

Kentucky Flat Firewise Community Assessment

September 2020

General Site Description

The Kentucky Flat Firewise Community is bounded on the north by Newtown Road, on the south roughly by Deer Creek and on the east by Mountain Lakes Estates Firewise Community. All parcels within the community have primary access onto Newtown Road, either directly or via Kentucky Flat Road or Avian Place.

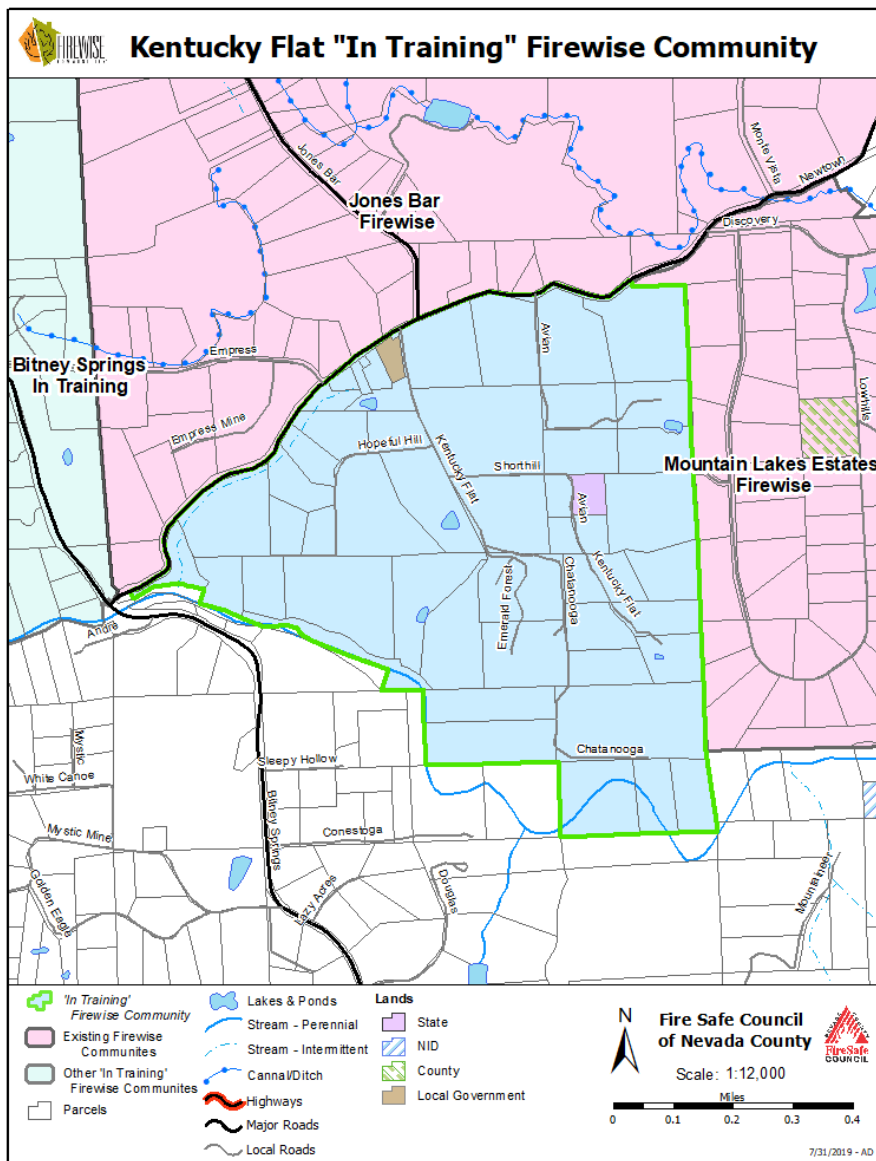


Figure 1 – Map of Kentucky Flat Firewise Community

Domestic water is supplied to homes from individual private wells. There is agricultural water supplied by Nevada Irrigation District on some of the parcels.

