

### 2025-2026 RC West Winter Readiness

RC West October 2nd 2025

### Agenda

- Welcome
- Weather Forecast Jessica Stewart
- RCWEST Winter Readiness Raj Thappetaobula
- Wildfire Forecast and Preparedness CalFire
- Natural GAS Coordination
- EIM Market Reminder- Cheri Pryor
- WECC Winter Readiness

### Housekeeping reminders

- This call is being recorded for informational and convenience purposes only. Any related transcriptions should not be reprinted without permission from RC West.
- This collaborative meeting is intended to stimulate open dialogue and engage different perspectives.
- Please keep comments professional and respectful.
- Please try and be brief and refrain from repeating what has already been said so that we can manage the time efficiently.

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  - NOTE: If you dialed into the call outside of Webex,
     press \*3 to get into the question queue.
- If you would like to view attendees, refresh your screen and open the "Intellor Transparency Viewer" at the bottom right of your screen.
- Closed captioning is now available by clicking the "CC" button on the bottom left of your screen.
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# 2024-2025 Summary of RC West Winter Operations

### 2025-2026 RC West Winter Readiness

- 2024-2025 winter operations had unique operational challenges.
  - Cold weather-related operational challenges and fire related operational challenges within the month of January 2025.
  - PNW Cold Weather Event during January 19 21, 2025 which resulted in south to north flows transmission overloads in path 80 and also Path31 overloads.
  - Multiple fires (Palisades/Eaton/Hurst) resulted in operational challenges in southern California.
  - Good coordination and communication between TOP Operators and RC operators to mitigate the operational challenges.
  - RCWEST footprint peak load occurred on Jan 22nd ~92322 MW





## 2025-2026 Winter Meteorological Outlook

Jessica Stewart
Senior Energy Meteorologist
Operational Forecasting

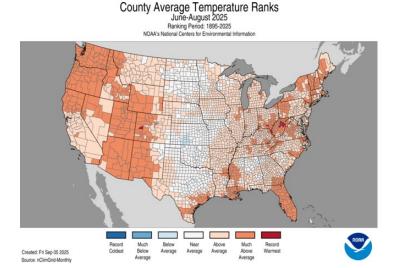
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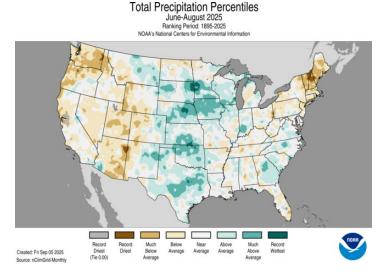
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### 2025 Summer Observations

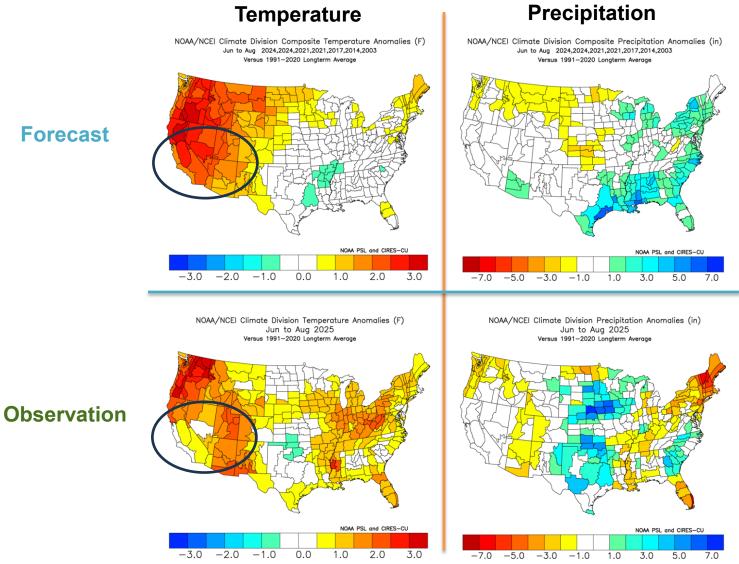
- CAISO
  - Highs 1.5°F below normal; lows 1°F above normal
- WEIM
  - Pac NW entities had most extreme and widespread departures above normal
  - Desert SW entities had below normal June, July, above normal August
- Above average monsoon for Sonoran Desert and NM, below normal elsewhere







### Summer 2025 forecast verified well versus forecast





### Winter 2025 Overview

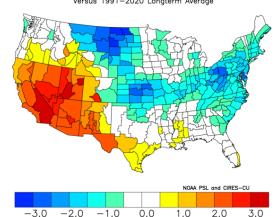
- Above average temperatures across
   California and much of the west
- Below average or average precipitation



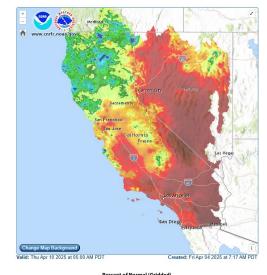


#### **Temperature**

NOAA/NCEI Climate Division Temperature Anomalies (F)
Dec to Feb 2024-25
Versus 1991-2020 Longterm Average



### Precipitation



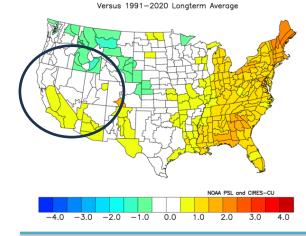


### Winter 2024-2025 forecast was cooler and drier than

Observations Temperature

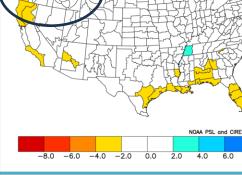


**Forecast** 

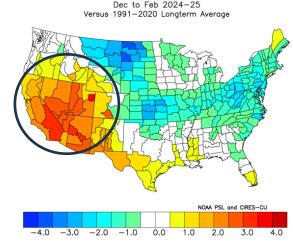


NOAA/NCEI Climate Division Composite Temperature Anomalies (F)

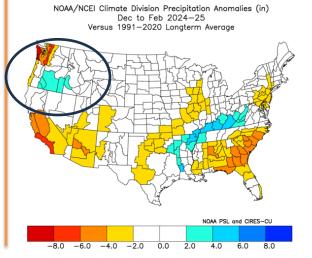
Dec to Feb 2005-06,2017-18,2021-22,2020-21,2022-23



Observation

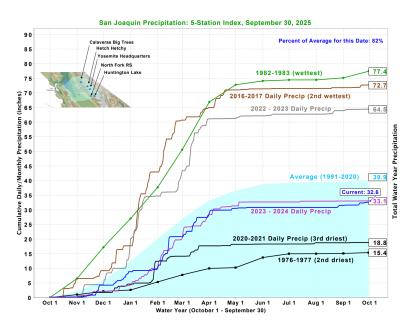


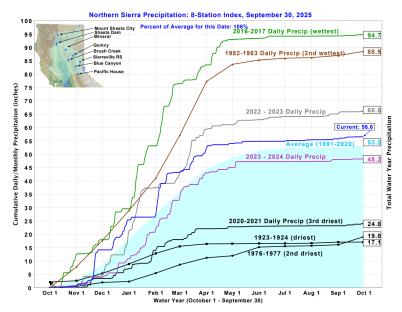
NOAA/NCEI Climate Division Temperature Anomalies (F)

