

# 9 Tahoe National Forest Area Forecast Zone

## 9.1 Forecast Zone Description

The Tahoe National Forest Area (FZ) is mostly defined by the Tahoe National Forest (TNF) boundary. The FZ connects Western Nevada County to Eastern Nevada County and is the least developed. Communities are very dispersed and intermixed with the forested landscape. The FZ is marked by steep topography and varying terrain.



*Little Town of Washington*

### 9.1.1 Location

The Tahoe National Forest (TNF) Area Forecast Zone (FZ) covers 234,891 acres, making it the largest FZ. It is bound on the west by the Grass Valley/Nevada City FZ, on the east by the Truckee/Donner, on the north by the South Yuba River, and on the south by the Bear River and Placer County. The FZ boundary roughly follows the TNF boundary.

### 9.1.2 Land Ownership

The largest landowner in the TNF Area FZ is the U.S. Forest Service which covers 59% of the FZ. Private ownership is the second largest ownership type covering 38% of the FZ. Land ownership in the TNF Area FZ is presented in Table 56.

**Table 56. Land Ownership in the Tahoe National Forest Area Forecast Zone**

Land Ownership	Total Acreage	Percent
United States Forest Service	138,169	59%
Private Ownership	90,123	38%
Nevada Irrigation District	6,054	3%
University of California	1,488	1%
United States Bureau of Land Management	1,170	1%
California Department of Forestry and Fire Protection	927	<1%
California Department of Parks and Recreation	912	<1%
The Nature Conservancy	715	<1%
Truckee Donner Land Trust	533	<1%
California State Lands Commission	78	<1%

**Table 56. Land Ownership in the Tahoe National Forest Area Forecast Zone**

Land Ownership	Total Acreage	Percent
California Department of Fish and Wildlife	29	<1%
Other State	2	<1%

Source: CAL FIRE 2024d.

## 9.2 Fire Hazard

### 9.2.1 Climate

Large elevation differences across the Tahoe National Forest (TNF) Area Forecast Zone (FZ) result in diverse weather (the FZ ranges in elevation from approximately 2,600’ in the west to approximately 8,900’ in the east). Due to overlapping similarities in terrain, the western region of the FZ is likely to experience weather similar to the Grass Valley/Nevada City FZ. In higher elevations throughout the TNF Area FZ, fire season may be delayed due to snowfall and more significant precipitation. Data collected from the Bowman Dam weather station, which is situated by Bowman Lake in the middle of the FZ, shows that temperatures during the summer months, from June through September, range from 51°F to 103°F, and that average winter temperatures, from November through March, average from 31°F to 62°F (NOAA 2024). Precipitation is minimal in the summer months, from June through September, though more than in other FZs (often in the form of thunderstorms), averaging about 0.58 inches. Average monthly precipitation, from October through May, ranges from 0.50 inches to 8.0 inches (NOAA 2004). The White Cloud RAWS station, located in the easternmost portion of the first third of the FZ, records a dominant wind direction from the southeast, with most winds in the area in the 1 mph to 8 mph range and averaging 3 mph (WRCC 2024).

### 9.2.2 Terrain

The terrain in the TNF Area FZ is the most variable among the other Nevada County FZs. The west to middle portion of the FZ contains the steepest sloped areas, specifically along the rivers and canyons present through the middle portion (slopes reaching 60% to 70% gradient). The San Juan Ridge continues east from the Grass Valley/Nevada City FZ until it meets the canyons and ridges that extend north from where the South Yuba River flows. Canyons and ridges are prevalent along the South Yuba River and Canyon Creek until they respectively empty out into Lake Spaulding and Bowman Lake. The Middle Yuba River, which runs above the San Juan Ridge, defines the northern border from the end of the Grass Valley/Nevada City FZ. The Middle Yuba River follows the northern border to Jackson Meadows Reservoir and follows the Middle Yuba River south of this reservoir until it intersects with the panhandle of Nevada County going east to Truckee. The slopes along these canyons, ridges, and rivers vary in the 46% to 70% and above range. Steep slopes are present throughout the FZ. Many bodies of water are located within the middle and eastern portion of this FZ, and many creeks run through this FZ.

### 9.2.3 Vegetation and Fuels

The composition of vegetation communities throughout the TNF Area FZ vary. The FZ vegetation communities consist predominantly of conifer and mixed conifer forests. Common species include ponderosa pine (*Pinus ponderosa*), Douglas fir (*Pseudotsuga menziesii*), white fir (*Abies concolor*), sugar pine (*Pinus lambertiana*), Jeffrey pine (*Pinus jeffreyi*), lodgepole pine (*Pinus contorta*), incense cedar (*Calocedrus decurrens*), mountain hemlock (*Tsuga mertensiana*), white fir (*Abies concolor*), and red fir (*Abies magnifica*). The hardwood forest communities are situated primarily in the western half of the FZ along the ridges and river valleys, with most of those communities following the South Yuba River and Canyon Creek. Other hardwood species include madrone (*Arbutus menziesii*), canyon live oak (*Quercus chrysolepis*), California black oak (*Quercus kelloggii*), bigleaf maple (*Acer macrophyllum*), willow (*Salix spp.*), black cottonwood (*Populus trichocarpa*), white alder (*Alnus rhombifolia*), and mountain alder (*Alnus incana*). Shrub communities are present throughout the FZ but are more prevalent in the eastern half of the FZ and concentrated in the middle of the FZ. Barren/other land coverage is almost equal to that of the shrub communities, as is comprised of granite outcrops. Wetlands and meadows are accounted for in the herbaceous community type. Table 57 displays all vegetation communities and their acreages, while Figure 5, Vegetation Communities, provides a visual display of these communities within the TNF Area FZ and comparatively to the rest of Nevada County.



Conifer forest in the Tahoe National Forest FZ

Shrub communities are present throughout the FZ but are more prevalent in the eastern half of the FZ and concentrated in the middle of the FZ. Barren/other land coverage is almost equal to that of the shrub communities, as is comprised of granite outcrops. Wetlands and meadows are accounted for in the herbaceous community type. Table 57 displays all vegetation communities and their acreages, while Figure 5, Vegetation Communities, provides a visual display of these communities within the TNF Area FZ and comparatively to the rest of Nevada County.

**Table 57. Tahoe National Forest Area Forecast Zone Vegetation Communities**

Vegetation Community	Total Acreage	Percent
Conifer Forest/Woodland	143,969	61%
Mixed Conifer/Hardwood	37,425	16%
Shrub	18,523	8%
Barren/Other	18,333	8%
Hardwood Forest/Woodland	8,187	3%
Water	5,449	2%
Herbaceous	2,675	1%
Urban	316	<1%
Agricultural	17	<1%

Source: USFS 2019a, 2019b.

### 9.2.4 Fire and Ignition History

From 1908 through 2023, the TNF Area FZ has experienced 95 fires. These fires burned approximately 55,845 acres within the FZ, with most of the wildfire acreage having occurred in the western portion of

the FZ (Figure 24, Fire History – Tahoe National Forest Area). The largest fires that have occurred in this FZ are the 1910 Fall Fire (2,416 acres), an unnamed fire in 1919 (4,277 acres), an unnamed fire in 1935 (5,245 acres), and an unnamed fire in 1946 (10,567 acres). The most recent fires that have occurred in this FZ of notable size are an unnamed fire in 2002 (1,476 acres), an unnamed fire in 2008 (943 acres), an unnamed fire in 2016 (2,105 acres), and an unnamed fire in 2022 (946 acres). The average fire return interval within the TNF Area FZ was calculated to be approximately every year, though it should be noted that, out of the 95 fires that have been recorded in this FZ, 76 of those fires, as well as the most acreage burned by period (49,822 acres), occurred before 1980. In comparison to the two FZs previously mentioned (Higgins/Penn Valley FZ and Grass Valley/Nevada City FZ), the TNF Area FZ has not experienced many wildfires within its boundary from 2011 to 2023. The Truckee/Donner FZ has also experienced a similar level of little recent wildfire history within the same year range. Table 58 summarizes the TNF Area FZ fire history per decade, with recorded history dating back to 1908. Fire History for the Plan Area is presented in Figure 24, Fire History – Tahoe National Forest Area.

**Table 58. Tahoe National Forest Area Forecast Zone Fire History by Period**

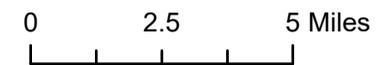
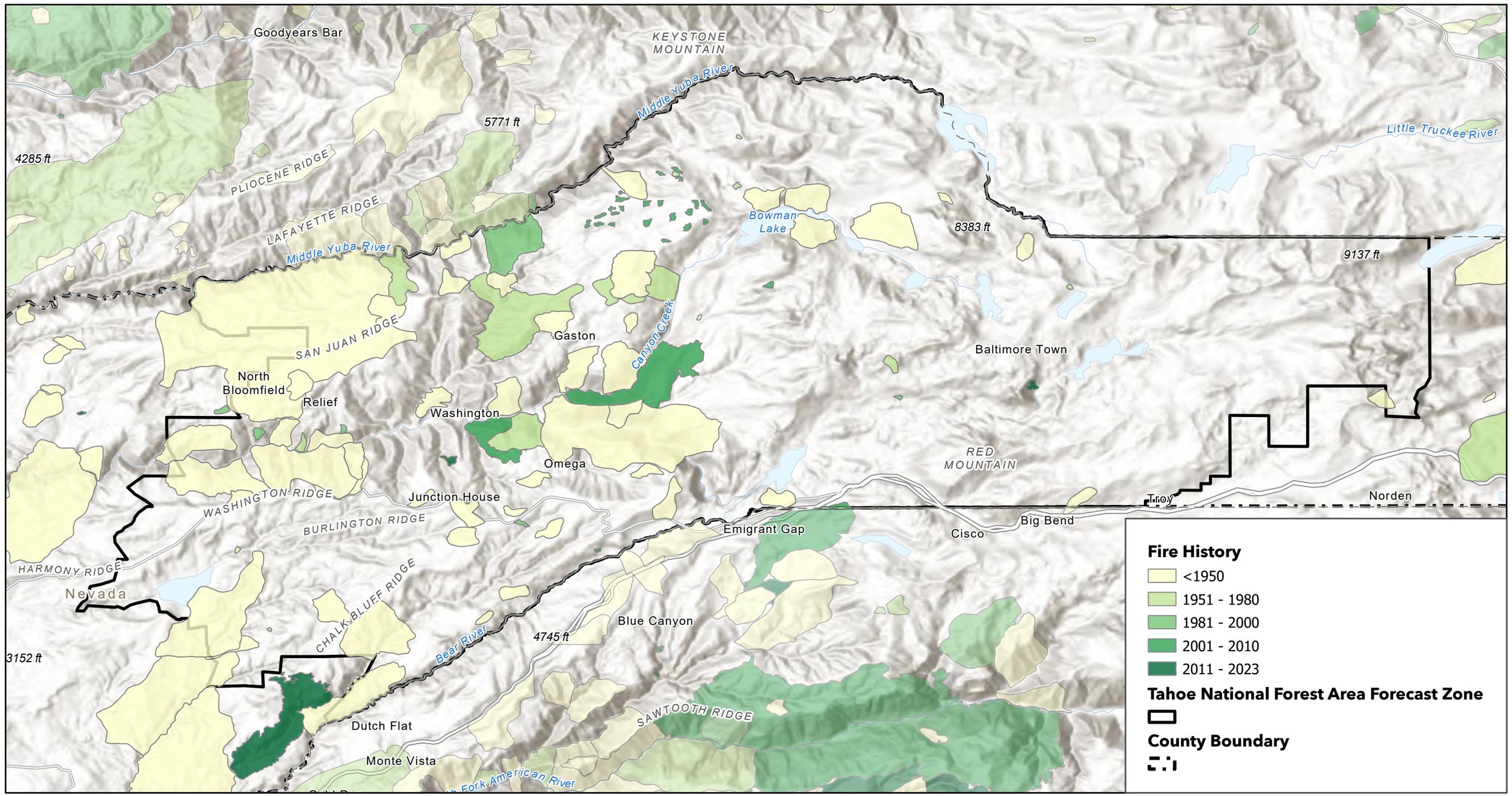
Years	Total Acreage	Number of Fires
<1980	49,822	76
1980–1990	1,331	5
1991–2000	553	3
2001–2010	4,036	7
2011–2020	47	2
2021–2023	57	2
<b>Total:</b>	<b>55,846</b>	<b>95</b>

Source: CAL FIRE 2024c.

