

## **NWS Fire Weather Planning Forecasts**

NWS Fire Weather Planning Forecasts provide general, information for daily preparedness and planning purposes. Forecasts are subdivided into meteorologically and topographically similar forecast areas called zones. Because of their more generalized information, planning forecasts are never to be used as a spot forecast. The table below outlines issuance times of planning forecasts for each NWS office. The beginning and ending date of high season forecast issuances vary by year, depending on weather and fuel conditions.

Weather Forecast Office	High Season Narrative Forecasts	Morning Narrative Forecast NLT	Afternoon Narrative Forecast NLT	Low Season Narrative Forecasts NLT	NWS Forecast Zones
Extreme Northern California – <b>Medford</b>	<i>Usually by June 1 to October 1 #</i>	7:30 a.m.	3:30 p.m.	Daily 7:30 a.m.	280-282, 284, 285
Northwest California – <b>Eureka</b>	<i>Usually by June 1 to November 1 #</i>	7:30 a.m.	3:30 p.m.	Daily 7:30 a.m.	201-204, 211, 212, 276,277, 283
North Central California – <b>Sacramento</b>	<i>User driven, but usually by June 1 to November 1 #</i>	7:30 a.m.	3:30 p.m.	Daily 7:00 am.	213-221, 263, 264, 266-269, 279
Extreme Eastern California – <b>Reno</b>	<i>Usually by June 1 to November 1 #</i>	7:30 a.m.	3:30 p.m.	Daily 7:00 a.m.	270-273, 278
Central Coast California – <b>San Francisco Bay Area/Monterey</b>	<i>Usually by June 1 to November 1 #</i>	7:00 a.m.	3:30 p.m.	Daily 3:30 p.m.	006, 505-513, 516-518, 528-530
Central California Interior – <b>San Joaquin Valley/Hanford</b>	<i>Usually May 15 to November 15 #</i>	7:00 a.m.	3:30 p.m.	Daily 3:00 p.m. PST or 3:30 p.m. PDT	289-299
Southwest California – <b>Los Angeles/Oxnard.</b>	<i>Usually May 15 to December 1 #</i>	9:30 a.m.	3:30 p.m.	M-F 3:30 p.m. also M at 9:30 a.m. *	234-241, 244-246, 251-254, 259, 288, 547,548
Extreme Southwest California – <b>San Diego</b>		7:00 a.m.	2:30 p.m.	Daily 7:00 a.m.	242, 243, 248, 250, 255-258 260-262
Southeast California – <b>Phoenix</b>		7:30 a.m.	3:30 p.m.	Daily 7:30 a.m.	230-232
Southeast California – <b>Las Vegas</b>		7:00 a.m.	3:30 p.m.	Daily 7:00 a.m.	226-229

\* excludes Federal holidays

# Customer coordinated depending on weather/fuels; two weeks' notice preferred for NWS WFOs

**Update/Corrected forecasts** – Planning Forecasts are updated or corrected upon issuance of a Fire Weather Watch or a Red Flag Warning, when the current forecast does not adequately describe significant weather expected in the future, or when typographical/format errors prevent proper interpretation of the forecast.

**Access** – Planning Forecasts are widely available from the California Fire Weather Page (<http://www.wrh.noaa.gov/sto/cafw/>), NWS office web sites, and Predictive Services web sites. All NWS fire weather information can also be accessed from the NWS National Fire Weather Page at: [www.weather.gov/fire](http://www.weather.gov/fire). Forecasts are also available via WIMS.

**Content and Format** – Forecasts follow the national standard narrative format, per NWS Directive 10-401. Morning forecasts focus on the next 36 hours and afternoon forecasts on the next 48 hours, with general extended outlooks in both cases out to at least five days.

Planning Forecasts begin with pertinent headlines and a non-technical weather discussion. Headlines are included as needed for Red Flag Warnings and Fire Weather Watches. Headlines for critical fire weather conditions that do not meet Red Flag criteria are also included. Discussions should normally be no more than 8 lines in length. A detailed, technical weather discussion is available in the [Area Forecast Discussion \(AFD\)](#) product which can be found on each forecast office website.

**Short-term forecast for the first 36 or 48 hours** - Short-term forecasts emphasize information needed for initial attack and day-to-day fire management. Each forecast zone or zone grouping contains the following elements, listed in the order they appear:

- Headline(s) as appropriate
- Sky/Weather
- Temperature
- Relative Humidity
- Wind – 20-foot, 10 minute average RAWS standard (slope/valley and ridge top, as appropriate)
- Chance of Wetting Rain (CWR)
- Lightning Activity Level (LAL)

Forecasts may include the following optional elements based on local customer requirements:

- Haines Index
- Mixing Level or Mixing Height
- Marine Layer
- Transport Wind
- 10,000-foot Wind
- Ventilation Category (or numeric value)
- 24-hour Trends (of temperature and relative humidity)

Descriptions of forecast parameters can be found in [Appendix A](#).