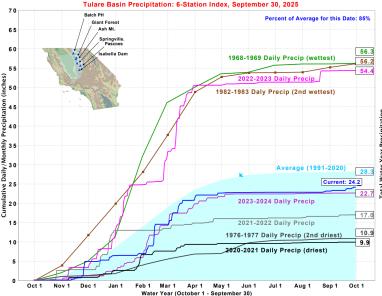


### 2024-2025 Water Year (WY)

- Water year October 1 September 30
- Statewide precipitation at of end of 2024-2025 water year 91% of normal







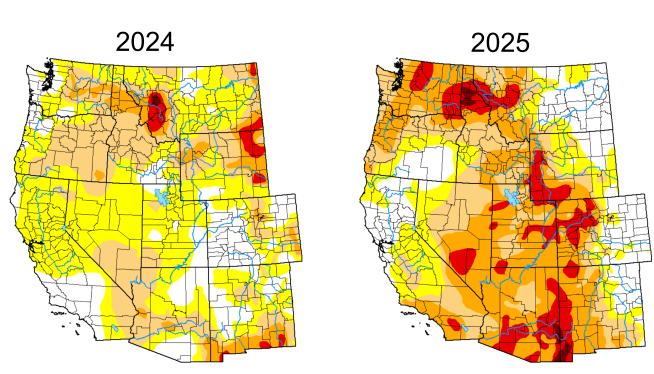


### Drought worsened over California and the west between 2024 and 2025







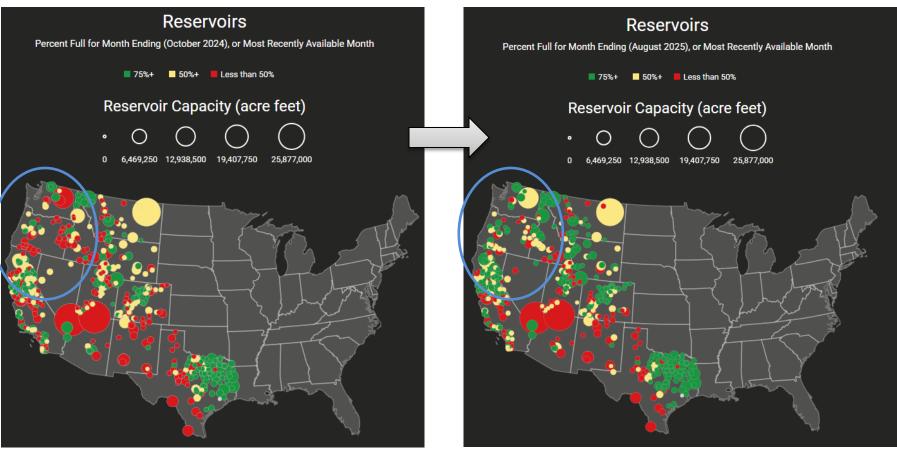


Maps as of September 23, 2025



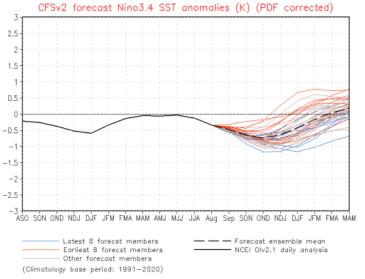
## Reservoir levels have improved from last year for NorCal and the Pac NW

2024 2025



### Inputs into the winter forecast

- Sea surface temperatures (SSTs) are continuing to lower across most of the Equatorial Pacific Ocean
- 71% chance of current ENSO-Neutral to transition to La Nina October - December
  - La Nina has 54% chance to persist through February
- Weak La Nina still likely to give conventional La Nina impacts

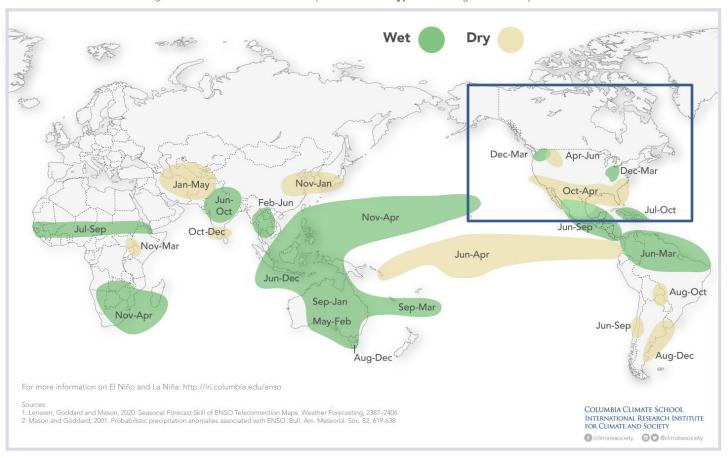




## La Nina expected to develop and persist through Winter

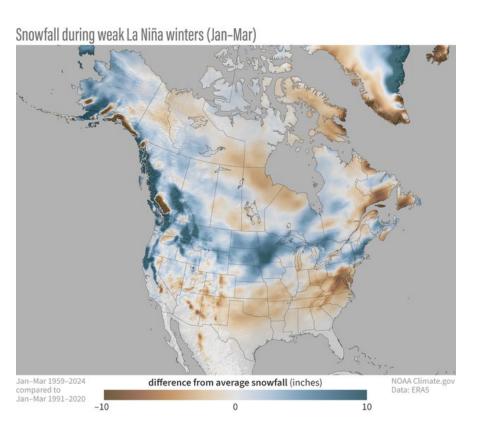
#### LA NIÑA AND RAINFALL

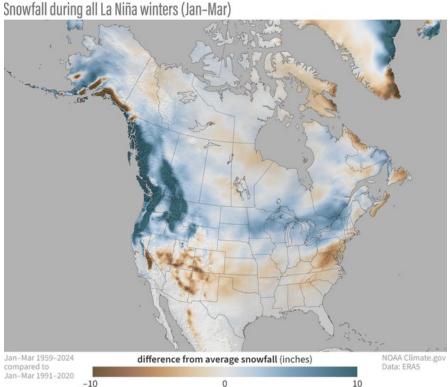
La Niña conditions in the tropical Pacific are known to shift rainfall patterns in many different parts of the world. The regions and seasons shown on the map below indicate *typical* but not quaranteed impacts of La Niña.





