

CAISO / RC West Summer Outlook & Emergency Communications

John Phipps Executive Director, Grid Operations, Grid Operations

May 23, 2023



Morning Session

Time	Length	Торіс	Presenter	Notes
08:30	15 min	Welcome- Agenda- Logistics	John Phipps	
08:45	15 min	Review Highlights of 2022 (Key Takeaways)	Tim Beach	
09:00	30 min	RC Transmission Outlook/Assessment	Raja Thappetaobula	
09:30	30 min	Review changes to RC West emergency procedures. Discuss contingency reserve management and options.	Samson Adigun	
10:00	15 min	Summer Assessment - 2023	Aditya Jayam Prabhakar	
10:15	15 min	Break		
10:30	30 min	Summer Weather Outlook – CAISO Short Term Forecasting team	Jessica Stewart	
11:00	45 min	Western US Wildfire Outlook	CAL Fire	
11:45	45 min	Lunch	Cafe	

Afternoon Session

Time	Length	Торіс	Presenter	Notes
12:30	30 min	CAISO BA Summer 2022 Highlights	Dave Delparte	
13:00	30 min	Review changes to CAISO BA summer playbook. (includes any 4420 changes)	Tricia Johnstone	
13:30	15 min	RC West review peak load day preparations and relevant operating procedures, tools.	Cody Smith	
13:45	15 min	CAISO BA will review peak load day preparations and relevant operating procedures, tools.	Dave Delparte	
14:00	15 min	Break		
14:15	60 min	Western BA's Preparations for Peak Load Days	Round table	BPA, PAC, APS, SRP, LDWP
15:15	60 min	RC West tabletop exercise using September 6, 2022 as a use case	Tricia/Tim/Dave	
16:15	30 min	Debrief		
16:45	15 min	Q/A		
17:00		Adjourn		



Tim Beach, Director, Reliability Coordination

RC WEST SUMMER READINESS 2022 REVIEW



RC West Operations Update – Peak Load



New Historical Peak Load Sept 6th HE18

➢RC West Historical Peak 130,986 MW (127,643)

>WECC Historical Peak 167,530 MW (160,240)



RC West Operations Update – EEA

Energy Emergency Alert	2023	2022	2021	2020
EEA - W		9	4	NA
EEA - 1	1	19	7	26
EEA - 2		7	3	9
EEA - 3	2	7	3	12
Total	3	42	17	47

32 EEA's occurred during the heat wave 9/1-9/9/2022

2023 EEA-3's due to arming Firm Load for Contingency Reserves



RC West Summer Readiness 2022 Review

- Advance forecast of EEA's
 (e.g. EEA-W forecasted for 1700-2200)
- It is permissible to notify RCW of a forecasted EEA
- RC will post GMS with forecasted declarations and repost at the effective time



RC West Summer Readiness 2022 Review

Insecure Operating State June 10th CAISO/PGAE Bakersfield Event

Loss of Midway-kern #4 230kV line would cascade on to Midway-kern #1 and #3 230kV lines, collapsing Bakersfield area. Boundary of the collapse could not be verified.

Post event analysis:

- Load has increased in the area, but was not expected at the level experienced
- There was a post-contingent reconfigure plan, which became unfeasible when the Insecure Operating State level was reached.
- All three entities operated to the same ratings during the event (PGAE/CAISO/RCW)
- PGAE has an on-going multi-year project in the area which increases line capacity
- Post event PGAE reassessed work that was complete as part of the project and issued new ratings.
- The reconfiguration plan remains available for use under extreme load conditions.



RC West Summer Readiness 2022 Review

Insecure Operating State June 10th CAISO/PGAE Bakersfield Event

RC Operations review:

- RC and TD did a good job discussing the load shed options, load shed amount
- RC could have been more clear on reinforcing the importance of the 30 minute mitigation requirement
- During mitigation instructions the words "Operating Instructions" weren't used. But the Shift Manager perceived mitigation instructions as an Operating Instruction



Lesson Learned Training

- If load shed is instructed:
 - Make sure to state that you are giving an Operating Instruction.
 - Be clear and concise with the instruction, and confirm a good repeat back.
- If post-contingent loading is over 100%, but under 125%: (Proactive prep)
 - Validate post-contingency load shed plan
 - $\circ~$ Make sure TOP / PTO agrees to specific breakers to open
 - Verify enough load can be shed quickly (by SCADA) to reduce loading below all Emergency Limits
- It is only an assumption that relays will open a line that is over 125% of its Emergency Limit
 - What do you do if contingency occurs and line remains in service and heavily overloaded?