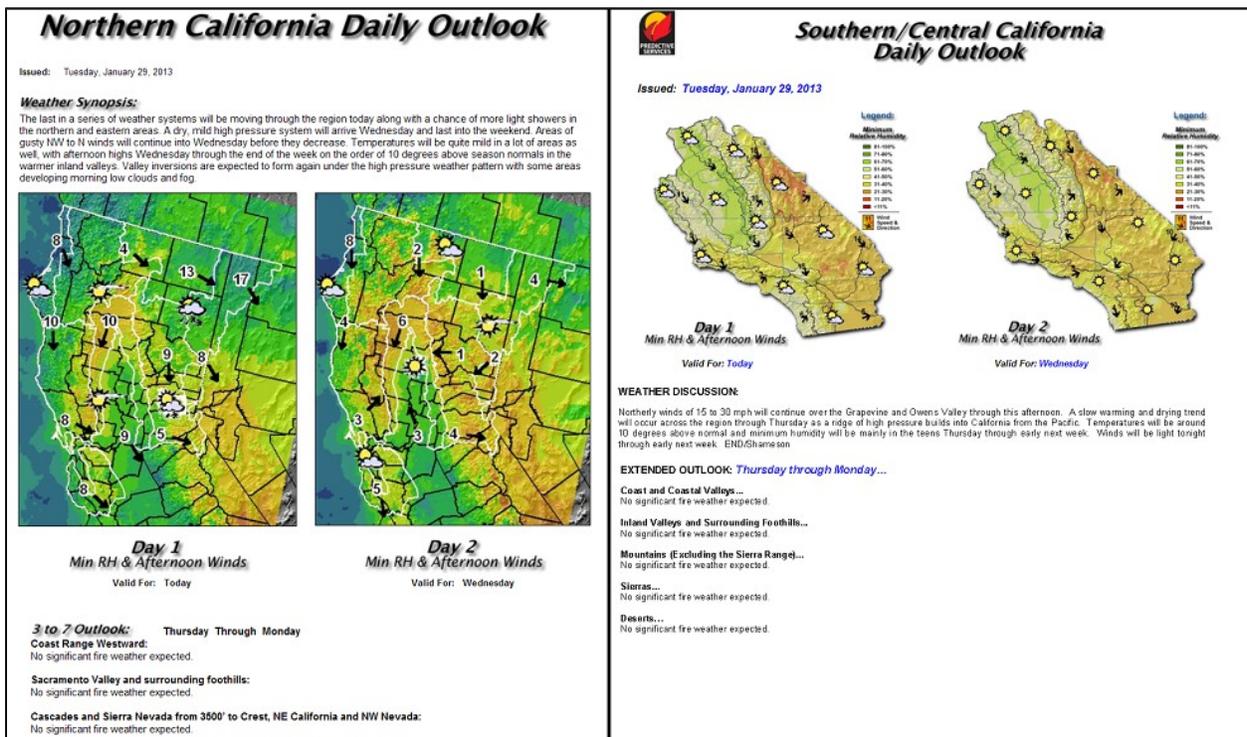
**Extended Outlook** - Beyond 36-48 hours, planning forecasts are used for resource planning. They contain general guidance information, keying on significant changes in temperature, humidity, wind, or weather needed for decision-making purposes.

Examples of NWS Fire Weather Planning Forecasts (FWF) can be found in [Appendix B](#) by clicking on the FWF header under the desired issuing office.

# Daily Outlook

This product provides fire personnel with a quick-briefing tool for obtaining weather highlights for Days 1 and 2 in their Geographic Area. The GIS-based graphics in this product combine three predicted elements from the NWS national gridded database; minimum relative humidity, wind speed and wind direction. Daily weather symbols are then added by Predictive Services meteorologists, who also write a weather synopsis along with a 3 to 7 Day narrative outlook which highlights any anticipated significant fire weather for that period.

Issuance Schedule: South Ops 930 am Pacific Time and North Ops 1000 am Pacific Time. Issued daily during fire season, and M-F during low season.



## Product Links:

Northern California Daily Outlook:

<http://gacc.nifc.gov/oncc/predictive/weather/DailyOutlook.html>

Southern California Daily Outlook:

[http://gacc.nifc.gov/oscc/predictive/weather/daily\\_product/DailyOutlook.html](http://gacc.nifc.gov/oscc/predictive/weather/daily_product/DailyOutlook.html)

## Spot Forecasts

**Spot Forecasts** are detailed site-specific forecasts issued for wildfires, HAZMAT incidents, prescribed burns, search and rescue operations, etc., and are made available upon request at any time. Spot forecasts are available to any federal, state, or municipal agency as described in [NWSI 10-401](#). *When smoke dispersion/smoke management is a concern, spot forecasts for prescribed burns may be requested from the PSU at Redding or Riverside at these locations.*

**North:** <http://gacc.nifc.gov/oncc/predictive/weather/spot/index.php>

**South:** [http://gacc.nifc.gov/oscc/predictive/weather/daily\\_weather/spot\\_form.doc](http://gacc.nifc.gov/oscc/predictive/weather/daily_weather/spot_form.doc)

Spot forecast information is perishable. Using up-to-date spot forecasts is important and the requested issuance time for spot forecasts should be within a few hours of when the forecast will be used. NWS Spot forecasts are normally not produced more than 48 hours in advance. More than 48 hours in advance, other planning information is available to fire agencies, including the Fire Weather Planning Forecast and digital planning tools available on NWS web pages. These tools can be used for planning up to seven days out to identify time periods during which weather for a prescribed burn or other project is favorable. A list of these planning tools is available [here](#). Please contact your NWS office for more information.

NWS spot forecasts are normally available within 30-60 minutes of the request, with wildfire and other urgent safety related requests having highest priority. If possible, non-urgent spot forecast requests for prescribed burns and similar projects should be made with as much lead time as possible. Requests made in the afternoon or evening for delivery of a prescribed burn spot forecast the following morning is a recommended practice.

If more than a 4-6 hour project delay occurs – particularly if there is anything in the forecast or in observed conditions which raises concern – the requestor should call their NWS office and discuss the forecast with a meteorologist. It is critical to have a working phone number from the requesting agency so they can be contacted by the NWS if needed.

**Requesting a Spot Forecast:** Spot forecasts are normally requested and received via the internet from the [California Fire Weather web page](#), the [national NWS Fire Weather web page](#), all NWS forecast office fire weather web pages and both California PSU web pages. If internet access is not available, spot forecasts may be requested and disseminated via phone or fax using the backup spot forecast request form found in the appendix section. Fire agencies will confirm receipt of a spot forecast with a phone call to the issuing NWS forecast office.