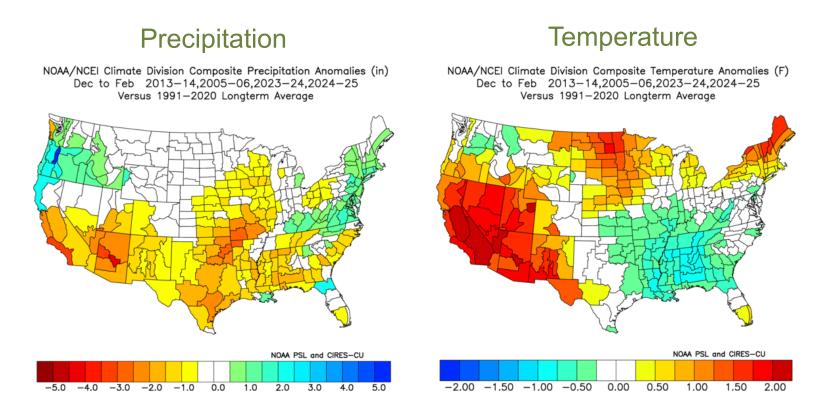
# The stronger the La Nina signal, the lower the chance California has to see above average snowfall



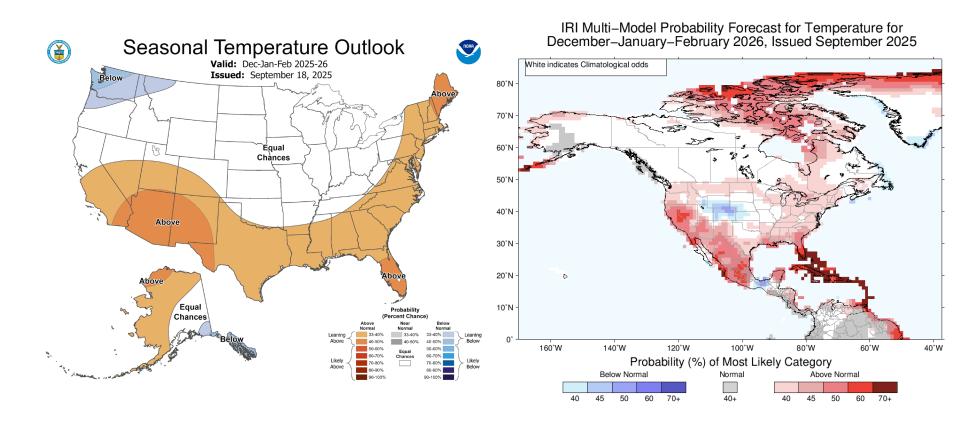


### Similar years temperature and precipitation anomalies

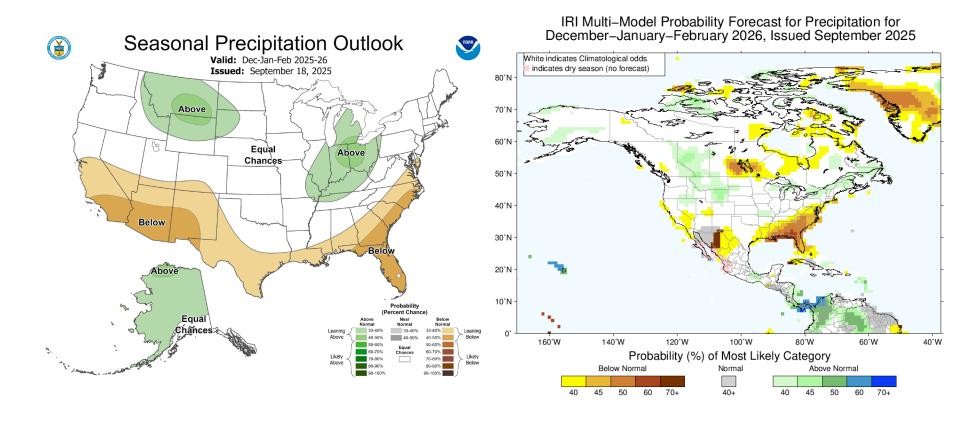
 Look at ENSO, other atmospheric teleconnections and SSTs to produce analog years



## Winter Temperature Outlook Dec – Feb



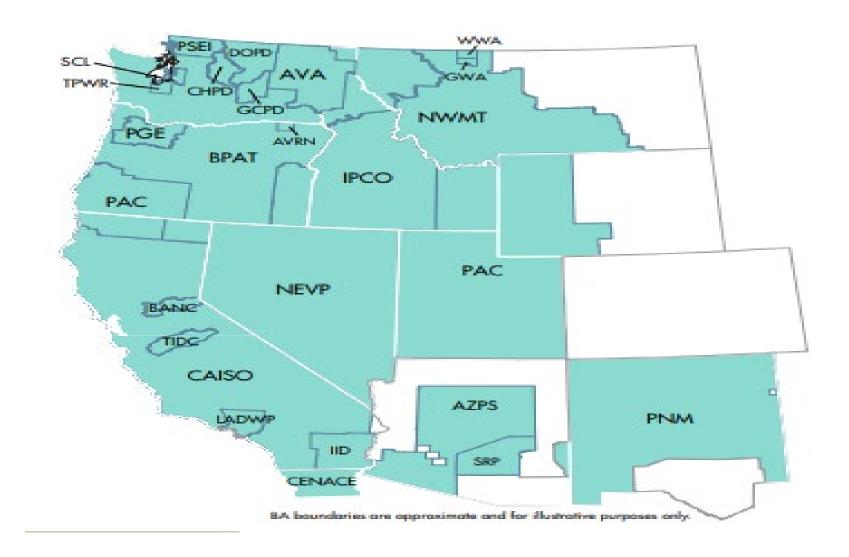
## Winter Precipitation Outlook Dec – Feb





## RC West TOP's Winter Transmission Assessment Overview and TTC Updates

### RCWEST TOP's





### 2025-2026 RCWEST TOP's Winter Assessment

- The subregional study groups, and the TOPs that comprise the subregional study groups, in consultation with the RC, have performed the seasonal studies in preparation for the upcoming winter operations.
- RCWEST pre and post contingency thermal and voltage performance criteria is evaluated against stressed winter conditions.
- RCWEST transient performance criteria is also evaluated.
- Mitigation plans are developed and coordinated with RCWEST for any issues identified.

### TOP's Winter assessment Studies:

- RCWEST evaluated Winter assessment study results that TOP performed and submitted on RC portal.
- No major thermal issues that will have adverse impact on Winter reliability have been identified.
- Identified system operating limits have appropriate mitigation plans and operating procedures.
- System has adequate reactive margins to manage voltages.
- Adequate Load serving capability for expected peak conditions.

### TOP's Winter assessment Studies:

- COI North to south TTC has been increased to 5100 MW on 4/1.
  - This is an increase from the previous 4800 MW.
  - TTC is updated on demand due to system outages.

Winter 2025-2026							
Studied Path Limits & TTC Values for the COI							
Path	Path SOL	Path TTC					
COI (N-S)	None	5100 MW					
COI (S-N)	None	3675 MW					

### TOP's Winter assessment Studies:

 Due to planned Fern road construction project there would be outage related TTC derates on COI (exact outage dates are not known yet)

Path 66 COI TTC: N-S: 3500 MW S-N: 2440 MW

### RC West Predefined IROLs

- NW Washington Import IROL (RC9110)
- Oregon Export IROL (RC9120)
- No new IROL's have been identified from winter assessment.
- RCWEST has appropriate tools and procedures to manage existing IROL's.



