

## Rapid Assessment Reference Condition Model

The Rapid Assessment is a component of the LANDFIRE project. Reference condition models for the Rapid Assessment were created through a series of expert workshops and a peer-review process in 2004 and 2005. For more information, please visit [www.landfire.gov](http://www.landfire.gov). Please direct questions to [helpdesk@landfire.gov](mailto:helpdesk@landfire.gov).

### Potential Natural Vegetation Group (PNVG)

R1PICOcw Sierra Nevada Lodgepole Pine - Cold Wet Upper Montane

### General Information

**Contributors** (additional contributors may be listed under "Model Evolution and Comments")

**Modelers**

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**Reviewers**

**Vegetation Type**

Forested

**General Model Sources**

- Literature  
 Local Data  
 Expert Estimate

**Rapid Assessment Model Zones**

- California       Pacific Northwest  
 Great Basin       South Central  
 Great Lakes       Southeast  
 Northeast       S. Appalachians  
 Northern Plains       Southwest  
 N-Cent. Rockies

**Dominant Species\***

PICO

**LANDFIRE Mapping Zones**

3      6  
4  
5

### Geographic Range

Cold wet lodgepole pine is distributed in the upper montane of the central and southern portions of the Sierra Nevada. Stands are typically located at elevations ranging from ~2000 m to ~3200 m (Potter 1994).

### Biophysical Site Description

Wet cold lodgepole pine occurs on upper montane sites usually on gently rolling lower slopes and drainage bottoms (Potter 1994, 1998). Stands are typically in broken terrain and thus few large contiguous areas of this type exist. Climate is Mediterranean with wet winters (Nov.-Apr.) and dry summers although summer thunderstorms occur sporadically. Sites are moist and more productive than dry cool subalpine lodgepole. Fuels are composed of a matrix of herbaceous vegetation and pine debris.

### Vegetation Description

The understory is diverse with graminoids and forbs (cover >50%). Tree cover is generally moderate to dense. At lower elevations there is an increasing dominance of red fir and western white pine. Lodgepole can be seral to these species and at higher elevations mountain hemlock.

### Disturbance Description

Disturbance patterns have been poorly studied in Sierran lodgepole pine. Sierra lodgepole has been described as not being a fire type (Barbour and Minnich 2000) or as having long intervals between fires (Parker 1986, Keeley 1980, Potter 1998). Somewhat similar wet lodgepole types in Klamath Mountains and Oregon had a FRI range of 70 - 100 years. Season of fire is generally late summer to early fall. Stand replacement fire occurs at long intervals resulting in low stand complexity. Mixed severity fire occurs when fuel conditions remain moist and result in mixed age stands. Very infrequently, surface fires can occur.

### Adjacency or Identification Concerns

#### Scale Description

Sources of Scale Data     Literature     Local Data     Expert Estimate

Fire size from small (few hectares) to 100s of hectares. Disturbance scale in areas with long to short FRI is

\*Dominant Species are from the NRCS PLANTS database. To check a species code, please visit <http://plants.usda.gov>.

variable. Most fires are small (<1 ha) but the less common large fires affect large areas (10s to 100s ha).

**Issues/Problems**

Limited information about disturbance is available. Available information from limited geographical range of sites. Divergent fire occurrence patterns ranging from moderate frequency to very long FRI in vegetation type. Differences may be related to ignition and fire spread probabilities or lack of data. Information applied to this type in most reviews was derived from studies in the Klamath mountains rather than the Sierra.

**Model Evolution and Comments**

**Succession Classes\*\***  
*Succession classes are the equivalent of "Vegetation Fuel Classes" as defined in the Interagency FRCC Guidebook (www.frcc.gov).*

**Class A 5%**

**Dominant Species\* and Canopy Position**  
PICO

**Structure Data (for upper layer lifeform)**

	<i>Min</i>	<i>Max</i>
<i>Cover</i>	0 %	100 %
<i>Height</i>	no data	no data
<i>Tree Size Class</i>	no data	

**Description**  
 Early1 PostRep  
 Lodgepole pine regeneration following stand replacing fire (severe understory fire or canopy fire). Moderate density to doghair thickets.

