

# 2018 SHASTA FORESTRY CHALLENGE

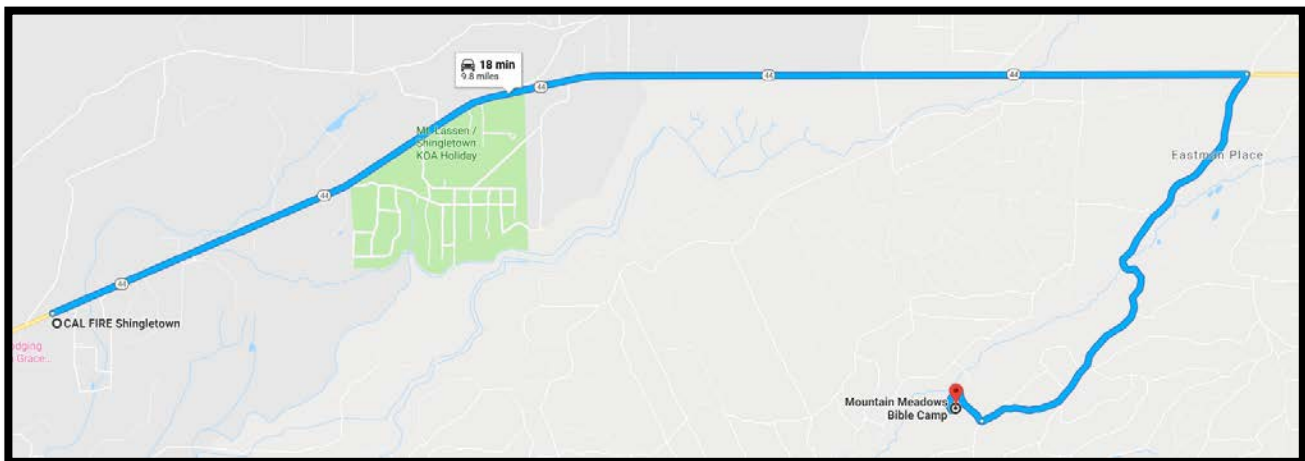
## FOCUS TOPIC QUESTION

### Introduction:

The focus topic for 2018 is ***Managing State Lands to Create a Wildfire-Resistant Forest***. Students will collect data on a 37 acre parcel of state-owned land where the CalFire Shingletown fire station is located and use the best regulatory mechanism to conduct a harvest that will result in reduced fuel loads with the goal of reducing wildfire severity.

### Focus Topic Fieldtrip Location:

We will use school vehicles to travel 10 miles to the CalFire Shingletown station, where we will assess the property and collect data. Below is a map of the route, and a map of the property with plot locations will be provided upon arrival.

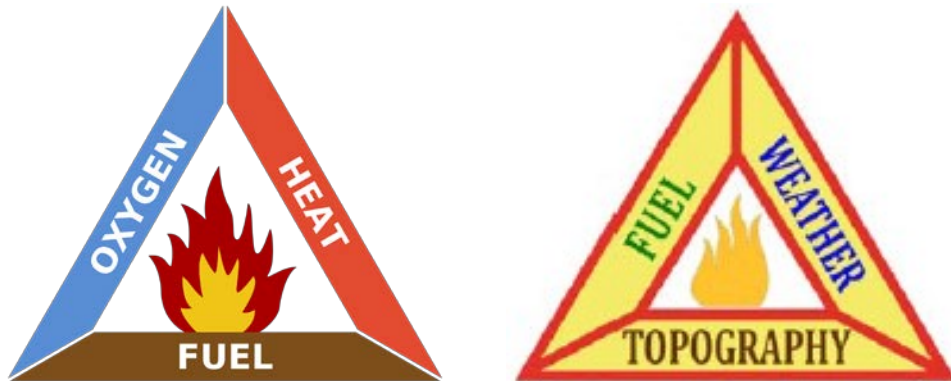


### Background Information:

#### History of the Property

Historical photographs show the forest in this area as heavily forested, but the subject property and the adjacent properties were damaged in a high intensity fire that came through the area in 1931. The fire killed most of the trees, leaving a few large trees that are easily identified today. A new forest grew, some trees through natural regeneration and some planted, and the State did a single tree selection harvest in 2011 using a standard Timber Harvest Plan (THP). Except for the few remaining residual large trees, the stand is young growth and mixed species, including ponderosa pine, sugar pine, white fir, Douglas-fir, and incense cedar.

## Fire Behavior



Above are diagrams of the Fire Triangle and the Fire Behavior Triangle. You will notice that the one element common to both triangles and the one we can most directly influence is Fuel.

When fuels (small trees & brush) are present and connected, such as from the ground to the tree tops or crowns, a fuel ladder exists that can carry a surface fire up into the crowns, where the fire becomes far more dangerous and difficult to control. A crown fire can sustain itself when trees are too close to each other such that their crowns (branches) once ignited can spread fire crown to crown. Therefore, to reduce the chances of a crown fire, it is necessary to disconnect both vertical and horizontal fuels.