At or before the time of a spot request, the requesting agency must provide information about the location, topography, fuel type(s), elevation(s), size, ignition time, and a contact name(s) and telephone number(s) of the responsible land management personnel. Also, quality representative observation(s) at, or near, the site of the planned prescribed burn, or wildfire, should be available to the NWS along with the request for a spot forecast(s).

**In the initial attack phase of a new wildfire that presents an immediate threat to firefighters and/or the public (such as an urban interface fire in critical fuels and weather), the NWS may be called directly for a quick verbal briefing prior to a formal spot forecast issuance as time/communications allow. Please discuss this option with your local NWS office.**

Upon completion, spot forecasts are posted to the appropriate Fire Weather Page of the NWS forecast office web site that received the request. NWS web sites may be linked from the [Individual Forecast Information Table](#).

Content and Format – National standard content and format for NWS spot forecasts can be found in [NWS Directive 10-401](#). At a minimum, wildfire spot forecasts always include this content: headlines (when RFW in effect or other significant weather is headlined in the planning forecast), discussion, sky/weather, (max/min) temperature, (max/min) relative humidity, and 20-foot wind.

Additional elements, such as transport winds, mixing height, LAL, etc., may be included upon request using the check boxes and “Remarks” section of the NWS Spot online form.

The forecast period is based on user request and will contain up to three periods, such as “TODAY”, “TONIGHT”, and “FRIDAY.” If requested and if enough weather information is received to make it feasible, a more specific first period such as “AT 11 A.M. IGNITION” may be used. In these cases, the meteorologist will not just forecast for the planned ignition time, but will include significant changes expected in the forecast parameters for the rest of the usual period, e.g., 11 AM temperature and the expected daytime maximum temperature.

When requested, an outlook for a longer duration will be appended, such as “OUTLOOK FOR WEDNESDAY THROUGH FRIDAY” for a spot requested on Monday.

**Spot forecasts are considered one-time requests and are not updated unless the following procedures are used:**

Scheduled Spot Forecast Update Requests –

- For wildfires and other high impacts incidents: Scheduled updated spot forecast requests, such as for an upcoming shift briefing, should be submitted to the NWS at least two hours before being needed.
- For prescribed burns and other non-urgent projects: Scheduled updated spot forecast requests should be made with as much lead time as possible. For a long-term project, a spot forecast update schedule provided to the NWS will help that office provide the best spot forecast service.

Unscheduled Spot Forecast Requests –

- Forecasts for unscheduled updates for prescribed burn spots, either due to a specific request based on weather at the site or due to monitoring invoked by the phrase, “Request Priority Monitoring” or similar in the remarks section of the spot forecast request, will be issued as soon as possible and no longer than two hours after it is recognized that an update is desirable. In this case the NWS may send an updated spot forecast without a formal request if the meteorologist has been made aware that monitoring is desired, and the meteorologist determines that the current forecast does not adequately represent current or expected weather conditions which might affect the project.

As with all NWS products, spot forecasts are corrected when a typographical or format error prevents correct interpretation of the forecast. Corrected forecasts are delivered to agencies in the same manner as the original spot forecast.

**Spot Forecast Feedback** - Requesting agencies should always provide fire-line weather observations for the validation of weather forecast accuracy back to the NWS. For further explanation of the Feedback process, please go to [Fire Weather Observations](#).

**HYSPLIT Plume Trajectory Assistance** – Automated HYSPLIT plume trajectory output is available with any spot forecast request and can be useful as a tool to help with smoke plume forecasting. The HYSPLIT Trajectory model provides automated trajectory guidance for air parcels at a given height above ground level.

To utilize this feature, simply add the phrase, "HYSPLIT to" and your email address into the remarks section of a spot request, such as "HYSPLIT to joe.cool@web.address" (Any email address works).

When the run is complete, you will receive an email with output that consists of a table of values, a gif HYSPLIT trajectory map, and a KMZ trajectory map for loading into Google Earth. This email is separate from the actual spot forecast. Please note that automated HYSPLIT output does not take into account information on burn size or fuels and generates air parcel trajectory forecasts for 500, 1500, and 3000 meters AGL and does not incorporate any fire plume height data.

For more information on HYSPLIT and how to interpret the output, please contact your local NWS fire weather program leader.

# IMET Incident Response

In addition to following direction in the National Mobilization Guide, the following direction is clarification for the Geographic Area Coordination Centers (GACC) in California:

When an IMET is requested for an incident, **the request will be placed to the GACC**. The GACC will notify the National Fire Weather Operations Coordinator (NFWOC) at NIFC at 1-877-323-IMET (4638).

The GACCs will maintain a list of qualified IMETs and trainees in the Resource Ordering and Staffing System (ROSS) by Weather Forecasting Office (WFO) identifier, and provide dispatching services for the NWS in California. This list will be updated annually based on the list that is published in the California Fire Weather Annual Operating Plan. IMETs will be dispatched by the GACCs in California just as if they are GACC employees.

When the NFWOC determines who will fill the incident request, the information will be relayed back to the GACC. If the IMET is within the requesting GACC, the IMET will be mobilized using ROSS.

If the IMET is in the California GACC that is not hosting the incident, the request will be placed through Selection Area to the other GACC.

If the identified IMET is not in a California WFO, the IMET request will be edited to add a Name Request and placed up to NICC who will place the request to the appropriate GACC.