**Ignition History**

While the largest areas of wildfire have occurred in the western portion of the FZ, the concentration of fire ignitions is highest in the middle portion of the FZ. This may be due to the seemingly higher amounts of recreational opportunities such as camping, hiking, off-highway vehicle (OHV) use, and lakeside activities that may bring increased car-related sparks and human activity to those areas—both of which could create ignitions. However, in addition to ignitions occurring just off frequently traveled roads such as State Route 20, it should be noted that many areas with high concentrations of ignition density tend to be around these recreational opportunities throughout the FZ (Figure 25, Ignition History – Tahoe National Forest Area FZ). Some ignitions are around the WUI in this FZ. The WUI area is presented in Figure 26 (Wildland-Urban Interface – Tahoe National Forest Area FZ) and the Defensible Space Area is presented in Figure 27 (Defensible Space – Tahoe National Forest Area FZ).

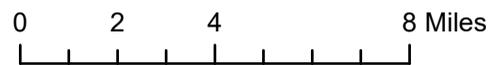
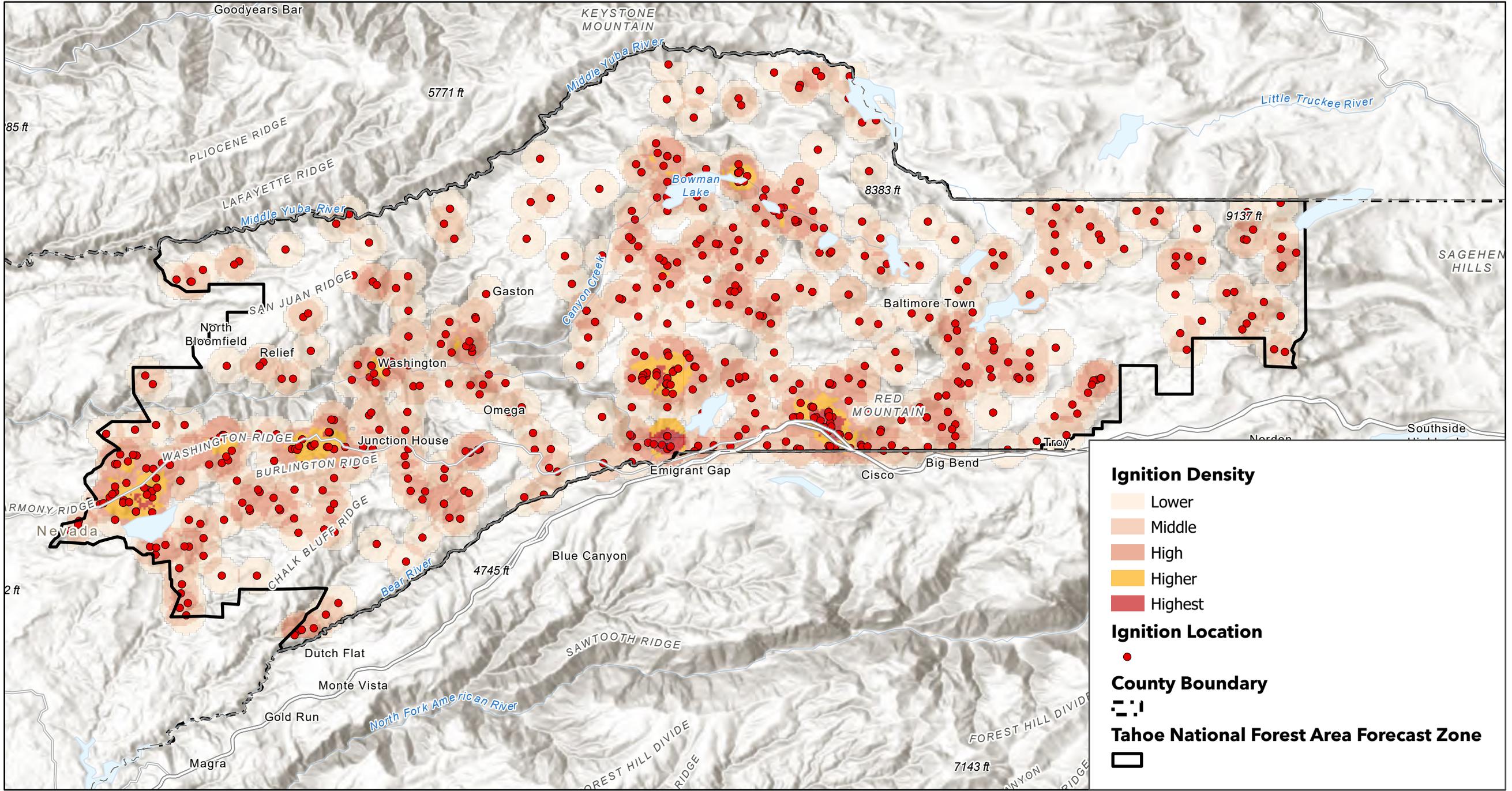
Figure 24 - Tahoe National Forest Area Forecast Zone - Fire History



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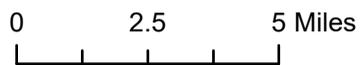
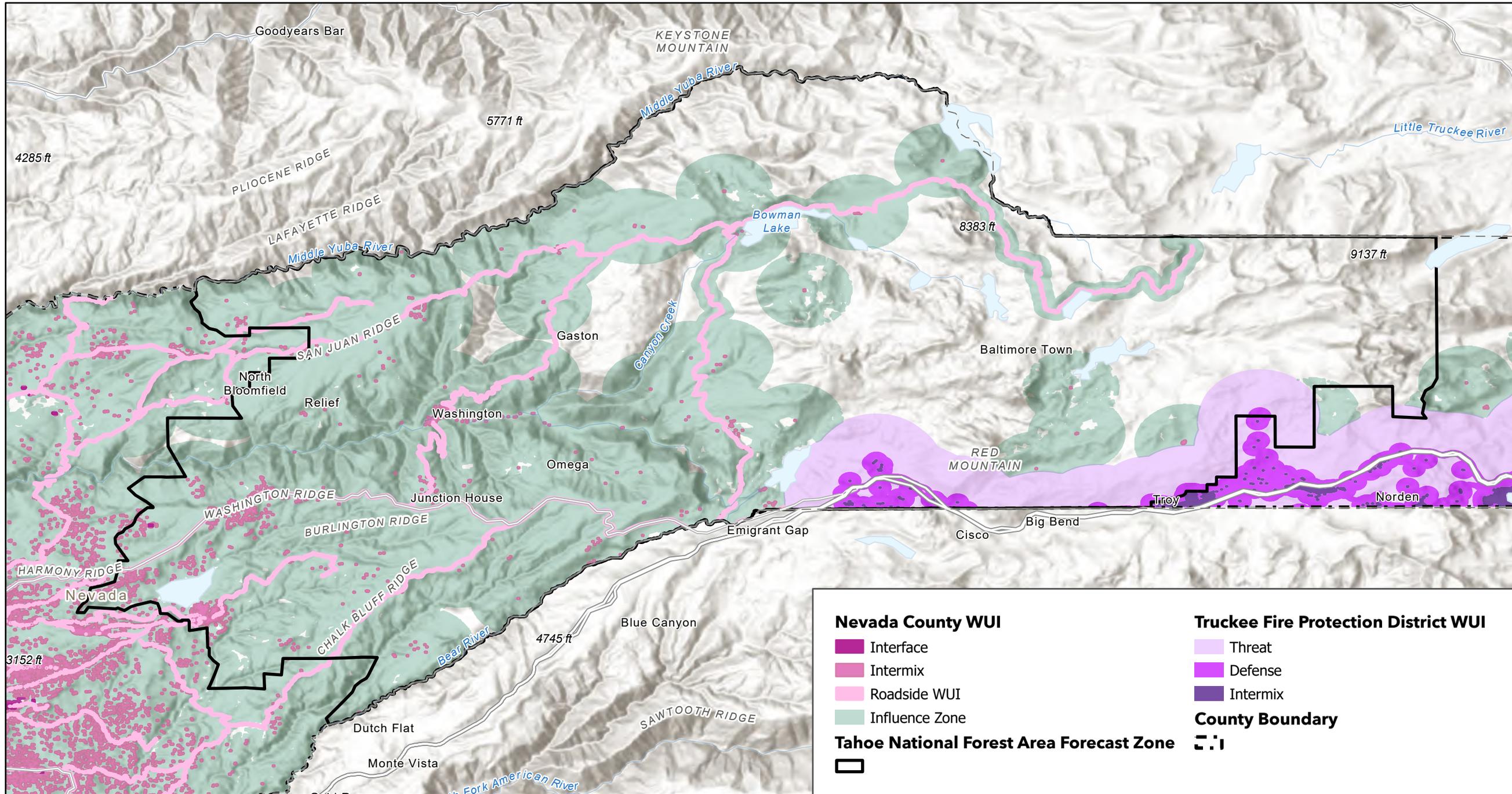
Figure 25 - Tahoe National Forest Area Forecast Zone - Ignition History



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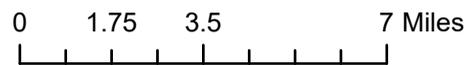
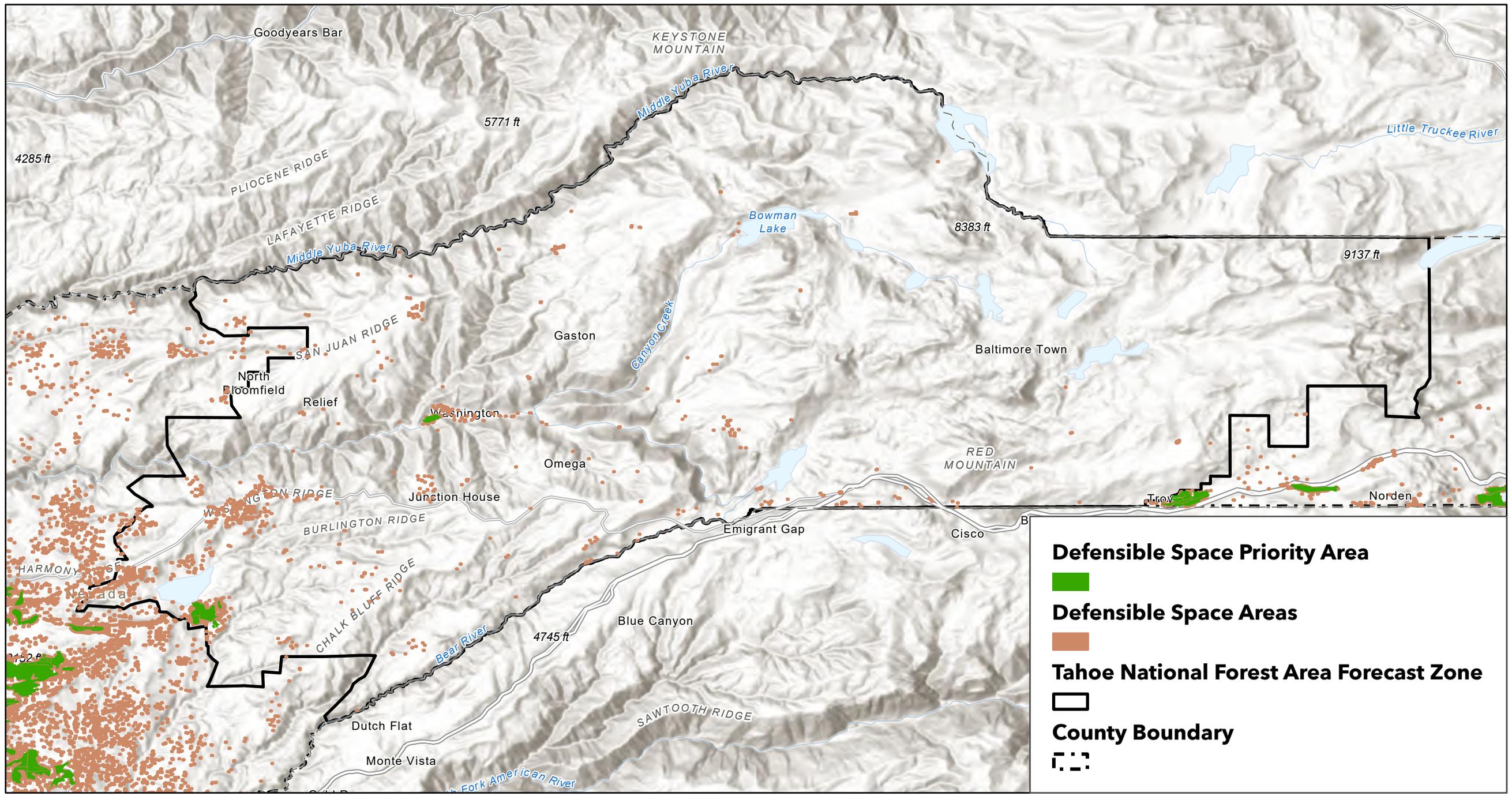
Figure 26 - Tahoe National Forest Area Forecast Zone - Wildland-Urban Interface



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Figure 27 - Tahoe National Forest Area Forecast Zone - Defensible Space Areas



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## 9.3 High Value Resources and Assets at Risk

### 9.3.1 Community Lifelines

Community Lifelines are critical assets to a community and are the fundamental services of a community that enable all other aspects of society. Community Lifelines include:

- **Communities** include populated areas (e.g., Grass Valley, Truckee, North San Juan, Lake of the Pines, Washington) and assets within them (e.g., fire stations, schools, post offices, gas stations, and grocery stores).
- **Vulnerable Populations** include nursing homes, mobile home parks, homeless shelters, and low-income or disadvantaged communities.
- **Critical Water Infrastructure** includes canals, dams, public and private water storage, water or wastewater treatment sites, and areas likely on well or septic systems.
- **Critical Transportation Infrastructure** includes airports, bridges, highways, railroads, major County roads, and yearlong USFS roads.
- **Critical Power and Communication Infrastructure** includes communications sites, power plants, and major powerlines.

