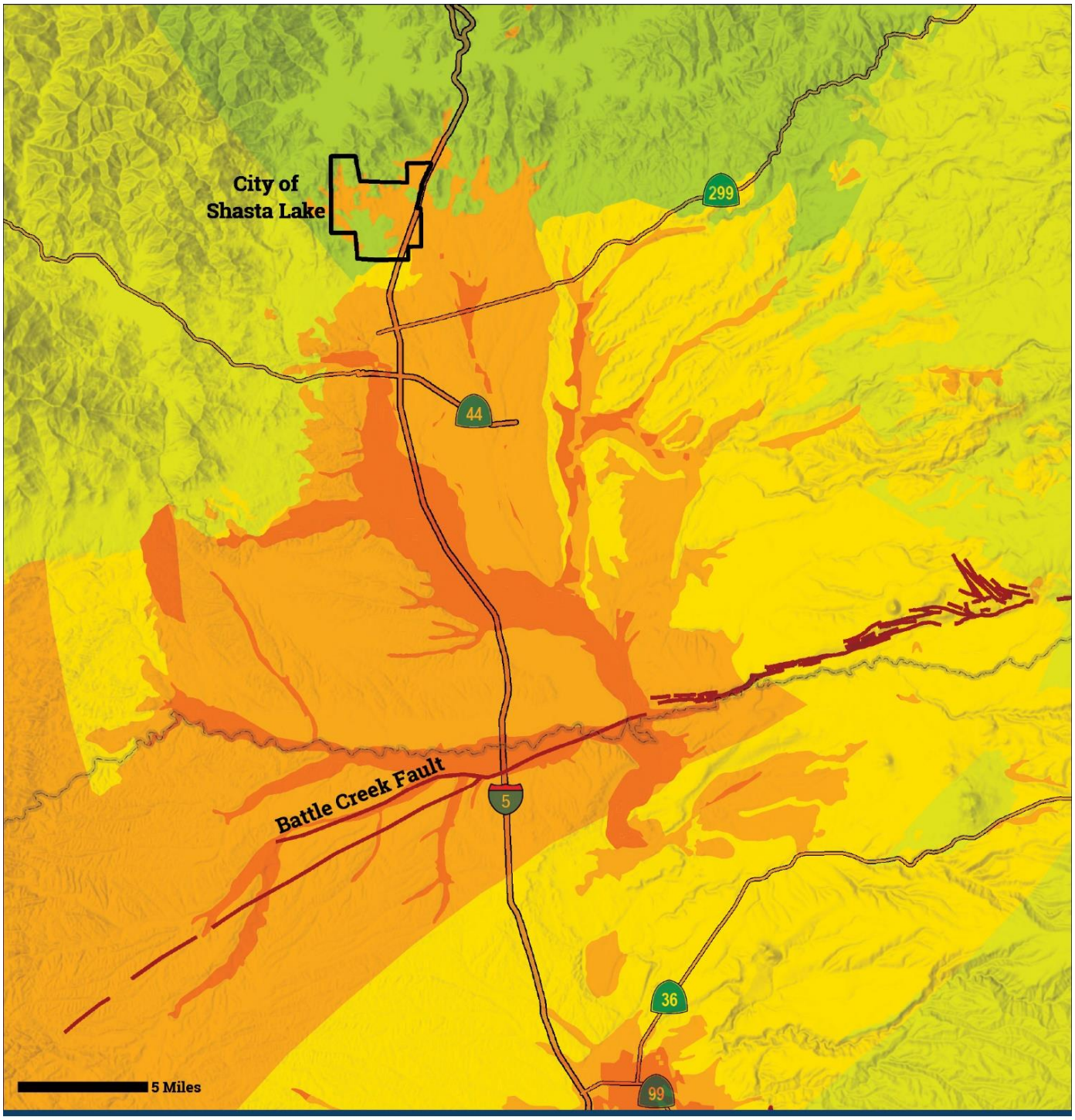

Figure 7-14: Earthquake Shaking Potential

7.4 Community Health and Wellness

To address rising rates of diabetes and the persistence of chronic diseases related to unhealthy eating habits and sedentary lifestyles, researchers and community members alike have identified creating built environments that support healthy eating and active living as one essential strategy for good health. Specific community factors, such as the availability of parks, the "walkability" of neighborhoods, and the presence of retail outlets with fresh and affordable healthy foods, appear to have an influence on the choices people make in their daily lives.

Click for Community Health and Wellness goals, policies, and implementation actions.

Determinants of Health and Wellness

Optimum health is a function of the built and natural environment in which people live, work, and play, as well as many socioeconomic factors. To improve and maintain the overall health and wellness of the community, the City of Shasta Lake prioritizes several critical determinants of individual health and healthy living environments, including access to **healthy foods**, access to **adequate services**, access to **healthy lifestyles**, and **environmental quality**. The City recognizes that access to high-quality affordable housing is also a determinant of health; however, that determinant is more appropriately addressed through the Housing Element.

Access Barriers

The population in the City of Shasta Lake may be vulnerable to health and wellness impacts due to a variety of factors, such as income, race, culture, and language. The median household income is consistently lower than the national average, and several hundred households have no vehicle available. Residents in lower-income households, both rural and urban, tend to have limited access to affordable fresh and healthful food options. (Hodgson, 2012) Linguistic and cultural barriers can further exacerbate lack of access to healthy foods. Although predominately white, there is a significant Native American population and approximately seven percent of households in Shasta Lake speak Spanish, and people of other races and cultural backgrounds within the city may also experience such barriers.

Other barriers to healthy lifestyles and food options include age and access and functional needs. In the City of Shasta Lake, almost one third of households include someone over the age of 65 and about one third include minors under the age of 18. Many of those households are single elderly persons living alone or households with a single parent. In addition, almost twenty percent of the total population has a disability.

Physical Access

Circulation infrastructure can also affect community ability to access health and wellness services. The City of Shasta Lake developed from separate boomtown communities that formed in the 1930s and 1940s to support the construction of Shasta Dam. Because of its origins, the city's development pattern is somewhat disjointed, and gaps exist in the multimodal transportation network, as discussed in detail in the Circulation Element. The main arterial roadway through the city is Shasta Dam Boulevard, also known as State Route 151, along which hourly daytime bus service is provided by the Redding Area Bus Authority (RABA). Although service is not frequent and is often delayed, diminishing convenience for riders, the Shasta Lake RABA route connects these historic boomtowns with stops in what used to be Pine Grove, Project City and Central Valley, and Summit City (Figure 7-15), and the route offers access to

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the City of Redding to the south, where additional services are provided. Existing and planned active transportation connections for cyclists and pedestrians are also shown in Figure 7-15.

For residents without or who choose to forego use of a personal vehicle, the gaps in the transportation network and transit delays make accessing healthy foods, services, and healthy lifestyles more difficult and less convenient. The goals, policies, and implementation actions in this element and the Circulation Element support increased access to these health necessities expansion and improvement of public transit and active transportation options, in conjunction with improving the stated determinants of health within the city.

7.4.1 ACCESS TO HEALTHY FOODS AND ADEQUATE SERVICES

Access to healthy, culturally appropriate, and affordable food is essential for optimum health for Shasta Lake residents. Healthy eating habits help prevent and reduce the risk for developing chronic diseases, obesity, and tooth decay. In addition, disinvestment and poor land use planning can disproportionately impact low-income neighborhoods and contribute to the creation of "food deserts," or "food swamps" where there is a high concentration of nutrient-poor processed and fast foods, leaving residential neighborhoods lacking ready access to the components of a fresh and healthful diet.

The availability of and access to adequate medical services, especially primary care, also has a significant role in supporting health and wellness. To support a healthy population, a community must have high quality and affordable health care services, including for mental health and dental and vision care, that are conveniently accessible for residents. Although some obstacles to adequate health care cannot be effectively addressed through the built environment, such as lack of health insurance or language barriers, the locations of health care services in relation to where residents work and live and the transportation connections between them are primarily a function of historic development patterns and land use planning.

A notable success in overcoming access barriers for the resident Native American population was the opening of the Wintu Tribe's Cultural Resource Center and Museum, which hosts educational opportunities and office space for tribal programs. Importantly, because the Wintu Tribe does not have access to many of the benefits that come with federal tribal recognition, the community space offers a commercial kitchen from which Native American nutrition classes and various food distribution and other welfare programs can be conducted.

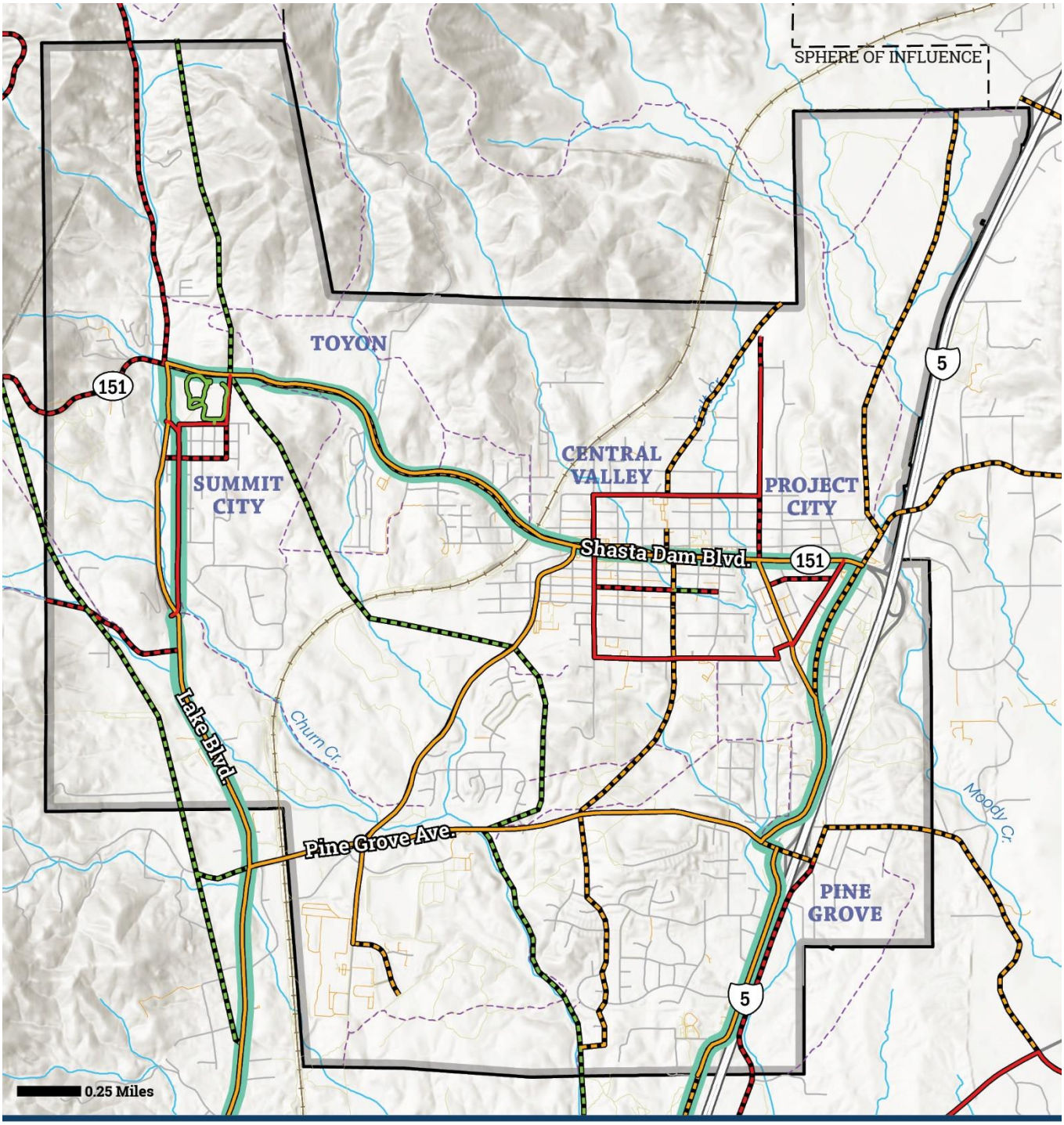


Figure 7-15: Historic Communities and Transportation Connections

Young and elderly populations require additional and tailored community services, like education and specialized housing needs. Rural communities such as the City of Shasta Lake may struggle more to provide these services adequately and affordably; however, both rural and metropolitan communities face challenges in meeting the needs of families with young children and seniors. Land use planning will play a significant role in meeting the service needs of these populations, especially as the senior population in the U.S. grows. (Choi & Warner, 2015)

7.4.1.1 Access to Healthy Foods

Access to healthy, affordable, and culturally appropriate food is a key component in a healthy, sustainable community. Food access is also a community development and equity issue. (Hodgson, 2012) Adequate access to healthy food includes the following components:

- Availability of nutritionally adequate, culturally appropriate, and affordable food;
- Sufficient income to purchase healthy food;
- Proximity and ability to travel to healthy food sources; and
- Clean water, sanitation, and the knowledge and tools for preparation of basic nutritional meals. (*Id.*)

A community designed to facilitate healthy diet choices and adequate food access offers access to an abundance of affordable fresh produce through full-service grocery stores, farmers' markets, and urban farming, including community gardens. (Kaplan & Kaplan, 1989) Within the City of Shasta Lake there is currently only one full-service grocery store, which is located on Shasta Dam Boulevard. An additional food market with limited options is located approximately three blocks to the west, clustering the two main food retailers within the downtown area of the city (Figure 7-18). Meanwhile, the historic communities of Pine Grove and Summit City in south and west Shasta Lake have only gas stations or convenience or liquor stores serving them. (Freedgood, Pierce-Quinonez, & Meter, 2011)

Figure 7-16: Produce at the Shasta Lake Farmer's Market, 2019

Source: Shasta Lake Creative Community Facebook page

It is important for individuals to be able to make decisions, take control, and produce their own food, if desired. (Hodgson, 2012) Establishing a built environment that supports consumer choice over food source options also helps to close gaps in the food system. Though agency over food choices comes in many forms, it often looks like growing one's own food or having the opportunity to purchase foods directly from producers at a farmer's market or through shares in local farms, known as community-supported agriculture (CSA). The City of Shasta Lake may consider future opportunities for the purchase of fresh, local food directly from producers since the majority of CSAs and farmers' markets operate out of Redding, Anderson, or other larger communities nearby.

Community gardens are especially valuable to those residents who do not otherwise have access to land on which to practice gardening. Creating more opportunities for school and community gardens, especially near senior housing and in lower income and minority neighborhoods, could help fill this gap in the local food system by providing environments to grow fresh fruits and vegetables and learn about food production, in addition to accessing the other benefits communal gardening provides, such as social and emotional wellbeing. (Armstrong, 2000) (Austin, Johnston, & Morgan, 2006) School gardens are also shown to improve children's attitude towards vegetables and increase their consumption of fruits and vegetables. (McAleese & Rankin, 2007) An example of a past community garden in the City of Shasta Lake is shown in Figure 7-17.

Figure 7-17: Former Shasta Lake Community Garden

Source: Photo by Denise Wesley, Volunteer Community Coordinator 2013-2014

Healthy Shasta is a local organization that promotes healthy eating and physically active lifestyles within Shasta County. Healthy Shasta offers resources and education on local food system issues, including gardening toolkits for communities and individuals, local food retail locations and producer information, and guidance on food waste reduction.