The following list designates which California GACC will status and dispatch personnel for the California WFOs. Status can be maintained available/Local until requested to reduce work:

## **Redding PS**

Eureka WFO  
Sacramento WFO  
San Francisco/Monterey WFO

## **Riverside PS**

Hanford WFO  
Los Angeles/Oxnard WFO  
San Diego WFO

IMET personnel from Medford WFO, Reno WFO, Phoenix WFO and Las Vegas WFO shall be requested through NICC to their respective GACC using a Name Request.

The procedures for requesting IMETs will follow the guidelines outlined in the National Interagency Agreement, Administrative Procedures section of the current National Mobilization Guide, Personnel section of the current California Mobilization Guide, and CALFIRE Procedure No. 302. Note that for non-Federal incidents, such as a CALFIRE or local government fire, the requesting agency may order an IMET from either the NWS or the North Ops Predictive Services unit to support their Incident meteorological needs.

The following information will be provided to the requested IMET:

- Name of fire
- Location of fire

- Directions to location where the IMET is to report and location of Incident Base.
- Name of Incident Commander, Plans Chief, and Fire Behavior Analyst, if available.
- Request and Resource Order number for IMET

Additionally, the user agency is responsible for providing adequate shelter to allow the equipment and fire weather meteorologist to function efficiently. This would include a location that is free of excessive dust, heat and moisture, protection from wind and other elements, table, and chair. Transportation and shelter arrangements should be made at the time of request; 120 volt AC power is desirable.

The following is a list of IMETs, and All-hazard Meteorological Response System (AMRS) in Northern and Southern CA:

**Northern and Southern California Area IMETs:** (T) designates a trainee

**NWS IMETs:**

<u>Location</u>	<u>Name</u>	<u>Agency</u>	<u>ROSS Unit ID</u>
Eureka, CA	Jeff Tonkin	NWS	CA-EKAW
	Alex Dodd (T)	NWS	CA-EKAW
Hanford, CA	Dan Harty	NWS	CA-HNXW
	James Dudley (T)	NWS	CA-HNXW
Las Vegas, NV	Jim Harrison	NWS	NV-VEFW
	Andy Gorelow (T)	NWS	NV-VEFW
Medford, OR	Frederic Bunnag	NWS	OR-MFRW
	Brett Lutz	NWS	OR-MFRW
	Shad Keene (T)	NWS	OR-MFRW
Monterey, CA	Ryan Walbrun	NWS	CA-MTRW
	Matt Mehle	NWS	CA-MTRW
Oxnard, CA	Rich Thompson	NWS	CA-LOXW
Phoenix, AZ	Valerie Meyers	NWS	AZ-PSRW
Reno, NV	Alex Hoon	NWS	NV-REVV
	Jim Wallmann	NWS	NV-REVV
Sacramento, CA	Jason Clapp	NWS	CA-STOW
	Mike Smith	NWS	CA-STOW
San Diego, CA	Stefanie Sullivan	NWS	CA-SGXW

**Predictive Services IMETS (State, Local, or Unified Command Incidents):**

Redding, CA	John Snook	USFS	CA-ONCC
	Basil Newmerzhicky	USFS	CA-ONCC
	Brenda Belongie	USFS	CA-ONCC
	Steve Leach (T)	BLM	CA-ONCC