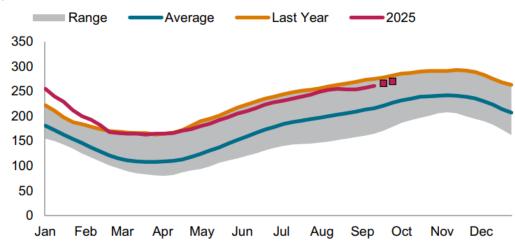
### **RC West Winter Readiness**

Northwest Pipeline

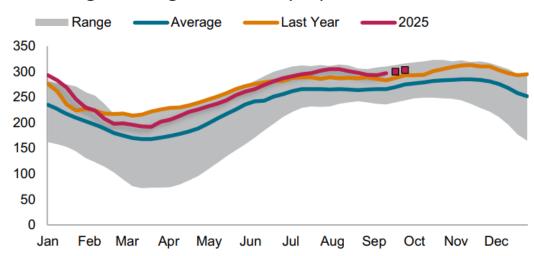
October 2, 2025

## West natural gas storage inventory above average, mixed compared to last Mountain region storage inventories (Bcf)

- Through September 19, EIA reports Lower 48 natural gas storage inventory is inline compared to last year and 6% above the 5-year average
- The Mountain region is 20% above 5-year average and 4% below last year
- Pacific region is 11% above the 5-year average and 4% above last year
- All EIA regions are above the 5-year average
  - In May, only Pacific and Mountain regions were above
- East, Midwest, and Mountain are below year ago levels
  - In May, all regions were below



#### Pacific region storage inventories (Bcf)

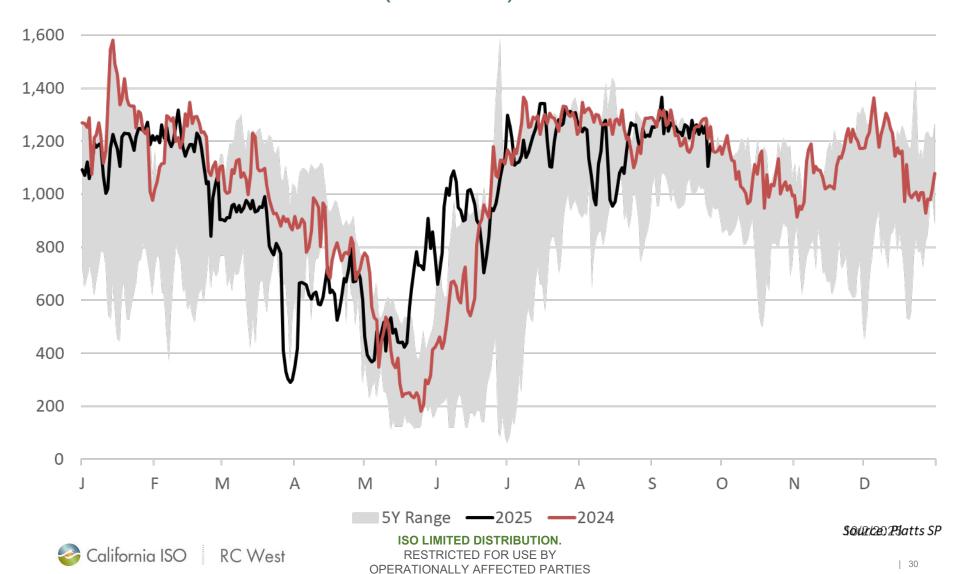


ISC Data compiled September 23, 2025.

RSources: S&P Global Commodity Insights; EIA.



# Washington, Oregon, and Idaho Natural Gas for Power <sup>1,80</sup>Generation Demand (MMcf/d)



### Expansions underway on Northwest Pipeline

**Huntingdon Connector** 

Capacity: 78 MMcf/d | Expected ISD: 4Q 2026

Kelso-Beaver Reliability Project

Capacity: 183 MMcf/d | Expected ISD: 4Q 2028

Stanfield South

Capacity: 80 MMcf/d | Expected ISD: 4Q 2025

**Naughton Coal-to-Gas Conversion** 

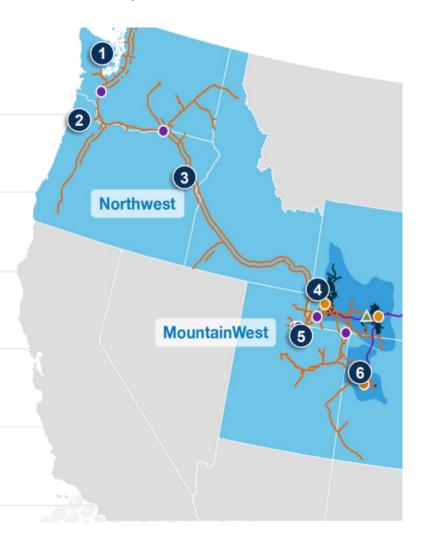
Capacity: 98 MMcf/d | Expected ISD: 2Q 2026

Ryckman Creek Lateral

Capacity: 50 MMcf/d | Expected ISD: 4Q 2026

Wild Trail

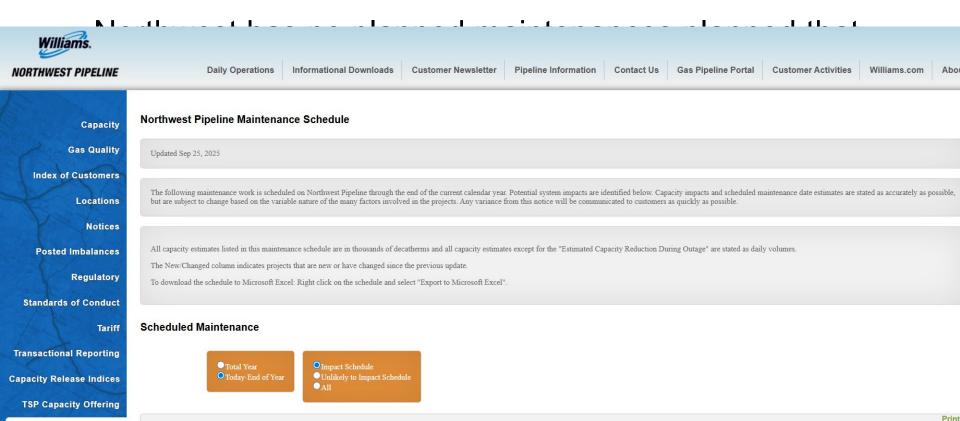
Capacity: 83 MMcf/d | Expected ISD: 4Q 2027





10/2/2025

### Pipeline Communication for Maintenances



Start Date	End Date	Potential Cut Point	Design Capacity MDth/d	Available Capacit y MDth/d	Directio n	Description/Location	Estimated Capacit y Reduction for th e Gas Day MDth/d	New/Changed
06/17/2025	10/31/2025	CISCO COMPRESSOR	286/359	241/284	N/S	Cisco M&ERP	45/75	
07/07/2025	10/15/2025	MUDDY CREEK NORTH CONSTR	774   KIGTED FOR	717	N	Muddy Creek #2 ESD & M&ERP	57	