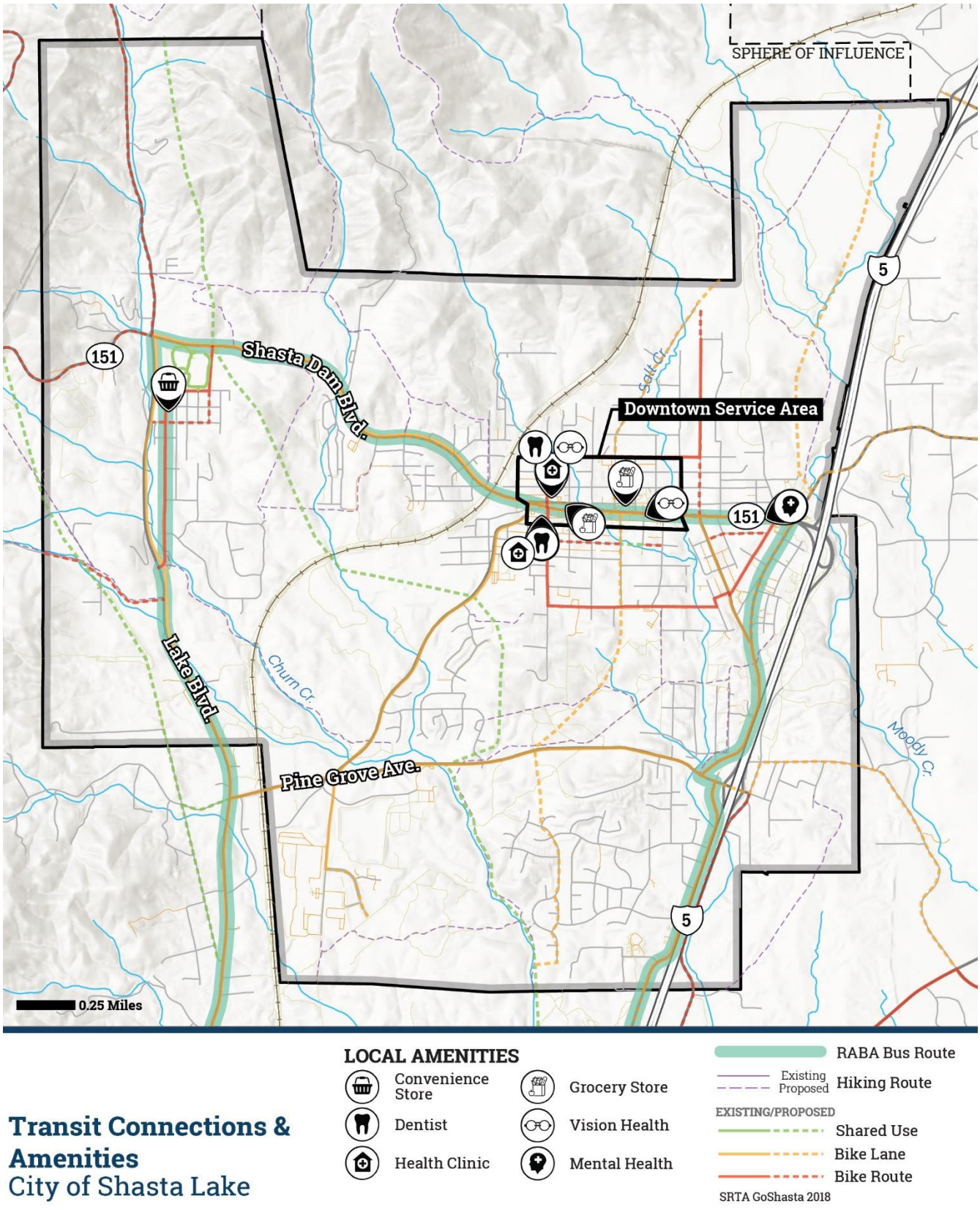


Figure 7-18: Transportation Connections and Amenities

7.4.1.2 Health Care Services

Access to primary care and health care services are linked to positive health outcomes. (Shi, 2012) Primary care is defined by the National Academies of Sciences, Engineering, and Medicine (formerly known as the Institute of Medicine) as integrated, accessible health care services by clinicians, practicing in the context of family and community, who address a large majority of personal health care needs and develop sustained partnerships with patients. (Institute of Medicine, 1996) Primary care providers are typically family physicians, pediatricians, or nurse practitioners who offer regular visits with patients for routine and preventative care, as well as early detection, treatment, and management of disease. (Shi, 2012)

In the City of Shasta Lake, all health care services, including mental health, dental, and vision care, are currently located in the downtown area along Shasta Dam Boulevard where bus service is provided by the RABA. Along this stretch of Shasta Dam Boulevard, between Interstate 5 and the Union Pacific Railroad underpass, there are two health care clinics, two dental service providers, two vision service providers, and one mental health counseling service. One of the health clinics, Central Valley Healthcare, serves Native Americans and offers both primary and urgent care. The other main provider is the Shasta Community Health Center (SCHC).

The Shasta Community Health Center offers comprehensive health care services, including dental and vision, maternity care, inclusive gender health services, and urgent care. SCHC also offers language services and an integrated substance abuse program. In an effort to provide quality primary health care services to medically underserved populations in the community, especially to those experiencing homelessness, SCHC operates the HOPE (Health Outreach for People Everywhere) Mobile Health Program (see Figure 7-19), which is supported by a system of community health centers in Redding, Anderson, and Shasta Lake.

Figure 7-19: Shasta Community Health Center HOPE Van

Source: Shasta Community Health Center website (shastahealth.org/hope)

The Hill Country Mobile Crisis Outreach Team (MCOT) provides mental health support in the City of Shasta Lake. The team of trained professions is available 24 hours a day, seven days a week to provide on-site services and immediate support to individuals, families, or children experiencing a mental health crisis. Services include assessment, case management, crisis follow-up, and ongoing follow-up support. With almost all health care services in the city located in the downtown area (see Figure 7-18), convenient transportation access is essential to providing adequate services to residents, particularly those without a personal vehicle or who do not drive. To ensure access to adequate and comprehensive health care services in Shasta Lake, the City prioritizes improvements to public transit and active transportation connectivity through goals, policies, and implementation actions discussed in the Circulation Element.

7.4.1.3 An Age-Friendly Community

The term "age-friendly" can be conflated with elder-friendly; however, age-friendly communities support a high quality of life at all stages by providing a built and social environment that is accessible and inclusive of residents of all ages. Factors that make communities more livable for seniors and young children often improve livability for the greater community with robust community services, including childcare, recreation, and transportation networks that serve populations that do not yet or no longer drive.

Age-friendly communities recognize intergenerational dependance as an asset to utilize services more efficiently and combat age segregation by promoting affordable and diverse housing options. Support for volunteerism and civic engagement also helps to integrate seniors and youth into the social fabric of the community, inhibiting ageism and isolation by validating community participation from these groups. Mixed-use development, such as along Shasta Dam Boulevard, supports and increases convenient connections among people, products, and services, and mixed-use also promotes healthy lifestyles for all age groups.

As discussed in the Circulation Element and under the Physical Access portion of Section 7.4 of this element, the City of Shasta Lake faces transportation network challenges inherent to its origins. Developing better and more convenient connections between the homes and destinations of seniors and young children is a critical step in creating an age-friendly community. Figure 7-20 and Figure 7-21 illustrate the age distribution within the city and the existing and future transportation connections to common destinations, such as schools and parks.

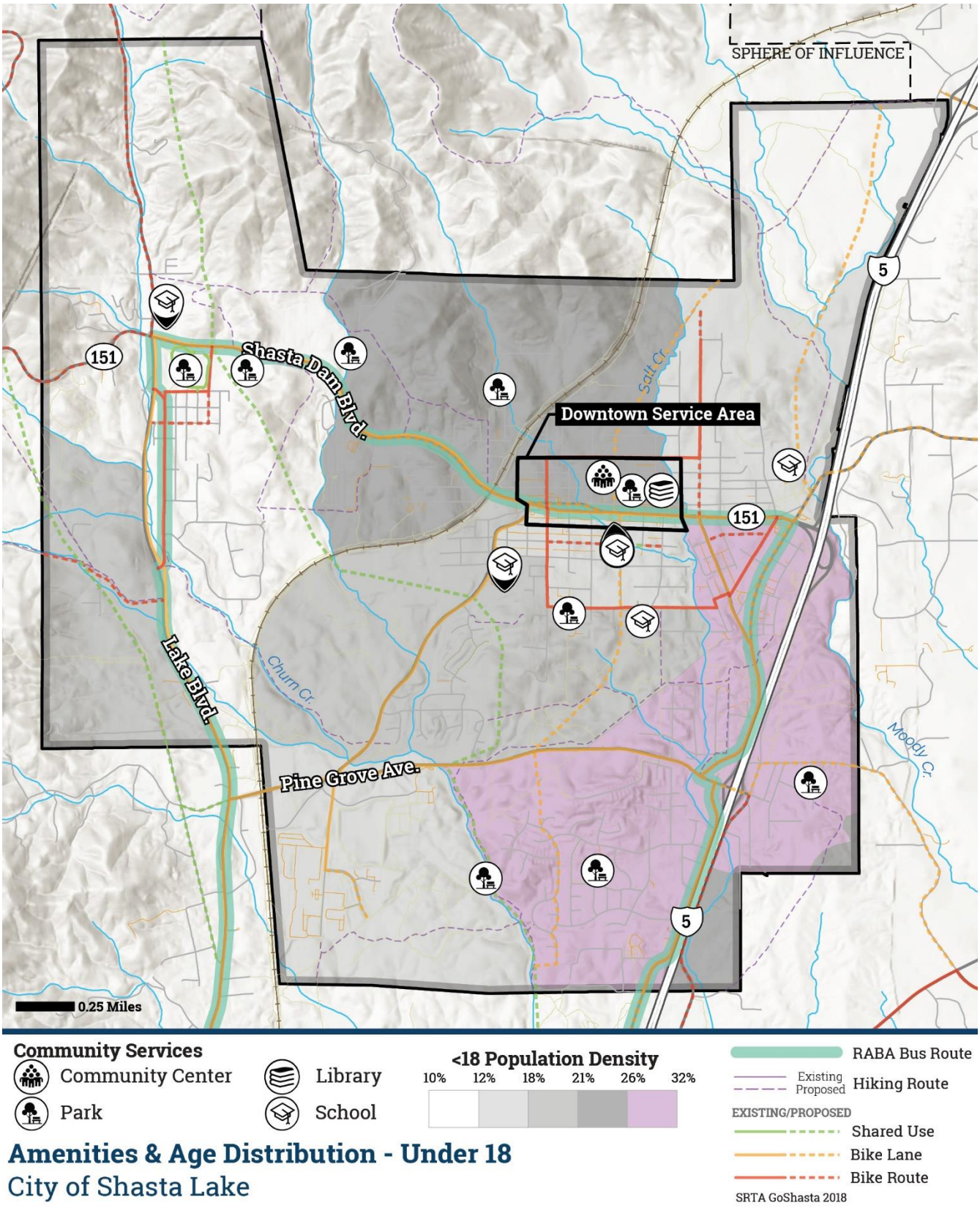


Figure 7-20: Population Under Age 18 Distribution with Transportation Connections and Amenities

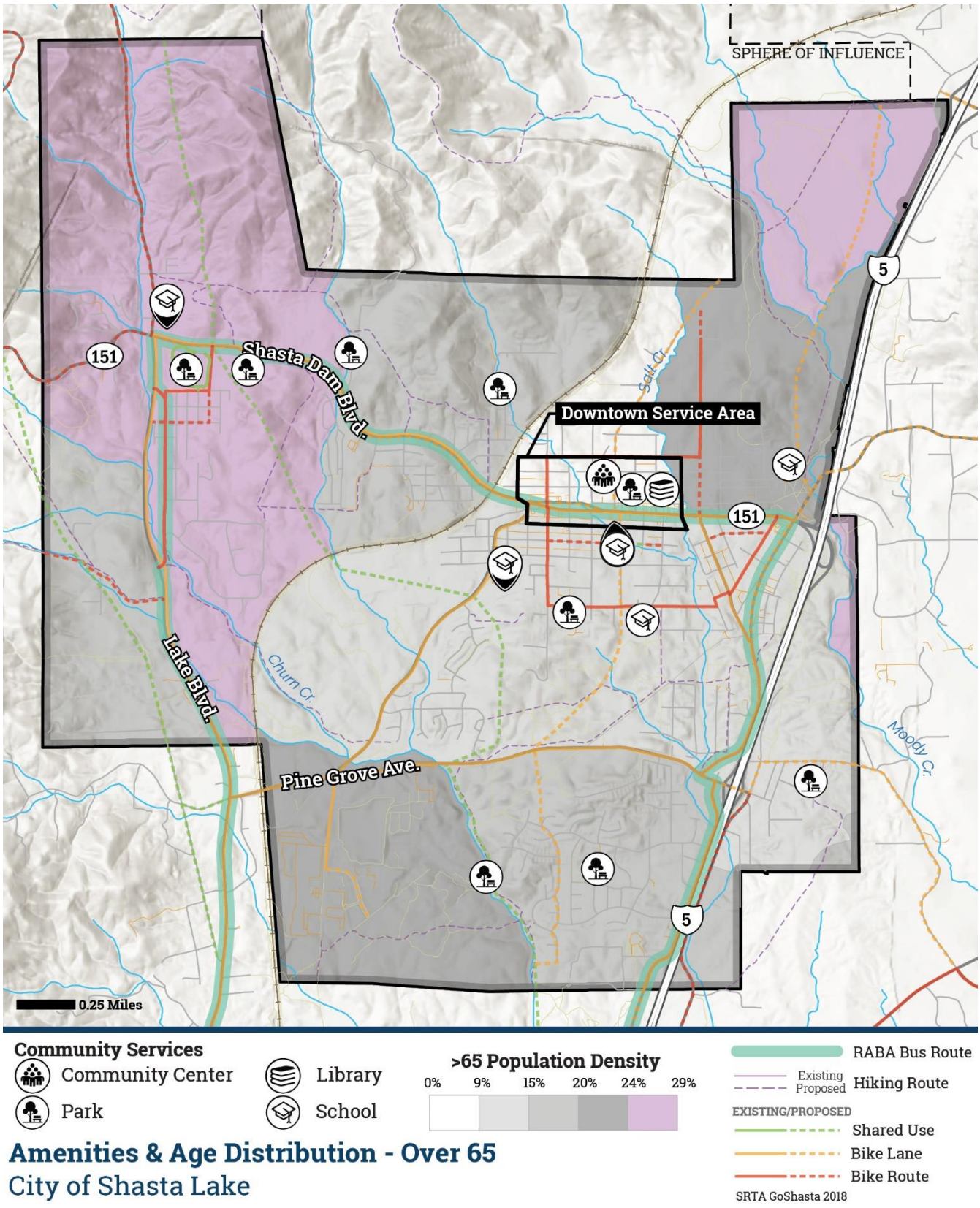


Figure 7-21: Population Over Age 65 Distribution with Transportation Connections and Amenities

Eldercare and Supportive Services

A significant majority of older adults approaching or over age 65 would prefer to remain in their homes as they age instead of relocating to an assisted living facility or institution. (Binette & Vasold, 2019) For many older adults, in-home or community-based supportive services are a cost-effective alternative to institutional options and produce better health outcomes, both mentally and physically. (Viveiros & Brennan, 2014) Nursing homes and assisted living facilities can cost upwards of $60,000 annually, and as much as $120,000 annually in California. Conversely, in-home assistance is typically less than half that cost, starting at about $30,000 annually for five hours per day, five days a week. (MetLife, 2017) In order to facilitate independent living, especially for seniors on fixed incomes with declining health or diminished abilities to perform daily activities, home- and community-based supportive services must be widely available, which may include assistance with cooking, bathing, or other daily activities.

The ability to age in place is dependent, in part, on the type of community, characteristics of the neighborhood, and available housing. In a less dense community like the City of Shasta Lake, where there is a mixture of urban and rural neighborhoods with single- and multi-family residences, supportive services should be located centrally, conveniently, and in existing senior centers when possible, and they should be complimented with robust transportation options. Community-based volunteer networks can be leveraged to fill gaps in the transportation network, and there are also programs that offer in-home assistance, such as Visiting Angels Redding. Perhaps the most important component to creating successful supportive programs is that they are developed and implemented through engagement with the senior population they are intended to serve. (Viveiros & Brennan, 2014)

Childcare and Intergenerational Collaboration

Intergenerational homes, where older adults and young children cohabitate, have long benefitted from in-home childcare provided by grandparents or other elder members no longer participating in the workforce. Seniors are more educated, healthier, active, and able than ever before, and they can be a tremendous resource for tutoring and mentoring the next generation. At the same time, intergenerational homes offer seniors safety, security, and socialization, boosting mental and physical health. By taking these lessons and applying them to the built environment, the City of Shasta Lake prioritizes collaboration with residents to better meet the needs of the community's seniors and children.