Other Highlights

BA Capacity Emergency and Reserve Drills

Held 20 joint simulations sessions with RC and BA Operators







Other Highlights

- Core Value- Continuous Improvement
 - 88 RC procedures
 - In 2022, 49 procedures and operating guides were revised or developed
 - □ Improved Voltage SOL methodology (in parallel ops)
 - Developed a Frequency Response Monitor and Mitigation Procedure (in parallel ops)
 - Developed a NWMT Path Operating Guide
 - □ Improved the OREX IROL Operating Guide
 - □ Improved the Open Loop Guideline







RC West Summer Transmission Assessment Overview

May 23rd 2023

Raja Thappetaobula - Director, Operation Engineering Services

RCWEST TOP's





2023 Summer Assessment

- RC West performs a coordination and facilitation role in the seasonal planning process for its RC Area as needed.
- The subregional study groups, and the TOPs that comprise the subregional study groups, in consultation with the RC, are responsible for determining the studies to be performed for a given season.
- RCWEST pre and post contingency thermal and voltage performance criteria is evaluated against stressed summer conditions.
- RCWEST transient performance criteria is also evaluated.
- Mitigation plans are developed and coordinated with RCWEST for any issues identified.



CAISO

- No major new transmission reliability issues have been identified from the summer transmission assessment.
- No new IROL's have been identified.
- PG&E 500 kV Derates due to facility rating evaluation
- TTC changes on COI/Path 66 due to derates.
- Long term outage at Sylmar Bank E has path 41 impacts and operating procedures are updated to manage the concerns



COI (Path 66)

COI Interface:

- Malin Round Mountain No.1 500 kV line
- Malin Round Mountain No.2 500 kV line
- Captain Jack Olinda 500 kV line

Path Rating:

- 4484 MW in North-to-South direction
- 3675 MW in South-to-North direction





Path 41 – Sylmar Banks

- Comprised of three banks (E, F, and G)
- Bank E is OOS on longer term outage
- CAISO/SCE/LADWP performed N-1 and N-1-1 studies and updated appropriate procedures for summer operations.



TOP's Summer assessment Study

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



New Projects

- DOPD and CHPD have a contract for a project that transferred CHPD's ownership of the Rocky Reach-Chelan #1 115-kV Line to DOPD.
- NMWT has couple of system upgrades
 - Rimrock Auto (RMRK_AUT)
 - Brand new substation complete
 - Laurel Auto (LAUREL_A)
 - Rebuilding existing ring bus to breaker-and-a-half
 - Missoula City (MSLA_1)
 - Refurbishing a substation no new configuration
- Arizona Public Service
 - Interconnected the Chevelon Butte Substation in the Preacher Canyon Cholla 345kV Line
 - The Chevelon Butte substation is for a wind generation interconnection (Potential of 240 MWs)



New Projects

- CAISO
 - East Shore-Oakland J 115 kV Line Reconductoring Project
 - Oakland Clean Energy Initiative Project (OCEI) Phase 2 (Moraga 115kV Bus upgrade)
 - Panoche -Oro Loma 115 kV Reconductoring
 - Los Banos Quinto Switching Station 230 kV Line Reconductoring Project
 - The Inyo-Phase shifter has been upgraded.
 - Eldorado-Lugo-Mohave (ELM) Series Caps & Equipment Upgrades
 - South Orange County reliability enhancement.



Conclusions:

- TTC reductions across couple of paths that will have minor impact on summer operations.
- No new IROL's have been identified.
- RCWEST operators have been trained on the summer transmission assessment and changes in the system.
- RCWEST has appropriate tools and procedures to manage existing IROL's.