Overhead electric distribution lines deliver power to most homes, and lately PG&E has been removing hazard trees, sometimes chipping the tops and limbs, and removing the logs, and other times leaving some of it behind. Some of these openings in the canopy have a positive effect on lowering the density of the forest canopy. There are some solar power arrays in open areas providing additional electric power.

Gas for domestic use is from individual propane tanks.

Newtown Road is a two-lane paved County road. All other roads in the community are private and vary from one-lane gravel, one-lane paved or two-lane gravel. Vegetation encroaches closely on most of the roads except where they pass through grassland and pasture. Vegetation clearing along some of the roads has been occurring recently by residents, and the tree removal work that PG&E has been doing is also clearing back vegetation from some of the roads. However, regrowth of shrubs, vines and grasses will be rapid and will need maintenance.

Kentucky Flat Community Center is located within the Firewise Community. It is owned by the Grass Valley School District and a long-term lease on the property is held by Kentucky Flat Community Association. The property consists of historic buildings, including a small schoolhouse that is used by a day care center, 4-H groups and other community purposes.



Figure 2 – Kentucky Flat Community Center – Historic Schoolhouse

Common Vegetation Types

The Kentucky Flat Firewise Community contains a mosaic of vegetation types. There are five major vegetation types within the community— ponderosa pine forest, California black oak forest, canyon live oak forest, oak woodland (mostly blue oak), and grassland/pasture.

Small stands of ponderosa pine forest are scattered through the community, on deep clay soils. The ponderosa pine forest is mostly very dense with a closed canopy. In some areas there is little understory vegetation, while in other areas there are shade tolerant incense-cedars, some shrubs and blackberry vines. If these areas are unmanaged, during a moderate to high intensity wildfire, crown fire and torching is likely. These areas can be managed by opening the canopy by thinning from below, retaining the larger, dominant trees and removing ladder fuels and most of the shrubs. Ground fuels should be removed periodically to keep fire intensity lower. Thinning the ponderosa pine forests will improve the long-term health of the trees, allowing them to better survive periodic droughts, bark beetle outbreaks and wildfires.

The California black oak forests are mostly located in the southern portion of the community, on deep, well drained soils. These forests have nearly 100 percent canopy cover with shade tolerant conifers invading the understory, creating ladder fuels. With the ladder fuels, especially considering their future growth in height and width, these forests could have crown fires and torching during moderate to high fire conditions. There are good examples within the community of minimal ladder and ground fuels that should be used as a model in managing the remaining black oak areas.



Figure 3 - Black oak forest with minimal ground fuels and ladder fuels. This good model is located on Chatanooga Road.

Canyon live oak forests occupy small areas toward the north end of the community, mostly along Shorthill and Avian. The fuel is very dense with nearly 100 percent canopy closure, contains continuous ladder fuels of dead branches and shrubs and will burn as a crown fire under moderate to high intensity wildfire. Shorthill Road passes through a tunnel of this fuel type (see figure 8). These areas can be managed by reducing ladder fuels through pruning and shrub removal, and by lowering the canopy density by thinning out the smaller, shrubbier trees. See Figure 4 for a good example of a safer condition.



Figure 4 - Example of good management of Canyon Live Oak forest in a residential setting on the east part of Kentucky Flat Road.

Oak woodland is composed of scattered clumps of mostly blue oak, with canyon live oak mixed in. The understory is mostly grassland, but can be blackberry thickets, patches of chaparral or invasive Scotch broom. Grazing or mowing of these areas will maintain a low level of ladder fuel and keep wildfires burning along the ground. Removal of Scotch broom is essential to keeping fire risk at a minimum.

Mixed chaparral of white leaf manzanita, buckbrush ceanothus and invasive Scotch broom is scattered in small patches. Thinning of native shrubs will reduce fire intensity and leave some

wildlife cover. Complete removal of Scotch broom is recommended to allow grasses to dominate the ground cover. Fire behavior in the chaparral will be extreme during under even moderate winds due to the density and dead material on the ground.