There are several areas where increased collaboration could benefit the young and old within the community. Joint use agreements between communities and schools are becoming more common to address the full range of needs of seniors and children at a reduced cost. (Morken & Baran-Rees, 2012) (Choi & Warner, 2015) Outside of normal school hours, school facilities may be available for recreation and adult education programs, or for providing health care or nutrition services. They are also well-suited for after school childcare and other programs that support child education and socialization, particularly in collaboration with senior programs (e.g., mentorships). In addition, rural and urban communities alike have school buses, which can be used to help address the transportation needs of the aging population, and this type of collaboration facilitates community participation, builds trust among community members, and supports informal networks among residents that fill gaps in services provided by formal institutions or governments. (*Id.*)

7.4.2 ACCESS TO HEALTHY LIFESTYLES

There are many health benefits associated with regular physical activity, especially when part of recreational or social activities. These benefits include reduced risks of heart disease, stroke, diabetes, hypertension, some cancers, and premature death. (Cohen, et al., 2006) There are also documented emotional benefits to physical activity, such as stress reduction and improved mood, and in addition to being venues for recreation and exercise, parks and open green spaces provide mental health benefits by providing contact with nature.

The physical design of communities can provide environments that support physical activity. Proximity to exercise opportunities, such as parks and recreation facilities, has been linked to an increase in physical activity among residents, and parks also provide people contact with nature, which itself is known to confer mental and physical wellbeing. (American Planning Association, 2003) As discussed in more depth in the Open Space and Circulation Elements, the City of Shasta Lake prioritizes creating and maintaining a community that promotes active lifestyles with access to nature and recreation opportunities for its residents and visitors.

7.4.2.1 Walkable Neighborhoods and Streets

There are undeniable health benefits of regular physical activity. Walking, in particular, has been shown to greatly improve overall health and wellness. For various study groups, walking one to two miles (or about 30 minutes) several times a week can have tremendous benefits as part of a routine. These benefits include improved circulation, reduced loss of bone mass, weight loss, increased muscle, improved joint health, better mood, and lower risk for mental decline. (Arthritis Foundation, n.d.) By improving the built environment to support safe and walkable community through policies and implementation actions discussed in the Circulation Element, the City of Shasta Lake can help residents incorporate walking and other activities, like bicycling, into their daily routines.

Healthy Shasta, a local organization that promotes healthy and physically active lifestyles within Shasta County, organizes local walking initiatives, such as community walking challenges and walk-to-school days, and provides guidance on safe and accessible walking routes in the area.

The City of Shasta Lake incorporates "complete streets" policies into its planning processes to support and encourage active transportation in the community, as detailed in the Circulation Element. All new public and private development in the city must also construct sidewalks, where appropriate, to provide for a comprehensive pedestrian transportation system around the city.

Figure 7-22: Community Trail Sign

Source: City of Shasta Lake Facebook page

One of the major thoroughfares in need of improvement is Shasta Dam Boulevard, also known as State Route 151. Walkability goals along Shasta Dam Boulevard are currently met with several barriers. The sidewalks along the boulevard are somewhat obstructed in multiple locations and abut the street directly, reducing pedestrians' sense of safety along a 30-40 mph roadway. There are also a limited number of improved crosswalks, which are often spaced blocks apart, and few mature trees to provide shade along the sidewalk during the hot, dry summers. In conjunction with the Circulation Element policies directing improvements along Shasta Dam Boulevard and other major streets, additional pedestrian enhancements will encourage more walking activity and support healthier lifestyles in this village-like commercial area.

Figure 7-23: Shasta Dam Boulevard

Source: Dynamic Planning + Science

7.4.2.2 Exercise and Recreation Facilities

The availability of and access to open space and recreation areas strongly influences how active people are. Parks, recreation facilities (e.g., playgrounds and sports areas), and open space provide people with places where they can engage in physical activities, including play, sports, and leisurely strolls or bicycle rides along trails and greenways. Outdoor play, particularly among children, is associated with higher levels of physical activity and wellbeing, and improving the walkability of neighborhoods and increasing access to recreation facilities are essential strategies for preventing childhood obesity. (Koplan, 2005) Playgrounds especially provide an outdoor environment where children can participate in more informal, unstructured play experiences and physical activity. See Figure 7-22 for a community trail sign example in Shasta Lake.

The physical design of communities can provide environments that support physical activity. Proximity to exercise opportunities, such as parks and recreation facilities, has been linked to an increase in physical activity among residents. As discussed further in the Open Space and Circulation Elements, the City of Shasta Lake promotes the preservation of natural environmental features and open space and prioritizes connecting people to these natural areas, both within and outside of the city.

7.5 Environmental Quality

The City of Shasta Lake continually strives to improve environmental quality for the benefit of its residents and the health of local natural resources and ecosystems. In this section of the Public Safety and Community Health Element, environmental quality concerns are discussed in the context of noise, air quality, and hazardous materials and waste management. Maintaining high water quality is also of great concern to the City of Shasta Lake, as discussed in detail in the Conservation Element.

7.5.1 NOISE

Land use decisions can have significant impacts on noise impacts to residents. When determining the placement of land uses, it is important to consider the activities associated with potential and existing uses within the surrounding environment. Incompatible uses can significantly impact the quality of life in the community, especially as population growth and new development within the city generate additional noise.

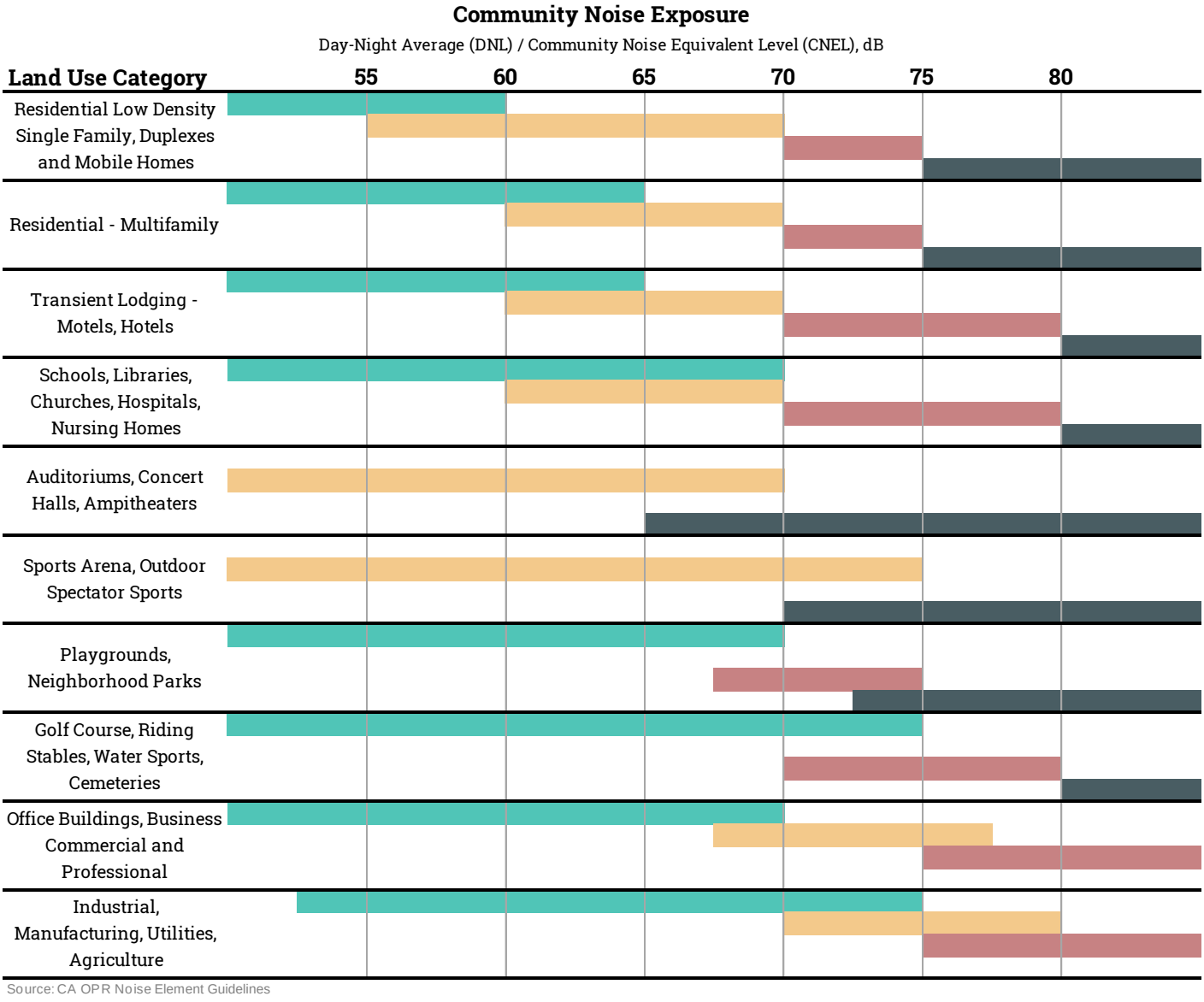
Click for Noise goals, policies, and implementation actions.

A primary purpose of the Noise section is to document existing community noise conditions and where noise issues may develop in the future as the community grows. This information must then be considered by the city when evaluating the type of development that is appropriate in a given location. Background data for this section of the element can be found in the Environmental Impact Report (EIR) prepared for this General Plan.

The basic definition of noise is unpleasant sound, especially that which is loud or causes disturbance. Noise is considered an environmental pollutant that threatens human health and quality of life through the disruption of everyday activities, especially sleep. In this section, current and future conditions and predominant noise sources within the City of Shasta Lake are identified along with strategies to reduce noise impacts on sensitive populations and the community in general.

The effect of noise on the individual and the community varies with its duration, intensity, and the tolerance level of the individual, and people react differently to sounds, even to the same sound. Figure 7-24 demonstrates community noise level exposure for various land use categories. Regardless of how noise is perceived on the individual level, the locations of existing and planned land uses must be considered when placing facilities that generate significant volumes of noise.

Noise in the City of Shasta Lake is principally caused by mobile sources including automobiles, trucks, and trains, and machinery for production, such as that used in industry and construction. Noise affects the quality of the environment at home, at work, or enjoyment of recreational activities. Excessive noise may adversely affect physical activity and psychological stability.



Source: CA OPR Noise Element Guidelines

LEGEND

Normally Acceptable	Conditionally Acceptable	Normally Unacceptable	Clearly Unacceptable
Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional constructions, without any special noise insulation requirements.	New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.	New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.	New construction or development should generally not be undertaken.

Figure 7-24: Noise Exposure by Land Use Category

Source: Adapted by DP+S from California Governor's Office of Planning and Research General Plan Guidelines (2003)

7.5.1.1 Measuring Noise

Noise intensity is measured on a decibel (dB) scale where a measurement of zero decibels is not audible, and noise measured at or above 120 decibels is painful and can cause permanent hearing loss (see Figure 7-25). When measuring noise on a community level, decibels are typically measured with A-weighting (dBA), which compensates for human sensitivity by discriminating against frequencies to approximate what is perceived by the human ear and correlates to individuals' subjective reactions to noise.

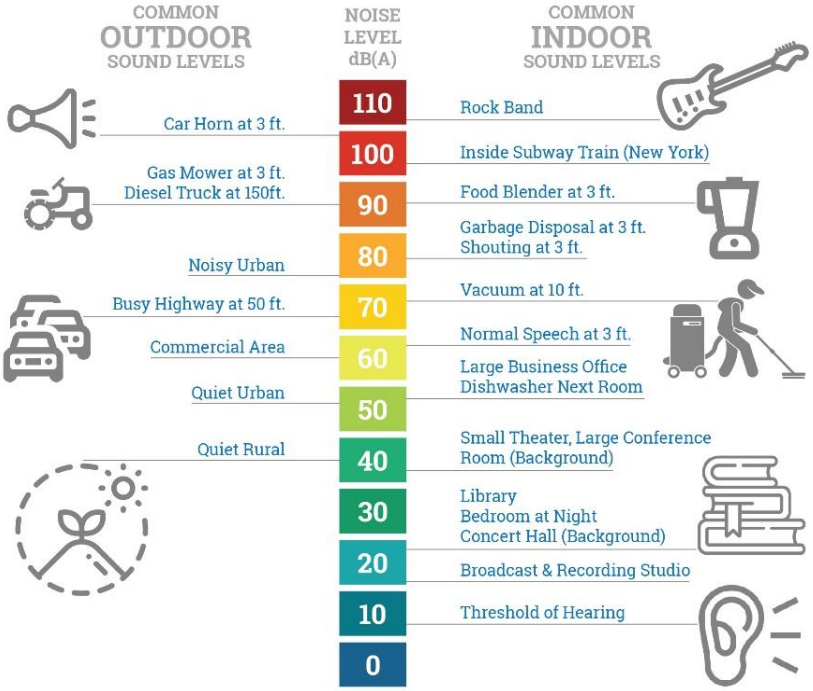


Figure 7-25: Comparative Noise Levels (dBA)

Source: Adapted by DP+S from Federal Aviation Administration website (faa.gov)

For evaluating noise levels over extended periods, the Community Noise Equivalent Level (CNEL) or the day-night average noise level (Ldn) are used, both of which are A-weighted levels averaged over a 24-hour day. The CNEL is obtained after the addition of five decibels in the evening (7 p.m. to 10 p.m.) and the addition of 10 decibels at night (10 p.m. to 7 a.m.).

In this General Plan, noise contours are shown using CNEL, as required under Cal. Gov't. Code § 65302(f), and used as a guide to determine appropriate locations for various land uses in the Land Use Element. Noise monitoring locations are identified in the EIR, and noise resulting from roadways was modeled based on existing and future traffic analysis.

7.5.1.2 Noise-Sensitive Uses and Areas

For purposes of this section, "noise-sensitive uses and areas" include residential areas, parks, places of worship, schools, hospitals, and long-term care facilities. These noise-sensitive uses and areas should be protected from identified sources of significant noise through separation of land uses, as discussed in the Land Use Element, and then through thoughtful siting and adequate buffering where adjacent uses have the potential to cause negative impacts on health and wellness. Although the City of Shasta Lake strives to create and maintain separation between incompatible uses, it is not always practical when encouraging the efficient use of resources through infill development. This section considers impacts on noise-sensitive uses, and the greater community in general, with consideration for noise levels from various sources.

There are numerous methods to address noise impacts on noise-sensitive uses and areas, including establishing land use compatibility standards, enforcing noise standards to protect quality of life, insulating residences exposed to excessive levels of noise, minimizing traffic noise, and regulating new development to limit noise impacts. Some compatibility standards are already established in Title 17, the Zoning Plan, of the city's municipal code. Additional mitigation measures that may be considered for new development on a site- or use-specific basis include berms, vegetative buffer areas, the use of insulation in buildings, building design and orientation, and staggering operating hours for stationary sources.

Figure 7-26 demonstrates the existing noise conditions in the City of Shasta Lake associated with relevant sources of concern. The figure shows general noise level conditions resulting from traffic traveling on roadways in Shasta Lake, rated on a scale from 55 CNEL (normally acceptable) to 75 CNEL (normally unacceptable). As would be expected, the highest levels of noise are generated by Interstate 5 where traffic volumes are the greatest. Figure 7-27 shows the future noise conditions in the City of Shasta Lake based on projected land uses and anticipated traffic in 2040; however, the expected increases in noise are nominal.