Samson Adigun, Manager, Reliability Coordination

RC WEST EMERGENCY PROCEDURES AND OPERATING GUIDES



RC0410 – Capacity and Energy Emergencies

- RC Operator can declare EEA Watch, and three levels of EEA to assist BA mitigate a capacity or energy emergencies.
- EEA Watch
 - Not an official EOP-11 EEA level
 - May be requested by BA prior to the operating day, or earlier in the operating day, if BA forecasts being in an EEA level.
 - This proactive notification may be helpful to assist the BA procure additional energy or capacity.



RC0410 – Capacity and Energy Emergencies

3.1.1. EEA Watch

A BA may request the RC operator to declare an "EEA Watch" one or more days prior to the operating day, or during the operating day, if the BA forecasts being in an EEA level.

Reliability Coordinator Actions

- Discuss with the BA forecasting a potential energy or capacity deficiency, and
- Determine whether an EEA Watch would be desired and the applicable day (date) and/or time period.
- Upon request by the BA, declare an EEA Watch via a WECC-wide GMS message, notifying all BAs, TOPs and Western RCs (See <u>Section 3.1.6 for templates</u>).
- Notify market participants in the RC Area via GMS.
- Cancel EEA Watch via GMS, if conditions change, and the BA no longer forecasts being in an EEA.



Sample GMS Message - EEA Watch

EEA Watch Declaration: [CAISO]

From: California ISO GMS Messaging Alert To: Recipient

Effective 1315 PPT, [CAISO] is forecasting being in EEA [2] from [1700] PPT to [2200] PPT on [9/6/2022]. Please contact the entity at (916) 555-5555 if you can provide assistance.

RC sends two GMS messages:

- 1. WECC All Reliability
- 2. All Market Participants

No RCIS sent for EEA Watch



RC0410 – Capacity and Energy Emergencies Energy Emergency Alerts (EEA) per NERC EOP-011

- EEA declaration is another tool to assist a BA maintain system reliability.
 - EEA should <u>not</u> be viewed as badge of shame or something to be avoided
 - RC responsible for notifying all BAs and TOPs in the RC area, and neighboring RCs in the Interconnection
- Initiated only by RC at 1) the RC's own request, or 2) upon the request of an energy deficient BA.
- NERC has established three levels of EEAs.



Energy Emergency Alerts (EEA) Levels

Three levels of EEAs and an additional termination level. Not necessary to progress through the levels sequentially

EEA	Define
EEA 1	All available generation resources in use
EEA 2	Load management procedures in effect
EEA 3	Firm Load interruption is imminent or in progress
EEA 0	Termination



Questions asked by RC Operator to verify appropriate EEA Level

- RSG
 - RC operator will determine if BA is part of RSG and if reserves are deliverable, and if EEA is required

EEA Level 1

- Is all generation within BA committed to meet firm load, firm transaction and reserve commitments?
- Is BA concerned about sustaining required Contingency Reserves?
- Has BA curtailed all wholesale energy sales, other than those that are recallable to meet reserve requirements?



Questions asked by RC Operator to verify appropriate EEA Level

EEA Level 2

- Is BA implementing demand response or other emergency load management procedures?
- Are there any generation or transmission outages that can be cancelled or recalled which may relieve loading on SOLs or IROLs for the possibility of energy or reserve deliverability?
- BA will need to update RC west at a minimum of every hour until the EEA 2 is terminated



Questions asked by RC Operator to verify appropriate EEA Level

• EEA Level 3

- Has BA exhausted all mitigation steps under EEA 1 and 2?
- Is BA considering or currently in the process of shedding load?
- Is BA considering *designating firm load as Contingency Reserve?* How much?
 - Must be deployable in 10 minutes
- If load is being counted as reserves, BA should update the ICCP point sent to RC West indicating the new available Contingency Reserves?
- BA will need to update RC west at a minimum of every hour until the EEA 3 is terminated



Sample GMS Message - EEA Level

EEA-3 Declaration: [IPCO]



From: California ISO GMS Messaging Alert To: Recipient

Effective [1712] hrs PPT, The RC West Reliability Coordinator has declared an EEA-3 for [IPCO]. Please contact the deficient entity at (555) 123-4444 if you can provide emergency assistance.