### Forest Practice Rules – Regulations Available to Get Work Done

Forest practices in California are highly regulated. Rules for standard harvest have been evolving since the Z'Berg – Nejedly Forest Practice Act was passed into Law in 1973. However, recent bark beetle infestations have caused high levels of tree mortality in California with an estimated 129 million trees dying between 2010 and 2017. Additionally, during this same period, California has experienced a high number of catastrophic wildfires responsible for yet more tree mortality, loss of human life, and destruction of improved property (homes & businesses). In response to these drought related events, the California Board of Forestry and Fire Protection has developed a set of Exemptions, Emergencies, and Timber Harvest Plan options to facilitate harvesting of dead, dying trees, and thinning to promote healthy forests having reduced fuel loads.

You will be provided a handout, "Remove Your Dead Trees. Reduce Your Wildfire Risk" that summarizes and compares these Exemptions, Emergencies, and Timber Harvest Plan options. This handout will supply you with the regulatory mechanisms available for use in developing your Focus Topic.

## Understory Fuels Treatments and Maintenance Options (Post Harvest)

One or more methods can be used to treat understory fuels and logging debris. Each one has advantages and disadvantages. Among them are:

- Mastication – a machine with a grinding head chews up the fuel and lays it on the ground
- Lop and scatter – crews cut fuel into small pieces and scatter it on the ground so it is no more than 18” high and will decompose over a few years time
- Hand cut and chip – crews cut fuel into small enough pieces to run through a chipper and scatter on the ground
- Hand cut, pile, and burn – crews pile branches and debris into piles that are burned in the wet season
- Prune lower branches of residual trees – crews cut lower branches off live trees and scatter
- Apply herbicides to control shrubs – certified applicators spray brush with chemicals designed to kill targeted brush species
- Utilize grazing animals on the landscape – herders construct a temporary fence and bring in goats or sheep to eat vegetation
- Conduct an understory broadcast burn under appropriate conditions – CalFire either provides crews or supervises contracted crews

### **COMPARISON OF UNDERSTORY TREATMENT OPTIONS**

Method	Relative Cost	Labor Input	Treatment Risk (Fire Escape)
Mastication	High	Low	Low
Lop and Scatter	Moderate (*Low)	High	Low
Hand cut and chip	Moderate (*Low)	High	Low
Hand cut and pile burn	Moderate (*Low)	High	Moderate
Prune lower branches	Moderate (*Low)	Moderate	Low
Herbicides	Moderate	Low	Low
Grazing	High	Moderate	Low
Prescribed Broadcast Burn	High (*Moderate)	Moderate	High

\*CalFire can use the services of inmate crews, which reduces the cost of some treatment methods. However, inmate crews are available only when not assigned to other duties like fighting fire.

**Fieldtrip:** You will visit the Shingletown CalFire Station and will conduct a cruise of the forest to determine the current forest condition. Each team will collect data on a 1/10<sup>th</sup> acre circular plot and will use that data and information on current regulations and exemptions to plan a treatment of the forest and maintenance plan that will result in a fire-safe forest.

## Landowner Objectives and Project Phases:

The state's primary objectives for this unit are

- to create a fire-safe forest that protects the trees and the fire station
- to create a fuel break that would aid in controlling the spread of a fire in the area
- to create an example of a aesthetically pleasing yet safe forest that could be used for tours and education and be duplicated on private forestland in the area

There are three phases for this project that will restore the forest to a fire-safe condition:

1. Harvest merchantable trees
2. Treat residual vegetation and logging slash
3. Conduct maintenance treatments to keep understory fuels to a minimum

## Resources:

You will be given resources on a flash drive to load onto your team's computer. Use these resources, plus anything you download from the internet, to help you answer the questions to be addressed in your presentation. Additionally, you can use photos you take during the fieldtrip and statements from foresters you work with and interview during Ask a Forester.

## Items to be Addressed in Your Presentation:

1. The ownership and fire history of the unit
2. Data collection methods
3. Summary of the current stand condition compared to a fire-safe stand
4. Regulatory mechanism for tree removal
5. Recommended understory treatment(s)
6. Plan for maintaining a low level of understory fuel

## Final Product:

Your goal is to produce a 15 minute PowerPoint presentation that **describes, in detail, the current stand condition of the CalFire forest, the regulatory mechanism you recommend for treatment, a maintenance plan, and the ideal fire-safe and desired forest condition.** You are encouraged to use photos and information collected on the fieldtrip, interviews with resource professionals during the Challenge, and the maps, tables, and information in the resources provided. Additionally, use the judges' score sheet as a checklist, to make sure you cover the items on which you will be scored.