The HVRA list for Nevada County and an explanation of each HVRA is documented in Appendix E of the WRA (Appendix B, Wildfire Risk Assessment).

#### 9.3.1.1 Communities

The Tahoe National Forest (TNF) Area FZ includes no incorporated cities, and all communities are located in unincorporated Nevada County. The communities within the FZ are very dispersed across the landscape and are predominately rural lifestyle. Communities in the Tahoe National Forest Area FZ are concentrated primarily in a few locations – Cascade Shores, Washington Ridge, and the Town of Washington. Building density (Jaffee et al. 2024) is high (approximately 500-1,000 buildings/km<sup>2</sup>) to moderate (approximately 100-500 buildings/km<sup>2</sup>) in Cascade Shores and the Town of Washington and moderate to low (approximately 5-100 buildings/km<sup>2</sup>) in Washington Ridge. The remainder of the FZ



*Cascade Shores General Store*

consists of scattered, low-density development characterized by isolated buildings with significant distances from neighboring buildings. Structure age in this FZ is predominantly older, with approximately 93% of construction occurring prior to 2007 (after which current California Building Code ignition-resistant construction requirements went into effect) (County of Nevada 2024c). Buildings are typically

wood frame construction with wood siding. Numerous outbuildings (barns, stables, utility buildings) are located on parcels throughout the FZ, especially in low-density areas where parcel sizes are greater.

Communities defined as at risk from wildfire by the Office of the State Fire Marshal and CAL FIRE Nevada-Yuba-Placer Unit within the TNF Area FZ are presented in Table 59.



*The Washington Hotel*

**Table 59. Office of the State Fire Marshal and CAL FIRE Communities at Risk in the Tahoe National Forest Area Forecast Zone**

Community Name	Incorporated Community
Cascade Shores	No
Washington	No

Source: OSFM 2024, CAL FIRE 2024e.

The FZ includes essential community services such as post offices, gas stations, grocery stores, schools, and fire stations. There is one post office in the FZ located in the Little Town of Washington. There is one gas station and one grocery store. Schools are an important community resource and service. Within the FZ is one school, Washington Elementary School, in the Little Town of Washington.

There are six fire stations in the TNF Area Forecast Zone (FZ) are presented in Table 60.

**Table 60. Tahoe National Forest Area Forecast Zone County Fire Stations and Camps**

Name	Address
CAL FIRE Washington Ridge	11425 Conservation Road
Washington Station 1	15406 Washington Road
NCC Station 81	16528 Pasquale Road
NCC Station 82	18969 Scotts Flat Road
Graniteville Volunteer Fire Co	35401 Graniteville Road
USFS – White Cloud	26533 State Highway 20

Note: NCC = Nevada County Consolidated and USFS = United States Forest Service

### 9.3.1.2 Vulnerable Populations

Vulnerable populations are important to consider in wildfire planning as they are more likely to have less access to wildfire risk reduction resources and/or a harder time recovering from wildfires. The TNF Area FZ includes mobile home areas. These communities face challenges with wildfire due to the ignitable nature of their structures, limited home hardening resources, limited ability to complete defensible space, and evacuation challenges. Finally, the FZ includes communities that have been identified as low-income and/or disadvantaged by the State or Federal government.

### 9.3.1.3 Critical Water Infrastructure

Critical water infrastructure includes canals, dams, public and private water storage, water or wastewater treatment sites, and areas likely on well or septic systems all of which exist in the TNF Area FZ. Canals exist all across the forecast zone providing communities, businesses, and landowners with water and include the historic wooden South Yuba Canal. These canals are also important resources for the community in terms of social value. There are 33 dams in the FZ this includes the Lake Spalding Dams, Meadow Lake Dam, Bowman Dam Scotts Flat Dam, and Dutch Flat Forebay Dam. The TNF Area FZ includes critical water storage for the FZ, the County, and the State. There are also over 809 public or private water storage resources including Scotts Flat Reservoir, Lake Spalding, Bowman Lake, and Jackson Meadows Reservoir. Water treatment is an important part of the water infrastructure system. Finally, with TNF Area FZ there are communities that are more likely to only be on a well or septic system and have no access or potential access to public water systems.

### 9.3.1.4 Critical Transportation Infrastructure

Transportation is a key component of communities. Transportation is important for ignition prevention, evacuations, and community recovery. In Nevada County, this includes airports, bridges, highways, railroads, major County roads, and yearlong USFS roads. In TNF Area FZ there are important critical transportation infrastructures both for the FZ but also for the County as a whole. There are 20 bridges in the FZ some of which provide critical crossings over rivers for vehicles such as the South Yuba River for the Little Town of Washington. Within the FZ is Highway 20 which is very important for the transportation of goods and resources and ingress/egress for the communities. There are major local roadways in the FZ such as Banner Quaker Hill Road, Casci Road, Pasquale Road, Scotts Flat Road, Gaston Road, Meadow Lake Road, Chalk Bluff Road, and Washington Road. Local roads are often primary ingress/egress routes for communities connecting them to essential services and to larger transportation infrastructures such as highways. Additionally, there are year-round USFS roads throughout the FZ. Finally, within the FZ are Community Evacuation



*Maybert Road Bridge over Canyon Creek*

Projects that were identified as priorities for evacuation improvement by communities in the 2024 Evacuation Study Appendix A.

### 9.3.1.5 Critical Power and Communication Infrastructure

Power and communication infrastructure play important roles in wildfires. Power infrastructure can be an ignition risk but is also a critical component of community recovery. Communication infrastructure is crucial for wildfire response allowing first responders to communicate in wildfire events, emergency alerts to be disseminated, and more. Powerlines exist all across the FZ providing electricity to residents and businesses as well as major high-voltage powerlines transportation corridors. Additionally, there are seven powerplants in the FZ one at Dutch Flat, one at Scotts Flat, one at Deer Creek, three at Lake Spalding, and one at Bowman Lake. Finally, there are over 76 communication sites within the FZ. These sites include radio towers (public and private), emergency communication sites, cellular communication towers, and microwave transmission sites.

### 9.3.2 Community Health

Community health focuses on factors that impact the overall health of a community and potentially could result in secondary impacts from a wildfire that impede community recovery. Community Health includes the following:

- **Wildfire Smoke Emission Potential** are areas identified by the U.S. Forest Service as having a high potential for emitting harmful levels of PM 2.5 if burned.
- **Soil Vulnerability** refers to soils in the County that are more likely to be subject to post-fire mass wasting events such as hydraulic mine scars.
- **Listed Hazardous Waste** are sites that are currently listed hazardous waste sites.
- **Hospitals and Sheltering Facilities** which include local hospitals, schools, community centers, veteran halls etc.
- **Solid Waste Management Facilities**

The HVRA list for Nevada County and an explanation of each HVRA is documented in Appendix E of the WRA (Appendix B, Wildfire Risk Assessment).

#### 9.3.2.1 Wildfire Smoke Emission Potential

Wildfire Smoke Emission Potential refers to areas that were identified the U.S. Forest Service as having a high potential for emitting harmful levels of PM 2.5 if burned in a wildfire. PM 2.5 is one of the air pollutants in wildfire smoke that can be harmful to communities. If these areas burn, they not only have the potential to negatively impact the TNF Area FZ but also adjacent communities and areas outside the County. Within the FZ there are 201,669 acres classified as having a high potential for emitting harmful levels of wildfire smoke.

### 9.3.2.2 Soil Vulnerability

Soil Vulnerability refers to soils in Nevada County that are more likely to be subject to post-fire erosion due to either their natural composition or human activities (i.e., hydraulic mining). Mass wasting events after a wildfire can be devastating. They can affect the community that burned or the community that is located downslope of the burn scar. Fire scars are regularly monitored for these types of events because of the potential impacts on communities. In the TNF Area FZ there are 1,563 acres of historic hydraulic mine sites which are more vulnerable to erosion and mass wasting events. They are located adjacent to water waterways and river canyons. There are several areas around Chalk Bluff, Omega/Relief Hill, and Moores Flat. In terms of areas naturally more likely to experience a landslide there are 80,072 acres within the FZ naturally more vulnerable to landslide events and they are concentrated at the South Yuba River and the center of the FZ.

### 9.3.2.3 Listed Hazardous Waste Sites

Hazardous waste sites can present challenges to community health if burned. They can emit toxic fumes and impede recovery efforts by requiring more stringent clean-up processes due to site contamination. Currently, there are 2 known hazardous waste clean-up sites in the TNF Area FZ.

### 9.3.2.4 Hospital and Sheltering Facilities

Hospital and sheltering facilities are included in Community Lifelines as components of communities. However, they also serve to support Community Health. They support secondary impacts from fire such as smoke impacts, sheltering sites, recovery centers, resource support, and more. These sites are often already within the community service as other functions such as schools, libraries, community centers, or churches. As previously mentioned, there is one school in the TNF Area FZ.

### 9.3.2.5 Solid Waste Management Facilities

As with the other HVRAs in Community Health, Solid Waste Management facilities are important to consider from a prevention and recovery perspective. Like hazardous waste sites, these facilities can present complications if burned related to contamination. They are also important for community recovery. Loss in solid waste infrastructure can cause community residents to have to drive long distances to dispose of their garbage. In TNF Area FZ there is one previously active solid waste site and one current active site, the Washington Transfer Station.

## 9.3.3 Natural Resources

In Nevada County, natural resources are both high-value resources that can be impacted by a wildfire and a wildfire hazard. The majority of vegetation has adapted in one way or another to exist in a fire-prone environment. However, historical management decisions and fire suppression have resulted in many of the natural resources in Nevada County being overloaded with fuel and presenting a fire hazard. Nevada County is also home to an abundance of natural resources that offer recreational amenities, significant species habitat, and support for watersheds. Further, the community has a very strong identity tied to many of these natural resources, such as the South Yuba River. The Natural Resources Primary-HVRA includes the following:

- **Outdoor Recreation Resources** which include recreation areas such as public parks, trails, campsites, seasonal roads, ski resorts, and the Tahoe National Forest.
- **Watersheds**
- **Significant Species**
- **Oak Woodlands**
- **Areas of High Climate Change Resilience** are areas identified by the State as being more likely to survive the impacts of climate change (Thorne et al. 2016).



*Bear Valley along Highway 20*

The HVRA list for Nevada County and an explanation of each HVRA is documented in Appendix E of the WRA (Appendix B, Wildfire Risk Assessment).