RC sends 3 messages:

- 1. GMS: WECC All Reliability
- 2. GMS: All Market Participants
- 3. RCIS



Procedure RC0410B Transmission Emergencies Due to Wildfire



Procedure RC0410B

Transmission Emergencies Due to Wildfire

- TOP Actions
 - In accordance with TOP-0015 R8, TOP should notify the RC when it becomes aware of a wildfire that threatens BES equipment, and could result in a BES emergency.
 - Declare a multiple contingency as credible based on its assessment of the threat to the BES



Procedure RC0410B

Transmission Emergencies Due to Wildfire

- RC West Actions:
 - If alerted to new wildfire within 2 miles of BES
 - Contact TOP and confirm if threatened, or if multiple contingency is being declared threatened
 - Has authority to declare MC credible (may supersede TOP designation)
 - Coordinate with RT Operations Engineer to study potential impact of fire and the credible contingency.



RC0130 - Notification Requirements for Real-Time Events

Item #	Event	Responsible Party	Medium	Time Requirement
	recovery plan, including target recovery time.9			
3.3.11	If denying a Reliability Adjustment Arranged Interchange, (typically called a "Curtailment") ¹⁰	BA	Phone notification or GMS	Within 10 minutes
3.3.12	A Conditionally Credible Multiple Contingency is declared a Credible Multiple Contingency by the TOP due to the Observable System Conditions	TOP	Phone notification or GMS	As soon as practicable



RC West Wildfire Threat Monitor (Internal RC West tool - Not Available on RC Portal)

RCWest -ACTIVE FIRE MONITOR-

SLEDGE FIRE

LINN COUNTY, OR 0.58 miles from MARION-ALVEY 0.55 miles from MARION-LANE Last Update: 5/14/2023, 5:44 PM Discovery Date: 5/14/2023, 5:00 PM

BRUSHY BUTTE

DOUGLAS COUNTY, OR 0.97 miles from MERIDIAN-DIXONVILLE Lest Update: 5/15/2023, 11:55 AM Discovery Date: 5/12/2023, 4:01 PM



Last update: 1 minute ago


Procedure RC0410B

Transmission Emergencies Due to Wildfire

- RC West Actions (continued):
 - Identify contingency in RTCA and determine if contingency would trigger a major RAS or drop significant amount of load (RTOE may need to define)
 - Send out Wildfire Transmission Emergency GMS message including HANA contingency name so that TOPs may review potential impact
 - Send Informational Wildfire GMS message if contingency would potentially trigger RAS actions that impact another TOP or BA, but does not deem the event an emergency
 - Implement mitigating actions according to established procedures



Wildfire Threat GMS Message

Wildfire Threat to BES lines (BES Emergency)



From: California ISO GMS Messaging Alert To: Recipient

Wildfire is threatening BES line(s) in [XXX] TOP area.

BES Elements: XXXX XXXX

RC West analysis indicate potential RAS actions which could trigger generation/load drop from the conditionally credible contingency. HANA users can monitor the potential impact of the contingency on the "Contingency Details" display in HANA (RTSA > Output > Contingency Details).

Contingency Name: XXXXX



Procedure RC0310C Guidelines for Declaring Insecure Operating State



	Reliability	Procedure No.	RC0310C	
🧉 Calitornia ISO 🛛 RC West	Coordinator	Version No.	1.1	
	Procedure	Effective Date	5/12/2020	
Guidelines for Declaring Operating State	Distribution Secu	Restriction: rrity		

Guidelines for Declaring Insecure Operating State

When RTCA, RT-DSA or RT-VSA indicates a single or credible multiple Contingency will result in *instability, cascading outages* or *voltage collapse*, which was not identified one or more days prior to the current day, the system is considered to be in an Insecure Operating State <u>once</u> the condition is verified. Declaring an Insecure Operating State is at the discretion of the RC operator.

The RC shall declare an Insecure Operating State without intentional delay as soon as the indicated condition is verified.