Highways and Interstates

Interstate 5 (I-5) is the only roadway within or affecting the City of Shasta Lake classified as a highway or interstate. I-5 runs north-south along the city's eastern boundary and is the primary source of noise within the city. The future land uses in this area consists mostly of Commercial, Industrial Light, and Mixed-Use classifications, as defined in the Land Use Element. However, high- and medium-density residential classifications are planned along portions of the interstate, and the Grand Oaks Elementary School is located in close proximity to I-5. For new residential development in this area, development plans should address noise impacts resulting from I-5 through appropriate mitigation measures, such as increased insulation and buffer areas

Arterials and Other Major Roads

There are two arterial roadways within the city: Lake Boulevard and Shasta Dam Boulevard (State Route 151). Cascade Boulevard, Pine Grove Avenue, and Ashby Road are three additional major roadways, all currently classified as collectors. Appropriate mitigation measures should be taken on a site- and use-specific basis to reduce impacts on noise-sensitive uses and areas from these high-volume roads.

Railroads, Truck Routes, and Transit

The Union Pacific Railroad (UPRR) bisects the city in a northeast-southwest direction. An average of 25 freight trains travel through the City of Shasta Lake along the UPRR on a daily basis. The UPRR line is also used daily by Amtrak for passenger rail service. Truck traffic is heaviest along Pine Grove Avenue between I-5 and the main industrial area, just east of the UPRR line in the southwestern portion of the city. The Redding Area Bus Authority (RABA) provides transit service along Cascade, Shasta Dam, and Lake Boulevards; however, the RABA route is relatively low impact with its current hourly service between the hours of 5:35 a.m. (8:35 a.m. on Saturdays) and 7:30 p.m. Appropriate mitigation measures should be taken on a site- and use-specific basis to reduce impacts on noise-sensitive uses and areas from these transportation routes.

Airports and Flight Paths

There are no major airports in or around the City of Shasta Lake; however, there are two small airports and one airstrip nearby. The main source of air traffic in the area is the Redding Airport, located

approximately 15 miles to the south. The Redding Airport is a full-service regional airport providing commercial airline passenger service, aviation related services, aircraft hangar facilities, and two runways. There is also a privately-owned airstrip located immediately east of the city limits, Tews Field, and a small domestic airport to the southwest, Benton Airpark. Benton serves primarily single-engine and small twin-engine aircraft on a single runway. Although aircraft flying overhead is occasionally audible, Shasta Lake is not located within the influence areas of either Redding Airport or Benton Airpark and the aeronautical operations in the area are not considered significant sources of noise for the city.

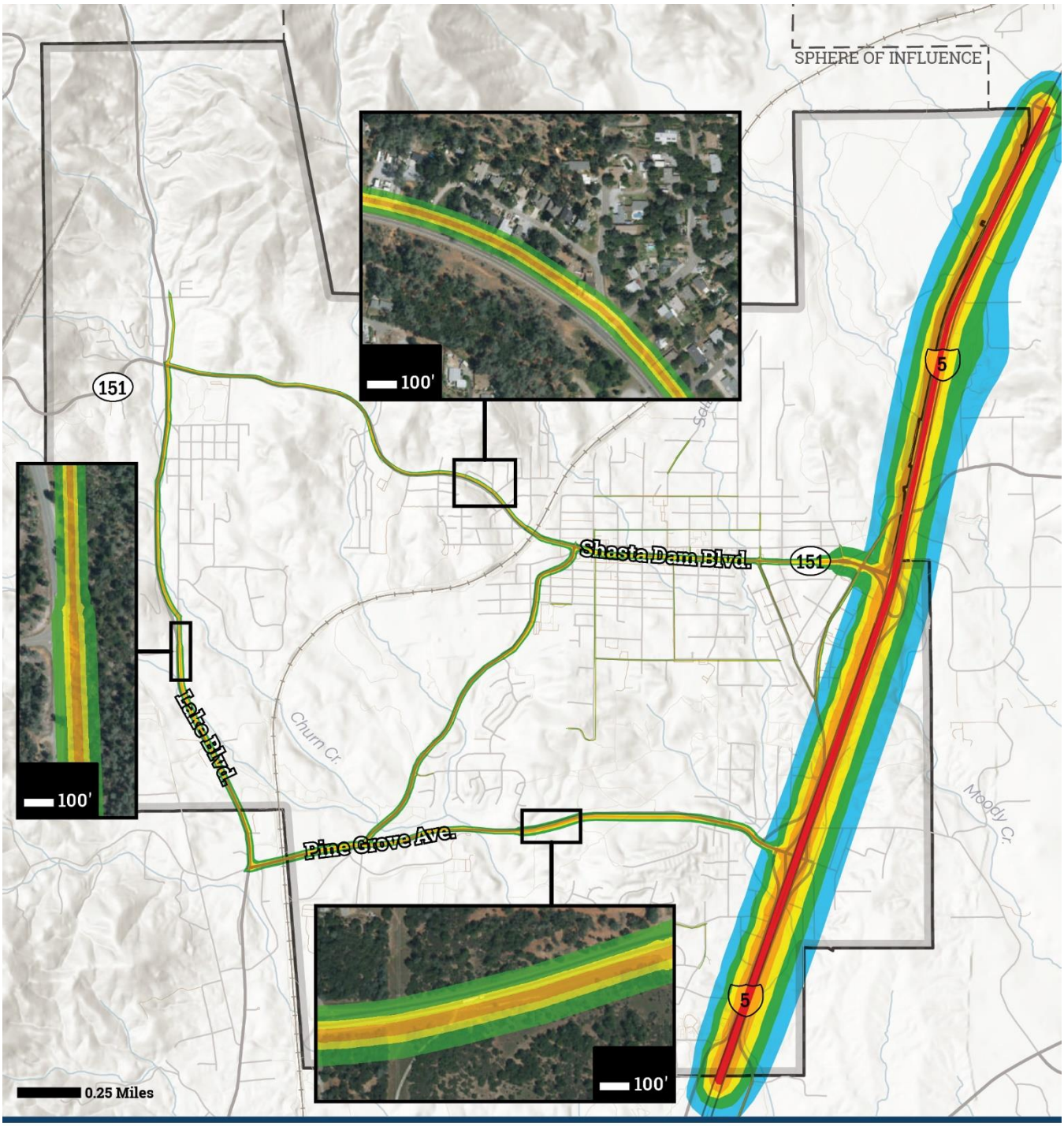
Industrial Uses and Other Stationary Sources

The city's main industrial area, including the Shasta Gateway Industrial Park, is located in the southwest corner of the city, to the north and south of Pine Grove Avenue and east of the UPRR line. Much of this industrial area is bounded by railroad right-of-way, roads, or open space, though some abuts low- or medium-density residential uses. In this area, the use of trucks, forklifts, heavy machinery, mechanical equipment, loading and unloading of vehicles and trucks, and a variety of other equipment can result in long durations of elevated noise levels.

Sierra Pacific Industries, located north of El Cajon Avenue, is another major source of noise within the city limits. The day- and night-time noise levels on this site have been monitored and typically range from 58 dBA to 63 dBA (Day Measurement Site 5 and Night Measurement Site 5 in EIR). Sources of peak noise were heavy trucks driving on El Cajon Avenue and heavy trucks, equipment, and machinery on the Sierra Pacific Industries property. Appropriate mitigation measures should be taken on a site- and use-specific basis to reduce impacts on noise-sensitive uses and areas from industrial uses and activities.

Military Installations

There are no military installations within or affecting the City of Shasta Lake.



Existing Noise Contours
City of Shasta Lake

Day-Night Average Sound Level
Community Noise Equivalent Level (CNEL)

55
60
65
70
75

Figure 7-26: Existing Noise Contours

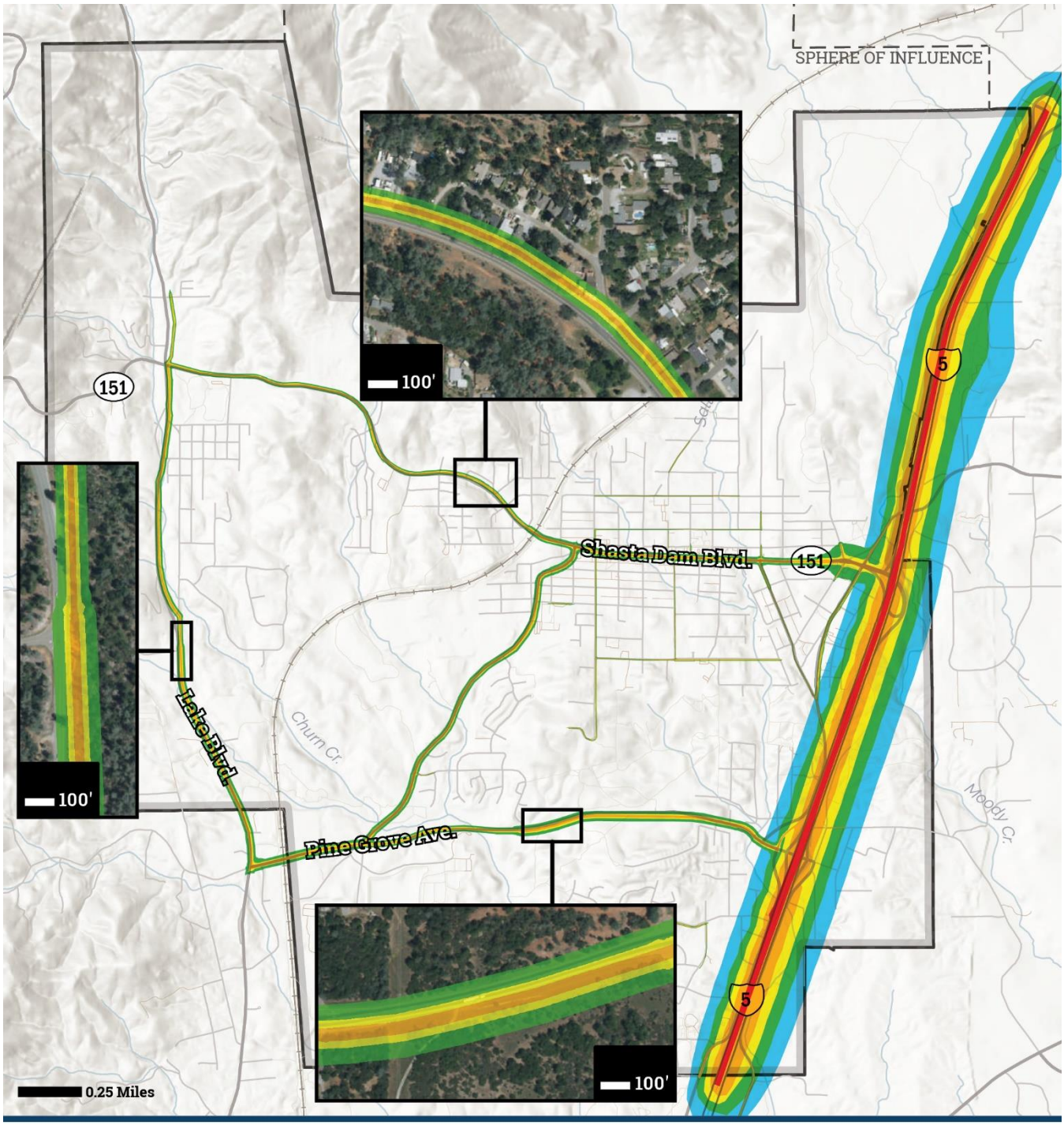


Figure 7-27: Future Noise Contours

7.5.2 AIR QUALITY

The State of California does not require general plans to include air quality elements. However, the City of Shasta Lake recognizes the importance of air quality to public health and safety, and also to the city's economic wellbeing and image in the region. As such, this Air Quality section addresses the potential impacts of poor air quality on the health of the Shasta Lake community.

Click for Air Quality goals, policies, and implementation actions.

Current air quality conditions, significant air pollutant sources, and policies and implementation actions to reduce emissions and safeguard public health are discussed, pursuant to state requirements. To meet the challenges of a strict statutory environment designed to ensure the nation's cities have clean air, emitters in the City of Shasta Lake must comply with all state and federal regulations and thresholds, and performance in meeting these regulations is monitored in accordance with specific timetables for implementing air quality programs and policies.

Chronic exposure to air pollutants, including ozone and particulates, can cause serious negative health effects, especially on vulnerable populations such as children, the elderly, or those with medical conditions. Although air quality is a regional issue that extends beyond jurisdictional boundaries, local land use policies and practices can significantly reduce emissions through the thoughtful design and management of transportation systems, promoting infill development, and supporting clean energy production. Planning, zoning, and development siting activities also play a critical role in avoiding incompatible land uses and reducing localized air pollution exposure that contributes to adverse health impacts. As such, the City of Shasta Lake strives to improve air quality for the benefit of residents and the greater regional community through various policies and implementation actions in this element and the Land Use and Circulation Elements.

Knauf Insulation represents one of the most progressive names in insulation manufacturing worldwide, and since opening their Shasta Lake manufacturing plant in the early 2000's they have successfully made major improvements in industry manufacturing techniques that have dramatically reduced stack emissions. Examples include switching from a petroleum-based binder to a biological binder called ECOSE® Technology and transitioning to formaldehyde free and DecaBDE free insulation.

This Air Quality section provides policies and implementation actions intended to control or reduce emissions associated with new and modified "indirect" sources of air pollution. Indirect sources include employment sites, shopping centers, medical facilities, housing developments, places of business and similar uses of land.

7.5.2.1 Sacramento Valley Air Basin

The California Air Resources Board (CARB) divides the state into 15 air basins that share similar meteorological and topographical features. The City of Shasta Lake is located within the Sacramento Valley Air Basin (SVAB), which comprises the counties of Butte, Colusa, Glenn, Sacramento, Shasta, Sutter, Tehama, Yolo, and Yuba; the western urbanized portion of Placer County; and the northeastern portion of Solano County. The SVAB is divided into two planning units called the Northern Sacramento Valley Planning Area (NSVPA) and the Broader Sacramento Area (BSA), with Shasta being in the NSVPA.

The Sacramento Valley is a broad, flat valley bounded by Klamath and Coastal Mountains to the northwest and the Cascade Mountains to the northeast and east. The entire SVAB occupies 14,994 square miles. Because of its inland location, the climate of the SVAB is more extreme than that of the San Francisco Bay Area or South Coast air basins. The extent and severity of the air pollution problem in the SVAB is a function of the area's natural physical characteristics, including weather and topography, as well as humanmade influences like development patterns and lifestyles.

Air quality at any site is dependent on the regional air quality and local pollutant sources, and regional air quality is determined by the release of pollutants throughout the SVAB. CARB monitors the local ambient air quality at various locations throughout the state. The data indicates that emissions from urbanized areas of the valley, including Sacramento, Yolo, Solano, and Placer Counties, dominates the emissions inventory for the SVAB. On-road motor vehicles are the primary source of emissions in the metropolitan area and nitrogen oxides from mobile and stationary combustion sources, combined with ammonia to form ammonium nitrate, are the largest contributors to ambient particulate matter (PM) levels. Wood smoke from residential wood combustion also contributes significantly to the ambient PM concentrations in the winter.

7.5.2.2 Contributing Factors

Factors such as wind, sunlight, temperature, humidity, rainfall, and topography all affect the accumulation and dispersion of air pollutants. For Shasta Lake, wind direction is primarily up- and down-valley due to the channeling effect of the mountains to either side. During the summer months, surface air movement is from the south, particularly during the afternoon hours, but wind direction during the winter months is more variable. Smoke from active wildfires in the region is also a major contributing factor to poor air quality in the City of Shasta Lake during the warmer months.

Wildfires

The size and intensity of wildfires in California have notably increased in recent decades. Fifteen of the 20 largest wildfires in California history have occurred since 2000, and 10 of the most costly and destructive fires to life and property in the state have occurred since 2015. (California Council on Science & Technology, 2019) These increases are expected to continue, if not worsen, in the future.

Smoke and air pollution from wildfires can last for weeks and be a severe health hazard, especially for sensitive populations such as children, the elderly, and those with respiratory and cardiovascular diseases. First responders likewise are exposed to the dangers from the initial incident and after-effects from smoke inhalation and heat stroke.