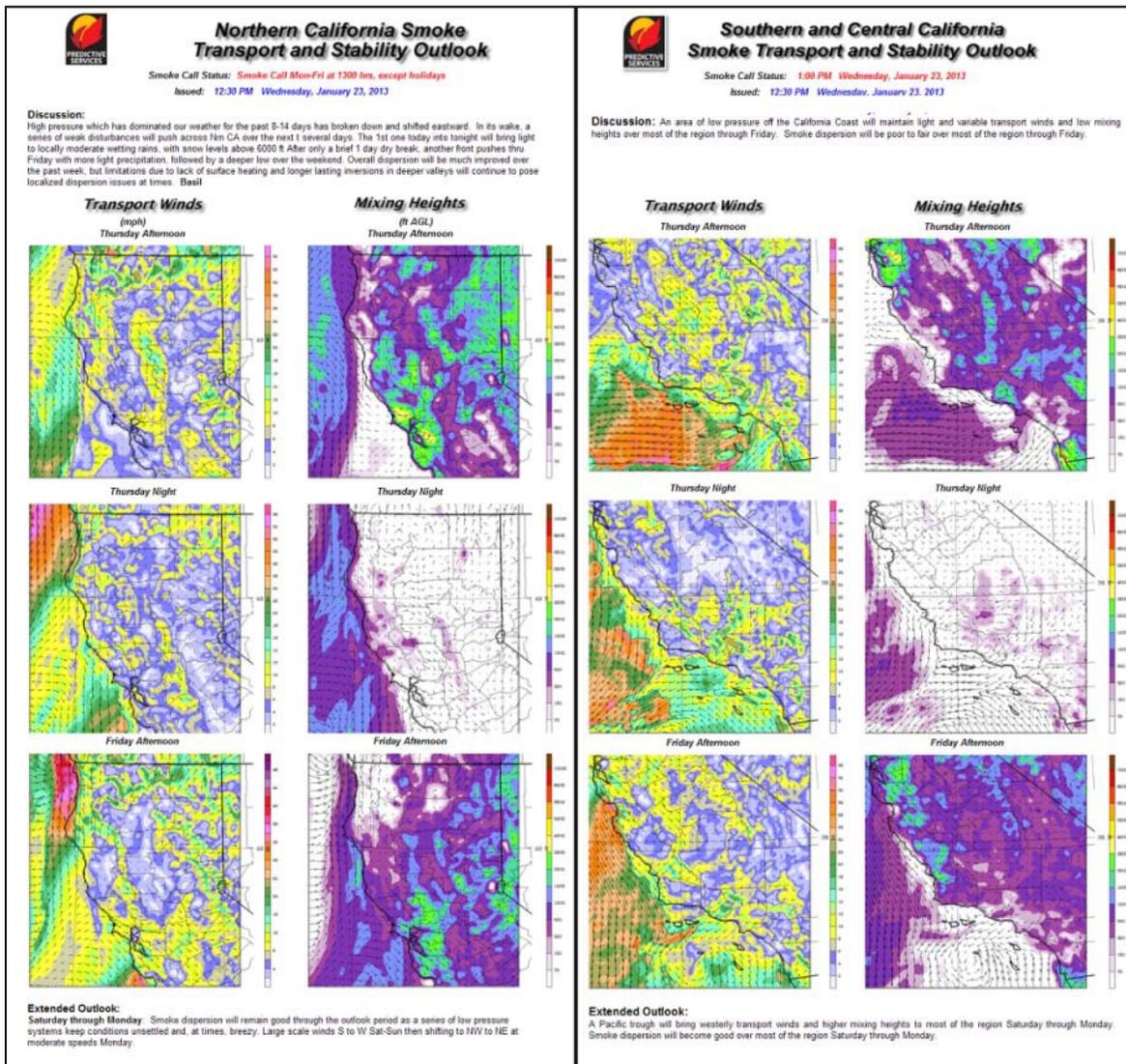
**AMRS Cache Sites**

Each NWS office serving California has at least one AMRS.

# Smoke Management

The **Smoke Transport and Stability Product** provides burners, and all other interested parties with a high resolution graphical display of *Transport Winds* (horizontal dispersion) and *Mixing Heights* (vertical dispersion), as well as an overall narrative describing general weather patterns, with an emphasis on smoke dispersion. An extended forecast describes expected large scale weather conditions for the 3-5 day period, again with an emphasis on smoke dispersion. At the top in red font is the Smoke Call Status, listing the next **Daily Smoke Call**. This is a conference call hosted by Predictive Services and the California Air Resource Board, along with various participants on the federal, state, and local level interested in discussing burning conditions and air quality based burn allowances across the state.

Issuance Schedule: Issued 1230 pm PT.....Issued daily during fire season and M-F during low season.



**Product Links:**

Northern California Smoke Transport and Stability Outlook:

[http://gacc.nifc.gov/oncc/predictive/weather/daily\\_smoke/Smoke.html](http://gacc.nifc.gov/oncc/predictive/weather/daily_smoke/Smoke.html)

Southern California Smoke Transport and Stability Outlook:

[http://gacc.nifc.gov/oscc/predictive/weather/daily\\_smoke/Smoke.html](http://gacc.nifc.gov/oscc/predictive/weather/daily_smoke/Smoke.html)

## ***Red Flag Program***

**Fire Weather Watches and Red Flag Warnings** are issued when the combination of fuels and weather conditions support extreme fire danger and/or fire behavior.

A *Fire Weather Watch* is used to alert agencies to the high potential for development of a Red Flag event in the 18-96 hour time frame. The Watch may be issued for all or selected portions of a fire weather zone or zones.

A *Red Flag Warning* is used to inform agencies of the impending or occurring Red Flag conditions. A Red Flag Warning is issued when there is high confidence that Red Flag criteria will be met within the next 48 hours or less or criteria are already being met. Longer lead times are allowed when confidence is very high or the fire danger situation is critical. The Warning may be issued for all or selected portions of a fire weather zone or zones.

Fire Weather Watch and/or Red Flag Warning headlines are included in all affected forecasts. All NWS fire weather web pages also highlight any watch and/or warning issuances.

Format and Contents - A bullet format text message (RFW) is used for issuing, updating, and cancelling all Fire Weather Watches and Red Flag Warnings. Complete information regarding the format, content and examples of Fire Weather Watches and Red Flag Warnings can be found here: <http://www.nws.noaa.gov/directives/sym/pd01004001curr.pdf>

NWS offices normally call affected dispatch offices when Red Flag Warnings and Fire Weather Watches are issued or updated. Watches and Warnings are also available on the internet via the California Fire Weather web page, the web site(s) of the issuing NWS office(s), the NWS National Fire Weather Page and ([www.weather.gov/fire](http://www.weather.gov/fire)) and from WIMS.

If the issuance of a Red Flag Warning or Fire Weather Watch requires an update of the forecast, the NWS office will verbally notify the Redding and Riverside PSUs as soon as possible. During non-duty hours for the PSUs, contact the GACC Coordinator on Duty (COD) as available.

Fire Weather Watches and/or Red Flag Warnings from NWS offices are normally issued only after, 1) an accurate assessment of fuel conditions has been determined (see "Qualifying Fuels Information" section), and 2) conferring with affected agencies, including the GACC Predictive Services Units. The final authority for the issuance of a watch/warning rests with the NWS forecaster.

### **Watch/Warning Fuel Requirements:**

Live and/or dead fuels are sufficiently receptive (dry) so that fire starts from any cause may become an initial attack problem for fire agencies in the Fire Weather Zone(s) impacted. Fuel dryness/receptiveness should be determined by the following methods, in ranking level of importance:

- The local Fuels Management Officer (FMO) determines fuels are dry enough in the (portions of) Fire Weather Zone(s) to constitute an initial attack problem.
- High to Extreme Fire Danger as determined by the local fire management agency.
- The Fuel Dryness Level of the Geographical Area Coordination Center (GACC):

Northern California - The Fuel Dryness Level 7 Day Fire Potential Matrix in a brown or yellow category for the (portions of) Fire Weather Zone(s) expected to be impacted. If the fuel dryness level in the chart is green, the forecaster must determine if there will be an initial attack concern due to fuel dryness over all or part of the Fire Weather Zone or Zones. In rare cases, fuels may be or, may be becoming, too wet for an imminent large fire concern for the GACC, but are still dry enough, or dry enough for long enough, to be an initial attack concern.

