

# EXPLANATION OF THE 7-DAY SIGNIFICANT FIRE POTENTIAL PRODUCT

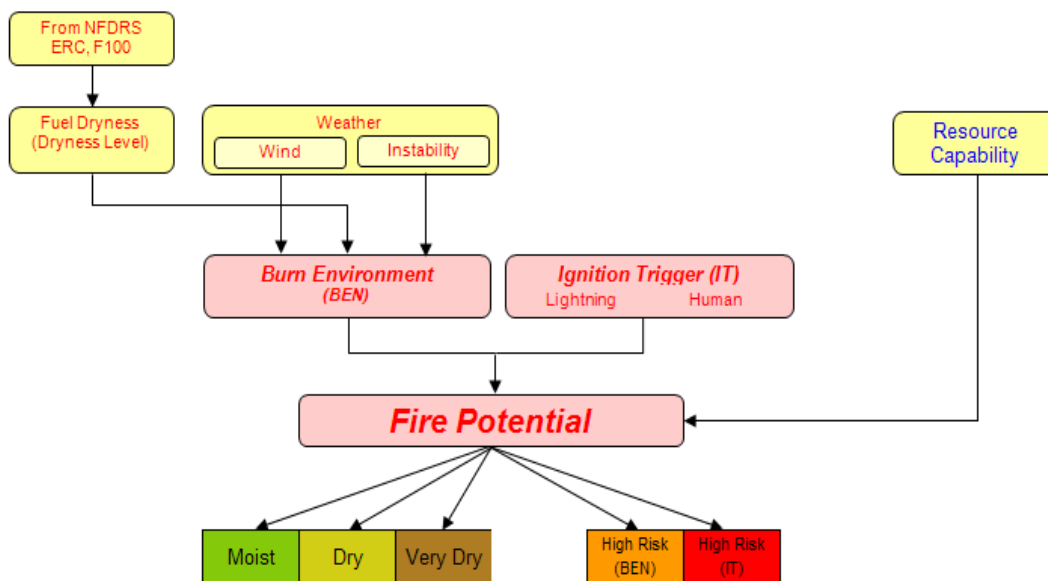
## Significant Fire Potential

The primary responsibility of Predictive Services is to provide sound guidance to regional and national resource managers concerning current and projected “Significant Fire Potential”. The goal of this guidance is to help these managers make effective and efficient use of available resources. “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 crucial to understand that although weather is a major contributor to Significant Fire Potential, this product is not a weather forecast.*** It is a forecast of Significant Fire Potential only, which is a function of fuel conditions, weather, and resource availability. It assesses the daily probability for occurrence of a new large fire and/or the daily potential for significant new growth on existing fires.

The following conceptual model was developed to help explain how Predictive Services assesses the daily probability for occurrence of a new large fire and/or the daily potential for significant growth on existing fires.

### *Fire Potential Model*



***"Fire Potential":*** A wildland fire scenario measured in terms of anticipated occurrence of large fires, complex fires or number of fires and management's capability to respond. Fire potential is influenced by a sum of factors that includes ***fuel dryness***, ***weather***, ***ignition triggers***, and ***resource capability***.

## **Wildland Fire Events**

A wildland fire event occurs over a relatively short period of time, often measured in days, and is usually evaluated by either fire size, number of ignitions, or by the complexity of the situation. When pre-set thresholds are reached the potential for significant fires increases.

- For this product a Large Fire is defined as a fire meeting the size of the top 5% of historic “daily largest fires” during a typical fire season for each PSA.
- When enough ignitions occur over a short period of time Initial Attack resources can be overwhelmed leading to an elevated chance of large fires. The threshold for number of ignitions over a set period of time is determined locally through a statistical analysis.
- The complexity of the terrain in which fires occur, including aerial coverall and accessibility to the terrain in which the fires occur, can also determine the potential for significant fire development.

## **Fuel Dryness Levels (DL)**

“Dryness level” (DL) is a combination of one or two fuel dryness and/or fire weather indices which correlate well to large fire occurrence.