Smoke generated by wildfire contains visible and invisible emissions, including particulate matter such as soot, tar, water vapor, and minerals; gases such as carbon monoxide, carbon dioxide, and nitrogen oxides; and toxins such as formaldehyde and benzene. Fine particulate matter with a diameter of 2.5 microns or less ($PM_{2.5}$) is a prevalent component in wildfire smoke and is of particular concern since it can enter the blood stream. Lingering health impacts from inhalation of $PM_{2.5}$ include chronic bronchitis, cardiovascular damage, and decreased lung function. Emissions from wildfires depend on the type of fuel, the moisture content of the fuel, the efficiency or temperature of combustion, and the weather. Figure 7-28 illustrates health impacts and an example spike in $PM_{2.5}$ from the 2020 August Complex wildfire.

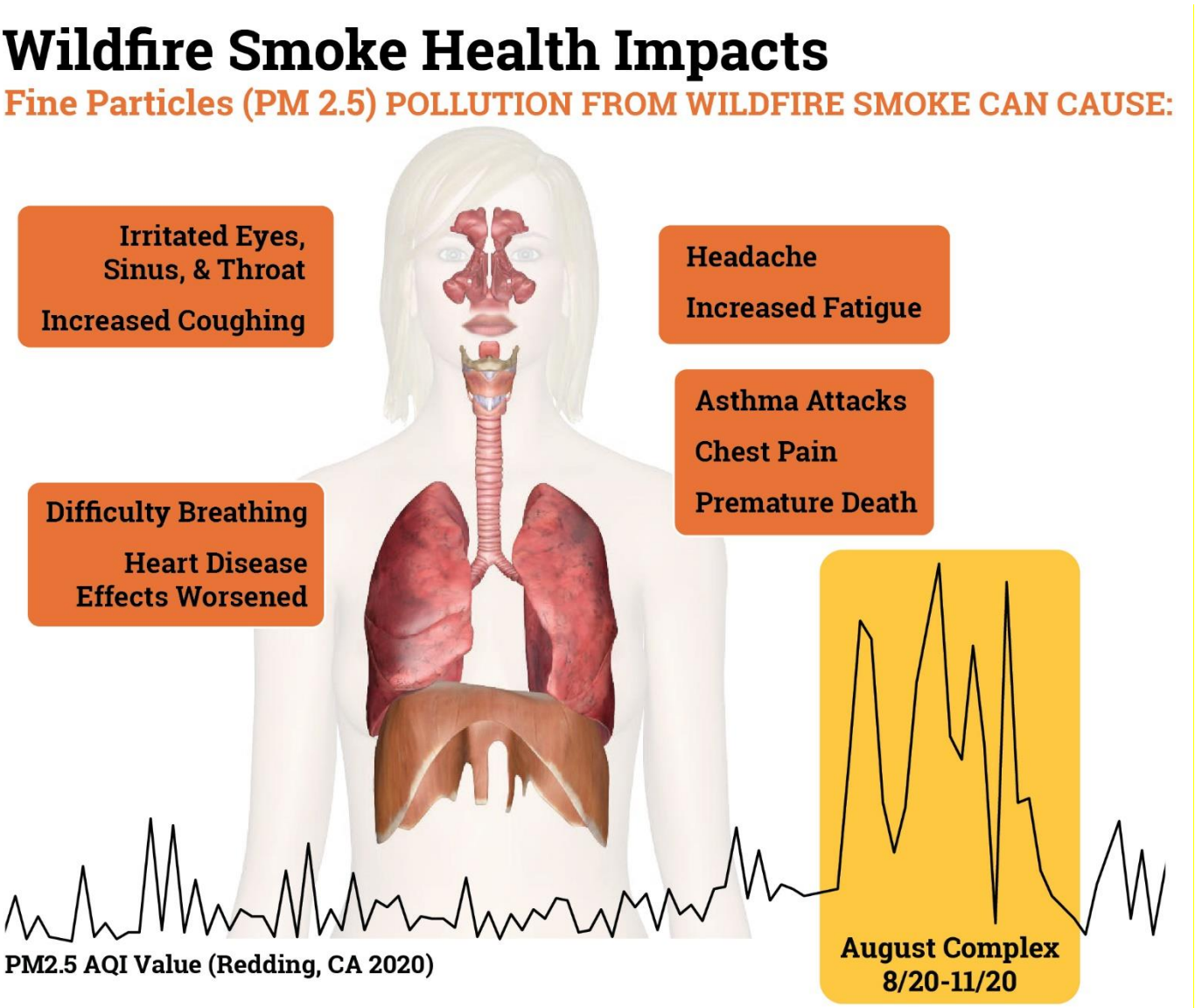


Figure 7-28: Wildfire Smoke Health Impacts

Combustion Engines and Ozone

Ozone pollution caused by vehicle and industrial emissions is another the major air contamination concern during the summer months. Ozone concentrations are also influenced by smoke from nearby wildfires. Ozone is formed by a photochemical reaction of nitrogen oxides and reactive organic gases. These ozone precursors are emitted as part of the exhaust of internal combustion engines in the NSVPA and BSA and transported northward via prevailing winds. While pollutant concentrations have generally declined over the years, peak ozone values in the SVAB have not declined as quickly as they have in other urban areas. Additional emissions reductions will be needed to attain state and federal ambient air quality standards in the air basin.

Inversions

Generally, the northern portion of the Sacramento Valley experiences moderate to very poor capability to disperse pollutants nearly 80 percent of the time, primarily due to the relatively stable atmosphere which acts to suppress vertical air movement. In valley locations under 1,000 feet in elevation, such as the City of Shasta Lake and the Redding Metropolitan area, this tendency for inversions to occur, where the upper and lower atmospheres remain stratified instead of mixing, creates a "lid" under which pollutants are trapped (see Figure 7-29). Dust, smoke, and other pollutants caught within these inversion layers will not disperse until atmospheric conditions become more unstable. Especially during the winter months, long nights, calm winds, and clear skies increase the rate of cooling at the Earth's surface and reduce the mixing of warm and cold air layers. (National Weather Service, n.d.) Cold-weather inversions trap airborne particles from open burning, fireplaces, and wood stoves, increasing concentrations of pollutants at or near the ground surface which pose significant health risks for plants, animals, and people.

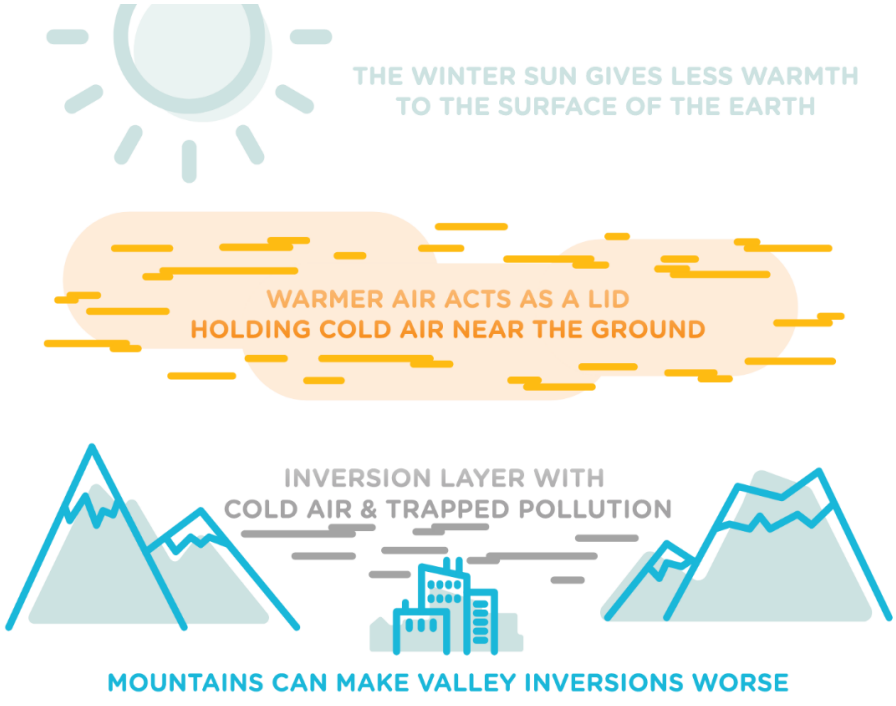


Figure 7-29: Diagram of Inversion Mechanics

Source: Utah Department of Environmental Quality website (deq.utah.gov)

7.5.2.3 Sensitive Populations and Land Uses

Sensitive populations are more susceptible to the effects of air pollution than the general population, particularly those in close proximity to localized emission sources. CARB identifies sensitive population groups as children under 14 years, elderly over 65 years, athletes, and people with cardiovascular and chronic respiratory diseases. Locations and land uses that may have high concentrations of these sensitive groups include residential areas, hospitals, childcare and eldercare facilities, elementary schools, and parks. In the City of Shasta Lake, the majority of land uses are residential, commercial, industrial, and open space; however, there are several schools scattered throughout the city which are more susceptible to the effects of air pollution. There are also various parks located within the city, such as Clair Engle Park, Margaret Polf Park, and Bizz Johnson Ball Park, but the closest hospitals are located in the City of Redding.

7.5.2.4 Air Quality Monitoring

Both the California and National Ambient Air Quality Standards (NAAQS) address various types of air pollution, including ozone (O_3), inhalable particulate matter, sulfur dioxide (SO_2), carbon monoxide (CO), nitrogen dioxide (NO_2), and lead. The California Ambient Air Quality Standards (CAAQS) go further and also regulate sulfates, hydrogen sulfide (H_2S), and visibility-reducing particles.

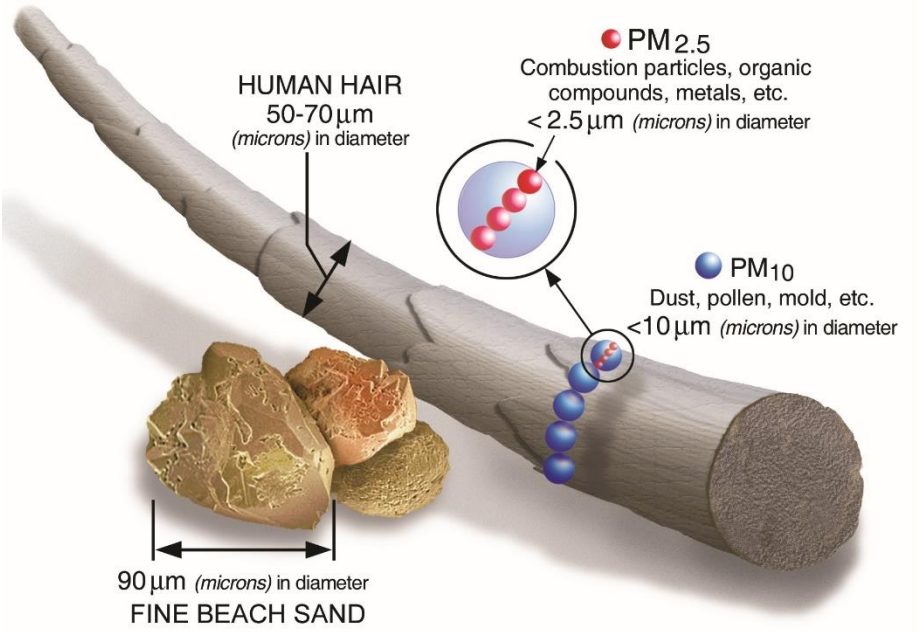


Figure 7-30: Size Comparison of Particulate Matter Particles

Source: Environmental Protection Agency website (epa.gov/pm-pollution)

Inhalable particulate matter, or particle pollution, is a mixture of solid particles and liquid droplets suspended in the air. These particles include dust, pollen, mold, wildfire smoke, vehicle exhaust, organic compounds, and metals, among others. Inhalable particulate matter with a diameter of 10 microns or less (PM_{10}) can enter the lungs and even the bloodstream, causing serious health effects, with the greatest risk resulting from fine particulate matter with a diameter of 2.5 microns or less ($PM_{2.5}$). See Figure 7-30 for a size comparison of particulate matter particles. (EPA, n.d.)

The California Clean Air Act (CCAA) requires air quality management districts that are not meeting ambient air quality standards (i.e., designated as a nonattainment area) to submit a plan for attaining and maintaining standards for ozone, carbon monoxide, sulfur dioxide, or nitrogen dioxide and review progress every three years. The first air quality attainment plan was prepared and adopted by the NSVPA air districts in 1991 and updates have been undertaken approximately every three years since. The most recent update to the NSVPA Air Quality Attainment Plan was completed in 2018. The Plan included an assessment of the progress made in protecting regional air quality, and in general found that regional air quality has been improving, with the exception of ozone.

The California ozone standard is 0.07 parts per million (ppm) over an eight-hour period or 0.09 ppm over a one-hour period. To account for year-to-year weather fluctuations and exceptional circumstances, one exceedance per year on average is allowed at any site within the air district. (SVAQEEP, 2018) Several air districts within the NSVPA, including the Shasta County Air Quality Management District (AQMD), are designated as nonattainment for the California eight-hour ozone standard as of August 2019. The district is designated as attainment for all other criteria air pollutants.

There are several air quality monitoring stations in the Shasta County AQMD. Redding and Anderson monitoring stations are the only ones currently monitoring for ozone, PM_{10}, and $PM_{2.5}$. There are two "experimental" monitoring stations in operation within the City of Shasta Lake that can be helpful in

gauging smoke levels" although not official stations. The Shasta Lake-Lake site is located on Lake Boulevard just south of the Shasta Dam Boulevard intersection and monitors ozone. The other site, known as Shasta Lake-La Mesa, is located at Central Valley High School south of La Mesa Avenue and monitors PM_{10}. (CARB, 2020)

Aside from the Shasta Lake-Lake location, all the Shasta County ozone monitoring sites have reported a decreasing number of days over the eight-hour standard since 2007, and none of the stations recorded a day over the California one-hour standard between 2015 and 2017. According to the 2018 Air Quality Attainment Plan prepared by the Sacramento Valley Air Quality Engineering and Enforcement Professionals (SVAQEEP), the projected precursor emissions for ozone continue to show a downward trend.

The Shasta County AQMD continues to engage in a spectrum of public engagement and education efforts to increase awareness of air quality issues and encourage community members to curtail their emissions. (SVAQEEP, 2018) Further, air quality policies and actions contained within this Public Safety and Community Health Element are intended to establish policy direction and implementation measures that allow the Sacramento Valley Air Basin to attain and maintain all federal and state air quality standards, as well as to protect Shasta Lake residents and businesses from the harmful effects of poor air quality.

7.5.3 HAZARDOUS MATERIALS AND WASTE MANAGEMENT

Click for Hazardous Materials & Waste Management goals, policies, and implementation actions.

State and federal laws regulate the production, storage, handling, and disposal of hazardous materials and waste, including industrial wastes, pesticides, radioactive substances, asbestos, and combustible fuels. Hazardous materials commonly used in the home include household cleaners, garden pesticides, used motor oil and filters, paint supplies, car batteries, and pool chemicals. The storage and handling of hazard materials is regulated differently than the disposal of hazardous materials, referred to herein as "hazardous waste." This section discusses hazardous materials in various life cycle phases, from production through use, storage, transport, and disposal.

Hazardous materials include substances that are explosive, flammable, poisonous, corrosive, radioactive, reactive, or any combination thereof because of the quantity, concentration, or characteristics of the material. Hazardous materials require special care in handling due to the potential risks to public health and safety and the environment, including from fire, explosion, or contamination. The potential danger of these types of materials increases in highly populated areas and along transportation routes. In the City of Shasta Lake, areas of concern involve operational use and storage, inadvertent release, transport, and disposal.

The primary concerns associated with a hazardous material are the short- and long-term effects on the public from exposure through unintentional releases. When evaluating future development, it is important to consider the quantity and location of hazardous materials, as well as the disposal of the resulting waste, near a project or being generated as part of a project. State and federal laws require inventorying and reporting for businesses that store more than 55 gallons of hazardous liquids, 500 pounds of solids, or 200 cubic feet of compressed gases, including plans for incident prevention,

emergency response, and evacuation. All businesses in Shasta Lake that meet the aforementioned criteria are required to prepare a Hazardous Materials Business Plan with the Environmental Health Division (EHD) of Shasta County. EHD also regulates the proper treatment and disposal of medical waste (i.e., sharps and biohazardous waste) for businesses located within Shasta County.