Grassland and pastures provide good breaks in fuel continuity, especially if they are grazed or irrigated. Without grazing or mowing tall dry grass burns hot and fast, leading to rapid fire spread. If mowing or grazing is not possible in all grass areas, mow along roads and forest edges at least 30 feet to minimize the impact of grass fires on roads and forests.



Figure 5 – Irrigated pasture provides good fire protection, as well as grazing.

Topography

The topography of Kentucky Flat Firewise Community consists of a series of hills which drop into the steep Deer Creek canyon to the south. Elevations range from around 2000 feet along Deer creek, to just under 2400 feet on a few of the hills. A few miles to the north lies a deep river canyon – South Fork Yuba River – which has a high risk of fire blowing up due to steep slopes and heavy fuels.

Wind and topography play a significant role in the speed and intensity of fire. Wind is also a key factor of spreading burning fire embers far ahead of the flames. Stronger winds mean faster

and hotter fires. When the direction of wind is in the same direction as a slope, basin, or drainage, it is called “aligned”. Alignment of topography and winds further intensifies fire and increases the rate of spread.

Prevailing wind in the area is from the southwest and a fire burning downstream from the community in the Deer Creek drainage will be pushed by these winds into the community. There is one well aligned drainage leading from Deer Creek into the center of the community – APN 52-101-030. All the properties sloping into Deer Creek, and this aligned drainage in particular, will have the highest risk for fires burning in Deer Creek watershed downstream from the community. The Trauner Fire of 1994 was a near miss of this exact scenario.

Another aligned drainage is Hart Creek along the lower end of Newtown Road, before the intersection with Bitney Springs Road and Deer Creek.

Under a northeast wind, our worst fire condition, which is common in late summer and fall, a fire burning in the South Yuba River drainage will be a rapidly spreading fire heading toward the Kentucky Flat community. There was a “close call” in 1988 with the 49er Fire, which nearly burned through the community and was stopped just to the north. The Lobo Fire of 2017 started about one mile to the west of Kentucky Flat Firewise Community, with a northeast wind pushing it away from the community.