### 9.3.3.1 Outdoor Recreation Resources

Outdoor Recreation Resources are important to Nevada County from multiple perspectives especially considering their often-hazardous fuel conditions and community value. They include things like public parks, trails, and campsites. There are several outdoor recreation resources like campgrounds and trails in TNF Area FZ. Campgrounds include Scotts Flat Campground and 10 U.S. Forest Service campsites. Trails exist across the FZ and are very popular with community members and visitors. These include trails such as Meyers Connector, Five Lakes Basin Trail, Pacific Crest Trail, Mount Lola Trail, Pioneer Trail, Warren Lake Trail, and Grouse Ridge Trail. There are 3 parks in the FZ Malakoff Diggins State Historic Park, South Yuba State Park, and Scotts Flat Lake recreation area. There are 358 seasonal U.S. Forest Service Roads in the TNF Area FZ and 138,169 acres of the Tahoe National Forest.



*Scotts Flat Lake*

### 9.3.3.2 Watersheds

Watersheds include public water bodies, wetlands, Clean Water Act 303(d) listed water bodies, and rivers/streams/creeks. These resources are critical in supporting our environment and the community. There are 580 public water bodies in the TNF FZ including Jackson Lake, Meadow Lake, Lola Montez Lake, Lake Spalding, and Bowman Lake. There are 2,522 acres of wetlands that are scattered throughout the FZ. One water body in the FZ is on the Clean Water Act 303(d) list, meaning it is impaired for water quality. Finally, there are 2,707 miles of rivers, streams, and creeks in the TNF Area FZ.

### 9.3.3.3 Significant Species

At the time of this CWPP there is known critical habitat identified in the TNF Area FZ. However, critical habitat and the presence of significant species regularly change. Further, critical habitat data is only

publicly available for animal species and does not include botanical species. This means that biological and botanical surveys are very likely to still be required for risk reduction activities.

### 9.3.3.4 Oak Woodlands

Oak Woodlands occur as a vegetation community in the TNF Area FZ. There are over 1,985 acres of Oak Woodlands and common species include canyon live oak (*Quercus chrysolepis*), interior live oak (*Quercus wislizenii*), and California black oak (*Quercus kelloggii*).

### 9.3.3.5 Areas of High Climate Change Resilience

There are 70,160 acres of Areas of High Climate Change Resilience (Thorne et al. 2016) in the TNF Area FZ. These are acres identified by the State as having a higher likelihood of being resilient to climate change impacts.

## 9.3.4 Economic Resources

An important component of wildfire resilience is economic resources. Communities not only need to be able to physically survive a wildfire, but they also need to be able to have their economic infrastructure in place so that the community can recover after a wildfire. In California, wildfire has significantly impacted economic resources, impairing the community's ability to recover. This is seen in Paradise, after the Camp Fire, and in rural communities, such as Greenville, after the Dixie Fire. Therefore, it is important to include Economic Resources as a Primary-HVRA in the WRA. In Nevada County, many economic resources also double as natural resources, as the economy is tourist-driven and focused on outdoor recreation. The Economic Resources Primary-HVRA includes the following Sub-HVRAs:

- **Recreation**
- **Historic and Cultural Districts**
- **Government Buildings**

It is important to note that the main driver of the economy in Nevada County is tourism, especially recreation-based tourism directly tied to the natural environment. This means that the County's main economic resource is the environment itself. Therefore, it is not possible to separate Economic Resources in a meaningful way, as they are components of all the HVRAs. Further, as a result, Economic Resources HVRA is very vulnerable to wildfire given that any impact on the other identified HVRAs also has the potential to impact the Economic Resources in Nevada County. For these reasons, the results from the Economic Resources risk assessments are not further analyzed in the WRA beyond the County-scale discussion of the risk assessments, and the information below is provided for community context.

The HVRA list for Nevada County and an explanation of each HVRA is documented in Appendix E of the WRA (Appendix B, Wildfire Risk Assessment).

### 9.3.4.1 Recreation

Recreation resources include the previously described Outdoor Recreation Resources in Section 9.3.3.1. These resources are not only components of the environment/Natural Resources in Nevada County but function as a crucial element in Nevada County's economy.

### 9.3.4.2 Historic and Cultural Districts

There are no Historic or Cultural Districts in the TNF Area FZ.

### 9.3.4.3 Government Buildings

While government facilities were included in Community Lifelines, they were specified in the Economic Resources HVRA since the largest employer in the County is government (local, state, and federal). There are 6 government buildings within the TNF Area FZ.

## 9.4 Risk Assessment Result Summary

As discussed in Section 3.2 a Quantitative Wildfire Risk Assessment (QWRA) was completed for High Value Resources and Assets at Risk (HVRA) within each Forecast Zone (FZ) following is a summary of the results from the QWRAs completed in the TNF Area FZ. It is important to note this is not the final component of the Wildfire Risk Assessment (WRA). More detailed information on the QWRA results can be found in Appendix A Wildfire Risk Assessment.

As compared to the other Forecast Zones (FZs), the Tahoe National Forest (TNF) Area FZ has the least number of developed communities. Outside of Cascade Shores, Scott's Flat, and the Little Town of Washington, the majority of people reside in smaller community groups off Highway 20. Though the amount of development is limited in this FZ, a significant amount of non-fuel areas exist as rock outcrops or exposed granite above tree line at upper elevations. This is reflected in the percentage of pixels classified as Non-Burnable<sup>14</sup>, which totals 11%. Two percent (2%) and 1% of pixels are classified as Burnable but Not Burned<sup>15</sup> in the fire scenarios. Pixels that are considered to have No Impact<sup>16</sup> range from 6% to 43%.

Within the FZ are very critical Community Lifelines that are related to critical infrastructure and over 50% are classified as High or Very High Priority Risk. The location of pixels classified as either High Priority or Very High Priority Risk tends to occur west of the Emigrant Gap and around the South Yuba River drainage. Generally, within the TNF Area FZ, the majority of people live west of the Emigrant Gap;

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<sup>14</sup> Non-burnable indicates an area mapped with a non-combustible fuel/vegetation type classification (e.g., rock, water, pavement).

<sup>15</sup> Burnable but Not Burned indicates an area that did not burn in the fire behavior modeling component but is mapped as a combustible fuel/vegetation type (e.g., grass, brush) and has the capacity to burn. This classification does not mean such areas cannot burn, but rather modeled fires did not reach these areas.

<sup>16</sup> No Impact classifications indicate areas that are not classified as an HVRA but did burn in the wildfire behavior modeling component.

therefore, it makes sense that this is where most of the High and Very High Priority Risk classifications are concentrated.

The results from the Community Health risk assessment are consistent with the results from the Community Lifelines risk assessment, meaning that the majority of pixels, over 60%, classified as High Priority Risk or Very High Priority Risk are also concentrated in the South Yuba River drainage or west of Emigrant Gap

Within the TNF Area FZ is one of the largest natural resource concentrations within Nevada County, as this FZ includes the majority of the TNF itself. Unsurprising, the results from the Natural Resources risk assessment have quite a bit of continuity within the FZ. There were no areas identified as High or Very High Priority Benefits. Over 50% of burnable pixels were either a High or Very High Priority Risk

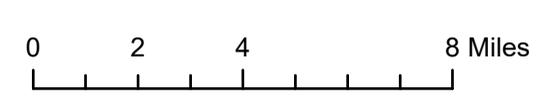
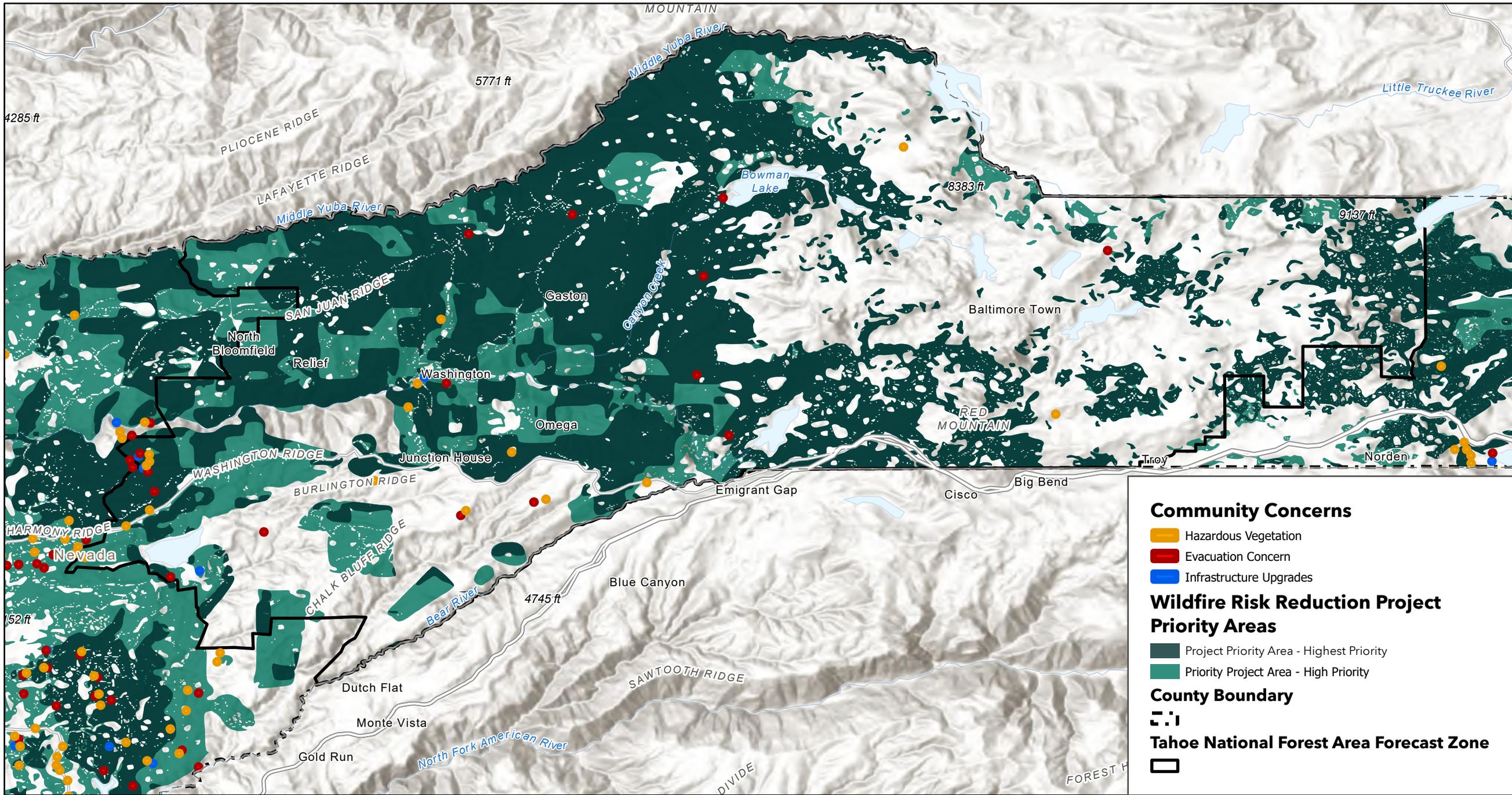
### 9.5 Project Priority Areas

As described in Section 4 the main goal of the Wildfire Risk Assessment (WRA) is to identify the Project Priority Areas. The Project Priority Areas are the final result of the WRA as they identify and prioritize areas on the landscape for multi-beneficial wildfire risk reduction activities. These areas represent the overlap between wildfire risk and assets and resources the community values in protecting from wildfire. The Project Priority Areas are organized into High and Highest Priority. High Priority is where there is overlap between Community Lifelines and Community Health at high risk from wildfire and Highest is where there is overlap between Community Lifelines, Community Health, and Natural Resources at high risk from wildfire. This prioritization was determined based on the results from the WRA, stakeholder outreach, and community outreach.

In the Tahoe National Forest (TNF) Area Forecast Zone (FZ), 162,080 acres are identified as Project Priority Areas, accounting for 69% of the FZ's total area. These 162,080 acres are classified as High Priority. Of these, 126,308 acres are also classified as Highest Priority. Project Priority areas in the TNF Area FZ are presented in Table 61 and shown graphically in Figure 28. The risk reduction approaches identified in Section 9.8 would be prioritized in these areas.

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Figure 28 - Tahoe National Forest Area - Community Concerns



Every reasonable effort has been made to assure the accuracy of the maps and data provided; nevertheless, some information may not be accurate. The County of Nevada assumes no responsibility arising from use of this information. THE MAPS AND ASSOCIATED DATA ARE PROVIDED WITHOUT WARRANTY OF ANY KIND, either expressed or implied, including but not limited to, the implied warranties of merchantability and fitness for a particular purpose. Before making decisions using the information provided on this map, contact the Nevada County Public Counter staff to confirm the validity of the data provided.