Southern California – In addition to the 7 Day Fire Potential Matrix, the Predictive Services Unit in Riverside will produce a written discussion on fuel status across southern California every other Thursday during fire season. This discussion will be based on input from the fire community and will include a brief description of the current status of the live and dead fuel moistures, including green-up/curing information, as well as expected fuel conditions over the next seven days.

- **Non Desert:** When a fuel condition of “Dry” (yellow) or “Very Dry” (brown) is displayed on the matrix for any Predictive Service Area (PSA), the “fuels switch” will be considered “on” for that day. A RFW is NOT recommended for any PSA designated as “Moist” (green).
- **Desert** (excluding the lower Colorado River Valley): During dry winters and the spring curing season, fuel moistures **over the deserts** may be quite low without initiating serious concerns about the potential for large fire growth. Reasons include light fuel loading and/or discontinuous fuel, or the existence of dry fine fuels when larger live fuels remain relatively green. The Southern California GACC PSU will coordinate with affected WFOs to clearly communicate fuel conditions, and provide updates regarding spatial trends and changes in large fire potential, despite a “Very Dry” (brown) display on the associated PSA matrix.

The NWS should refer to this online document as the primary source of fuels information along with the National Fuel Moisture Database located at:

<http://72.32.186.224/nfmd/public/index.php>, but may look at other sources for fuels information.

**Watch/Warning Weather Criteria:**

**Abundant and/or Dry Lightning**

Area Description	NWS Fire Weather Zones	Criteria
<b>Northern California West of the Cascade/Sierra Crest</b>	006, 201-204, 211-213, 215-221, 263, 264, 266-269, 276, 277, 279-283,	Abundant lightning (scattered [25%] areal thunderstorm coverage or greater) in

<b>Eastern Sierra, Northeast CA</b>	284, 505-513, 516-518, 528-530	conjunction with sufficiently dry fuels (fuels remain dry or critically dry during and immediately following a lightning event). Warnings may be issued for isolated events (<25% areal coverage) when little or no precipitation is expected to reach the ground.
<b>Lake Tahoe Basin</b>	214, 270-271, 273, 278, 284, 285	
	272	
<b>Southern California desert area excluding the Lower Colorado River Valley</b>	226-228, 230, 232, 260-262	A lightning event that is not accompanied by enough precipitation to significantly wet fuels that have been identified as critically dry. Significant precipitation is defined as ranging from .05 inches for grass or brush fuels to .15 inches for closed-canopy timber/heavy fuels. Fire Weather Watches and Red Flag Warnings will be issued for high impact lightning events in receptive fuels. Isolated events or events of short duration (i.e., events which start dry but become wet within an hour or two) do not need warnings but will be headlined in the forecast.
<b>Lower Colorado River Valley</b>	229, 231	
<b>Antelope Valley and SE Kern County Deserts</b>	298, 299, 259, 289-297	
<b>Central California Interior</b>	234 - 241, 244, 245, 246, 251 - 254, 288, 547, 548	
<b>Southern California Excluding the Antelope Valley</b>	242, 243, 248, 250, 255-258, 260, 261, 262	
<b>Extreme Southern California</b>		

### Wind and/or Low Humidity

Area Description	NWS Fire Weather Zones	Criteria
<b>Southern California desert area excluding the Lower Colorado River Valley</b>	226-228, 230, 232, 260-262	Relative Humidity $\leq$ 15% and wind gusts $\geq$ 35 mph for 6 hours or more, assuming fuel conditions are critical.
<b>Lower Colorado River Valley</b>	229, 231	Relative Humidity $\leq$ 15% with sustained winds $\geq$ 20 mph or wind gusts $\geq$ 35 mph for 3 hours or more.
<b>Antelope Valley and SE Kern County Deserts</b>	298, 299, 259	Relative Humidity $\leq$ 15% and sustained (20-foot) winds $\geq$ 25 mph for a duration of 8 hours or more.
<b>Central California Interior (WFO Hanford)</b>	289-297	OR Relative Humidity $\leq$ 10% for a duration of 10 hours or more regardless of wind.
<b>Southern California Excluding the Antelope Valley (WFO Los Angeles)</b>	234, 235, 236, 237, 238, 239, 240, 241, 244, 245, 246, 251, 252, 253, 254,	RH $\leq$ 10% with sustained wind $\geq$ 15 mph or with gusts $\geq$ 25 mph for 6 hours or more.

	288, 547, 548	RH ≤ 15% with sustained wind ≥ 25 mph or with gusts ≥ 35 mph for 6 hours or more.
<b>Extreme Southern California (WFO San Diego)</b>	242, 243, 248, 250, 255, 256, 257, 258, 260, 261, 262	RH ≤ 15% with sustained wind ≥ 25 mph or with gusts ≥ 35 mph for 6 hours or more.
<b>Northern California West of the Cascade/Sierra Crest</b>	006, 201-204, 211-213, 215-221, 263, 264, 266-269, 276, 277, 279-283, Western 284, 505-513, 516-518, 528-530	Refer to Wind/RH RFW Decision Matrix for Northern California West of the Cascade/Sierra Crest on next page.
<b>Eastern Sierra, Northeast CA (WFO Reno)</b>	214, 270-271, 273, 278	RH ≤ 15% with wind gusts ≥ 30 mph for 3 hours or more.
<b>Northeast CA excluding Surprise Valley (WFO Medford)</b>	Eastern 284, 285	≤ 15% with wind gusts ≥ 30 mph for 3 hours or more. OR Daytime Min RH ≤ 10% with wind gusts ≥ 20 mph for 3 hours or more.
<b>Lake Tahoe Basin</b>	272	If fuels are at extreme levels: wind gusts ≥ 30 mph for 3 hours or more, regardless of RH.