California ISO KC VV

Maintenance Schedule

Commercial Contacts

Agreements/Forms

**Portal History** 



## TC ENERGY / RC WEST PRE-WINTER MEETING



## TC Energy GTN Pre-Winter Meeting

#### Kyle Husfeld

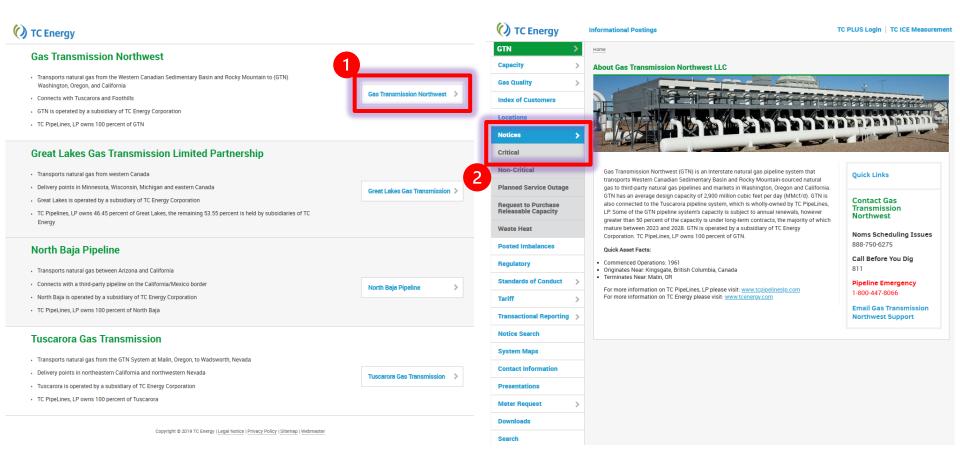
- EBB Navigation to Critical Postings
- Maintenance Schedules
- Capacity Constraint Locations
- Historical Power Load
- Winter Operational Outlook
- Q/A



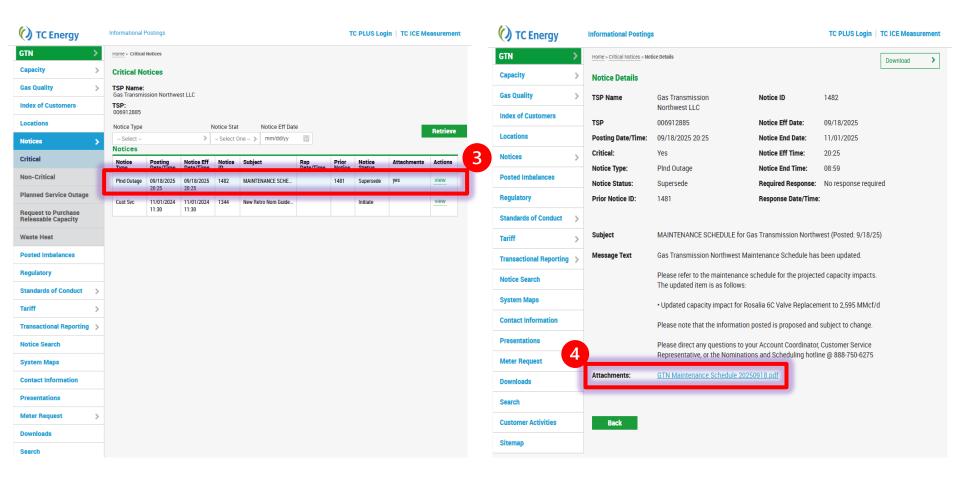
OCTOBER 2, 2025



### **EBB Navigation / Critical Postings**



# EBB Navigation / Critical Postings (Continued)



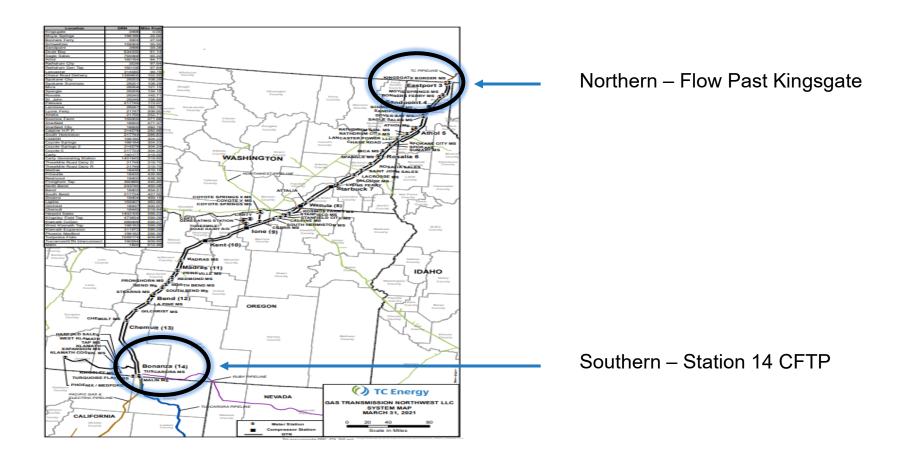


## **GTN Upcoming Maintenance**

- 11/3 through 11/12 B8 B9 MFL Combo Tool (Pig Run)
- 11/1 through 11/10 CS14 Chemult TSA (Automation Upgrade)

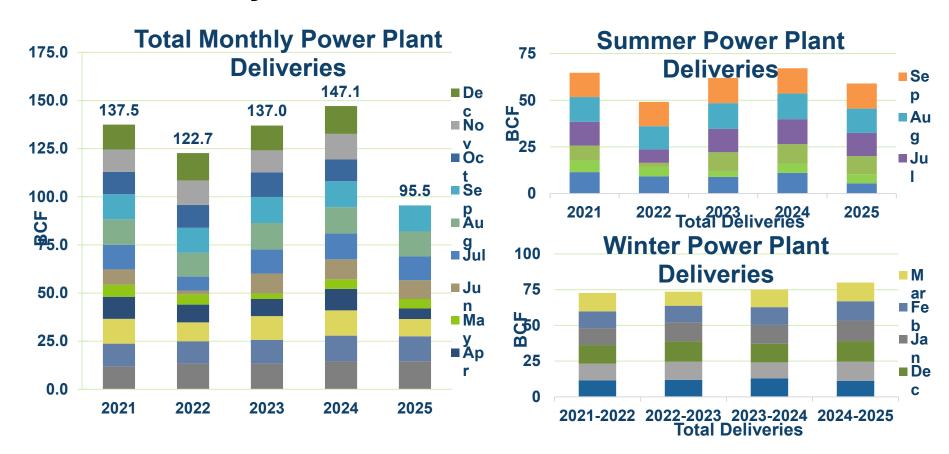
Oct 2025	Area/Segment	Available Capacity	Potential Cuts Firm Primary	Potential Cuts Firm Secondary / ITS
	Flow Past Kingsgate Capacity #3500			
10/1 - 10/3	Athol Station Fall Maintenance	2400-MMcf/d	High	High
10/6 - 10/10	Eastport Station Fall Maintenance	2350-MMcf/d	High	High
10/27 - 10/31	Sandpoint Station Fall Maintenance	2600-MMcf/d	High	High
	Station 6 CFTP Capacity #954690			
10/20 - 10/24	Rosalia Station Fall Maintenance	2360-Mmcf/d	High	High
10/20- 10/23	Starbuck E Unit Fall Maintenace	2360-Mmcf/d	High	High
	Station 8 CFTP Capacity #28218			
10/1	Wallula A Unit Fall Maintenance	2590-MMcf/d	High	High
10/2 - 10/3	Wallula C Unit Fall Maintenance	2490-MMcf/d	High	High
10/27 - 10/30	Wallula B Unit Fall Maintenance	2675-MMcf/d	Low	Medium
	Station 14 Capacity #18446			
10/1 - 10/31	Chemult TSA	1650-MMcf/d	High	High
Nov 2025	Area/Segment	Available Capacity	Potential Cuts Firm Primary	Potential Cuts Firm Secondary / ITS
	Station 8 CFTP Capacity #28218			
11/3 - 11/12	GTN B8 - 9 MFL Combo	1892-MMcf/d	High	High
	Station 14 Capacity #18446			
11/1 - 11/10	Chemult TSA	1650-MMcf/d	High	High
			Potential Cuts	Potential Cuts
Dec 2025	Area/Segment	Available Capacity	Firm Primary	Firm Secondary / ITS