It is critical to locate facilities involved in the production, use, storage, transport, or disposal of hazardous materials away from land uses that may be adversely impacted by such activities and areas susceptible to impacts or damage from a natural disaster. See Figure 7-31 for the locations of active handlers of hazardous materials or waste within the City of Shasta Lake. The locations of these sites are important to understand for future siting and quantification of hazards within the community.

Understanding the nature and locations of leaking underground storage tanks (LUST), brownfields, and other sites needing remediation from potential contamination is also vital to protecting the community from exposure to hazardous materials or waste. See Figure 7-32 for the locations of open and closed (i.e., remediated) hazardous materials clean-up sites.

7.5.3.1 Household Hazardous Waste and Electronic Waste

For future health and safety of the community, it is also import for Shasta Lake to support the operation of programs and recycling centers that accept household hazardous substances, such as paint, car batteries, used motor oil, and cleaning chemicals. In Redding, there is a household hazardous waste facility that provides for disposal of household and car batteries, compact fluorescent light bulbs, fluorescent light tubes, paint, garden and household chemicals, and sharps. The Buckeye Transfer Station, located just off of Lake Boulevard, accepts used motor oil and filters, and the Anderson Landfill accepts tires, construction and demolition debris, and industrial and special waste; although, the landfill does not accept hazardous waste.

As the use of televisions, computers, cell phones, and other electronic devices increases, the issues surrounding the of disposal of electronic waste, or "e-waste," also grow. Without adequate standards, oversight, and disposal facilities, e-waste may be burned or submerged in acid baths to recover valuable components, resulting in the potential for significant public health and environmental impacts. (U.S. Environmental Protection Agency, 2021) For residents in the City of Shasta Lake, e-waste recycling and disposal is available at the Anderson Landfill, Redding Transfer Station, Burney Transfer Station, and West Central landfill. No curbside services are currently offered.

7.5.3.2 Solid Waste Management

Solid waste management addresses typical household and business waste, including non-hazardous waste (i.e., trash), recycling, and green waste. Trash and recycling pick-up in the City of Shasta Lake are provided by Waste Management, a private entity, and processing and disposal are done at the Anderson Cottonwood Disposal in Redding. (Waste Management, n.d.) This facility provides solid waste disposal, recycling, and yard waste collection. In addition, the Buckeye Transfer Station, owned by Shasta County and operated by Waste Management, is located within the city and accepts municipal residential waste and recycling.

Food scraps and yard waste, known as "green waste," make up more than 30 percent of the solid waste sent to landfills in the United States. Compost is organic material, such as food scraps and garden

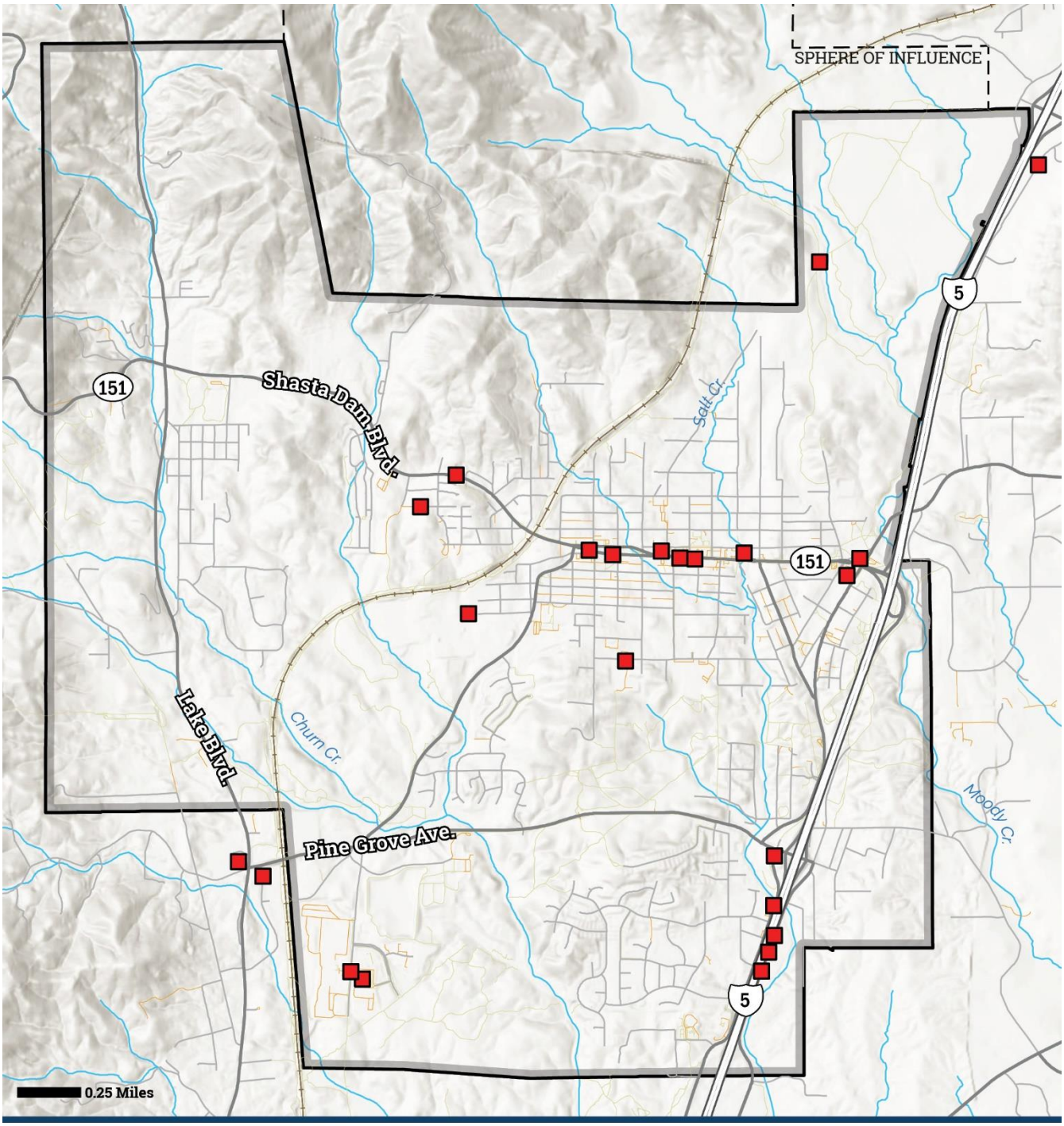
cuttings, that can be used to amend soil and add nutrients that help plants grow. Instead of taking up space in landfills and contributing to the release of methane, a potent greenhouse gas, green waste can be composted. Composting effectively recycles nutrients and replenishes valuable organic material in the soil, resulting in the reduced need for chemical fertilizers. Compost also helps soils retain moisture and encourages beneficial bacteria and fungi. (U.S. Environmental Protection Agency, 2021)

Backyard composting is easy and can help divert the majority of green waste from landfills. Some types of green waste, such as dairy products and meat; diseased or insect-infested plants or trimmings; noxious or invasive weeds; and pet waste, can only be composted in large-scale commercial facilities where the composting process is tightly controlled and reaches a high enough heat (around 130 degrees Fahrenheit) to remove pests and prevent weed seeds from germinating. Commercial facilities can also handle biodegradable serving ware, such as cups and plates. There is currently no commercial composting available in City of Shasta Lake, but the City of Redding operates a facility that processes approximately 18,000 tons of green waste each year.

7.5.3.3 Wastewater Management

The City of Shasta Lake provides wastewater collection services to approximately 3,518 residential, commercial, industrial, and institutional accounts. The City owns, operates, and maintains the wastewater collection system, which consists of approximately 58 miles of gravity and force mains that convey flow to the Shasta Lake Wastewater Treatment Plant. The City's Wastewater Master Plan identifies necessary improvements based on the 10- and 20-year future growth projections, compiled into a Capital Improvement Program.

There are also more than 500 on-site wastewater treatment systems (OWTS) (i.e., septic systems) located within the city limits, most of which are outside of the current wastewater service area. Concerns and policies regarding OWTS failure risk and potential water quality impacts are discussed in the Conservation Element.



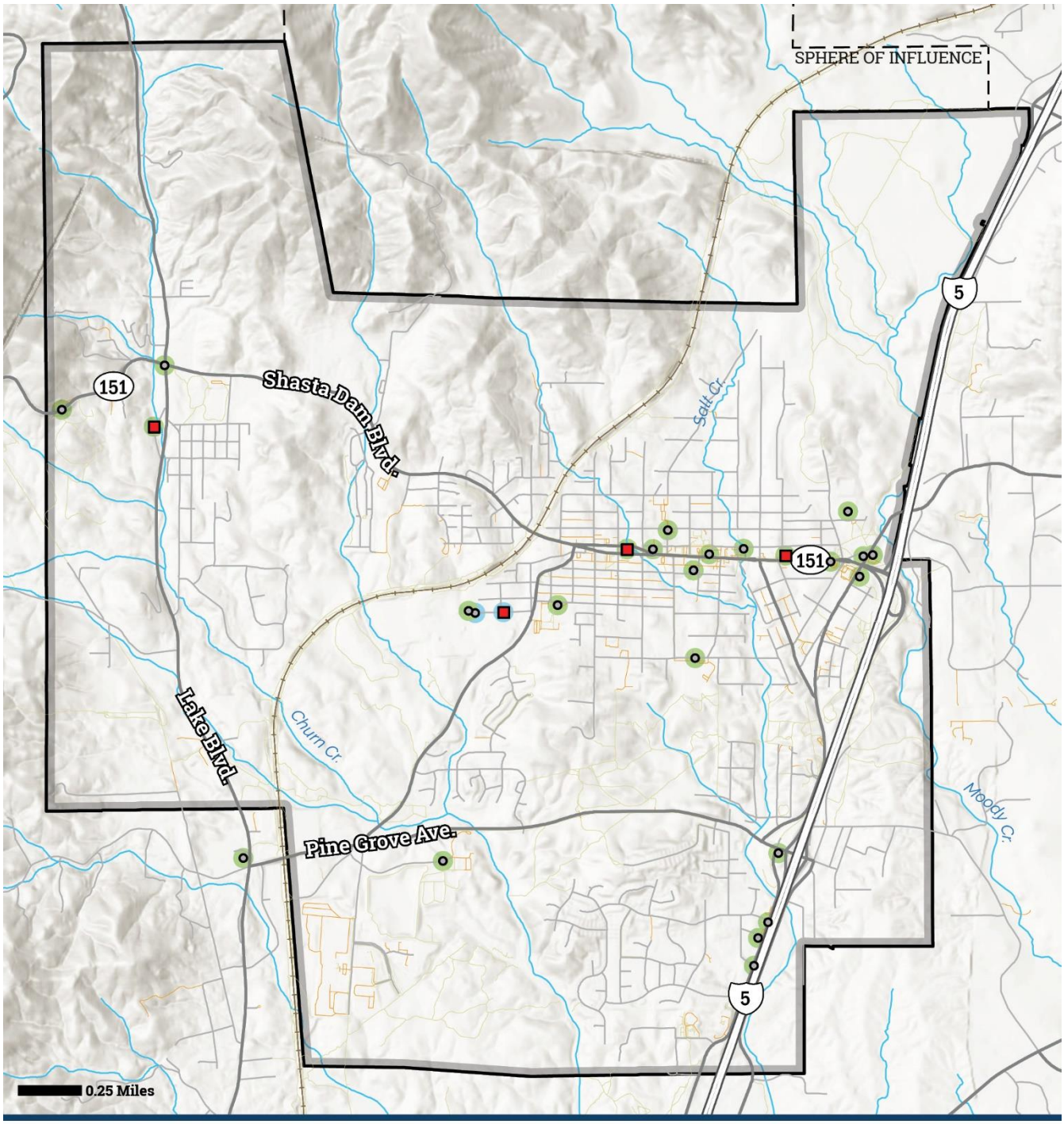
California Department of Toxic Substances Control
Hazardous Waste Tracking System (HWTS)

Active Handler Facilities

The HWTS system generates reports on hazardous waste shipments for generators, transporters, and treatment, storage and disposal facilities.

Hazardous Materials
Active Handlers
City of Shasta Lake

Figure 7-31: Hazardous Materials Sites, Active Handlers



California State Water Resources Control Board
GeoTracker Cleanup Sites

Hazardous Materials Cleanup
City of Shasta Lake

SITE SYMBOL
- Open Case
- Completed - Case Closed

SITE HIGHLIGHT
- Cleanup Site
- LUST Site

GeoTracker is the Water Boards' data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Figure 7-32: Hazardous Materials Cleanup Sites

7.6 Goals, Policies, and Implementation Actions

PUBLIC SAFETY AND EMERGENCY RESPONSE

GOAL HS-1	**Create and maintain a safe environment.** ***(Source: New)***
POLICY-HS-1.1	Coordinate with state, county, and other local agencies to build mutual aid capacity for emergency events, especially through disaster preparedness training. *(Source: New)*
POLICY-HS-1.2	Expand emergency training and local expertise for hazard event response and recovery, including through volunteer roles. *(Source: New)*
POLICY-HS-1.3	Protect life and property by encouraging the incorporation of Crime Prevention Through Environmental Design techniques in the physical design of new development. *(Source: Existing Objective FS-2, modified)*
POLICY-HS-1.4	Establish levels of service thresholds for fire protection and law enforcement services. *(Source: Existing Policy FS-a)*
POLICY-HS-1.5	All land divisions and development applications that have the potential for life-safety impacts shall be forwarded to the Shasta Lake Fire Protection District (SLFPD) for review. *(Source: New)*
POLICY-HS-1.6	Known fire hazard information should be analyzed as part of every general plan amendment, zone change, use permit, variance, building site approval, and all other land development applications subject to environmental assessment. *(Source: Existing Policy FS-c)*
POLICY-HS-1.7	New development shall be encouraged to incorporate site planning and appropriate structural design features designed to deter crime. *(Source: Existing Policy FS-d)*
POLICY-HS-1.8	New and non-conforming development located in hazard areas requiring additional levels of law enforcement and fire services shall participate in offsetting costs for the additional services. *(Source: Existing Policy FS-e, modified)*
IMPLEMENTATION-HS-1.1	Ensure developed properties are easily identifiable by emergency responders from the street. *(Source: New)* ***Responsibility:*** *SLFPD and City Development Services Department* ***Time Frame:*** *Ongoing* ***Funding Source:*** *General fund (staff)*
IMPLEMENTATION-HS-1.2	Work to maintain an adequate emergency response time for all proposed urban development. Identify existing developed areas lacking adequate emergency service, especially focusing on neighborhoods in high wildfire

hazard zones that do not have at least two emergency evacuation routes, both urban and rural. (*Source: Existing Implementation FS-(1), modified)*

Responsibility: *SLFPD, Shasta County Sheriff's Office, and City Development Services Department*
Time Frame: *Ongoing; inventory of emergency evacuation routes by 2024*
Funding Source: *General fund (staff)*

IMPLEMENTATION-HS-1.3 Maintain mutual aid agreements with other agencies in Shasta County. (*Source: Existing Implementation FS-(2))*

Responsibility: *SLFPD, Shasta County Sheriff's Office, and City Finance and Public Works Departments*
Time Frame: *Ongoing*
Funding Source: *General fund (staff)*

IMPLEMENTATION-HS-1.4 Identify and create evacuation zones based on area-specific considerations. *(Source: New)*

Responsibility: *SLFPD, Shasta County Sheriff, and City Development Services and Public Works Departments*
Time Frame: *1-3 years*
Funding Source: *General fund (staff)*

IMPLEMENTATION-HS-1.5 Encourage the County to require development in unincorporated areas within the City's Sphere of Influence to conform to development standards within the city, including but not limited to Uniform Building Code, Uniform Fire Code, water, wastewater, and street improvement standards. (*Source: Existing Implementation FS-(4))*

Responsibility: *City Development Services Department*
Time Frame: *Ongoing*
Funding Source: *General fund (staff)*

IMPLEMENTATION-HS-1.6 Provide rapid and timely response to all law enforcement and other emergencies. Work to maintain minimum average response times. (*Source: Existing Implementation FS-(6))*