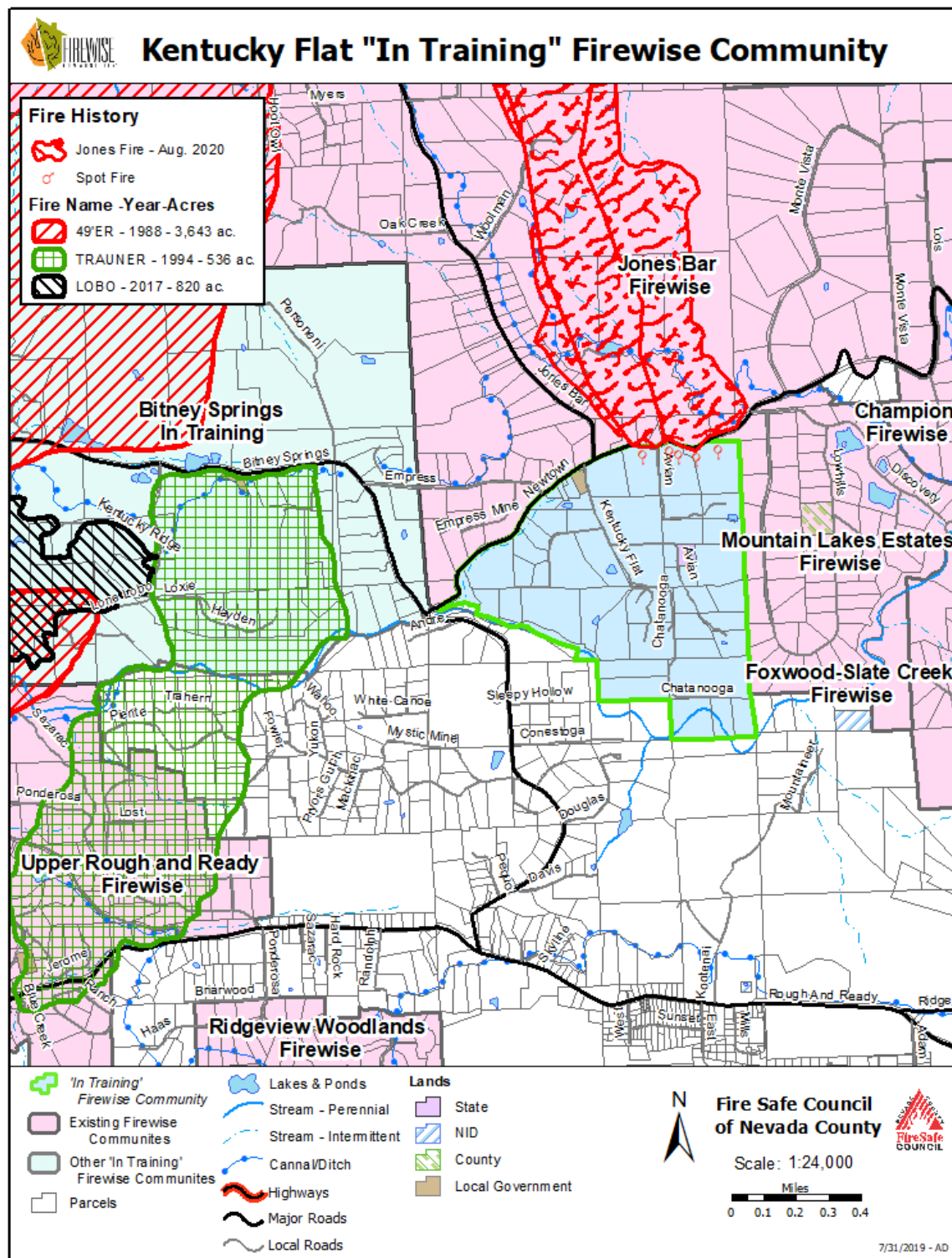


Figure 6 – Recent fire history of the area surrounding Kentucky Flat

Common Open Space and Adjacent Areas

There are no common open space areas within the Kentucky Flat Firewise Community. The surrounding areas are mostly private land, with three existing Firewise Communities to the east, north and northwest (Mountain Lakes Estates, Jones Bar, Bitney Springs). The surrounding Firewise Communities are working on fuel reduction and evacuation route improvement projects similar to projects within Kentucky Flat Firewise Community. Collaboration with Mountain Lakes Estates, Jones Bar and Bitney Springs Firewise Communities is encouraged.

Additional Comments

There are three primary ways that wildfire will occur in the community and result in homes burning. One way is if a fire ignites in the area from surrounding communities and spreads into the Kentucky Flat Firewise Community as a flaming front. The second way a fire may impact this community is from embers. Embers are small burning pieces of live or dead vegetation and fuel that can travel 1 or more miles ahead of a fire. The third way is if fires start in or around homes in the community. This could be from unintentional or careless ignition sources including barbeques, smoking, powerlines or using power equipment during dry, windy conditions.

Treatment of fuels within and adjacent to the community have the potential to impact fire intensity, rate of spread, ember production and ability of fire fighters to protect structures and control a wildfire. Fuel treatments can also make evacuations safer and less stressful. Fuel reduction work is effective in slowing a fire's progress only if it is completed on a large area, and is regularly maintained.

Evacuation Routes – The main evacuation routes out of the community lead to Newtown Road, a two-lane paved County road. Once on Newtown Road the options are west to Bitney Springs Road and then to Pleasant Valley Road or Rough and Ready Highway, or east on Newton Road to Highway 49. Considering the number of residents in the community and surrounding communities, a large and sudden evacuation would likely create traffic congestion and hinder evacuation. Thus, if possible, early evacuation is highly recommended, which requires good preparedness by each individual household. When evaluating and developing alternative evacuation routes be sure to consider the ability to navigate those with low clearance vehicles along with dark and smoky conditions. Deer Creek to the south creates a barrier without an elaborate and expensive road crossing. Working with Mountain Lakes Estates FWC to the east may yield another evacuation route option.