- Moist (Green): Indicates a burn environment which has historically resulted in a very low or no probability of new large fires or significant growth on existing fires, even when accompanied by critical weather events.
- Dry (Yellow): Indicates a transitional burn environment that typically results in low probabilities of new large fires or significant growth on existing fires unless accompanied by a critical weather or ignition trigger event.
- Very Dry (Brown): Indicates a very dry burn environment which has historically resulted in a higher than normal probability of significant fire growth and new large fires, especially when accompanied by a critical weather or ignition trigger event.

## **High Risk Days**

High Risk Days are issued when fuel and weather conditions are predicted that historically have resulted a significantly higher than normal chance for a new large fire or for significant growth on existing fires. ***On average, days in this category have about a 20% or better chance of large fire occurrence.*** There are three contributing factors for a High Risk Day: Critical Burn Environment, Ignition Triggers and Resource Availability.

- **Critical Burn Environment (Orange)**: Indicates a Critical Burn Environment that, given an ignition, significant fire growth will occur due to a combination of sufficiently dry fuels and critical weather conditions. Examples of critical

weather conditions are high winds, low humidity, an unstable atmosphere and very hot weather. An Orange box will be used with a symbol representing the weather condition responsible for the critical burn environment.

- Ignition Triggers (Red):** Indicates sufficiently dry fuels and a significant ignition source that is expected to result in a high probability of a large number of fire starts. Unlike the burn environment which merely promotes or inhibits fire growth should a fire occur, an Ignition Trigger actually starts fires. A lightning outbreak is the most common Ignition Trigger in the western United States, but others are possible depending on the geographic area (e.g. holidays that have historically resulted in a greater than normal number of fire starts). A Red box will be used with a symbol representing the Ignition Trigger.
- Resource Availability:** When enough fires occur within a geographic area, Initial Attack resources can be overwhelmed, leading to an elevated chance of large fires. Also, sending resources to fires in other geographic areas may increase the probability of large fire occurrence, since the ability to respond quickly to new ignitions is impaired.

**The Product**

The 7-day chart is divided up into PSAs, with color-coded forecast DL values for each of the next 7 days (including the observed reading for 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 7-Day Chart, a Weather Synopsis and a Fire Potential Discussion are included, as well as an assessment of Available Resources for Initial Attack activity. There may also be links to additional products that display a 7-day outlook of maximum temperature, minimum relative humidity, and fire weather indices for each PSA with a comparison to historical values.

**Issued:** Saturday Sep 23, 2006

Predictive Service Areas	Ytd	Sat	Sun	Mon	Tue	Wed	Thu	Fri
	Sep 22	Sep 23	Sep 24	Sep 25	Sep 26	Sep 27	Sep 28	Sep 29
NC01 - North Coast								
NC02 - Mid Coast to Mendocino		W						
NC03 - Bay Area		W						
NC04 - Northwestern Mountains		W						
NC05 - Sacramento Vly/Foothills		W						
NC06 - Northeastern California				⚡				
NC07 - Northern Sierra		W		⚡				
NC08 - East Side				⚡				

## **NWCG Glossary**

**Fuel Dryness Level (DL)** - A quantitative measure of fuel moisture and receptability to ignition as determined by an accepted Fire Danger Rating System index that influences fire growth, intensity, or activity.

**High Fire Risk Day** - A day when an ignition trigger and/or significant weather trigger and an appropriate fuel dryness level combine to create conditions that historically have resulted in a significant fire event for a particular area.

**Ignition Trigger** - A causative agent for wildland fire. For example, human or lightning.

**Large Fire** - For statistical purposes, a fire burning more than a specified area of land e.g., 300 acres.

**Significant Fire Event** - An event measured by the occurrence of fire(s) that requires mobilization of additional resources from outside the fire event area.

**Significant Fire Potential** - The likelihood a wildland fire event will require mobilization of additional resources from outside the area in which the fire situation originates.

**Significant Weather Trigger** - A weather phenomenon resulting in an environment that has a significant impact on fire spread, intensity, or occurrence. Example: strong wind, unstable air mass, etc.