Responsibility: *SLFPD, Shasta County Sheriff, and City Administration Department*
Time Frame: *Ongoing*
Funding Source: *General fund (staff) and grants*

IMPLEMENTATION-HS-1.7 Identify geographical areas or population groups experiencing noticeable crime victimization in order to improve effectiveness of crime prevention efforts and commit resources, as appropriate, to these areas to help them. *(Source: Existing Implementation FS-(7))*

Responsibility: *Shasta County Sheriff's Office and City Administration and Development Services Departments*
Time Frame: *Ongoing*
Funding Source: *General fund (staff) and grants*

IMPLEMENTATION-HS-1.8 Periodically evaluate the cost and benefits of maintaining contract law enforcement services to determine if the city should establish its own police services. *(Source: Existing Implementation FS-(8), modified)*

Responsibility: *City Administration Department*
Time Frame: *Ongoing*
Funding Source: *General fund (staff) and grants*

NATURAL HAZARDS

GOAL HS-2	**Minimize the risk to life and property from natural disasters. *(Source: New)***

POLICY-HS-2.1	Implement the City of Shasta Lake Hazard Mitigation Plan. (*Source: New*)
POLICY-HS-2.2	Educate the public about natural hazard risks, mitigation, and hazard preparedness. (*Source: New*)
POLICY-HS-2.3	Participate in region-wide emergency preparedness plans to protect the public from hazards. (Source: *Existing Policy FL-d, modified)*
POLICY-HS-2.4	Locate, to the extent feasible, new essential public facilities (e.g., schools, health care facilities, emergency shelters, emergency response centers) outside of hazard areas, such as high severity fire zones and the 100-year floodplain, considering future climate change projected increase in hazard areas. *(Source: Existing Policy FL-f, modified)*
IMPLEMENTATION-HS-2.1	Update the HMP regularly and as required to stay in compliance with relevant FEMA and state requirements. (*Source: New*) ***Responsibility:*** *City Development Services Department* ***Time Frame:*** *Ongoing* ***Funding Source:*** *General fund (staff) and grants*
IMPLEMENTATION-HS-2.2	Prioritize and apply for funding through the FEMA Hazard Mitigation Assistance grant program and through CALFIRE for mitigation actions identified in the HMP. (*Source: New*) ***Responsibility:*** *SLFPD and City Development Services Department* ***Time Frame:*** *Ongoing* ***Funding Source:*** *Grants*
IMPLEMENTATION-HS-2.3	Create and maintain a "Hazard Preparedness" page or pages on the City's website to educate the public about the flood hazard in Shasta Lake. (*Source: New*) ***Responsibility:*** *SLFPD and City Development Services Department* ***Time Frame:*** *Ongoing* ***Funding Source:*** *General fund (staff) and grants*

WILDFIRE HAZARD

GOAL HS-3	**Minimize the risk to life and property from wildfire. *(Source: New)***
POLICY-HS-3.1	Identify the areas of highest fire risk in the community and prioritize areas for treatment, modification, or abatement when appropriate. *(Source: New)*
POLICY-HS-3.2	Ensure emergency responders have adequate water supplies around the city, particularly in developed areas with limited access in high fire hazard zones. *(Source: New)*
POLICY-HS-3.3	Limit new development in high fire hazard zones to those projects which can meet established standards for adequate emergency and evacuation access and water supplies. *(Source: New)*
POLICY-HS-3.4	Collaborate with local, state, tribal, and federal entities to address wildfire risk on lands surrounding the city. *(Source: New)*
POLICY-HS-3.5	Enforce weed abatement regulations, especially on vacant land, and assist residents in weed abatement and debris clearing. Prioritize assistance to senior, disabled, and low-income persons living in high wildfire hazard areas. *(Source: New)*
POLICY-HS-3.6	Protect development from wildland and non-wildland fires by requiring development to incorporate design measures responsive to the risk from this hazard. *(Source: Existing Objective FS-1)*
POLICY-HS-3.7	Encourage wildfire-resilient options for redevelopment should a wildfire occur, such as alternate location, construction material, topography, or vegetation. (*Source: New*)

IMPLEMENTATION-HS-3.1	Strengthen site access, emergency water supply, vegetative fuel modification, and defensible space standards for new development, including for the long-term maintenance of such infrastructure. Develop fire protection and hazardous fuel reduction plans for new subdivisions in high fire hazard areas. Ongoing implementation of the plans should be required and funded by new development. *(Source: New)* ***Responsibility:*** *SLFPD and City Development Services Department* ***Time Frame:*** *1-3 years* ***Funding Source:*** *General fund (staff)*
IMPLEMENTATION-HS-3.2	Identify residential areas within high fire hazard zones that do not have at least two routes for emergency egress, lack adequate emergency water supply, or need vegetative fuel modification to reduce risk. Work with affected residents and the SLFPD to identify potential area-specific solutions to ensure risk reduction. *(Source: New)* ***Responsibility:*** *SLFPD and City Development Services and Public Works*

Departments
Time Frame: *Ongoing*
Funding Source: *General fund (staff) and grants*

IMPLEMENTATION-HS-3.3 To the degree possible, align the goals, policies, and implementation actions for wildfire hazard mitigation across all plans that address fire protection, and update plans as necessary. *(Source: New)*

Responsibility: *SLFPD and City Development Services Department*
Time Frame: *Ongoing*
Funding Source: *General fund (staff)*

IMPLEMENTATION-HS-3.4 In collaboration with local, state, tribal, and federal entities, identify strategic areas near the city boundaries to employ greenbelts as defensible space buffers for developed areas. Evaluate the feasibility of creating and maintaining greenbelts for fire protection purposes. *(Source: New)*

Responsibility: *SLFPD and City Development Services Department*
Time Frame: *1-3 years*
Funding Source: *General fund (staff)*

IMPLEMENTATION-HS-3.5 Conduct regular wildfire response training with fire personnel and volunteers, and ensure they are properly trained to conduct controlled burns in and around the city. *(Source: New)*

Responsibility: *SLFPD and City Development Services Department*
Time Frame: *Ongoing*
Funding Source: *General fund (staff)*

IMPLEMENTATION-HS-3.6 Conduct a public awareness and education campaign about wildfire preparedness with a focus on at-risk populations and renters. *(Source: New)*

Responsibility: *SLFPD and City Development Services Department*
Time Frame: *Ongoing*
Funding Source: *General fund (staff)*

IMPLEMENTATION-HS-3.7 Enforce standards to protect structures and roadways in wildland fire areas and include standards in a Best Practices Manual or similar implementing program that meets the SRA Fire Safe Regulations and Fire Hazard Reduction Around Buildings and Structures Regulations. These standards will include, for example, use of fire-resistant building and roofing materials, installation of fire-resistant landscaping, maximum road gradients, and clearance of vegetation proximate to structures and roadways (both public and private). (*Source: Existing Implementation FS-(5), modified)*

Responsibility: *SLFPD and City Development Services Department*
Time Frame: *Ongoing*
Funding Source: *General fund (staff) and grants*

FLOOD HAZARD

GOAL HS-4	Minimize the risk to life and property from flood. *(Source: New)*
POLICY-HS-4.1	Protect public health and safety from flooding through floodplain management which regulates the types of land uses which may locate in the floodplain, prescribes construction designs for floodplain development, and requires mitigation measures for development which would impact the floodplain by increasing runoff quantities. *(Source: Existing Objective FL-1)*
POLICY-HS-4.2	Regulate new development in floodplains through zoning regulations addressing land use type, density, and siting of structures. *(Source: Existing Policy FL-a)*
POLICY-HS-4.3	Support project level flood control measures that also further the goals of recreation, resource conservation (including streamside vegetation and habitat modification when necessary), and the preservation of the scenic values of water resources. *(Source: Existing Policy FL-b, modified)*
POLICY-HS-4.4	Design or approve flood control measures which avoid, to the extent feasible, the alteration of creeks, wetlands, and riparian buffer areas. *(Source: Existing Policy FL-c, modified)*
POLICY-HS-4.5	Continue collaborative working relationships among regional public agencies with responsibility for flood protection and participate in region-wide emergency preparedness plans to protect the public from flooding hazards. *(Source: Existing Policy FL-d, modified)*
POLICY-HS-4.6	Participate in the preparation of a region-wide flood control drainage plan to reduce existing and future regional flooding. *(Source: Existing Policy FL-e)*
POLICY-HS-4.7	Continue participation in the National Flood Insurance Program (NFIP). (*Source: New*)
POLICY-HS-4.8	Periodically update the citywide Master Drainage Plan, reducing existing and future flooding hazards. *(Source: Existing Policy FL-g, modified)*
POLICY-HS-4.9	Maintain Flood Hazard Maps to aid in the project review process. *(Source: Existing Policy FL-h, modified)*
POLICY-HS-4.10	Require mitigation for impacts of new development on the floodplain or other downstream areas due to increased runoff, potentially through low impact design best practices. *(Source: Existing Policy FL-I, modified)*

IMPLEMENTATION-HS-4.1 As part of project review, ensure that structures subject to the 100-year flood provide adequate protection from flood hazards. *(Source: Existing Implementation FL-(1))*

Responsibility: *City Public Works and Development Services Departments*
Time Frame: *Ongoing*
Funding Source: *General fund (staff) and new development*

IMPLEMENTATION-HS-4.2 In designing flood control facilities, consider the need to protect anadromous fisheries and allow for adequate water passage to ensure the survival of downstream riparian ecosystems. *(Source: Existing Implementation FL-(2))*

Responsibility: *City Public Works and Development Services Departments*
Time Frame: *Ongoing*
Funding Source: *General fund (staff) and grants*

IMPLEMENTATION-HS-4.3 Conduct regular meetings with city staff to review effectiveness of the floodplain management ordinance and identify areas for improvement. (*Source: New*)

Responsibility: *City Public Works and Development Services Departments*
Time Frame: *Ongoing*
Funding Source: *General fund (staff)*

CLIMATE CHANGE HAZARD

GOAL HS-5	**Minimize the risk to life and property from climate change. *(Source: New)***

POLICY-HS-5.1	Incorporate climate change considerations into city processes and planning efforts, utilizing best available data to understand climate predictions and the potential impacts on community resources and facilities. This includes such plans as the City Hazard Mitigation Plan and Public Safety and Community Health Element Appendix A: Climate Vulnerability Assessment. (*Source: New*)
POLICY-HS-5.2	Actively participate in regional discussions on infrastructure improvements and adaptation strategies related to climate resiliency and addressing potential community impacts. (*Source: New*)

IMPLEMENTATION-HS-5.1	When reviewing new development, consider impacts that may be exacerbated by climate change projections, and identify potential mitigations for consideration by the project proponents and the approving authority. (*Source: New*) ***Responsibility:*** *City Development Services Department* ***Time Frame:*** *Ongoing* ***Funding Source:*** *General fund (staff)*
IMPLEMENTATION-HS-5.2	Incorporate climate change impacts into public emergency preparedness education programs, with special consideration given to effective methods to communicate the issue to a general audience. (*Source: New*) ***Responsibility:*** *Shasta County Sherriff's Office, SLFPD, and City Development Services Department* ***Time Frame:*** *Ongoing* ***Funding Source:*** *General fund (staff) and grants*
IMPLEMENTATION-HS-5.3	Assess existing infrastructure and essential public facilities that are vulnerable to hazard impacts, taking into consideration potential climate change impacts. *(Source: New)* ***Responsibility:*** *City Public Works and Development Services Departments* ***Time Frame:*** *Ongoing* ***Funding Source:*** *General fund (staff)*

IMPLEMENTATION-HS-5.4 Identify important green infrastructure in the city that may be used in climate adaptation projects. Where feasible, use existing natural features and ecosystem processes, or the restoration of natural features and ecosystem processes, when developing climate mitigation and adaptation projects (e.g., floodplain and wetlands restoration or preservation, combining levees with restored natural systems to reduce flood risk, and urban tree planting to mitigate high heat days). *(Source: New)*

Responsibility: *City Public Works and Development Services Departments*
Time Frame: *Ongoing*
Funding Source: *Impact Fees, Grants, and General Fund (staff)*

GEOLOGIC HAZARDS

GOAL HS-6	**Minimize the risk to life and property from geologic hazards. *(Source: New)***

POLICY-HS-6.1	Protect development from seismic hazards, and protect essential or critical structures, such as schools, public meeting facilities, emergency services, and high-rise and high-density structures, by developing standards appropriate for such protection. *(Source: Existing Objective SG-1, modified)*
POLICY-HS-6.2	Comply with state seismic and building standards in the design and siting of critical facilities, including hospital facilities, law enforcement and fire stations, school facilities, hazardous material manufacture and storage facilities, bridges, and large public assembly halls. Require all new buildings in the city be built under the seismic requirements of the currently adopted codes. *(Source: Existing Policy SG-a)*
POLICY-HS-6.3	The City of Shasta Lake should coordinate with county, state and federal agencies monitoring volcanic activity and hazards. *(Source: Existing Policy SG-b)*
POLICY-HS-6.4	Sedimentation and erosion from development shall be minimized through ordinances and implementation mechanisms as adopted by the City. *(Source: Existing Policy SG-c)*
POLICY-HS-6.5	Protect development from geologic hazards such as landslides, erosion, and expansive soils. *(Source: Existing Objective SG-3)*

IMPLEMENTATION-HS-6.1	Identify and prioritize seismic retrofits needed on existing public buildings. (*Source: New*) ***Responsibility:*** *City Public Works Department* ***Time Frame:*** *Ongoing* ***Funding Source:*** *Grants*
IMPLEMENTATION-HS-6.2	Support residents and business owners to implement seismic bracing and other retrofits for non-structural building components. (*Source: New*) ***Responsibility:*** *City Public Works Department* ***Time Frame:*** *Ongoing* ***Funding Source:*** *Grants*

IMPLEMENTATION-HS-6.3 Avoid development on unstable slopes through implementation and occasional revisiting of the City's Grading, Erosion Control, and Hillside Development Ordinance. *(Source: New)*

Responsibility: *City Development Services Department*
Time Frame: *Ongoing*
Funding Source: *General fund (staff)*

IMPLEMENTATION-HS-6.4 Consider options for implementing application of California Building Code seismic bracing requirement for non-structural building components for commercial projects involving major changes in use requiring a use permit. *(Source: New)*

Responsibility: *City Development Services Department*
Time Frame: *Ongoing*
Funding Source: *General fund (staff)*

COMMUNITY HEALTH AND WELLNESS

GOAL HS-7	**Create and maintain a community with equitable access to healthy foods and adequate care services and with opportunities for healthy and active lifestyles. *(Source: New)***

POLICY-HS-7.1	Increase access to and promote the availability of healthy and culturally appropriate foods, including by increasing the capacity for individuals to grow and source foods locally. *(Source: New)*
POLICY-HS-7.2	Whenever possible, work to address local food security disparities, especially among children, seniors, and low-income households, in new or updates to existing plans, programs, and other mechanisms. *(Source: New)*
POLICY-HS-7.3	Support agencies in their effort to improve the local food system and access to locally-sourced fresh produce with community-based solutions. *(Source: New)*
POLICY-HS-7.4	Promote an age-friendly community that serves residents at all stages of life. *(Source: New)*
POLICY-HS-7.5	Encourage the co-location and accessibility of health care services, including for vision, dental, and mental health care. (*Source: New*)
POLICY-HS-7.6	Explore opportunities for community collaboration and the efficient use of limited resources to improve access and services for the community's seniors and children. *(Source: New)*
POLICY-HS-7.7	Provide a range of quality recreational facilities that represent the multicultural needs of the community, are well maintained, and have adequate lighting, signage, and hours of operation. *(Source: New)*
POLICY-HS-7.8	Promote physical activity in the daily routines of residents through targeted improvements to active transportation infrastructure, consistent with the Circulation Element. *(Source: New)*