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**Table 61. Tahoe National Forest Area Forecast Zone Priority Project Areas**

Name	Acres
Highest Priority (Community Lifelines, Community Health, and Natural Resources)	126,308*
High Priority (Community Lifelines and Community Health)	162,080

**Note:**

\* Areas designated as highest priority are also considered high priority areas.

## 9.6 Community Engagement Results

### 9.6.1 Community Wildfire Protection Plan Survey

As described in Section 5.1.1, the Community Wildfire Protection Plan (CWPP) process was initiated by a CWPP Public Survey. The survey was used to understand community priorities, wildfire risk reduction priorities, wildfire risk perception, and evacuation behavior. Tahoe National Forest (TNF) Area Forecast Zone (FZ) survey results are estimated to be just around 500 survey respondents. The exact number is unknown since the TNF Area FZ shares a zip code with the Grass Valley/Nevada City FZ.

Survey respondents viewed the County’s Risk from wildfire as High and felt that the most important risk reduction actions for the County to address were (1) Defensible Space Assistance, (2) Evacuation Route Improvement, and (3) Home Hardening Incentives/Rebates. In the FZ the highest priority to protect from wildfire was Community Lifelines, followed by Community Health, Natural Resources, and Economic Resources.

When asked about their personal wildfire risk the majority of respondents felt that their risk was high. Respondents felt that the main challenges in reducing their wildfire risk were (1) fuel on neighboring properties, (2) cost of defensible space/fuel reduction, and (3) cost of home hardening.

In terms of evacuation, the majority of respondents had never been evacuated in Nevada County before and felt that they would leave as early as possible if they needed to evacuate in the future. The three primary evacuation concerns for respondents in the Higgins/Penn Valley FZ were (1) getting trapped on the road, (2) getting out early, and (3) losing their home or property.

A full report on the survey results for TNF Area FZ is available in Appendix C.

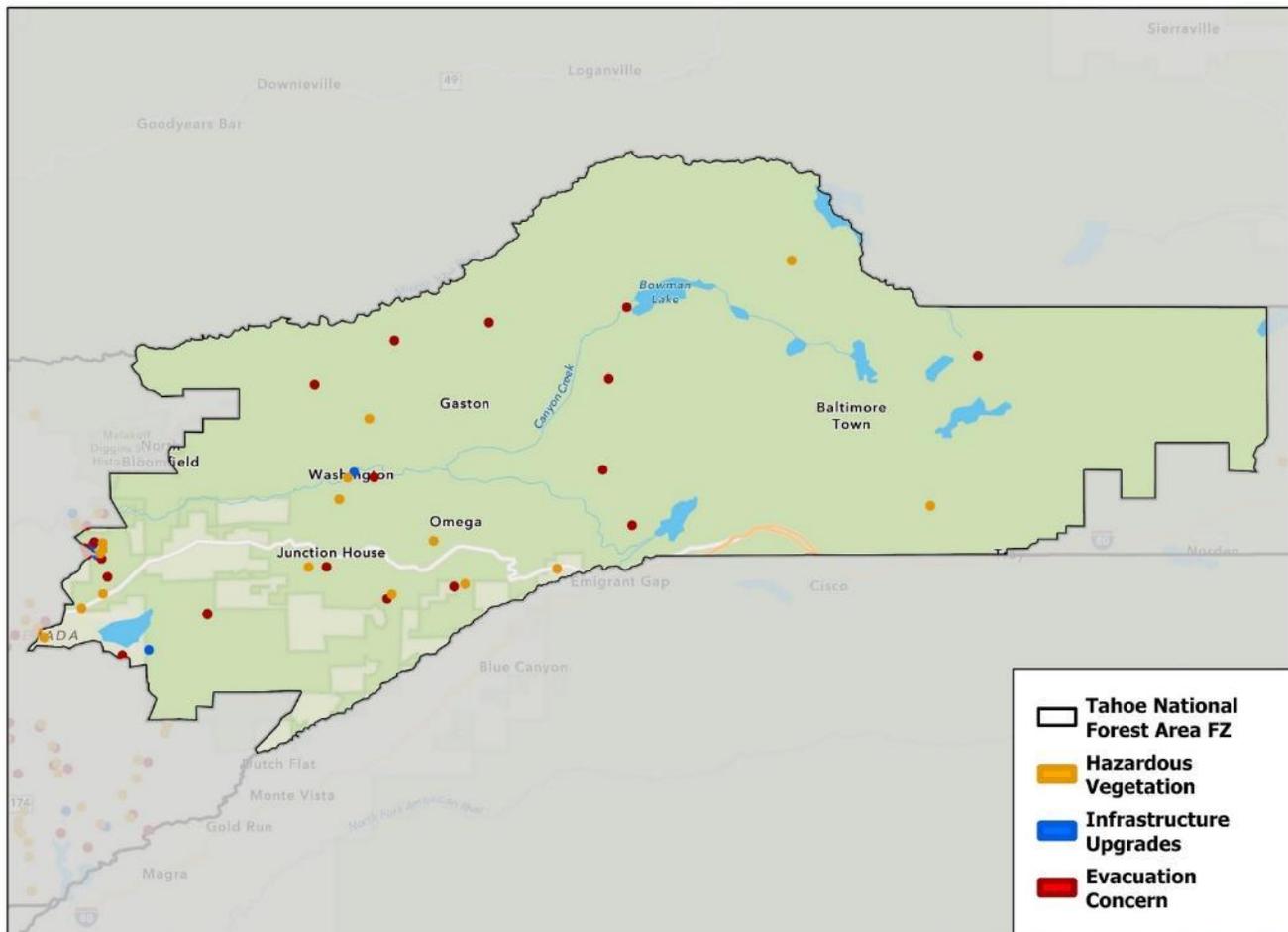
### 9.6.2 Community Workshop Results

The workshops for the Tahoe National Forest Area FZ took place on January 31<sup>st</sup> and February 6, 2024, and included 10 total attendees. The workshop included a brief overview of the project followed by self-guided and active engagement activities aimed at facilitating discussion and gaining input from community members. A summary of the activities and community input received is provided in the following sections.

9.6.2.1 Self-Guided Activities

The self-guided activities included a map activity where community members could identify areas of concern using pins on a map, including limited evacuation routes, hazardous vegetation, and areas where structural hardening is needed. Areas pinned by community members are shown in Exhibit 19. Many of the pins were placed in areas that participants lived in or were familiar with, which gave great insight into those areas. This includes evacuation concerns scattered throughout the forecast zone with a more concentrated group near Cascade Shores. However, there are gaps for areas where community representation was missing at the workshops.

Exhibit 19. Community-identified areas of concern for the Tahoe National Forest Area Forecast Zone



DUDEK

Tahoe National Forest Area FZ  
Community Concerns

The self-guided activities also included a bead activity which allowed residents to prioritize wildfire risk reduction methods for the community and to identify which vegetation management techniques they wanted to see in the community. Exhibit 20 presents community preferences for wildfire risk reduction activities.

**Exhibit 20.** Preferred wildfire risk reduction methods for the Tahoe National Forest Area Forecast Zone

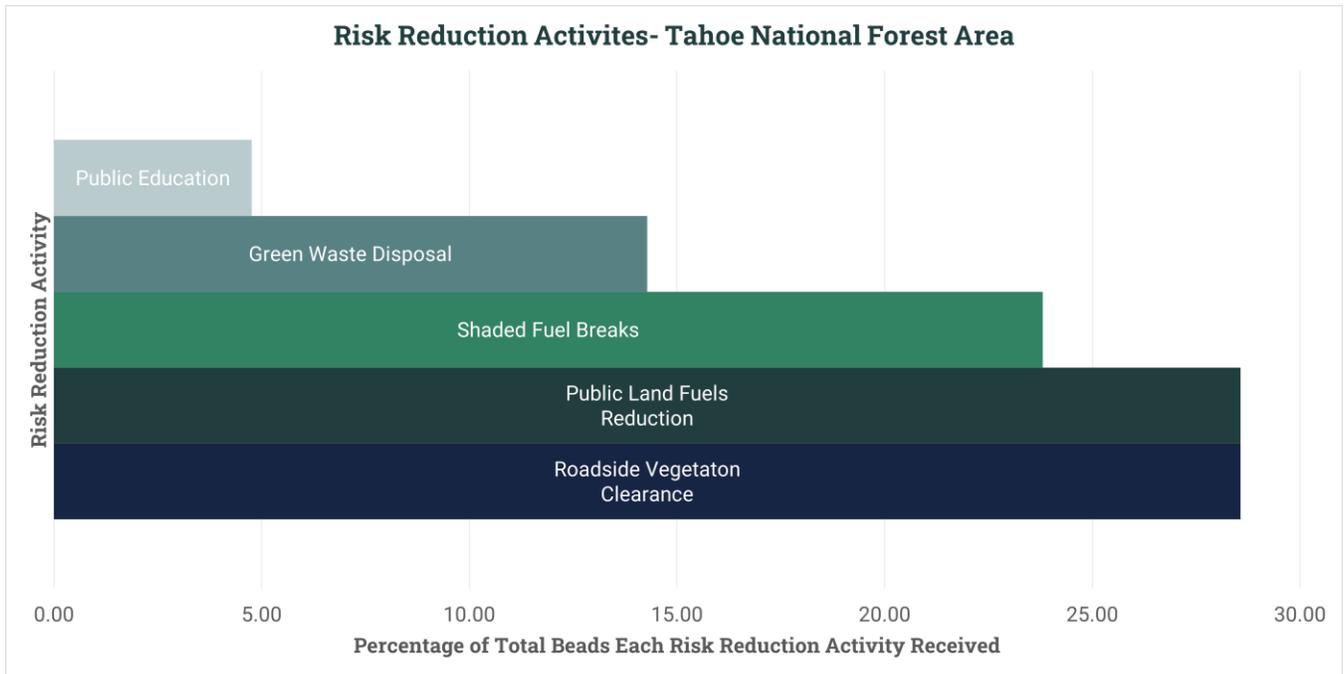
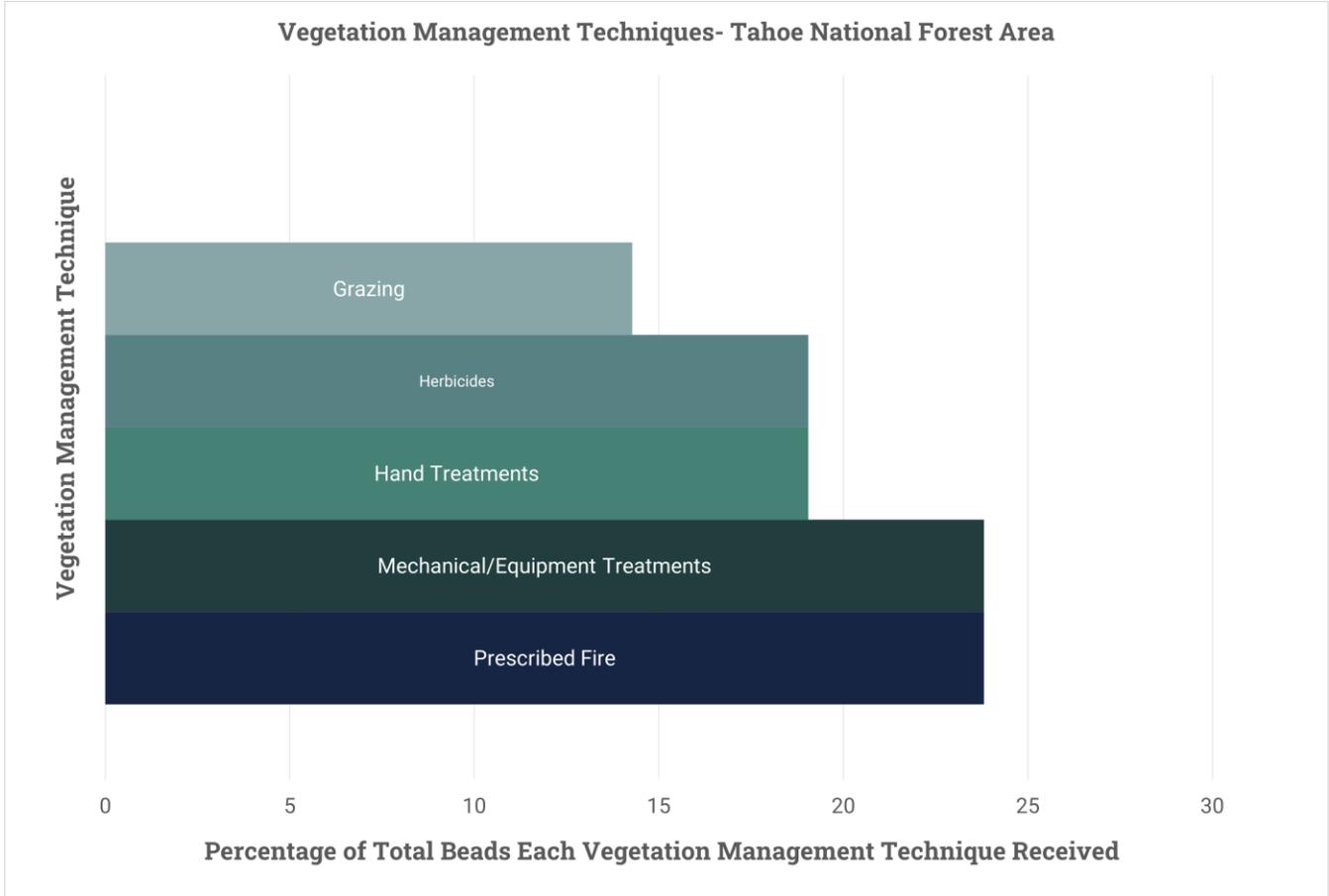


Exhibit 21 presents community preferences for vegetation management techniques.

