

Amador-El Dorado Unit Fire Safe Planning

The Problem

The Unit has a unique wildland fire environment owing to its Mediterranean climate, highly combustible fuels, frequent wildland-urban interface zones, and the complexity of its terrain. Fires burn with greater intensity in this environment and are more costly and difficult to control, creating a greater risk of loss of life, property, and resources.

The Unit's Direct Protection Area (DPA¹) on the west slope of the Central Sierra Nevada Mountain Range is experiencing explosive population growth. Most of this growth is occurring outside of the incorporated cities - the same areas that contain the most hazardous fuels and most difficult terrain. Most of the man-made values at risk from wildfire are also located in these areas.

The fire environment in the Unit is conducive to large destructive wildfires as shown by the fire history map. Most of CAL-FIRE's DPA contains high to very high hazard fuels (brush and timber). These areas contain steep, rugged river canyons that can limit accessibility. Fighting fires with bulldozers is difficult, if not impossible in some locations.

Key Issues:

- Increasing life, property, resources, and ecological losses.
- Inadequate community ingress/egress routes.
- Difficulty of fire suppression, increasing safety problems for firefighters.
- Longer periods between recurring fires in many vegetation types increasing volumes of fuel per acre.
- Increasing fire intensities.
- Increasing taxpayer costs and asset losses.
- More people are living and recreating in wildland intermix areas, which adds to the increases in ignition sources, resulting in more fires.
- The loss of funding for the two lookouts has significantly decreased the early detection ability of fires in AEU.

¹ DPA are lands that CAL FIRE has contractually agreed to protect. These are usually federal lands where the federal government is fiscally and legally the protection agency but CAL FIRE resources are better positioned to provide protection. Federal agencies provide direct protection to SRA lands where the situation is reversed.

Fire History

The Unit's fire history is one of numerous small fires with large fires occurring every thirty to forty years. The last large fire was the Rancheria Creek Fire in 1961(34,104 ac.) However, over the past twenty years population growth and development in the wildland have placed many additional homes and businesses at risk - now small fires often create wildland-urban interface fire protection problems previously only found in the most densely populated areas of southern California. [Appendix "A"](#) contains the large fire history and the ten-year fire occurrence maps of the Unit. On these maps the fires shown prior to the 2002 fire season are 300 acres and larger. In 2002, CAL FIRE changed its fire mapping requirements to include mapping grass fires 300 acres and over, brush fires 50 acres and over, and timber fires 10 acres and over, and all wildland fires which destroy 3 or more structures or which cause \$300,000 or more in damage.

Most large fires are aligned east to west. This is particularly evident in Amador County. This orientation is due to two factors, prevailing winds and terrain. El Dorado and Sacramento Counties are more likely to experience fires, which run from the north to the south - especially at the lower elevations. However, the historical large fires in El Dorado County follow the same east to west orientation as those in Amador County.

Fire Weather & Terrain

The Wildland Fire Triangle consists of fuels, weather, and topography. The most variable component is weather and the most stable of the three is topography. These components of the fire environment can't be altered by humans to affect the potential outcome of wildland fire occurrence, however the contribution to fire behavior by both require significant analysis to meet the objective of mitigating wildland fire activity on State Responsibility Lands.

Fire Weather

Fire weather for AEU is typically dominated by three general weather phenomenon; the delta push influence, north wind events, and east foehn winds caused by high pressure development in the Great Basin. All three weather conditions cause considerable increases in fire intensity and size, however the delta influence is the most common and surfaces frequently throughout summer.

Typically, high pressure systems will dominate Northern California in the summer months bringing extremely hot and dry conditions over much of the region. As these systems develop they will tend to yield near the Delta and Sacramento

areas bringing the marine influence to the Unit. This is generally considered a good thing for fire behavior; slightly cooler afternoon temperatures and increases in relative humidity. The downside however is the strong winds that accompany these patterns. These winds are generally capable of overriding any benefit that may come from marine air. There is however an upside, this type of wind will typically subside after sundown causing fire behavior to drop off dramatically.

The other critical wind patterns for AEU are very difficult to predict, are relatively rare, and often times are forecasted only the day before. Northerly or easterly winds are typically warmer and drier than most other wind patterns due to air compression. These conditions provide the perfect environment for increased fire intensity and large fire growth. Fire growth is typically wind driven, however as these events recede, fire immediately returns to fuel/topography driven in opposing directions to the wind driven direction. This type of wind event is commonly referred to as a Santa Ana Wind in Southern California, however it can manifest itself anywhere in California.