IMPLEMENTATION-HS-7.1	Collaborate with Shasta County Health and Human Services Agency (SCHHSA) to help identify funding sources to facilitate improved access to healthy and culturally appropriate foods, comprehensive health care services, nutrition programs, childcare, and supportive services, especially for disadvantaged populations. *(Source: New)* ***Responsibility:*** *SCHHSA and City Administration and Development Services Departments* ***Time Frame:*** *Ongoing* ***Funding Source:*** *General fund (staff) and grants*

IMPLEMENTATION-HS-7.2 In collaboration with the SCHHSA and community organizations, develop a program to encourage convenience stores, supermarkets, and neighborhood markets to stock fresh produce, meats and dairy, 100% juices, and whole-grain products. Identify stores that are willing to participate in the program. *(Source: New)*

Responsibility: *SCHHSA and City Administration and Development Services Departments*
Time Frame: *1-5 years*
Funding Source: *General fund (staff) and grants*

IMPLEMENTATION-HS-7.3 Participate in the establishment of a food system work group or coalition among local government departments, including Shasta County, local schools, and local stakeholder groups to plan for a more robust and equitable local food system that facilitates the following or similar improvements:

- Support businesses and institutions that purchase food from local sources and create a consumer campaign on the benefits of eating and buying local food.
- Utilize city-owned land for farmers markets, farm stands, food production, or composting when practical and consistent with other community needs.
- Support farm-to-school, school gardening, food preparation, and other food system education programs, and expand support for existing programs.
- Support the development of neighborhood food hubs, community gardens, and urban gardening on vacant or underutilized land. *(Source: New)*

Responsibility: *SCHHSA, City Development Services Department, and Community Groups*
Time Frame: *Ongoing*
Funding Source: *General fund (staff) and grants*

IMPLEMENTATION-HS-7.4 Collaborate with local urban agriculture advocates to identify sites with urban agriculture potential. *(Source: New)*

Responsibility: *SCHHSA, City Development Services Department, and Community Groups*
Time Frame: *1-5 years*
Funding Source: *General fund (staff)*

IMPLEMENTATION-HS-7.5 Support the development and continuation of high-quality health care services, including services for vision, dental, and mental health, and promote connectivity to those services through transit and active transportation options, consistent with the Circulation and Land Use Elements. *(Source: New)*

Responsibility: *SCHHSA, City Development Services and Public Works Departments, and Community Groups*
Time Frame: *Ongoing*
Funding Source: *General fund (staff)*

IMPLEMENTATION-HS-7.6 Evaluate existing supportive service programs and promote new programs that increase the capacity for aging-in-place through active engagement with the senior community. *(Source: New)*

Responsibility: *SCHHSA and City Development Services Department*
Time Frame: *Ongoing*
Funding Source: *General fund (staff)*

IMPLEMENTATION-HS-7.7 The City will provide leadership in identifying opportunities for healthy lifestyles through partnerships with school districts, community health providers, and neighborhood organizations. This may include:

- Joint use agreements with local school districts to share facilities for recreation or other activities that can benefit all residents health;
- Requiring new housing projects to provide specific areas for community gardens and outdoor activity;
- Promoting pedestrian and bicycle access between existing residential areas and community amenities such as parks and open spaces;
- Partnering with other agencies to capture grant funding that will support healthy activities in Shasta Lake; and
- Using city media tools and other resources to educate the public about the benefits of healthy lifestyle and good nutrition. *(Source: New)*

Responsibility: *SCHHSA and City Administration and Development Services Departments*
Time Frame: *Ongoing*
Funding Source: *General fund (staff) and grants*

IMPLEMENTATION-HS-7.8 Implement pedestrian enhancements along Shasta Dam Boulevard and other major streets to encourage walking and support healthier lifestyles, consistent with the Circulation Element, which could include:

- Constructing new and widening existing sidewalks;
- Eliminating obstructions;
- Planting street trees and vegetative strips to buffer pedestrians from traffic;
- Constructing additional improved crosswalks with clear signals to drivers; and
- Installing street furniture to allow pedestrians to rest, especially the young and old and those with functional needs. *(Source: New)*

Responsibility: *City Public Works and Development Services Departments*
Time Frame: *Ongoing*
Funding Source: *General fund (staff)*

NOISE

GOAL HS-8 Protect the community from excessive noise. *(Source: New)*

POLICY-HS-8.1 Protect the community from excessive noise through thoughtful siting and adequate buffering where new uses have the potential to cause negative noise impacts on health and wellness. *(Source: New)*

POLICY-HS-8.2 Protect noise-sensitive uses and areas from significant sources of noise, including from transportation and stationary noise-generating uses. *(Source: New)*

POLICY-HS-8.3 New development shall use appropriate site planning and building design to reduce undesirable noise impacts. The noise sensitivity of land uses as established in Table N-1 shall be used in the location of new development, new circulation improvements, and preparation of general plan amendments and specific plans. The noise exposure level shall be established by reference to the Noise Contour Map (on file with the city) or project-specific measurements or calculations made pursuant to a noise ordinance. The guidelines in Figure N-1 in the EIR (in production) shall be with the degree of flexibility required in each case to achieve a sound and feasible land use decision. *(Source: Existing Policy N-a)*

IMPLEMENTATION-HS-8.1 Buffer noise-sensitive uses and areas adjacent to existing and new sources of noise, such as Interstate 5 and industrial areas and uses, through the implementation of various methods, including but not limited to:

- Establishing land use compatibility standards;
- Enforcement of noise standards;
- Insulating or buffering residences exposed to excessive levels of noise;
- Minimizing traffic noise through responsive site design techniques and physical barriers; and
- Regulating new development to limit noise impacts through site and building design and operational conditions. *(Source: New)*

Responsibility: *City Development Services Department*
Time Frame: *Ongoing*
Funding Source: *General fund (staff)*

IMPLEMENTATION-HS-8.2 Design new transportation system improvements to minimize noise impacts on adjacent land uses and mitigate significant noise impacts from existing transportation routes. *(Source: Existing Policy N-a, modified)*

Responsibility: *City Public Works and Development Services Departments*
Time Frame: *Ongoing*
Funding Source: *General fund (staff)*

IMPLEMENTATION-HS-8.3 Coordinate with Caltrans to obtain landscaping or other types of improvements needed to reduce highway traffic noise impacts on existing and future residential areas and other sensitive uses along state-routes and highways. *(Source: Existing Implementation N-(5) and N-(7), modified)*

Responsibility: *Caltrans and City Public Works and Development Services Departments*
Time Frame: *Ongoing*
Funding Source: *Caltrans, general fund (staff), and grants*

IMPLEMENTATION-HS-8.4 Condition approval of all new development in residential on the use of noise mitigation measures to reduce exterior sound levels to less than or equal to 60 dB CNEL. *(Source: Existing Implementation N-(1))*

Responsibility: *City Development Services Department*
Time Frame: *Ongoing*
Funding Source: *General fund (staff)*

IMPLEMENTATION-HS-8.5 Where noise mitigation measures are anticipated to be needed based on a review of a project, require that project applicants secure the services of a qualified acoustical engineer to perform a detailed technical study and to design mitigation measures. *(Source: Existing Implementation N-(2))*

Responsibility: *City Development Services Department*
Time Frame: *Ongoing*
Funding Source: *General fund (staff)*

IMPLEMENTATION-HS-8.6 Site-specific noise studies shall be prepared for noise sensitive development projects anticipated to be affected by elevated noise exposure levels. Generalized noise contours are shown on the Noise Contour Map and serve as a "trigger" indicating where future study is advisable. *(Source: Existing Implementation N-(4))*

Responsibility: *City Development Services Department*
Time Frame: *Ongoing*
Funding Source: *General fund (staff)*

IMPLEMENTATION-HS-8.7 Control noise at the source through use of insulation, berms, building design and orientation, buffer yards, staggered operating hours, and other techniques; where necessary, use noise barriers to attenuate noise to acceptable levels; require that barriers are landscaped to reduce negative visual impacts on the community when necessary. *(Source: Existing Implementation N-(5))*

Responsibility: *City Development Services Department*
Time Frame: *Ongoing*
Funding Source: *General fund (staff)*

IMPLEMENTATION-HS-8.8 Encourage noise attenuation programs that avoid visible sound walls, where practical. Open space, parking, accessory buildings, frontage roads, and landscaping can be used to buffer development from noise. *(Source: Existing Implementation N-(6))*

Responsibility: *Caltrans and City Public Works and Development Services Departments*
Time Frame: *Ongoing*
Funding Source: *Caltrans, general fund (staff), and grants*

AIR QUALITY

GOAL HS-9	**Protect the community from low air quality. *(Source: New)***
POLICY-HS-9.1	Improve and maintain air quality to protect human health and preclude damage to plants and property. (*Source: Existing Objective AQ-1*)
POLICY-HS-9.2	Cooperate with the Air Quality Management District and the Regional Transportation Agency to meet air quality standards and implement provisions of the California and Federal Clean Air Acts. (*Source: Existing Objective AQ-2, Policy AQ-a, and Policy AQ-p, modified*)
POLICY-HS-9.3	Encourage integration of land use, transportation, and energy planning efforts to help reduce air pollution. (*Source: Existing Objective AQ-3, modified*)
POLICY-HS-9.4	Review land use decisions with consideration of the potential for improvement of air quality and mitigate air quality impacts to the greatest extent practicable. Consult with the Air Quality Management District regarding mitigation of air quality impacts. (*Source: Existing Policy AQ-b, modified*)
POLICY-HS-9.5	All parcels created by new land divisions and new multi-family residential, commercial, and industrial development (or with expansion of such uses) shall be served by paved roads, driveways, and parking areas. Unpaved roads serving one or more vacant parcels shall be paved at the time of property development. Alternative surfacing methods or timing may be authorized in limited circumstances, subject to specific findings by the approving authority. (*Source: Existing Policy AQ-c, modified)*
POLICY-HS-9.6	Encourage a land use pattern that reduces reliance on the automobile and encourages alternative modes of transportation for travel to employment and shopping by encouraging: - Infill development; - Mixed-use development near employment centers (e.g., day cares, restaurants, and banks); - Increased residential densities near employment and shopping, and along major traffic corridors; and - Employment opportunities and shopping near to residential development. (*Source: Existing Policy AQ-d*)

POLICY-HS-9.7	Encourage a reduction in vehicle trips and vehicle miles traveled by promoting: - Public transportation; - Carpooling, ridesharing, and vanpooling; - Shortened and combined motor vehicle trips for work, shopping, and services; - Use of bicycles; and - Pedestrian access and walking. (*Source: Existing Policy AQ-e*)
POLICY-HS-9.8	Encourage pedestrian-oriented and transit-oriented design in new development. (*Source: Existing Policy AQ-f*)
POLICY-HS-9.9	Adopt guidelines for developers to encourage and promote pedestrian movement, bicycling, and public transit. (*Source: Existing Policy AQ-g*)
POLICY-HS-9.10	Encourage local development in order to encourage local employment and shopping opportunities and reduce the number and distance of vehicle trips. (*Source: Existing Policy AQ-h*)
POLICY-HS-9.11	Work with the Redding Area Bus Authority, Caltrans, and other agencies to establish multi-modal transfer sites for automobiles, bicycles, pedestrians, and public transit, consistent with the Circulation Element. (*Source: Existing Policy AQ-j, modified*)
POLICY-HS-9.12	Develop a bikeway plan to encourage the use of bicycles, consistent with the Circulation Element. (*Source: Existing Policy AQ-k, modified*)
POLICY-HS-9.13	Develop a pedestrian plan to encourage walking, consistent with the Circulation Element. (*Source: Existing Policy AQ-l, modified*)
POLICY-HS-9.14	The City will support the Air Quality Management District's efforts to reduce and track emissions through appropriate analysis of project level air quality impacts during the CEQA process. *(Source: New)*
POLICY-HS-9.15	Recognize the health impacts on local and regional air quality resulting from climate change and wildfire. Support efforts to mitigate these impacts through the application of appropriate vegetation management in the wild land-urban interface areas, and on public lands abutting the City's planning area. *(Source: New)*
POLICY-HS-9.16	Increase community awareness of wildfire smoke risks and health hazards and provide guidance to individuals, businesses, and institutions on how to reduce risks during a wildfire event affecting local air quality. *(Source: New)*

IMPLEMENTATION-HS-9.1	Continue to require new development to implement CALGreen building standards. *(Source: New)* ***Responsibility:*** *City Development Services Department* ***Time Frame:*** *Ongoing* ***Funding Source:*** *General fund (staff)*

IMPLEMENTATION-HS-9.2 Support programs that encourage and promote the recycling and composting of residential green waste as a preferred alternative to disposal by lawful burning on-site. *(Source: Existing Policy AQ-o, modified)*

Responsibility: *City Finance Department and Waste Management*
Time Frame: *Ongoing*
Funding Source: *General fund (staff)*

IMPLEMENTATION-HS-9.3 Evaluate the feasibility of providing incentives to encourage the retrofitting of existing older wood burning devices with devices meeting current air quality standards at the time a residence is sold, or a major alteration or addition is initiated. *(Source: Existing Policy AQ-n and Implementation AQ-(2))*

Responsibility: *City Development Services Department*
Time Frame: *1-5 years*
Funding Source: *General fund (staff)*

IMPLEMENTATION-HS-9.4 Coordinate with the Air Quality Management District regarding proposed land uses near hazardous air pollution sources. (*Source: Existing Policy AQ-i*)

Responsibility: *Air Quality Management District and City Development Services Department*
Time Frame: *Ongoing*
Funding Source: *General fund (staff)*

IMPLEMENTATION-HS-9.5 Encourage and promote public education regarding the link between air quality, transportation alternatives, and wood burning. Emphasize health hazards resulting from wildfire smoke and wood burning. (*Source: Existing Policy AQ-m, modified*)

Responsibility: *SCHHSA and City Administration and Development Services Departments*
Time Frame: *Ongoing*
Funding Source: *General fund (staff)*

IMPLEMENTATION-HS-9.6 In collaboration with SCHHSA, provide guidance to the public on ways to reduce health risks during a wildfire event affecting local air quality. *(Source: New)*

Responsibility: *SCHHSA and City Administration Department*
Time Frame: *Ongoing*
Funding Source: *General fund (staff)*

IMPLEMENTATION-HS-9.7 Encourage community and agency efforts that will reduce the potential for uncontrolled wild land fires which can negatively impact air quality. Consider modifying city policies or ordinances which make this more difficult. *(Source: New)*

Responsibility: *City Development Services Department*
Time Frame: *Ongoing*
Funding Source: *General fund (staff)*

HAZARDOUS MATERIALS AND WASTE MANAGEMENT

GOAL HS-10	**Protect the community from the release of hazardous materials and promote responsible waste disposal. *(Source: New)***

POLICY-HS-10.1	Protect people and property from contact with hazardous materials through land use regulations, site design, public awareness campaigns, and emergency preparedness planning. *(Source: Existing Objectives HM-1 and HM-2, modified)*
POLICY-HS-10.2	Support programs and recycling centers that accept household hazardous waste and electronic waste. *(Source: New)*
POLICY-HS-10.3	Decrease the amount of food and other green waste sent to landfills where practical, consistent with the requirements of AB 1826. *(Source: New)*

IMPLEMENTATION-HS-10.1	Maintain a citywide emergency preparedness plan for hazardous materials and coordinate emergency drills with affected departments and agencies. *(Source: Existing Policy HM-b and Implementation HM-(2), modified)* ***Responsibility:*** *Emergency Services and City Finance and Public Works Departments* ***Time Frame:*** *Ongoing* ***Funding Source:*** *General fund (staff)*
IMPLEMENTATION-HS-10.2	Work with business and neighborhood associations, community groups, and utility providers to promote community awareness of hazardous waste disposal and recycling opportunities. (*Source: Existing Implementation HM-(1), modified*) ***Responsibility:*** *City Public Works and Development Services Departments* ***Time Frame:*** *Ongoing* ***Funding Source:*** *General fund (staff)*
IMPLEMENTATION-HS-10.3	Actively support food waste education and reduction programs, including composting for businesses, institutions, and residences. (*Source: New*) ***Responsibility:*** *City Administration, Designated Waste Hauler, and Development Services Departments* ***Time Frame:*** *Ongoing* ***Funding Source:*** *General fund (staff)*