**Upper Layer Lifeform**

Herbaceous  
 Shrub  
 Tree

Upper layer lifeform differs from dominant lifeform. Height and cover of dominant lifeform are:

**Fuel Model** no data

**Class B 30%**

**Dominant Species\* and Canopy Position**  
PICO

**Structure Data (for upper layer lifeform)**

	<i>Min</i>	<i>Max</i>
<i>Cover</i>	50 %	100 %
<i>Height</i>	no data	no data
<i>Tree Size Class</i>	no data	

**Description**  
 Mid1 Closed  
 Mid-maturity lodgepole pine undergoing intrinsic stand thinning. Considerable surface fuel from tree mortality from previous fire.

**Upper Layer Lifeform**

Herbaceous  
 Shrub  
 Tree

Upper layer lifeform differs from dominant lifeform. Height and cover of dominant lifeform are:

**Fuel Model** no data

**Class C 5%**

**Dominant Species\* and Canopy Position**  
PICO

**Structure Data (for upper layer lifeform)**

	<i>Min</i>	<i>Max</i>
<i>Cover</i>	10 %	49 %
<i>Height</i>	no data	no data
<i>Tree Size Class</i>	no data	

**Description**  
 Mid1 Open  
 Mid-maturity lodgepole pine where surface fire or other disturbance has opened the stand.

**Upper Layer Lifeform**

Herbaceous  
 Shrub  
 Tree

Upper layer lifeform differs from dominant lifeform. Height and cover of dominant lifeform are:

**Fuel Model** no data

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**Class D 5%**

Late I Open

**Description**

Areas that have experienced one or more low severity understory fires that had reduced stand density or old stands that have not experienced fire but have been thinned by other processes (tree falls etc.). Stands are uneven aged.

**Dominant Species\* and Canopy Position**

PICO

**Upper Layer Lifeform**

- Herbaceous
- Shrub
- Tree

**Fuel Model** no data

**Structure Data (for upper layer lifeform)**

	Min	Max
Cover	10 %	49 %
Height	no data	no data
Tree Size Class	no data	

Upper layer lifeform differs from dominant lifeform. Height and cover of dominant lifeform are:

**Class E 55%**

Late I Closed

**Description**

Old stands where fire has had minimal influence.

**Dominant Species\* and Canopy Position**

PICO

**Upper Layer Lifeform**

- Herbaceous
- Shrub
- Tree

**Fuel Model** no data

**Structure Data (for upper layer lifeform)**

	Min	Max
Cover	50 %	100 %
Height	no data	no data
Tree Size Class	no data	

Upper layer lifeform differs from dominant lifeform. Height and cover of dominant lifeform are:

**Disturbances**

**Disturbances Modeled**

- Fire
- Insects/Disease
- Wind/Weather/Stress
- Native Grazing
- Competition
- Other:
- Other

**Historical Fire Size (acres)**

Avg: no data  
Min: no data  
Max: no data

**Fire Regime Group: 3**

- I: 0-35 year frequency, low and mixed severity
- II: 0-35 year frequency, replacement severity
- III: 35-200 year frequency, low and mixed severity
- IV: 35-200 year frequency, replacement severity
- V: 200+ year frequency, replacement severity

**Fire Intervals (FI)**

Fire interval is expressed in years for each fire severity class and for all types of fire combined (All Fires). Average FI is central tendency modeled. Minimum and maximum show the relative range of fire intervals, if known. Probability is the inverse of fire interval in years and is used in reference condition modeling. Percent of all fires is the percent of all fires in that severity class. All values are estimates and not precise.

	Avg FI	Min FI	Max FI	Probability	Percent of All Fires
Replacement	150	37	764	0.00667	23
Mixed	50			0.02	70
Surface	500			0.002	7
All Fires	35			0.02867	

**Sources of Fire Regime Data**

- Literature
- Local Data
- Expert Estimate

**References**

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