### Wind/RH Decision Matrix for Northern California West of the Cascade/Sierra Crest

- Matrix assumes daytime 10-hour fuel moisture (NFDRS obs time) is ≤ 6%, annual grasses have cured, and no wetting rain (greater than 0.10 inch) has fallen in the past 24 hours.
- The sustained wind refers to the standard 20-foot, 10 minute average fire weather wind speed.
- The wind event should be expected to last for at least 8 hours to qualify for a Red Flag warning. [This guidance was developed for Foehn wind events, which normally exceed 12 hours duration, and may last as long as 3-5 days].
- A 'W' in the matrix indicates that a Watch or Warning should be considered.

Relative Humidity	Sustained Wind 6-11 mph	Sustained Wind 12-20 mph	Sustained Wind 21-29 mph	Sustained Wind 30+ mph
Daytime Minimum RH 29-42% and/or Nighttime Maximum RH 60-80%				W
Daytime Minimum RH 19-28% and/or Nighttime Maximum RH 46-60%			W	W
Daytime Minimum RH 9-18% and/or Nighttime Maximum RH 31-45%		W	W	W

Daytime Minimum RH < 9% and/or Nighttime Maximum RH < 31%	W	W	W	W
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Fire Weather Watch and/or Red Flag Warning headlines are included in all affected forecasts. All NWS fire weather web pages also highlight any watch and/or warning issuances.

Format and Contents - A bullet format text message (RFW) is used for issuing, updating, and cancelling all Fire Weather Watches and Red Flag Warnings. Complete information regarding the format, content and examples of Fire Weather Watches and Red Flag Warnings can be found here: <http://www.nws.noaa.gov/directives/sym/pd01004001curr.pdf>

NWS offices normally call affected dispatch offices when Red Flag Warnings and Fire Weather Watches are issued or updated. Watches and Warnings are also available on the internet via the California Fire Weather web page, the web site(s) of the issuing NWS office(s), the NWS National Fire Weather Page and ([www.weather.gov/fire](http://www.weather.gov/fire)) and from WIMS.

If the issuance of a Red Flag Warning or Fire Weather Watch requires an update of the forecast, the NWS office will verbally notify the Redding and Riverside PSUs as soon as possible. During non-duty hours for the PSUs, contact the GACC Coordinator on Duty (COD) as available.

Fire Weather Watches and/or Red Flag Warnings from NWS offices are normally issued only after, 1) an accurate assessment of fuel conditions has been determined (see "Qualifying Fuels Information" section), and 2) conferring with affected agencies, including the GACC Predictive Services Units. The final authority for the issuance of a watch/warning rests with the NWS forecaster.

### **Watch/Warning Fuel Requirements:**

Live and/or dead fuels are sufficiently receptive (dry) so that fire starts from any cause may become an initial attack problem for fire agencies in the Fire Weather Zone(s) impacted. Fuel dryness/receptiveness should be determined by the following methods, in ranking level of importance:

- The local Fuels Management Officer (FMO) determines fuels are dry enough in the (portions of) Fire Weather Zone(s) to constitute an initial attack problem.
- High to Extreme Fire Danger as determined by the local fire management agency.
- The Fuel Dryness Level of the Geographical Area Coordination Center (GACC):

Northern California - The Fuel Dryness Level 7 Day Fire Potential Matrix in a brown or yellow category for the (portions of) Fire Weather Zone(s) expected to be impacted. If the fuel dryness level in the chart is green, the forecaster must determine if there will be an initial attack concern due to fuel dryness over all or part of the Fire Weather Zone or Zones. In rare cases, fuels may be or, may be becoming, too wet for an imminent large fire concern for the GACC, but are still dry enough, or dry enough for long enough, to be an initial attack concern.

Southern California – In addition to the 7 Day Fire Potential Matrix, the Predictive Services Unit in Riverside produces a written discussion on fuel status across southern California every other Thursday during fire season. This discussion is based on input from the fire community and includes a brief description of the current status of the live and dead fuel moistures, including green-up/curing information, as well as expected fuel conditions over the next seven days. The Fuels Discussion can be found at: [http://gacc.nifc.gov/oscc/predictive/fuels\\_fire-danger/myfiles/Fuels\\_Discussion.pdf](http://gacc.nifc.gov/oscc/predictive/fuels_fire-danger/myfiles/Fuels_Discussion.pdf)

- **Non Desert:** When a fuel condition of “Dry” (yellow) or “Very Dry” (brown) is displayed on the matrix for any Predictive Service Area (PSA), the “fuels switch” will be considered “on” for that day. A RFW is NOT recommended for any PSA designated as “Moist” (green).
- **Desert** (excluding the lower Colorado River Valley): During dry winters and the spring curing season, fuel moistures **over the deserts** may be quite low without initiating serious concerns about the potential for large fire growth. Reasons include light fuel loading and/or discontinuous fuel, or the existence of dry fine fuels when larger live fuels remain relatively green. The Southern California GACC PSU will coordinate with affected WFOs to clearly communicate fuel conditions, and provide updates regarding spatial trends and changes in large fire potential, despite a “Very Dry” (brown) display on the associated PSA matrix.

The NWS should refer to this online document as the primary source of fuels information along with the National Fuel Moisture Database located at: <http://www.wfas.net/index.php/national-fuel-moisture-database-moisture-drought-103>, but may look at other sources for fuels information.