The following thresholds may be used for declaring an Insecure Operating State:

- 4 adjacent >200kV station Voltages 5% below steady-state SOL
- 4 BES lines will cascade out of service after a single or credible multiple contingency
- Voltage collapse or instability is affecting 345kV and/or 500kV facilities
- Assessment time is exceeding 30 minutes without being able to *invalidate* the indicated condition

An Insecure Operating State is a Transmission System Emergency. The system must be returned to a secure state without delay, and no longer than 30 minutes after the Insecure Operating State is declared.



Thank you!



Aditya Jayam Prabhakar, Director, Resource Assessment and Planning

2023 SUMMER LOADS AND RESOURCES ASSESSMENT



Summer 2022 Review

Overview

- California load conditions were moderate till August 31-September 8
- Record breaking extended heat for large portion of region but not all at the same time

Role the WEIM had on reliability

- During September 2022 WEIM performed to get surplus to areas of higher need
- Responded to outages during critical times

Growth of storage

Approximately 3,000 MW of storage added to the system



Key observations for 2023:

- 2023 materially improved conditions due to:
 - Addition of over 3,000 MW storage since summer 2022
 - Beneficial hydro conditions at or near historical high
- Resource fleet scheduled to be online by June 1 exceeds the 1-in-10 planning target with a margin of approximately 200 MW
- Resources scheduled by September 1 exceeds the 1-in-10 planning target with a margin of approximately 2,300 MW
- Note planning targets address probability of calling on emergency measures, not actual loss of firm load



Key observations for 2023 (continued):

- Grid remains vulnerable to high loads and availability of imports during widespread heat events, especially in late summer
- Hours of most vulnerability continue to shift to hours after sunset when solar output declines
- Strategic reserves have been mobilized to safeguard against these extremes



The ISO is showing considerable improvement in the resource situation driven off of new resources and high hydro conditions

• New resource development is continuing through the summer:

Resource Type	Incremental Installed Capacity Between Sept 1 2022 and <u>June 1,</u> <u>2023</u>	Incremental Installed Capacity Between Sept 1 2022 and <u>Sept 1, 2023</u>
Wind	518	518
Solar	2,478	3,774
Battery Storage	2,293	4,302

• Hydro conditions are tracking to record highs:





The improved resource situation more than offset modest increases in CEC load forecasts

CEDU 2022 Planning Forecast for ISO Balancing Authority Area

	Forecast for 2023	Last year's forecast for 2022
1-in-2 forecast	46.8 GW	46.3 GW
1-in-5 forecast	48.8 GW	48.3 GW
1-in-10 forecast	49.9 GW	49.4 GW

In 2022, the actual peak demand reached 52,061 MW – a 1-25 year event (weighted 3-day temperature using 28 years of weather data).



Assessing progress towards resource planning targets

1. Assessing the adequacy of the CPUC's Preferred System Portfolio (PSP) to meet resource planning targets for the CEC's load forecast

2. Determine the actual resource requirement to precisely meet the planning targets based on surpluses or shortfalls in the PSP

3. Compare the existing resource fleet and resources scheduled to be online by summer against the requirement that meets the planning targets



Overall, the ISO balancing authority area is expected to achieve the reliability planning target of 1-in-10 LOLE

Progress to achieving a 1-in-10 reliability planning target	Resources scheduled online by June 1	Resources scheduled online by September 1		
With current high hydro conditions	~ 200 MW Surplus	~ 2300 MW Surplus		
With average hydro conditions	~ 1100 MW Shortfall	~ 960 MW Surplus		

There was an estimated 1,700 MW capacity shortfall in 2022 to meet the planning target.



Peak load analysis also shows a significant improvement over 2022 in meeting operating reserves at peak load



An 18.5% reserve margin is needed to meet reserve requirements and allowances for forced outages and to accommodate a 1-in-5 load level.