**Exhibit 21.** Preferred vegetation management techniques for the Tahoe National Forest Area Forecast Zone

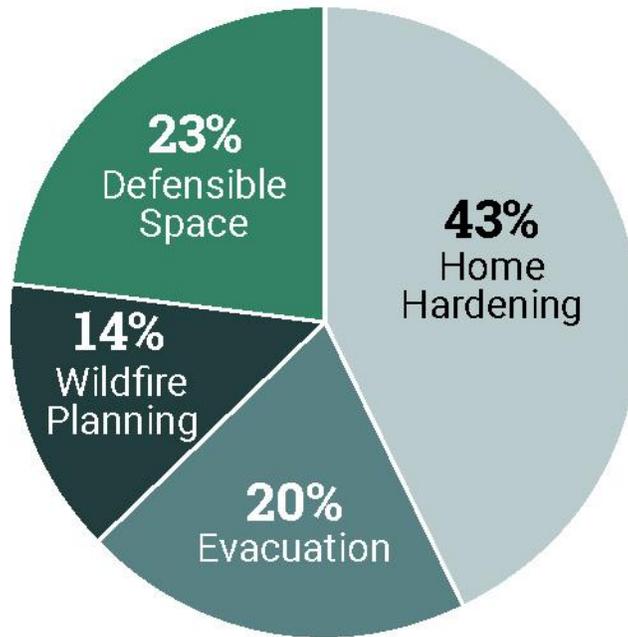


### 9.6.2.2 Community Discussions

To analyze the community group discussions, two methods were taken. The data was first categorized by challenges and opportunities. As further described in Section 5.1.2, this data was then categorized by the four discussion topics to help show the distribution of issues for each FZ. Exhibit 22 shows the distribution of challenges by topic for the TNF Area FZ. This shows how the majority of the written comments refer to Home Hardening, with fewer comments regarding Defensible Space, Wildfire Planning, and Evacuation.

Exhibit 22. Community-identified challenges for the Tahoe National Forest Forecast Zone

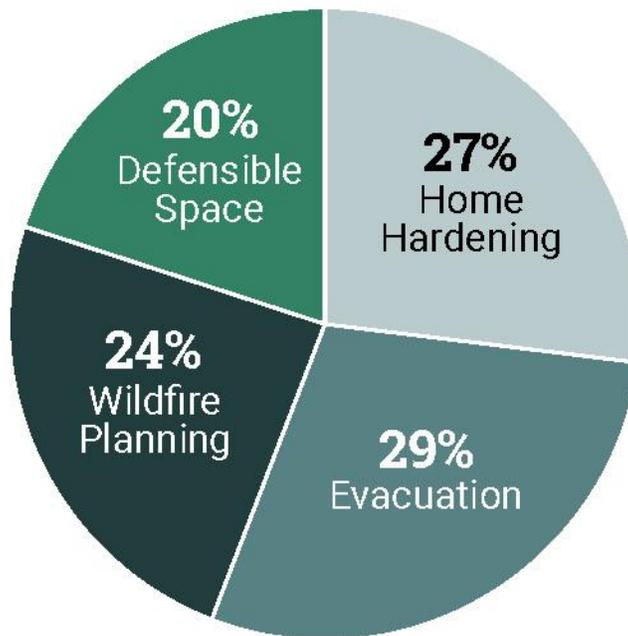
## Tahoe National Forest Area Distribution of Challenges by Topic



Additionally, as shown in Exhibit 23, when looking at opportunities, community members in the TNF FZ were focused primarily on Evacuation and Home Hardening. The proportions of challenges did not always translate to the proportion of opportunities. For example, although Home Hardening represented 43% of the comments regarding challenges, it only represented 27% of the comments regarding opportunities.

Exhibit 23. Community-identified opportunities for the Tahoe National Forest Forecast Zone

## Tahoe National Forest Area Distribution of Opportunities by Topic



The data was also categorized by issue topic. Exhibit 24 shows the distribution of overall challenges by issue category.

**Exhibit 24.** Community-identified challenges by issue category for the Tahoe National Forest Forecast Zone

## Tahoe National Forest Area Challenges

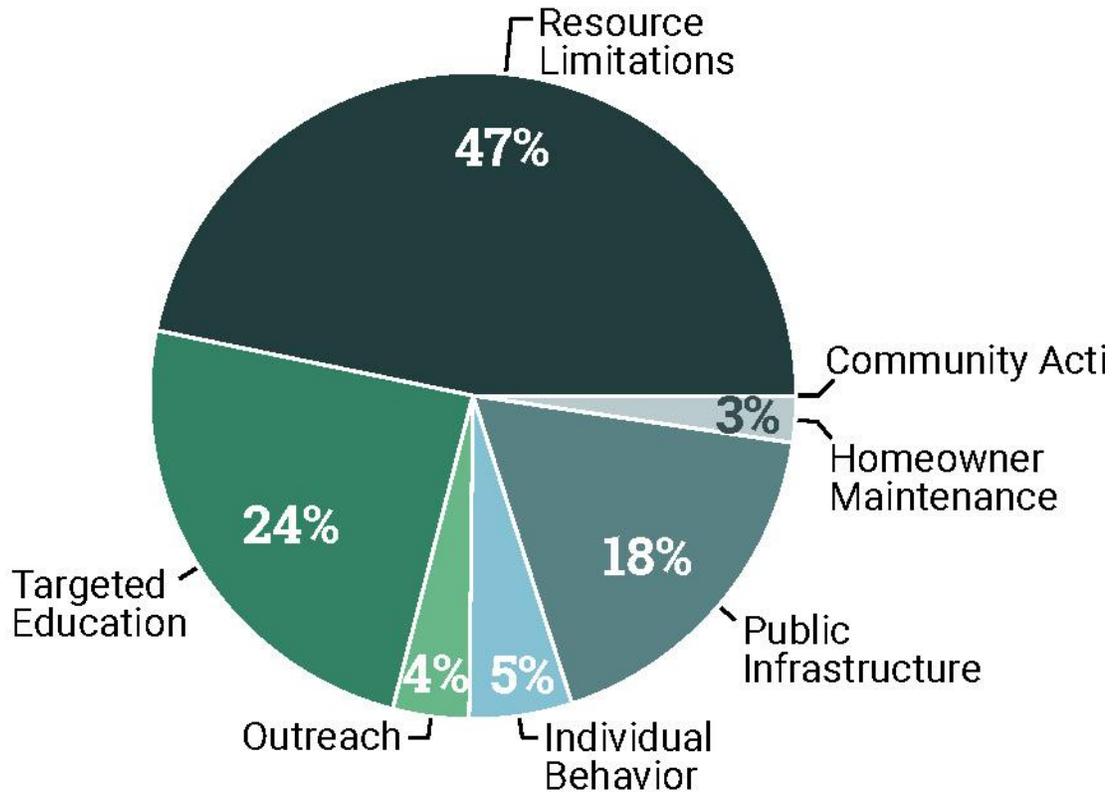
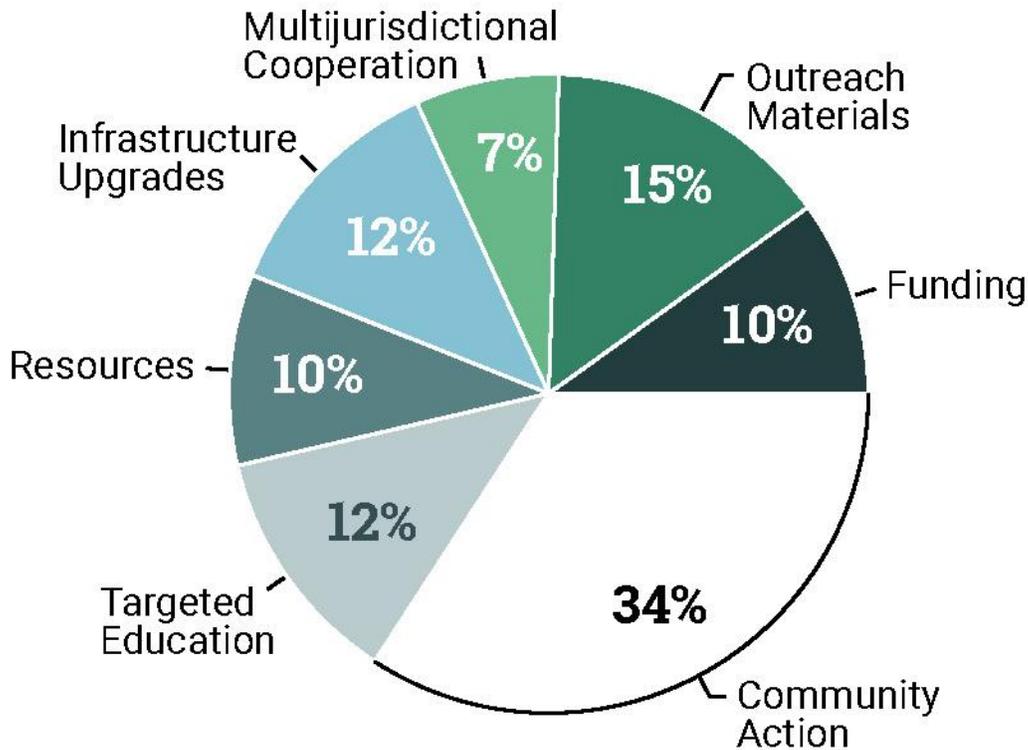


Exhibit 24 emphasizes how community members in the TNF Area FZ are very concerned about resource limitations that prevent people and communities from preparing for wildfire. This includes the costs associated with hardening their homes or implementing defensible space, not having the time or physical ability to implement improvements, or not having enough contractors to do the work. Other main concerns include needing more targeted education for full time and seasonal residents, outreach, and influencing individual behavior.

As shown in Exhibit 25, community members in the TNF Area FZ primarily focused their discussions on opportunities for community action.

**Exhibit 25.** Community-identified opportunities by issue category for the Tahoe National Forest Forecast Zone

## Tahoe National Forest Area Opportunities



For Community Action, community members in the TNF Area FZ wanted more education regarding evacuation, local ordinances that involve vegetation management, education on how fire behaves in this environment, and the importance of implementing Zone 0 within defensible space areas. Community members in this FZ also wanted more outreach materials to help increase community awareness so residents have a better understanding of what actions they can take themselves to reduce wildfire risk and a priority list to help them decide how to proceed with these actions. **For full results of each discussion topic and the full community workshop analysis, please see Appendix D.**

## 9.7 Issues Specific to the Tahoe National Forest Area Forecast Zone

The following list summarizes the major issues present within the Tahoe National Forest (TNF) Area Forecast Zone (FZ). These issues were obtained from community member input, collaboration with interested parties, field visits, and a review of wildfire-related spatial data.