## **GTN Capacity Constraint Locations**





## **GTN Monthly Deliveries to Power Plants**









## TC Energy Winter 25-26 Operational Forecast

- No maintenance scheduled for the Winter season
- GTN anticipates maximum capacity for the season unless major Winter storms occur
- Long-term weather forecast predicts a typical Winter







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## **WECC Assurance Program**

**Steve Ashbaker** 

Reliability Initiatives Director

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### **Assurance Program**

- Long-Term Strategy
- Impact Area 1 "Risk Mitigation: We are an organization aligned around risk reduction. Our holistic risk-based approach uses all the tools and skills available to deliver comprehensive risk mitigation strategies."
- Initiative 4 "Implement a collaborative extreme weather preparedness assurance program to facilitate best practices sharing and assessment of interconnectionwide readiness."
- Broader—Assurance Program

## **Basic Principles**

- This program is designed to provide an assessment of readiness and sharing of best practices with registered entities in the Western Interconnection.
- This program is intended to be a tool that will support WECC's holistic risk-based approach for risk mitigation.

## What is an Assurance Program

- Why have an <u>Assurance</u> <u>Program</u>?
- What is assurance?
   Confidence of mind or manner
- What information do we have?
- What achievements have others made?



## Approach

- Cross-departmental team
- Selection process
- Followed assurance approach used in previous efforts
  - This approach is focused on reliability, not compliance with standards
    - Feedback forms provided to the entity. Highlight areas of strength and opportunities for improvement
- Virtual and on-site discussions

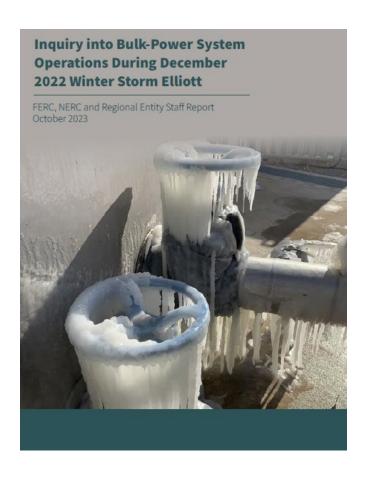
## **Engagement with Entities**

#### Why me?

- Identification of risks requiring better understanding interconnection-wide;
- Risk impact on the Western Interconnection (collectively and individually);
- Need for development and identification of best practices or effective internal controls;
- Newly registered entities or those planning to register soon;
- Concerns about inherent risks and obligations for identified risks;
- Mitigation plan uncertainties noted during outreach activities;
- Confusion over the applicability of a Standard or Requirement to a registered entity's functions;
- Development of an understanding of expectations (e.g., utility commissions); and
- Guidance on general readiness.
- Learn from top performers



# Why?



- Recommendation 1(b): ... NERC should identify the generating units that are at the highest risk during extreme cold weather and work with the Regional Entities ... to perform cold weather verifications of those generating units until all the extreme cold weather Standards proposed by the 2021 Report are approved and effective. (Verify highest risk units by Q4, 2023; implement by Q3, 2024)
- 1(c) Generator Owners/Operators should assess their own freeze protection measure vulnerability, and NERC or the Regional Entities should perform targeted cold weather verifications pursuant to a risk-based approach.
- Recommendation 3: A joint NERC-Regional Entity team, collaborating with FERC staff, should study the overall availability and readiness of blackstart units to operate during cold weather conditions

#### Benefits from Efforts

- WECC staff has a better understanding of GOs' cold weather readiness in the WI
- Best practices and opportunities for improvement have been identified:
  - General observations
  - Entity-specific observations
- Discussions with entities; encourage improvement
- Findings shared in multiple settings and presentations

#### Results

- Non-Binding Report
- Review of winter preparedness
- Review of winterization plan/program and effectiveness
- Identification of positive observations, best practices, and recommendations

# California Seasonal Outlook

October – January, 2026

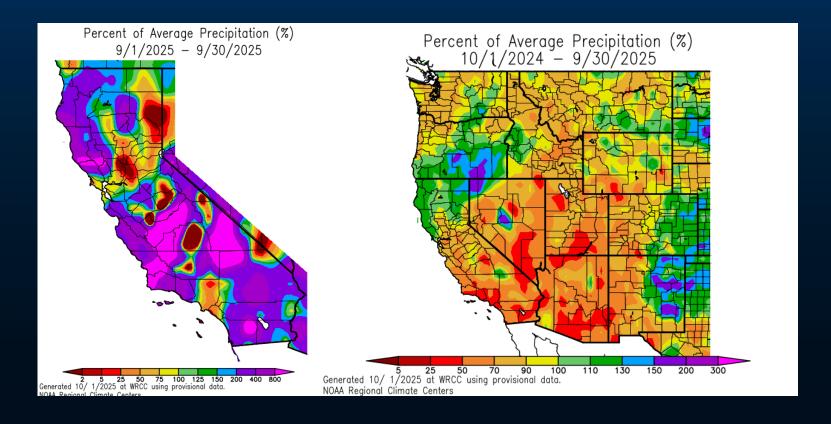
Winter Readiness Workshop







# Percent of Average Precipitation



#### Since Oct 1, 2024

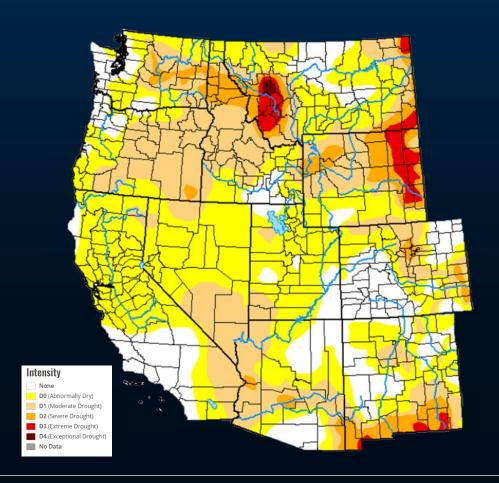
- Near normal precipitation totals in the Pacific Northwest. Western Oregon and Washington below normal
- The majority of areas south of the Sacramento Valley are experiencing anywhere from less than 50% to 90% percent of average precipitation.
- Portions of the South Coast, Southern Sierra, and Southern deserts have received only 25%-50% of average precipitation





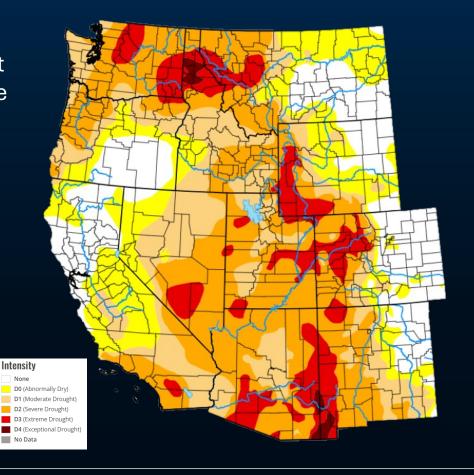
# US Drought Monitor: Western Region

Drought Status October 1, 2024



- Southern California is now under moderate to severe drought, with just one little area of extreme drought over the Lower Deserts.
- Central California
  remains mostly under
  abnormally dry
  conditions, with the San
  Joaquin Valley under
  moderate drought