Overall 2023 conditions have improved significantly

- While the ISO is showing considerable improvement in the resource situation driven by the addition of over 3,000 MW storage supply and beneficial hydro conditions...
- ...extreme drought, wildfires and continued potential for widespread regional heating event and other disruptions continue to pose a high risk for outages to the ISO grid.
- In order to safeguard against more extreme events, the CAISO continues to work with its state partners on the operation and sequencing of strategic reserves and emergency programs for this summer



Jessica Stewart, Sr. Energy Meteorologist, Short-Term Forecasting 2023 SUMMER METEOROLOGICAL OUTLOOK



Winter 2022 Overview

- Higher than normal precipitation across CA and desert SW
 - 2nd highest Sierra season snowfall on record
- Below normal temperatures across the entire west





Temperature





Precipitation as of May 9

- California snowpack 244% of normal
- Cumulative precipitation:
 - Northern Sierra Precipitation:
 - 127% of average
 - San Joaquin Sierra Precipitation:
 - 167% of average
 - Tulare Basin Precipitation:
 - 195% of Average
- Statewide precipitation:
 - 163% of normal









Despite above normal rainfall, reservoir levels remain low west-wide





Drought improved over California and western US between 2022 and 2023

Drought Classification



D3 (Extreme Drought) D4 (Exceptional Drought) No Data





Maps as of May 2, 2023



2022 Summer: Observations

- Strongest heat in August and September
- Above normal overnight temps all summer
- Above average monsoon rainfall
 - Helped to keep desert SW from seeing as extreme heat



NOAA/NCEI Climate Division Temperature Anomalies (F) Jun to Sep 2022 Versus 1991–2020 Longterm Average





NOAA/NCEI Climate Division Precipitation Anomalies (in) Jun to Sep 2022 Versus 1991-2020 Longterm Average





INPUTS TO THE SUMMER FORECAST



ENSO forecast from the Climate Prediction Center (CPC)

- Equatorial SSTs are currently near average across the Pacific
 ENSO-neutral
- >60% chance of El Niño as early as MJJ, very likely to persist through entire of Summer
 - 40% chance of strong El Nino by end of year





"Typical" El Nino Summer

- Historically, ENSO is most influential on US temperatures and precipitation in the winter
- In Summer, it has more of a relationship on coastal temperatures (especially Pac NW), with less bearing on interior







2022 Spring vs 2023 – El Nino versus La Nina SST anomalies



Year	DJF	JFM	FMA	MAM	AMJ	MJJ	JJA	JAS	ASO	SON	OND	NDJ
2020	0.5	0.5	0.4	0.2	-0.1	-0.3	-0.4	-0.6	-0.9	-1.2	-1.3	-1.2
2021	-1.0	-0.9	- 0.8	-0.7	-0.5	-0.4	-0.4	-0.5	-0.7	-0.8	-1.0	-1.0
2022	-1.0	- 0.9	-1.0	-1.1	-1.0	-0.9	-0.8	-0.9	-1.0	-1.0	-0.9	-0.8
2023	-0.7	-0.4	-0.2									



2009 Spring and Summer vs 2023



2007	0.7	0.2	-0.1	-0.3	-0.4	-0.5	-0.6	-0.8	-1.1	-1.3	-1.5	-1.6
2008	-1.6	-1.5	-1.3	-1.0	-0.8	-0.6	-0.4	-0.2	-0.2	-0.4	- 0.6	-0.7
2009	-0.8	-0.8	-0.6	-0.3	0.0	0.3	0.5	0.6	0.7	1.0	1.4	1.6
Year	DJF	JFM	FMA	МАМ	AMJ	MJJ	JJA	JAS	ASO	SON	OND	NDJ
2020	0.5	0.5	0.4	0.2	-0.1	-0.3	-0.4	-0.6	-0.9	-1.2	-1.3	-1.2
2021	-1.0	-0.9	-0.8	-0.7	-0.5	-0.4	-0.4	-0.5	-0.7	-0.8	-1.0	-1.0
2022	-1.0	-0.9	-1.0	-1.1	-1.0	-0.9	-0.8	-0.9	-1.0	-1.0	-0.9	-0.8
2023	-0.7	-0.4	-0.2									



2009 Spring and Summer vs 2023





June – September SST Forecast







Similar years: 2002, 2009, 2022

- Focusing on years with similar SST and El Niño patterns
- Watching positioning of ridge
 - Movement can shift the ridge of heat further east and allow for more seasonable temperatures across the coastal areas