**Watch/Warning Weather Criteria:**

**Abundant and/or Dry Lightning**

Area Description	NWS Fire Weather Zones	Criteria
<b>Northern California West of the Cascade/Sierra Crest</b>	006, 201-204, 211-213, 215-221, 263, 264, 266-269, 276, 277, 279-283,	Abundant lightning (scattered [25%] areal thunderstorm coverage or greater) in

<b>Eastern Sierra, Northeast CA</b>	284, 505-513, 516-518, 528-530	conjunction with sufficiently dry fuels (fuels remain dry or critically dry during and immediately following a lightning event). Warnings may be issued for isolated events (<25% areal coverage) when little or no precipitation is expected to reach the ground.
<b>Lake Tahoe Basin</b>	214, 270-271, 273, 278, 284, 285	
	272	
<b>Southern California desert area excluding the Lower Colorado River Valley</b>	226-228, 230, 232, 260-262	A lightning event that is not accompanied by enough precipitation to significantly wet fuels that have been identified as critically dry. Significant precipitation is defined as ranging from .05 inches for grass or brush fuels to .15 inches for closed-canopy timber/heavy fuels. Fire Weather Watches and Red Flag Warnings will be issued for high impact lightning events in receptive fuels. Isolated events or events of short duration (i.e., events which start dry but become wet within an hour or two) do not need warnings but will be headlined in the forecast.
<b>Lower Colorado River Valley</b>	229, 231	
<b>Antelope Valley and SE Kern County Deserts</b>	298, 299, 259, 289-297	
<b>Central California Interior</b>	234 - 241, 244, 245, 246, 251 - 254, 288, 547, 548	
<b>Southern California Excluding the Antelope Valley</b>	242, 243, 248, 250, 255-258, 260, 261, 262	
<b>Extreme Southern California</b>		

### Wind and/or Low Humidity

Area Description	NWS Fire Weather Zones	Criteria
<b>Southern California desert area excluding the Lower Colorado River Valley</b>	226-228, 230, 232, 260-262	Relative Humidity $\leq$ 15% and wind gusts $\geq$ 35 mph for 6 hours or more, assuming fuel conditions are critical.
<b>Lower Colorado River Valley</b>	229, 231	Relative Humidity $\leq$ 15% with sustained winds $\geq$ 20 mph or wind gusts $\geq$ 35 mph for 3 hours or more.
<b>Antelope Valley and SE Kern County Deserts</b>	298, 299, 259	Relative Humidity $\leq$ 15% and sustained (20-foot) winds $\geq$ 25 mph for a duration of 8 hours or more.
<b>Central California Interior (WFO Hanford)</b>	289-297	RAWS sustained winds $\geq$ 25 mph or frequent gusts $\geq$ 35 mph AND Relative Humidity $\leq$ 15% for a duration of 6 hours or more. OR Relative Humidity $\leq$ 10% for a duration of 10 hours or more regardless of wind.
<b>Southern California Excluding the Antelope Valley (WFO Los Angeles)</b>	234, 235, 236, 237, 238, 239, 240, 241, 244, 245, 246, 251, 252, 253, 254,	RH $\leq$ 10% with sustained wind $\geq$ 15 mph or with gusts $\geq$ 25 mph for 6 hours or more.

	288, 547, 548	RH ≤ 15% with sustained wind ≥ 25 mph or with gusts ≥ 35 mph for 6 hours or more.
<b>Extreme Southern California (WFO San Diego)</b>	242, 243, 248, 250, 255, 256, 257, 258, 260, 261, 262	RH ≤ 15% with sustained wind ≥ 25 mph or with gusts ≥ 35 mph for 6 hours or more.
<b>Northern California West of the Cascade/Sierra Crest</b>	006, 201-204, 211-213, 215-221, 263, 264, 266-269, 276, 277, 279-283, Western 284, 505-513, 516-518, 528-530	Refer to Wind/RH RFW Decision Matrix for Northern California West of the Cascade/Sierra Crest on next page.
<b>Eastern Sierra, Northeast CA (WFO Reno)</b>	214, 270-271, 273, 278	RH ≤ 15% with wind gusts ≥ 30 mph for 3 hours or more.
<b>Northeast CA excluding Surprise Valley (WFO Medford)</b>	Eastern 284, 285	≤ 15% with wind gusts ≥ 30 mph for 3 hours or more. OR Daytime Min RH ≤ 10% with wind gusts ≥ 20 mph for 3 hours or more.
<b>Lake Tahoe Basin</b>	272	Relative Humidity ≤ 20% with wind gusts ≥ 30 mph for 3 hours or more. If fuels are at extreme levels: wind gusts ≥ 30 mph for 3 hours or more, regardless of Humidity.

### Wind/RH Decision Matrix for Northern California West of the Cascade/Sierra Crest

- Matrix assumes daytime 10-hour fuel moisture (NFDRS obs time) is ≤ 6%, annual grasses have cured, and no wetting rain (greater than 0.10 inch) has fallen in the past 24 hours.
- The sustained wind refers to the standard 20-foot, 10 minute average fire weather wind speed.
- The wind event should be expected to last for at least 8 hours to qualify for a Red Flag warning. [This guidance was developed for Foehn wind events, which normally exceed 12 hours duration, and may last as long as 3-5 days].
- A 'W' in the matrix indicates that a Watch or Warning should be considered.

Relative Humidity	Sustained Wind 6-11 mph	Sustained Wind 12-20 mph	Sustained Wind 21-29 mph	Sustained Wind 30+ mph
Daytime Minimum RH 29-42% and/or Nighttime Maximum RH 60-80%				W
Daytime Minimum RH 19-28% and/or Nighttime Maximum RH 46-60%			W	W
Daytime Minimum RH 9-18% and/or Nighttime Maximum RH 31-45%		W	W	W

<b>Daytime Minimum RH &lt; 9% and/or Nighttime Maximum RH &lt; 31%</b>	<b>W</b>	<b>W</b>	<b>W</b>	<b>W</b>
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