Newtown Road currently has encroaching vegetation on both sides and could be a danger to evacuees or fire service personnel. Much of the encroaching vegetation is Scotch broom, small trees and brush that would easily burn in a wildfire, making the route impassible. Empress Road may currently be a better option, but it too needs vegetation clearing.



Figure 7 - Newtown Road has vegetation encroaching on both sides.

Private roads within the community – All of the roads within the community are privately owned and maintained, some paved and others graveled. There are many roads within the community with dense vegetation along both sides of the road. A few roads have pasture or recent clearing of trees by PG&E crews. Vegetation burning within 30 to 100 feet of the road, especially in windy conditions, will result in very intense fire and tall flame lengths that will make it unsafe for emergency fire evacuation or firefighter access. There are numerous areas where trees overhang the roads. Both situations, with vegetation close to and above the road, will create a “tunnel of fire”, creating intense heat that cars cannot insulate and may be deadly or cause severe injury.



Figure 8 – Thick vegetation and overhanging branches on an evacuation route on Shorthill Rd.

State and Nevada County regulations require only 10 feet of horizontal clearance to 15 feet high along all roads and driveways. In reality, clearance of 30 to 100 feet, depending on vegetation type and slope, would provide safe evacuation routes. Trees with crowns separated from one another could be retained if pruned to 15 feet high, with all understory vegetation to be removed.

Kentucky Flat Community Center – The historic buildings at the Community Center are vulnerable to wildfire and should be protected from ember intrusion and radiant heat igniting the buildings or surrounding vegetation. Generally, unless recent upgrades have been made, older buildings do not have the features currently in use for structure hardening. Much knowledge about building design and materials have been realized through testing, research, and review of past fires' effects on structures. This information should be applied to improving the chances of the Community Center to survive a wildfire.

Mystic Mine community on the other side of Deer Creek does not have a Firewise community, and at some future point, collaboration may be useful.

Summary

Most of the homes are well constructed and maintained, have fire resistant roof materials, and some have fire resistant siding. Careful attention needs to be given to vent screening and gaps in siding and eave construction to prevent ember intrusion. A few homes are not even close to compliance with California PRC 4291 or Nevada County Hazardous Vegetation Abatement Ordinance.



Figure 8 – Structures such as this one are completely undefendable in even low intensity fires.

Many residences lack the recommended reflective signs with minimum 4-inch high letters. Others have the signs, but they are poorly placed and will not be visible in headlights at night or in smoky conditions. The signs need to be visible from vehicles coming from either direction, so two-sided signs are usually necessary.

The original road system has been changed by blocking roads and adding new roads. The result is a confusing naming scheme that includes duplicate names of roads not connected. This would make it difficult for emergency response personnel to quickly find a specific residence.

There are informal agreements between landowners to allow emergency use of roads normally closed to traffic. These agreements should be encouraged and strengthened if possible.

Wooden porches and decks are common and storage of combustible materials under decking needs to be eliminated. This includes leaves, firewood, scrap lumber and other materials that can burn. All firewood must be stored at least 30 feet from structures, or be placed inside a building that will not allow ember intrusion.

There are some landscaping issues that should be scrutinized. Foundation plants should be eliminated or pruned up off the ground. Ornamental conifers have no place in the landscaping within 30 feet of structures. Ornamental grasses need to be pruned back after seed set when leaves begin to dry. Dead leaves and branches must be cleared regularly within landscaping to reduce the possibility of shrubs and small trees from torching. Small lawns or well-watered groundcovers act as fuel breaks.

