7-Day Significant Fire Potential Product Explanation Page

The 7-Day Significant Fire Potential Product (7-Day product) is a projection of significant fire activity (that which requires additional resources from outside the fire origin) over the next seven days. First developed in the Pacific Northwest area of the United States, it is now done nationwide and has become the Predictive Services' signature product. The product is based on a statistical approach correlating historical fire occurrence data with National Fire Danger Rating System (NFDRS) indices and meteorological data to determine probabilistic forecasts of fire potential. Significant Fire Potential is defined as "The likelihood that a wildland fire event will require mobilization of additional resources from outside the area in which the fire situation originates". It is important to keep in mind that this product is not a weather forecast, it is a projection of significant fire potential based on weather, fuel conditions, and resource availability (**Figure 1**).



Fire Potential Model

Wildland Fire Event

A wildland fire event occurs over a relatively short period of time, often measured in days, and is *evaluated by either fire size, number of ignitions, or by the complexity of the situation.* For the southern California Geographical Coordination Center (GACC), **a wildland fire event is defined by fire size**. Therefore the 7-Day product is a projection of **large fire activity** during the next 7 days across the GACC.

Fire size is determined by taking the top 5% of all the daily largest fires during the past 15 years for each Predictive Service Area (PSA) and the end result is a large fire size expressed in acres. Listed below are the large fire sizes for each PSA:

- SC01 Eastern Sierra (100 Acres)
- SC02 Central Sierra (50 Acres)
- SC03 Southern Sierra (250 Acres)
- SC04 Sierra Foothills (300 Acres)
- SC05 Central Valley (500 Acres)
- SC06 Central Coast Interior (500 Acres)
- SC07 Central Coast (250 Acres)
- SC08 South Coast (250 Acres)
- SC09 Western Mountains (150 Acres)
- SC10 Eastern Mountains (50 Acres)
- SC11 Southern Mountains (300 Acres)
- SC12 Lower Deserts (50 Acres)
- SC13 Eastern Deserts (50 Acres)
- SC14 Central Mojave (300 Acres)
- SC15 Upper Deserts (250 Acres)
- SC16 Northern Deserts (250 Acres)

Fuel Dryness Levels

Dryness Level (DL) is a combination of the Energy Release Component (ERC) with either the ten or one hundred hour dead fuel moisture which has historically related to large fires. Three categories of fuel dryness have been developed for each PSA and are defined as followed:

- Moist (Green) A Fuel Dryness which has historically resulted in a zero or very low probability for having a new large fire or for significant growth on existing fires.
- Dry (Yellow) A Fuel Dryness which will not typically result in a new large fire or significant growth on existing fires, but could *if* accompanied by a critical burn environment or an ignition trigger.
- Very Dry (Brown) A Fuel Dryness which results in a higher then normal probability of significant fire growth or new large fires, especially when accompanied by a critical burn environment or an ignition trigger.

High Risk Days

High Risk Days are rare occasions when conditions exist that historically have yielded in a significantly higher than normal chance for a new large fire or for significant growth to occur on existing fires. On average, days in this category have about a 20% or better chance of having either one of these two situations occur. There are two conditions that would lead to the issuance of a High Risk Day: A Critical Burn Environment or Ignition Trigger combined with a Fuel Dryness either in the "Dry" or "Very Dry" category.

Critical Burn Environment (Orange) – A Critical Burn Environment results when a combination of sufficiently dry fuels and critical weather conditions are expected. Examples of critical weather conditions are high winds and low humidity or very unstable atmospheric conditions. An Orange color will be used along with a symbol representing the weather condition responsible for the Critical Burn Environment.

Ignition Triggers (Red) – Ignition Triggers are those causative agents that start fires such as lightning or high recreation activity such as the Forth of July.

Resource Availability – When enough fires occur within a GACC, Initial Attack resources can be overwhelmed, leading to an elevated chance of a large fire. Sending resources to fires outside the local GACC also increases the probability of large fire occurrence within the local GACC.

High Risk Criteria

Lightning:

SC01 Eastern Sierras – Two Day Dryness Level* of 2.5 or higher with 190 or more lightning strikes

SC03 Southern Sierra – Two Day Dryness Level* of 2 or higher with 180 or more lightning strikes SC09 Western Mountains – Two Day Dryness Level* of 3 with 30 or more lightning strikes SC11 Southern Mountains – Two Day Dryness Level* of 3 with 85 or more lightning strikes SC14 Central Mojave – Two Day Dryness Level* of 3 with 110 or more lightning strikes SC16 Northern Deserts – Two Day Dryness Level* of 2.5 or higher with 315 or more lightning strikes

*Two Day Dryness Levels are calculated by taking the Fuel Dryness Level from the first day with lightning and adding the Fuel Dryness Level of the next day and dividing by two. Example: SC01 is in the brown category on day 1 (Brown = 3) and drops into the yellow category (2) on day 2. So 3 + 2 = 5 and 5/2 = 2.5. This takes into account of whether or not the lightning activity is becoming wetter over time.

Wind:

SC08 South Coast – Sustained winds of 20 mph combined with humidity of less than 15% SC09-SC16 – Sustained winds 30 mph combined with humidity of 15% or less

The Product

The chart located on the 7-Day Significant Fire Potential Product is divided up into PSAs, with color-coded forecasts of DL values for each of the next seven days (including the observed reading fro the previous day). High Risk Days are highlighted with orange or red boxes, and include a symbol for the associated weather or trigger element. Below the chart, a weather synopsis and fire potential discussion is included, as well as an assessment of available resources for initial attack activity. Links to projected maximum temperature, minimum humidity, Energy Release Component, Ten and Hundred Hour dead fuel moistures are available at the bottom of the product.

Predictive Service Areas	Ytd	Mon	Tue	Wed	Thu	Fri	Sat	Sun
	Jul O5	Jul O6	Jul 07	Jul O8	Jul 09	Jul 10	Jul 11	Jul 12
SC01 - Eastern Sierra								
SC02 - Central Sierra								
SC03 - Southern Sierra			×	×				
SC04 - Sierra Foothills								
SC05 - Central Valley								
SC06 - Central Coast Interior								
SC07 - Central Coast								
SC08 - South Coast				¥				
SC09 - Western Mountains								
SC10 - Eastern Mountains								
SC11 - Southern Mountains								
SC12 - Lower Deserts								
SC13 - Eastern Deserts								
SC14 - Central Mojave								
SC15 - Upper Deserts								
SC16 - Northern Deserts								