Topography

Topography in AEU is much like most other Sierra Units; flat near the valley bottom and increasingly steep as the unit reaches higher elevations. More importantly is the relationship of vegetation change with that of topography. Fuel loads tend to increase significantly as the topography becomes more rugged. The area near the Central Valley and Delta region, which is characterized by rolling hills and flat valley bottoms, is generally dominated by grass lands or savannah. The fire behavior is generally wind driven short duration fires, typically lasting no more than one burning period.

As the terrain approaches the upper foothills the vegetation changes dramatically to brush and tree dominated fuel types. These areas are generally steeper and longer sloped which will tend to cause more fuel and topography dominated fire behavior. Heavier fuels over steeper slopes cause marked increases in fire intensity and fire size as well as making fire fighting efforts more difficult. This is primarily due to the demands that heavier fuels on steeper terrain can have on resources during active suppression and mop up operations.

Higher elevation areas of the unit are typically steeper than that of the upper foothill region. Fuels are generally Sierran Mixed Conifer which is made up of heavy timber and significant loads of accumulated dead fuels. Fire spread is typically fuel and slope driven but winds can cause long range spotting.

A major topographic feature that can lead to increased fire spread and intensity is the canyon alignment of the major river systems within the unit. All of the major river systems are generally aligned in an east/west direction which coincides with the general prevailing westerly wind patterns over the Unit. This alignment can have the effect of channeling which can increase the wind speed and turbulence

along these river systems. This alignment can often cause fire to spread farther and with greater intensity.

The Amador-El Dorado Unit has completed a Fire Weather Operating Plan which is used to drive much of the day to day fire business decision making in the unit. That plan is attached as an appendix and goes into much greater detail with respect to weather and topography. [Appendix "G"](#)

Geographic/Ownership

AEU is located in the Northern Central Sierras. It includes Amador, El Dorado, Alpine and portions of Sacramento and San Joaquin counties. AEU encompasses 2,667,841 acres. AEU's DPA serves **898,861** acres. The United States Forest Service, Bureau of Indian Affairs, Bureau of Land Management, and Bureau of Reclamation manage lands that are protected by AEU. Conversely, in addition to national forest lands, the Forest Service provides direct wildland fire protection to private lands within the El Dorado and Toiyabe National Forest. Even with the USFS providing that protection the Unit is still actively engaged in pre-fire projects outside of its DPA.

Within AEU there are two all season trans-Sierra highways, State Highway 50 in El Dorado County and State Highway 88 in Amador County. Bisecting the Unit north to south is historic State Highway 49, on the west side of the Sierras and State Highway 89 in the Lake Tahoe Basin on the east side of the Sierras. Most population growth has historically occurred along the two east-west highways. With the influx of high-tech industry in Sacramento County, growth is occurring north and south from the major population centers creating new areas of wildland-urban interface.

AEU contains all or part of three major watersheds, the Middle and South Forks of the American, the North Fork of the Mokelumne, and the Cosumnes River basin. Numerous water agencies and power companies utilize the resources of these rivers and their tributaries for generation of hydroelectric power, acquisition of drinking and irrigation water.

Socioeconomic

The approximate resident population in AEU's DPA is 320,053. El Dorado County's highest population densities are found along the Highway 50 corridor from El Dorado Hills to Pollock Pines. The areas of Pleasant Valley and along State Highway 49 south of the community of El Dorado are also experiencing a rapid population growth. In Amador County, the population densities are greatest along the State Highway 88 corridor from Jackson to the Pioneer area.

County	Population²
Alpine	1,100
Amador	40,000
El Dorado	180,000
Sacramento	1,377,193
San Joaquin	664,000
Unit Total	2,262,293

A significant seasonal population increase occurs in mid-spring and continues to gradually increase due to the influx of seasonal workers seeking employment during the apple and grape harvests in the late fall.

The easy access to the Lake Tahoe Basin, recreational areas, summer homes, and tourist attractions are also major factors that influence the population during fire season. Even though most of these areas are located within the El Dorado National Forest, visitors must transit through CAL FIRE's DPA to reach them. Since the majority of the fires are human caused, this increase in population usually results in more wildland fire ignitions.