Some of the homes have adequate 100 feet defensible space zones, while others need to extend the zone of clearance to achieve the required 100 feet. Some of the developed lots have heavy ground and ladder fuels beyond the 100 foot zone, which can lead to torching or crown fires. The average lot size is 6.66 acres, which leaves a sizable percentage of each lot beyond the defensible space zone. If only the 100 foot defensible space zone is treated on a 10-acre lot, that still leaves at least 80% of the area untreated and exposed to the risk of crown fire.

Areas along power lines recently cleared by PG&E crews are vulnerable to invasion by Scotch broom, blackberry vines and small trees. These areas should be maintained as much as possible with low growing vegetation such as grasses to facilitate easy maintenance of fuel loads. Many of these power line corridors parallel evacuation routes.

There are 11 undeveloped parcels within the Kentucky Flat Firewise Community and mostly contain dense chaparral or overgrown forest. Most of these lots are located near Deer Creek and in their overgrown condition could lead crown fires into the center of the community. These lots create a fire hazard to the community due to high canopy density, abundant ladder fuels and heavy fuel loading. Owners of undeveloped lots may not be aware that a wildfire may threaten their real estate investment. Forested lots with heavy fuel loading will be destroyed by a crown fire, or be severely damaged by a hot surface fire. The costs of cleaning up after a wildfire are remarkably high, and the value of a burned over lot is much less than a forested lot that has been thinned and maintained. Owners of undeveloped lots need to be informed of the economic risks they face, in addition to the risks their lots pose to the residents.

There are no fire hydrants in the community. Several parcels contain private water storage tanks of up to 5000 gallons. These tanks need to have proper plumbing to allow rapid use by fire personnel. They also need clearance of vegetation for at least 30 feet, and posted with reflective signs to make them easy to find in smoke and darkness.

Recommendations

Ensure that all residents and visitors are familiar with Ready-Set-Go preparedness and are psychologically prepared to leave all belongings behind. Residents should be registered for emergency notification systems including CodeRed. Residents should become with the HIGH-LOW sirens used for evacuation warning. A video is available on www.readynevadacounty.org.

Encourage all community members to become familiar with the website of the Nevada County Office of Emergency Services at www.readynevadacounty.org. There is a wealth of information there for preparing for and reacting to all potential disasters.

Encourage early evacuation at the first signs of wildfire danger. Any wildfire occurring within 5 miles should be considered as extremely dangerous, depending on the wind direction. Fires within 10 miles should be monitored closely, with preparations for evacuation to take place immediately.

Develop a system to notify all community members if a wildfire is burning that is an immediate threat, or a potential threat within 12 hours. Each resident can decide exactly when to evacuate, but knowing that evacuation is a possibility well in advance of a CodeRED notification is very advantageous.

All community members should drive the various evacuation routes to become familiar with the options.

The community should educate residents on the importance of hardening their homes to fire, especially embers. For older homes, the importance of two less costly improvements could be emphasized. Enclosing the base of decks and porches and replacing vent screens with 1/8-inch mesh would make substantial improvements at relatively low cost. Pay more attention to what is stored on or under wood decks and porches. Any combustible materials, such as chair cushions, door mats or decorative pieces, could catch embers and ignite the decking, and burn to the structure. Adequate home hardening and defensible space is essential for the use of the home for sheltering in place in case of late notification of a rapidly moving fire cutting off evacuation. Educate residents on the proper procedures for sheltering in place if evacuation is not possible.

Show the "Be Ember Prepared" video at a community meeting. It can be found at, <https://www.youtube.com/watch?v=gAuhNDb963Y&t=9s>.

All homeowners should request a Defensible Space Advisory Visit (DSAV) from the Fire Safe Council of Nevada County. The Kentucky Flat Firewise Community should encourage several residents should take the free DSAV training offered annually by the Fire Safe Council. Advice on treating and maintaining natural vegetation, landscaping, fences, decks, and homes can be obtained from these volunteers.

Review existing landscaping and remove any plants that present hazards that cannot be mitigated with good maintenance.