### Wildfire Hazard

- Areas of High and Very High wildfire hazard are present throughout this FZ, however, wildfire hazard in this FZ was modeled to be generally widespread in the western half of the FZ.
- Wildfires are more common in the western half of the FZ according to the public record. Specific areas with more frequent wildfires (areas that have burned three or more times) include the South Yuba River drainage east of Washington, south of the Marsh Mill area, and south of Orleans Flat near the southern crest of the Middle Yuba River drainage.
- Private timberlands are common throughout the FZ, likely requiring collaboration across land ownerships when conducting landscape-level vegetation management/fuel reduction projects.

### Wildfire Ignitions

- Offroad vehicle use is highly popular within the FZ, increasing the likelihood of ignitions along forest roads.
- A review of vegetation fire ignition history shows that ignitions are more common near Emigrant Gap, Crystal Lake, along Highway 20, and near Scotts Flat Reservoir and other popular recreational lakes.

### Community Participation and Education

- The FZ includes “disconnected rural communities,” limiting community participation and creating outreach challenges.

### Evacuation and Access Challenges

- The FZ includes many areas without cell reception, presenting challenges for effective emergency notifications.
- Major road access is limited.
- The FZ includes popular recreation areas accessed by narrow roads, potentially leading to emergency access issues due to parked cars and evacuation challenges.

### Financial Barriers

- Financial barriers commonly prevent community members from creating defensible space and conducting structural hardening measures.

### Jurisdiction and Land Ownership

- Federally owned lands (TNF) dominate this FZ. Therefore, USFS has jurisdiction across the majority of the FZ.
- Private timberlands are common throughout the FZ, likely requiring collaboration across land ownerships when conducting landscape-level vegetation management/fuel reduction projects.

### Other

- Community water supply is limited within many communities in this FZ.

## 9.8 Action Plan

### 9.8.1 Risk Reduction Approaches

Wildfire often impacts a wide range of assets. Risks to identified assets can be mitigated through the implementation of a variety of risk reduction approaches. The following sections identify wildfire risk reduction approaches that may be considered within Project Priority Areas

#### 9.8.1.1 Reducing Structural Ignitability

Terrain, vegetation, and climatic conditions in the Plan Area combine to create a unique situation capable of supporting large-scale, high-intensity, and sometimes damaging wildfires. There are two main components to reducing structural ignitability: structural hardening and defensible space. The following sections identify actions that can be implemented by homeowners on private properties to reduce the potential for structure ignitions caused by wildfires.

##### 9.8.1.1.1 Structural Hardening

The main way in which structures ignite is via direct fire exposure (flame impingement, convection, radiation) or via ember exposure (Maranghides et al. 2022). To reduce structural ignitability, efforts need to address direct fire and ember exposure (Maranghides et al. 2022). Addressing structural ignition potential is an effective mitigation strategy for preventing wildfires and increasing WUI ignition resistance (Zhou 2013). Research has found that structural characteristics, especially roofing, play a significant role in reducing structural vulnerability to fire and the likelihood of burning (Bracmort and Gorte 2012; Kolden and Henson 2019; Manzello et al. 2011; Syphard et al. 2017; Zhou 2013). Further, reducing a structure's likelihood of ignitions reduces the risk for individual homeowners and the risk associated with fire spreading to other homes and wildland areas (Mockrin et al. 2020).

Although fire-resistant construction standards are mandatory for new buildings in the Plan Area, hardening of existing structures is voluntary. Hardening of the homes and other structures to enhance survivability during a wildfire would include retrofitting the most vulnerable home features, including roofs, vents, eaves and soffits, windows, walls, decks, rain gutters, patio covers, chimneys, garages, and fences. Adopting mandatory home hardening provisions through building and fire codes is problematic because existing, nonconforming structures were typically approved and built to the codes in effect at the time of construction. A burning structure contributes to wildfire spread via radiant heat generation

(to nearby structures) and ember generation (to downwind structures). Retrofits to existing structures can reduce fire risk, and some cost-sharing and grant programs are available to offset costs. Resources for hardening structures can be found on the following websites:

- [Wildfire Home Retrofit Guide](#)
- [Protect Your Property from Wildfire](#)
- [Prepare for Wildfire](#)
- [Low-Cost Retrofit List](#)
- [Preparing Your Home](#)

Recommendations for the Tahoe National Forest (TNF) Area Forecast Zone (FZ) to reduce structural ignitability are presented in Table 62.

**Table 62. Tahoe National Forest Area Forecast Zone Recommendations for Reducing Structural Ignitability**

Action/Recommendation	Issue	Scale
Encourage structural retrofits through inspections, community education, and grant funding opportunities.	Structure Exposure	Community
	Community Participation and Education	
	Financial Barriers	
Target contiguous community areas to provide maximum benefit towards reducing structure-to-structure ignitions.	Structure Exposure	Community
	Financial Barriers	
Evaluate opportunities for engaging residents and landowners in structural retrofit programs.	Structure Exposure	Community
	Community Participation and Education	
	Financial Barriers	
Work to encourage home hardening self-assessments through community education.	Structure Exposure	Community
	Community Participation and Education	Individual
Prioritize the most cost-effective structural hardening actions in community education and outreach materials and campaigns. Prioritize this outreach in financially challenged communities.	Structure Exposure	Community
	Community Participation and Education	
	Financial Barriers	
Encourage structure defensible space around recreation facilities and structures.	Structure Exposure	Community

9.8.1.1.2 Defensible Space

Reducing structure exposure to wildfire is also achieved via vegetation management/fuel reduction in defensible space areas. Five zones are identified for defensible space areas. Recommendations for management actions that can be taken by homeowners in each of these zones can be found on Nevada County’s website at <https://nevadacountyca.gov/3004/Defensible-Space>. Recommendations for Defensible Space in the TNF Area FZ are presented in Table 63.

**Table 63. Tahoe National Forest area Forecast Zone Defensible Space Recommendations**

Action/Recommendation	Issue	Scale
Encourage local government, fire agencies, and NGOs to identify staffing needs in order to facilitate a high level of defensible space inspections annually. Focus efforts to increase defensible space inspection rates, education, and compliance levels in communities with higher wildfire risk exposure. Focus these efforts on disadvantaged communities with high wildfire risk exposure.	Structure Exposure	Community
	Wildfire Hazard	Community
	Structure Exposure	
Increase defensible space education and resource deployment in vulnerable populations with high wildfire risk exposure.	Wildfire Hazard	Community
	Structure Exposure	
	Community Participation and Education	
In areas outside of Nevada County jurisdiction where creating 100 feet of defensible space is not possible for a single property due to property size, develop a process for property owners to partake in collaborative vegetation management. Provide residents with information on alternative methods and materials that can be implemented to increase fire safety when 100 feet of defensible space is not feasible (e.g., fire wall, enhanced structural hardening measures).  Most applicable in medium to higher-density communities where parcel sizes are smaller.	Structure Exposure	Community
	Wildfire Hazard	Individual
	Community Participation and Education	
Promote community-scale defensible space projects within the County Defensible Space Home Hardening Zone.	Structure Exposure	Community
	Wildfire Hazard	
Develop a training course for landscape contractors on defensible space standards, common issues, and best practices. Maintain a list of contractors who have completed the training course.	Structure Exposure	Community
	Community Participation and Education	

**Table 63. Tahoe National Forest area Forecast Zone Defensible Space Recommendations**

Action/Recommendation	Issue	Scale
Emphasize the importance of creating an Ember Resistant Zone (Zone 0) around all structures.	Structure Exposure	Community
	Wildfire Hazard	Individual
	Wildfire Ignitions	
	Community Participation and Education	
Emphasize the importance of storing firewood away from structures during fire season.	Structure Exposure	Community
	Community Participation and Education	Individual
Develop Community-based volunteer programs where community members can assist one another with defensible space creation.	Structure Exposure	Community
	Community Participation and Education	Individual
Emphasize the relationship between winter storm debris and defensible space. Promote defensible space as a year-round activity.	Structure Exposure	Community
	Wildfire Hazard	Individual
	Community Participation and Education	
Educate residents on the impact of noxious species on defensible space and the importance of removing these species from defensible space zones.	Structure Exposure	Community
	Wildfire Hazard	Individual
	Community Participation and Education	
Educate residents about the issue of large trees growing in close proximity to homes and the challenge of removing large trees. Encourage residents whenever possible to remove saplings/seedlings growing in the defensible space zone.	Structure Exposure	Community
	Wildfire Hazard	Individual
	Community Participation and Education	
Educate residents about the importance of removing pine needles from roofs, gutters, decks, and within Zone 0.	Structure Exposure	Community
	Wildfire Hazard	Individual
	Community Participation and Education	

9.8.1.2 Vegetation Management/Fuel Reduction

Vegetation management/fuel reduction actions outside of defensible space/fuel modification areas (see Section G-IV 7.3 of County Hazardous Vegetation Abatement Ordinance) may be conducted by fire and land management agencies, organizations, or private landowners for the purposes of wildfire risk reduction, especially at the landscape scale. Recommendations for Vegetation Management/Fuel Reduction in the TNF Area FZ are presented in Table 64.

**Table 64. Tahoe National Forest Area Vegetation Management/Fuel Reduction Recommendations**

Action/Recommendation	Issue	Scale
Promote partnership between federal agencies, state agencies, and private landowners to collaborate in cross-ownership vegetation management/fuel reduction projects.	Wildfire Hazard	Community
	Jurisdiction and Land Ownership	Individual
Provide community education focused on the post-fire benefits of active vegetation management/fuel reduction on watershed function, slope stability, and forest health/vegetation community resilience.	Community Participation and Education	Community
Conduct roadside vegetation management/fuel reduction along major evacuation routes and where roadside ignitions are common.	Wildfire Ignitions	Community
	Evacuation and Access Challenges	Individual
Create or maintain fuel breaks/hazardous fuel reduction areas along strategic ridgelines.	Wildfire Hazard	Landscape
Identify and address obstacles to implementing prescribed fire on public and private land.	Wildfire Hazard	Community
Conduct vegetation management/fuel reduction around critical infrastructure and critical resources.	Wildfire Hazard	Community
Conduct vegetation management/fuel reduction projects around high-use recreation facilities to decrease the potential for ignitions.	Wildfire Ignitions	Community
	Evacuation and Access Challenges	
	Wildfire Hazard	
Encourage the development of wildfire risk reduction projects that also promote climate resilience.	Wildfire Hazard	Community
Encourage the development of wildfire risk reduction projects that also address tree mortality.	Wildfire Hazard	Community

**Table 64. Tahoe National Forest Area Vegetation Management/Fuel Reduction Recommendations**

Action/Recommendation	Issue	Scale
Explore opportunities for vegetation removal around reservoirs and critical water infrastructure.	Wildfire Hazard	Community
Explore opportunities for using timber harvest and logging activities to reduce fuel loading in forested areas.	Wildfire Hazard	Community

**Notes:** USFS = U.S. Forest Service; CalVTP = California Vegetation Treatment Program.

### Vegetation Management/Fuel Reduction Monitoring and Evaluation Strategies

Vegetation management/fuel reduction activities may occur over long periods of time and require substantial investment and resources. In addition, these activities often require adaptive management due to changing conditions and subsequent treatments to ensure their effectiveness and longevity. Therefore, it is necessary to have a strategy to measure, both quantitatively and qualitatively, whether the goals and objectives of vegetation management/fuel reduction activities are being met as expected.

The 2024 Truckee Community Wildfire Protection Plan (CWPP) identified monitoring strategies that may be employed during vegetation management/fuel reduction projects throughout the County. Monitoring strategies aid in reaching management objectives and ensure that treatments address prior goals. Additionally, effective monitoring of vegetation management/fuel reduction projects addresses environmental damages that can be caused by vegetation removal such as soil erosion and invasive species recruitment. Post-treatment monitoring of treated areas also assists in the identification of appropriate treatment intervals based on the regrowth of vegetation following treatments.

Monitoring for each vegetation management/fuel reduction project will be tailored to the specific site and vegetation management/fuel reduction goals. The monitoring activities listed below serve different objectives, require varying amounts of time, and are suitable for different groups. These include:

#### Minimum- Level 1: Pre-and Post-Project Photographs

This monitoring strategy is considered a minimum standard and assists in comparing pre- and post-treatment vegetation conditions. This strategy captures vegetation conditions soon after treatment and therefore does not address vegetation regrowth over time.