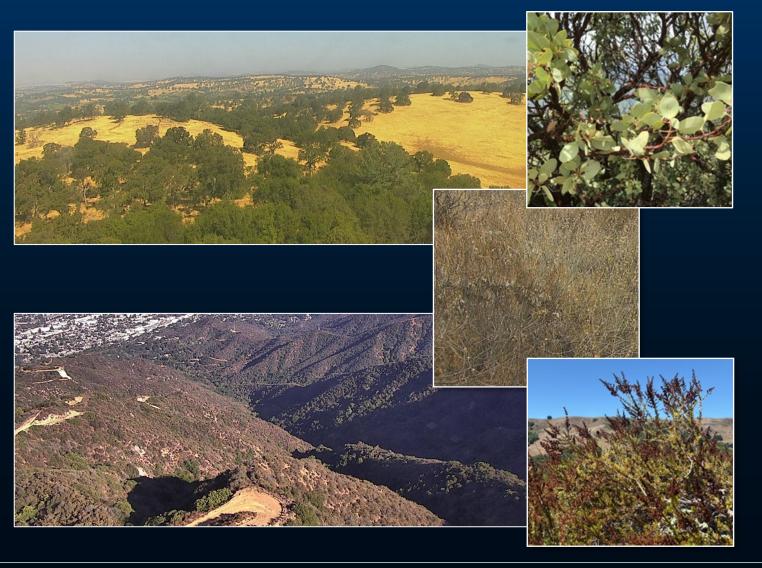
Drought Status September 30, 2025







## Fuels Discussion: Herbaceous Live Fuels



- The live fuel moisture content is a critical factor in determining how easily vegetation will ignite and burn.
- As live fuels lose moisture, due to seasonal drying or prolonged drought conditions, they become more flammable.
- Monitoring live fuel moisture through field sampling is important to be situationally aware of the current conditions through out the state.



## Fuels Discussion: Herbaceous Live Fuels

#### **Northern California**

• Live fuel moistures are near average with some species and areas recording a little below normal while other areas a little above average.

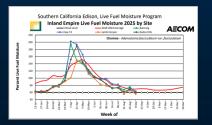


Current and Average Monthly Values						
	Chamise			Manzanita		
Month	2024/25	2023/24	Ave	2024/25	2023/24	Ave
0ct	60	65	63	76	94	84
Nov	69	68	69	98	96	95
Dec	71	73	75	107	109	105
Jan	69	75	77	107	100	99
Feb	78	79	84	104	10	100
Mar	99	89	98	101	96	98
Apr	120	112	113	103	99	99
May	109	126		119	124	124
Jun	97	106	99	117	130	132
Jul	77	81	78	108	112	108
Aug	64	66	66	84	88	91
Sep	60	62	62	82	80	83
0ct		60	60		76	81

#### Southern California

The live fuel moisture continues to gradually decrease and is now mostly between 45% and 70%, which is a below normal for this time of the year.

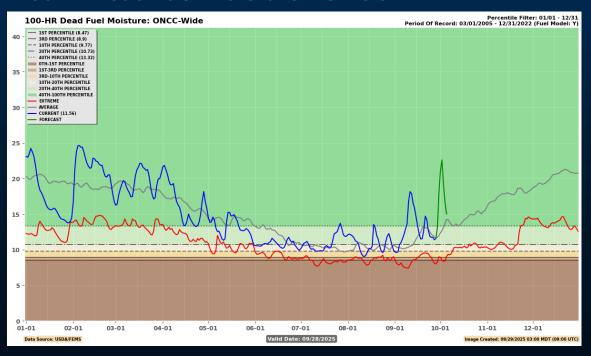




LOCATION	SPECIES	LIVE FUEL MOISTURE		
LOS ANGELES BASIN		CURRENT	PREVIOUS	%CHANGE
LAUREL CANYON, MT. OLYMPUS	CHAMISE	59%	64%	-8.3%
GLENDORA RIDGE, GLENDORA	CHAMISE	64%	69%	-8.1%
LA TUNA CANYON, TUJUNGA	CHAMISE	59%	61%	-3%
GLENDORA RIDGE, GLENDORA	HOARYLEAF	53%	54%	-2.3%
	CEANOTHUS			
LA TUNA CANYON, TUJUNGA	BLACK SAGE	52%	58%	-11.8%
SANTA MONICA MOUNTAINS		CURRENT	PREVIOUS	%CHANGE
CLARK MOTORWAY, MALIBU	CHAMISE	63%	66%	-4.8%
STUNT ROAD, CALABASAS	CHAMISE	58%	62%	-6.5%
TRIPPET RANCH, TOPANGA	CHAMISE	58%	61%	-4.8%
CLARK MOTORWAY, MALIBU	BIGPOD	59%	57%	2.4%
	CEANOTHUS			
TRIPPET RANCH, TOPANGA	BLACK SAGE	72%	71%	0.6%
SANTA CLARITA VALLEY		CURRENT	PREVIOUS	%CHANGE
PEACH MOTORWAY, SANTA CLARITA	CHAMISE	60%	59%	1.5%
QUIGGLEY CANYON, SANTA CLARITA	CHAMISE	65%	63%	3.2%
PEACH MOTORWAY, SANTA CLARITA	BLACK SAGE	61%	52%	17.1%
PEACH MOTORWAY, SANTA CLARITA	CALIFORNIA	63%	51%	25.1%
	SAGEBRUSH			
HIGH COUNTRY		CURRENT	PREVIOUS	%CHANGE
TEMPLIN HIGHWAY, CASTAIC	CHAMISE	59%	59%	0%
BOUQUET CANYON, SAUGUS	CHAMISE	59%	57%	3.1%
TEMPLIN HIGHWAY, CASTAIC	PURPLE SAGE	57%	59%	-4.2%
SUMMARY		CURRENT	PREVIOUS	%CHANGE
LOS ANGELES BASIN CHAMISE	60%	65%	-6.6%	
SANTA MONICA MOUNTAINS CHAM	ISE (average)	60%	63%	-5.3%
SANTA CLARITA VALLEY CHAMIS	E (average)	62%	61%	2.4%
HIGH COUNTRY CHAMISE (av	erage)	59%	58%	1.5%
ALL AREAS ALL FUELS (ave	rage)	60%	60%	-0.5%

## Fuels Discussion: 100-hr & 1000-hr Dead Fuels | Northern California

#### **100-hr Dead Fuel Moisture – ONCC**



#### 1000-hr Dead Fuel Moisture - ONCC



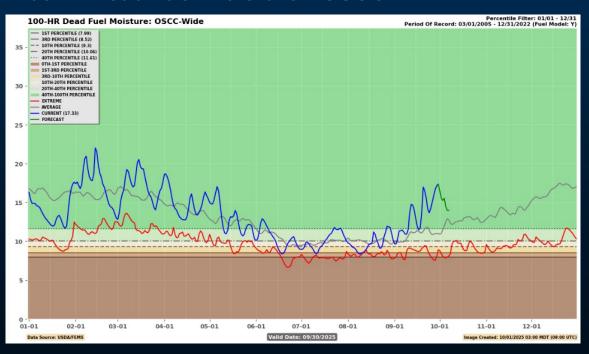
1-hr Fuels – fine grasses, needles, twigs  $< \frac{1}{4}$  "
10-hr fuels –  $\frac{1}{4}$ " – 1"
100-hr fuels – 1" – 3"
1000-hr fuels – 3" – 8"