Encourage the Kentucky Flat Community Association to schedule a Defensible Space Advisory Visit to improve the survivability of the historic structures. When scheduling the DSAV request one of the more experienced advisors knowledgeable in the latest construction materials and design for structure hardening. Considering the historic nature of the building the improvements may require more expertise to design and implement than a residence.

The Nevada County Hazardous Vegetation Abatement Ordinance and California Public Resource Code 4290 both require a minimum 10 feet of horizontal clearance of dry grass, shrubs, small trees, and branches up to 15 feet above the ground along both sides of all roads and driveways – public or privately owned. These standards should not be viewed as the ideal condition to reduce the risk of fire blocking roads to travel. With narrow roads, steep slopes or under windy conditions, much more than 10 feet of clearance is necessary. Flame length can be 3 times the height of the burning vegetation, and will be pushed horizontally much further with wind. Strive to achieve at least 30 feet of horizontal clearance on each side of all roads and driveways. If a visual screen is more important than fire safety, place screens as far from the roads as possible and utilize a patchy and staggered screen rather than a thick wall of fuel as a screen.

Encourage Nevada County to clear the vegetation along Newtown Road in both directions from Kentucky Flat. Nevada County is only required to maintain vegetation 10 feet from the edge of the road. The landowners adjacent to the Newtown Road should extend the clearing to at least 30 feet.

Work with Nevada County to create a more consistent road naming scheme to eliminate duplication in road names.

Be sure that all lots have adequately displayed reflective address signs that are easily visible in the headlights of vehicles travelling on the roadway.

Improve signs at intersections of private road to make navigation easier during darkness and smoky conditions. Upgrade road signs to 4-inch high letters on reflective signs and place signs close to intersections where headlights are likely to reflect from the signs.

Organize a Scotch broom pull in the community to remove these plants before they become large and highly combustible. The Fire Safe Council of Nevada County can help with advice and loaning of tools to make the job easier.

Encourage all community members to become familiar with the website of the Nevada County Office of Emergency Services at www.readynevadacounty.org. There is a wealth of information there for preparing for and reacting to all potential disasters.

Along recently cleared power line corridors, remove small trees that will eventually grow into the powerlines, and maintain the vegetation that is now receiving extra sunlight to keep fuel loading to a minimum.

Increase the level of thinning of the forested areas, mainly targeting for removal the understory small trees and shrubs. Additional thinning of crowded mature overstory conifers and hardwoods would open the dense canopy to allow heat from a fire to escape above the treetops and minimize torching and crowning, while allowing fire retardant to make it to the ground, improving the success of using aerial attack on wildfires.

Fire behavior can be influenced if most of the land has low fuel loads, little vertical continuity, and well-spaced healthy trees. Promote fuel treatments on parcels not yet treated. The more acreage treated the safer everyone will be, and the long-term health of the forests will improve, despite infrequent severe droughts and wildfires. Work from your existing defensible space outward as much as your resources permit each year. The community should strive to treat fuels on 2/3 of the entire community to effectively alter fire behavior. Grazed and irrigated pastures provide the best treatment for slowing wildfires, while thinning forests and reducing shrub cover can allow more successful containment by fire fighters.

Maintenance of vegetation on previously treated areas on private land is essential, and much less costly, to avoid intensive treatments after a decade of neglect. Plan on follow up maintenance at least every two to three years on treated lands.

Consider installing a 10,000-gallon water storage tank in coordination with the fire department. This could be an underground tank, and the location should be approved by the fire department. Alternatively, consider adapting a gravity-fed line from privately owned NID water stands. Get prior approval and specifications from the Penn Valley Fire Department to be sure it will be useful to firefighters.

Contact owners of undeveloped lots and inform them of the risk their properties pose to the residents. Let them know of the risks they are taking with the value of their parcels should a wildfire burn through them. The costs of the cleanup will be high, and the decrease in land value will be significant.