SUMMER FORECAST



Temperature Outlook June – August

- Overall western US temperature leaning above normal
- Cool SSTs off the coast expecting milder conditions with enhanced marine layer along coastal CA in June and July
- Indications that Northern CA, Pac NW and the Desert SW could see larger temperature anomalies
- Guidance leaning towards slightly improved from '22





Precipitation Outlook June – August

- Mild drought likely to persist for the deserts
- Leaning towards below normal summer rainfall for Pacific Northwest and some monsoon locations
- Potential for above average hurricane activity in the Pacific







Weather Outlook August – October

- Due to warming SSTs to above normal, chances for above normal high and low temperatures increase
- Better chances for coastal areas to see more impactful heat events
- Likely above normal for entire west
- Continued risk for below normal rainfall for Pac NW





SUPPLEMENTAL SLIDES



Western Weather Outlook – Fire Risk June – October

- Lower fire risk across CA through August due to increased snow pack and soil moisture
- Normal fire risk September October
- Elevated fire risk across Pac NW due to below normal precip and above normal temps expected









"Typical" El Nino Summer

 Historically, ENSO is most influential on US temperatures and precipitation in the winter




Lower soil saturation relative to rainfall amount- can assist with snow melt keeping ground saturated longer into summer







California ISO

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NOAA/NCEI Climate Division Temperature Anomalies (F) Aug to Oct 2022 Versus 1991–2020 Longterm Average





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Performance of '22 Monsoon



IRI Multi–Model Probability Forecast for Precipitation for June–July–August 2022, Issued April 2022



NOAA/NCEI Climate Division Precipitation Anomalies (in) Jun to Aug 2022 Versus 1991–2020 Longterm Average







Palmer Drought (mean) 2022 vs. analogs

NOAA/NCEI Climate Division Palmer Drought Index



NOAA/NCEI Climate Division Composite Palmer Drought Index Jun to Sep 2015,2017,2018,2019





Early Summer Drought Outlook





In reference to Winter Outlook 22/23 Verification



Difference in simulated precipitation between wettest La Niñas and driest La Niñas



Tulare Lake









CAL Fire WESTERN US WILDFIRE OUTLOOK





Fire Year 2023 Outlook

Note Version



















<u>May – August 2023 California Highlights</u>

- The state slowly dries in May with small pulses of moisture in the first half of the month with temperatures remaining below normal in the north state with the marine layer influencing south coast areas strongly; temperatures slightly warmer than normal in Great Basin and desert regions
- Weather outlook for June and July suggest near normal temperatures and below normal precipitation patterns. The current ENSO index is near neutral with a transition to an El Niño 62% likely by July



<u>May – August 2023 California Highlights</u>

- Near to below normal number of offshore wind events through June
- The south coast and mountains can expect below normal large-fire potential with wind-driven grass-fueled fire events through August
- North state remains green with a robust green-up in herbaceous and shrubs making flammable alignments unlikely through July as record snowpack levels melt and keep hydrologic systems charged



May – August 2023 California Highlights

- Desert, Great Basin, and Modoc Plateau will have potential flammable alignments in July and August
- Mountain regions will be below normal fire potential with alpine areas under the influence of lingering snowpack well into August
- An early El Niño arrival could lead to higher temperatures, greater lightning potential, and make all the above moot



Weather Discussion: El Niño



- The El Niño-Southern Oscillation (ENSO) is in a neutral position, trending to an El Niño pattern
 Affects jet stream flow
 - and how the Subtropical Ridge builds which controls monsoon flow
 - controls monsoon flow
- Late summer lightning activity potential



Weather Discussion: Drought Monitor

U.S. Drought Monitor California



April 25, 2023 (Released Thursday, Apr. 27, 2023) Valid 8 a.m. EDT



international conditions may vary. For more information on the Drought Monitor, go to https://droughtmonitor.unl.edu/About.aspx

Author: Richard Tinker CPC/NOAA/NWS/NCEP Drought conditions have improved with the most populous regions experiencing none