The major industries that support the local economy includes timber, tourism, recreation, wine and fruit production, construction, service oriented businesses and to a lesser extent, light industry. All of these industries have at one time or another been affected by wildfires. Hundreds of thousands of dollars have been lost both directly and indirectly due to wildfires. It has been estimated that a closure of Highway 50 during the summer months, would result in a loss of between 1.5 and 2 million dollars a day in the South Lake Tahoe Basin (including Nevada interests). Additionally, an estimated \$150,000 would be lost to the west slope communities due to a closure of Highway 50 from the west county line to Echo summit.

² 2002 census data

California Fire Alliance Communities at Risk

Wildfires burn millions of acres throughout the United States each year. These fires dramatically illustrate the threat to human lives and development.

A fundamental step in realizing this was the identification of areas that are at high risk of damage from wildfire. Federal fire managers authorized State Foresters to determine which communities were under significant risk from wildland fire on Federal lands.

The California Department of Forestry and Fire Protection undertook the task of generating the State's list of communities at risk. With California's extensive Wildland-Urban Interface situation the list of communities extends beyond just those on Federal lands.

AEU contains thirty-three communities classified at risk from wildfire. Most of which are adjacent to federal lands. These are indicated with an "F" in the "federal threat" column of the following chart. The Hazard Level Code included on the list designates a community's fire threat level where 3 indicates the highest threat.



California Fire Alliance communities at risk

Communities	COUNTY NAME	FEDERAL THREAT	HAZARD LEVEL
Bear Valley	ALPINE	F	3
Kirkwood	ALPINE	F	2
Markleeville	ALPINE	F	3
Paynesville	ALPINE	F	3
Woodfords	ALPINE	F	3
Woodfords Community (Indian Reservation)	ALPINE	F	3
Amador City	AMADOR	F	3
Fiddletown	AMADOR	F	3
Ione	AMADOR		3
Jackson	AMADOR	F	3
Pine Grove	AMADOR	F	3
Pioneer	AMADOR	F	3
Plymouth	AMADOR	F	3
River Pines	AMADOR		3
Sutter Creek	AMADOR	F	3
Volcano	AMADOR	F	3
Cameron Park	EL DORADO	F	3
Coloma	EL DORADO	F	3
Cool	EL DORADO	F	3
Diamond Springs	EL DORADO	F	3
El Dorado Hills	EL DORADO	F	3
Georgetown	EL DORADO	F	3
Grizzly Flat	EL DORADO	F	3
Kelsey	EL DORADO	F	3
Latrobe	EL DORADO	F	3
Omo Ranch	EL DORADO	F	3
Outingdale	EL DORADO	F	3
Placerville	EL DORADO	F	3
Pleasant Valley	EL DORADO	F	3
Pollock Pines	EL DORADO	F	3
Shingle Springs	EL DORADO	F	3
South Lake Tahoe	EL DORADO	F	3
Rancho Murrieta	SACRAMENTO		3

AEU Action Plan



The Unit's Fire Management Plan was developed to address fire safe planning and hazardous fuel reduction concerns of federal, state, and local fire agencies, fire safe councils and other collaborators. The Fire Plan incorporates an across the board approach to reducing the occurrence and impact of wildland fire through a coordinated effort involving law enforcement, for instance PRC-4291 defensible space requirements, education and information, community fire safe and evacuation planning and hazardous fuel reduction with emphasis upon the wildland-urban interface and in particular the homeowner and creating defensible space.

Shaded fuel breaks are also a large component of the overall fuel reduction effort with the Unit focusing on those fuel breaks that support the safe ingress of fire suppression forces and egress of civilians in and around communities.



The Unit considers collaborator support extremely important. Lack of collaborators may eliminate otherwise important projects from consideration. To gain community support, the Unit works closely with the Fire Safe Councils, local governments, and Federal agencies. These Fire Safe Councils provide a forum for creating support for all kinds of projects. This resource has proven so effective that the Unit now accomplishes projects it could not accomplish in the past.

These Fire Safe Councils also closely link their projects with projects in the Unit's Fire Plan. This allows greater progress towards the ultimate goal of reducing damage from wildfire.

The key to effective fire planning is the battalion's acting as community wildfire leaders. Consequently, as community wildland leaders, the battalions can only achieve the Unit and Department goals with support from the community.