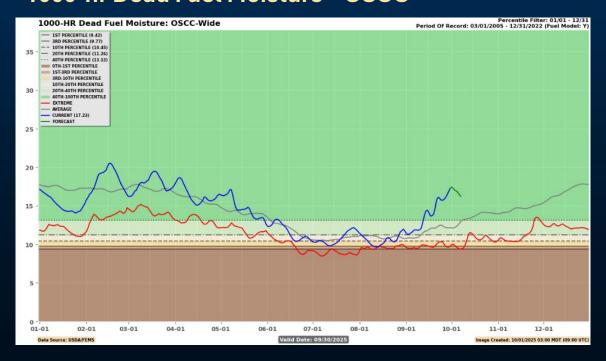


## Fuels Discussion: 100-hr & 1000-hr Dead Fuels | Southern California

#### 100-hr Dead Fuel Moisture - OSCC



#### 1000-hr Dead Fuel Moisture - OSCC



1-hr Fuels – fine grasses, needles, twigs  $< \frac{1}{4}$  "
10-hr fuels –  $\frac{1}{4}$ " – 1"
100-hr fuels – 1" – 3"
1000-hr fuels – 3" – 8"





# California: Four Month Significant Fire Potential

#### October – January 2026 California Highlights

#### Northern California

- Weather pattern swings expected during the next 4-months with extended cool-moist periods mixed with extended warm-dry ones.
- Normal frequency of northerly-offshore wind periods is likely with 2-3 per month.
- Alignment of critically dry dead-live fuels is expected to be minimal or occur during shorter periods.
- Lowland areas will remain susceptible to dry-gusty wind periods until new herbaceous green-up is sufficient enough to offset the amount of carryover standing dead.
- Significant fire potential for the Northern region is projected to be normal during the outlook period, which means 1 or less large fire per PSA during October and less than 1 per PSA during November through January.

#### Southern California

- Precipitation will likely be well below normal through January.
- Temperatures will likely be well above normal through January.
- The amount of Santa Ana wind events will likely be normal to above normal through January.
- Warm and dry conditions combined with any offshore winds at times will cause the potential for large fire to be above normal across Southern California from the mountains westward October through December. will be near normal across Central California October through December



# California: Four Month Significant Fire Potential

October





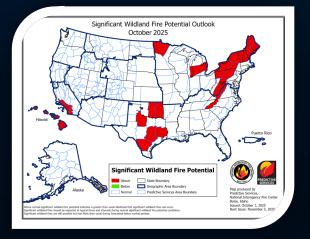


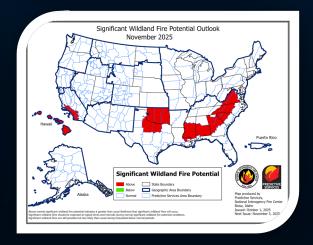
December

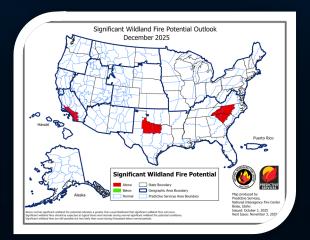


January





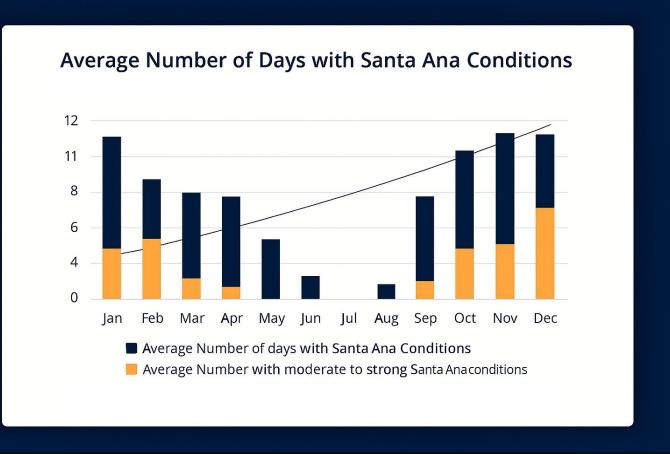






# Fall Fire History









# Year to date Wildfire Activity

#### **CAL FIRE TOTAL INCIDENT RESPONSES: 2025 YTD**

\*Within CAL FIRE jurisdiction only

WILDLAND FIRES	STRUCTURE FIRES	FIRE, OTHER	MEDICAL	HAZMAT	LAW ENFORCEMENT	PUBLIC SERVICE	TOTAL
7,227	2,795	39,924	326,826	8,871	3,213	56,731	447,587

#### **CALIFORNIA TOTAL WILDLAND FIRE STATS YTD**

Year-To-Date (YTD) is for current year, last year, and 5-year average, as of the "Updated" date indicated above.

INTERVAL	WILDLAND FIRES	ACRES
2025 Combined YTD (CALFIRE & US Forest Service)	7,227	521,770
2024 Combined YTD (CALFIRE & US Forest Service)	6,084	472,437
5-Year Average (same interval)	6,234	1,117,717

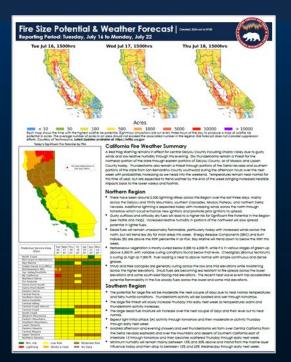
#### For 2025 YTD:

- 7,227 fires burning 521,770 acres. Increase of over 1,200 fires compared to 2024.
- Slight increase in acres burned compared to 2024 to date.
- Above the 5 –year average on number of fires, but below the 5year average in acres burned.





## WFTIIC Products

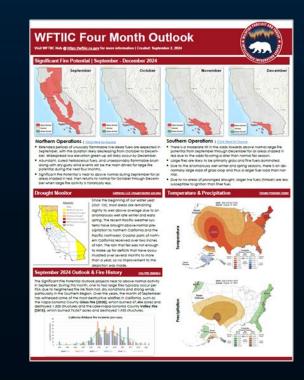


#### **WFTIIC Daily**

- 3-day Fire Size Potential Forecast for the entire state of California.
- Includes CA Fire Weather Summary provided by WFTIIC's NWS liaison.
- Statewide 7-day Significant Fire Potential Map with FireGuard detections and daily fire potential rating by Predictive Service area with CAL FIRE Unit boundaries.

#### **WFTIIC Monthly One-page**

- Lower right portion reflects the immediate concern of the outlook.
- Rainfall to date, snowpack status, reservoir capacity, grassland fuel loading, dead fuel moisture, lightning outlook, fall fire history, Santa Ana wind trends, Pacific Ocean current oscillations.









# Wildfire Forecast & Threat Intelligence Integration Center (WFTIIC)



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