*Targeted Group: Homeowners conducting fuel reduction projects on private property.*

#### Moderate - Level 2: Multiple Permanent Photo Points

Permanent photo points allow vegetation conditions to be assessed over time at set locations. This ensures consistency and ensures photo monitoring remains consistent. This monitoring strategy is best utilized over multiple years.

*Targeted Group: Enthusiastic homeowners or agencies conducting small-scale projects.*

High – Level 3: Basic Vegetation Plots

Vegetation plots are utilized to assess vegetation conditions including species, canopy cover, and vegetation frequency, in addition to environmental conditions including slope, aspect, soil type, and elevation. Using pre-established measurement protocols, vegetation conditions can be assessed pre- and post-treatment. Plot locations can be recorded, allowing continual monitoring over time to assess vegetation regrowth and identify treatment frequency standards.

*Targeted Group: Agencies conducting fuel treatments in forestlands.*

Intense – Level 4: Basic Vegetation Plots Plus Dead and Downed Fuels Inventory

In addition to the basic vegetation pots described above, conducting an inventory of dead and down fuels at each plot provides additional insights into fuel loading. This would include an assessment of dead and down fuels that may contribute to increased wildfire severity. Over time, these fuels build up in forested areas and may decrease the level of fuel treatment effectiveness if not maintained over time.

*Targeted Group: Agencies tracking detailed changes in vegetation following fuel treatments in forestlands.*

**9.8.1.3 Community Outreach and Education**

Community outreach and education is an important component in community wildfire hazard reduction efforts. Such efforts increase the community’s knowledge and awareness of wildland fire, can assist in prevention and preparedness efforts, and are an important component in planning and implementing vegetation management/fuel reduction projects. Given the size of the County, it is important the outreach messages around wildfire preparedness are consistent amongst communities. Information on existing County programs can be found in Section 6.2.4. Community Outreach and Education recommendations for the TNF Area FZ are presented in Table 65.

**Table 65. Tahoe National Forest Area Forecast Zone Community Outreach and Education Recommendations**

Action/Recommendation	Issue	Scale
Develop wildfire awareness materials (e.g., handouts, signage, QR codes) for display and/or distribution at high-use recreation areas (campgrounds, trailheads, day-use areas) to increase awareness of wildfire hazards.	Community Participation and Education	Community
Work with camps, recreational facilities, and other guest-oriented businesses to develop evacuation plans and enhance wildfire preparedness.	Jurisdiction and Land Ownership	Community
Conduct outreach specific to address wildfire hazards, emergency communications, and evacuation procedures with vulnerable populations.	Community Participation and Education	Community

**Table 65. Tahoe National Forest Area Forecast Zone Community Outreach and Education Recommendations**

Action/Recommendation	Issue	Scale
Support the development of new Firewise Communities in areas where they are needed and encourage the creation of Community Focus Groups intended to engage community members and identify local priority projects.	Community Participation and Education	Community
Develop outreach and education strategies that promote all-hazard disaster preparedness.	Community Participation and Education	Community
Develop outreach and education to support land management and land management planning for public and private landowners.	Community Participation and Education	Community
Develop outreach and education to engage with stakeholders and communities around climate and wildfire resilience.	Community Participation and Education	Community

**9.8.1.4 Evacuation**

The Plan Area presents unique challenges for evacuation, including narrow and windy roads, single access communities, rural communities located far from major evacuation routes, steep and variable terrain, and hazardous vegetation near roadways. In the Plan Area, the Nevada County Sheriff’s Office (NCSO) is responsible for coordinating emergency notifications and evacuations in their jurisdiction within the County’s operational area in addition to the County’s unincorporated areas. This includes alerting and warning the public, coordinating evacuations, enforcing laws and emergency orders, establishing safe traffic routes, ensuring that security is provided at incident facilities, ensuring access control to damaged areas, ordering, and coordinating appropriate mutual aid resources, and assuming responsibility for the coroner function. NCSO communicates the need for evacuation to the public using various communication methods as described further in Section 2.6 and Section 6.2.5.

The actions presented in Table 66 are recommended to address evacuation in the TNF Area FZ.

**Table 66. Tahoe National Forest Area Forecast Zone Evacuation Recommendations**

Action/Recommendation	Issue	Scale
Leverage and extend the 2024 Evacuation Study by identifying key ingress/egress routes that should be prioritized for improvements to facilitate emergency egress (e.g., widening, road surface improvements, bridge improvements, vegetation management/fuel reduction, signage, and refuge sites). Prioritize roadways that function as the sole evacuation route for communities.	Evacuation and Access Challenges  Wildfire Ignitions	Community

**Table 66. Tahoe National Forest Area Forecast Zone Evacuation Recommendations**

Action/Recommendation	Issue	Scale
Leverage Appendix A of the 2024 Evacuation Study to support the implementation of community-identified evacuation priorities.	Evacuation and Access Challenges	Community
Coordinate with private landowners to implement roadside vegetation removal along private roadways.	Wildfire Ignitions	Community
	Jurisdiction and Land Ownership	Individual
Prioritize efforts to address community evacuation priorities as identified in the Nevada County Evacuation Study.	Evacuation and Access Challenges	Community
Where secondary evacuation routes exist, seek opportunities to improve road conditions to conditions suitable for low-clearance vehicles.	Evacuation and Access Challenges	Community
Coordinate with relevant agencies to manage access to areas with large expanses of open space during Red Flag Warnings, or other high fire hazard periods, to minimize ignition potential.	Evacuation and Access Challenges	Community
	Jurisdiction and Land Ownership	
	Wildfire Ignition	
Identify high-use roadways and parking areas where parking restrictions during fire season or Red Flag warnings are needed to improve emergency ingress and evacuation.	Evacuation and Access Challenges	Community
Encourage community-wide evacuation drills to prepare community members for emergency situations.	Evacuation and Access Challenges	Community
	Community Participation and Education	
In communities lacking secondary access, install reflective road signs to direct those to primary egress routes.	Evacuation and Access Challenges	Community
	Community Participation and Education	
Educate residents on the importance of developing individualized evacuation plans.	Evacuation and Access Challenges	Individual
	Community Participation and Education	
Continue to educate residents about Evacuation Zones and nexus with emergency alerts.	Evacuation and Access Challenges	Community
		Individual

**Table 66. Tahoe National Forest Area Forecast Zone Evacuation Recommendations**

Action/Recommendation	Issue	Scale
	Community Participation and Education	
Encourage communities to replace wooden street signs with non-burnable materials and that all house addresses are clearly visible and reflective.	Evacuation and Access Challenges	Community
	Community Participation and Education	Individual

**9.8.1.5 Emergency Communication Alerts**

Emergency Communication Alerts are a critical way to communicate relevant emergency information to residents in the Plan Area. With the Plan Area having a diverse population including in age, race, ethnicity, native language, and access to technology it is crucial that emergency notifications accommodate that. This includes a diversity of media sources, languages, and methods of delivery of these notifications to reach most residents in the Plan area. The actions presented in Table 67 are recommended to address emergency communication alerts in the TNF Area FZ.

**Table 67. Tahoe National Forest Area Forecast Zone Emergency Communication Alerts Recommendations**

Action/Recommendation	Issue	Scale
Pursue methods for disseminating evacuation information at high-use recreation areas where cell phone reception is limited.	Evacuation and Access Challenges	Community
	Community Participation and Education	
Identify areas with limited telecommunications facilities and capabilities and explore opportunities for enhancing communications to residents and visitors prior to, during, and following wildfire events.	Evacuation and Access Challenges	Community
	Community Participation and Education	
Improve early warning systems and emergency communications to reach everyone, including non-English speakers, and develop materials or tools to facilitate emergency communications in appropriate languages.	Evacuation and Access Challenges	Community
	Community Participation and Education	
Install remote-operated electronic emergency signs in communication-limited areas to inform community members of emergency alerts including evacuation information and active wildfire information	Evacuation and Access Challenges	Community
	Community Participation and Education	
Pursue strategies to increase community familiarity with Hi-Lo Sirens used during evacuations.	Evacuation and Access Challenges	Community

**Table 67. Tahoe National Forest Area Forecast Zone Emergency Communication Alerts Recommendations**

Action/Recommendation	Issue	Scale
	Community Participation and Education	

**9.8.1.6 Post-Fire Recovery**

The Plan Area has been subject to numerous wildfires that have necessitated evacuations, impacted road systems, reduced soil stability, and damaged infrastructure and natural resources. Post-fire runoff, flooding, and debris flows are also possible and can cause further damage and impacts downstream of the burn area. Issues associated with post-fire recovery include repair and re-opening of access roads, repairs to utilities and other infrastructure, instability of slopes, proliferation of invasive species, and the need to rebuild damaged or destroyed structures, amongst others. Post-fire recovery actions are difficult to complete in advance because the location and extent of a burn area are unknown, and the level of burn severity drives much of the required actions. The Cal OES provides resources for post-fire recovery at <https://wildfirerecovery.caloes.ca.gov/>. Additionally, the Natural Resources Conservation Service provides information about post-fire assistance and recovery at: <https://www.nrcs.usda.gov/wps/portal/nrcs/main/ca/newsroom/features/>.

The actions presented in Table 68 are recommended to address post-fire recovery in the TNF Area FZ.

**Table 68. Tahoe National Forest Area Forecast Zone Post-Fire Recovery Recommendations**

Action/Recommendation	Issue	Scale
Develop post-fire rehabilitation guidelines for property owners and landowners in cooperation with appropriate federal, state, and local agencies that address post-fire effects of flooding and soil erosion. Prioritize reducing the importation of invasive species and restoring native habitats where applicable.	Community Participation and Education	Community
Develop post-fire rehabilitation guidelines for property owners and landowners in cooperation with appropriate federal, state, and local agencies that address post-fire effects on potable water, wastewater, hazardous materials, and the clean-up process.	Community Participation and Education	Community
Continue to aid those affected by wildfire through post-fire recovery guidance including insurance recommendations, how to apply for federal assistance, and guidance for post-fire cleanup, property reassessment, and rebuilding. <a href="https://nevadacountyca.gov/1241/Disaster-Recovery">https://nevadacountyca.gov/1241/Disaster-Recovery</a>	Community Participation and Education  Financial Barriers	Individual

**Table 68. Tahoe National Forest Area Forecast Zone Post-Fire Recovery Recommendations**

Action/Recommendation	Issue	Scale
Identify opportunities for post-fire social resilience, including, but not limited to, support for housing and employment access, health resource access, and access to mental and emotional support services.	Community Participation and Education  Financial Barriers	Community  Individual
Support the community by providing post-fire educational resources related to physical recovery, monetary support, and social services.	Community Participation and Education	Community
Encourage residents and property owners to participate in wildfire insurance reduction programs.	Community Participation and Education	Community  Individual
Educate residents on how unpermitted structures impact post-fire recovery options.	Community Participation and Education	Community  Individual

**9.8.1.7 Additional Approaches**

In addition to those discussed in the previous sections, other wildfire risk reduction approaches can be effective on a case-by-case basis depending on assets at risk and resource availability. The following identifies additional wildfire risk mitigation approaches that may be considered within Project Priority Areas:

- **Fire Road Maintenance:** Activities, including minor grading or natural material resurfacing, to ensure that existing roads are drivable by fire agency apparatus.
- **Ignition and Spread Prevention:** Modifications to areas prone to wildfire ignitions (e.g., roadsides) including flashy fuel treatment, restoration, installation of ignition-resistant materials, and use modifications/restrictions.
- **Utility Hardening/Undergrounding:** Undergrounding of power lines/utilities, or retrofitting overhead power line networks to minimize arcing, conductor contact, etc.
- **Inspection/Monitoring:** Staff time allocated to conducting defensible space or structural hardening inspections or monitoring open space areas for trespass or fire activity.
- **Chipper Programs:** Services where a chipper is provided for residential areas to incentivize defensible space and fuel modification area maintenance work on residential properties.
- **Equipment Acquisition:** Purchase of tools, vehicles, or other equipment used in vegetation management/fuel reduction, restoration, firefighting, data collection, mapping, and public education related to wildfire hazard reduction.
- **Infrastructure:** Purchase, installation, permitting, and maintenance of equipment intended to alert the community about wildfires (e.g., fire detection cameras), or provide data to fire managers (e.g., remote automated weather stations).
- **Staffing:** Funds for permanent or seasonal/temporary personnel focused on firefighting or fire prevention activities.

- **Patrols:** Funding for permanent or seasonal/temporary personnel to patrol large open space areas during periods of high fire hazard to detect and report fire starts.