- Siskiyou and Modoc counties continue with moderate drought conditions
- Mojave & Colorado deserts are dry



Drought

Weather & Fuels Discussion: Storm Damage



- Increased fuel loading induced by low snow levels and heavier snow loads on drought-weakened trees
- Impacts to access roads where mass wasting and culvert failure could delay Initial Attack from gaining access to ignition area



Storm Damage

Fuels Discussion: Increased Fuel Loading



 Wind damage, snow breakage, and residual mortality snags from previous years will only add to heavy fuel loading



Winter Storm Damage

Weather & Fuels Discussion: Storm Damage



- Snowpack conceals the full scope of impacts to forest roads throughout state
- Snow melt runoff will exacerbate the damage



Fuels Discussion: Tree Mortality in North State



- Drought-induced tree mortality has reached the north state
- Primarily affecting Abies in Sierra/Cascade range
- Douglas-fir mortality in Siskiyou/Trinity region
- Snag risk impacts to firefighters and infrastructure



California Outlook



ALERTCalifornia: Devil's Garden-1, Modoc County, 26 April 2023

 Great Basin and Modoc Plateau areas are still affected by drier conditions and warrant higher alert levels for larger fire potential



Four-month Outlook

Fuels Discussion: Drying Grasses



- Increased fuel loading from Spring flush of herbaceous material averaging a ton per acre through much of the "Golden Hills of California"
- Significant flash fuels combined with higher temperatures associated with El Niño: high fire potential with wind events

Fuels
Source: <u>FuelcastApp</u>



Fuels Discussion: Drying Grasses



ALERTCalifornia: Bealville-1, Kern County, April 25st, 2023

 Herbaceous materials are beginning to dry and cure on south-facing and level areas in the southern Central Valley



Fuels Discussion: Drying Grasses & Denser Loading



ALERTCalifornia: Bealville-1, Kern County, May 9th, 2023

- Significant flush of herbaceous and increased loading that will skew fuel modeling
- Grass Model value
 upgraded in Fire Sims to
 reflect taller, fuller
 herbaceous biomass



Fuels Discussion: Fuels GR2 vs. GR4 Modelling



 Eel River serpentine grasslands modelled fire using standard GR2 fuels: 850.6 acres



Fuels Discussion: Fuels GR2 vs. GR4 Modelling



 Eel River serpentine grasslands modelled fire replacing GR2 fuels with GR4 fuels: 1,685.2 acres



Fuels Discussion: Initial Attack Assessment Differences

2 - Moderate		
1h-Area (ac)	16.4	
Average Slope (%)	25	
Fire Behavior Index	2 - Moderate: Fire spreads rapidly presenting moderate resistance to control but can be countered with direct attack by firefighters.	
Flame Length (ft)	3.48	
ROS (ch/h)	20.06	
Growth Potential Index	4 - Very Active: The fire has a very active potential due to its size and combination of potential growth in the next hour (if not contained).	
1h-Perimeter (mi)	0.5	
Area (a2/a1) (%)	426.4	

4 - Very High 1h-Area (ac) 117.2 Average Slope (%) 27 **Fire Behavior Index** resistance to control. Indirect attack may be effective. Safety of firefighters in the area becomes a concern. Flame Length (ft) 8.39 ROS (ch/h) 71 5 - Extreme: The fire has an extreme potential due to its size Growth Potential Index and combination of potential growth in the next hour (if not contained). 1h-Perimeter (mi) 1.5 Area (a2/a1) (%) 183.9

• GR4

• GR2

Fuels Source: <u>FuelcastApp</u>



Fuels Discussion: Fuels GR2 vs. GR4 Modelling



 Gorman Substation modelled fire using standard GR2 fuels: 527 acres



Fuels Discussion: Fuels GR2 vs. GR4 Modelling



 Gorman Substation modelled fire replacing GR2 fuels with GR4 fuels: 1,839.6 acres



Fuels Discussion: Initial Attack Assessment Differences

1 - Low	
1h-Area (ac)	7.5
Average Slope (%)	42
Fire Behavior Index	2 - Moderate: Fire spreads rapidly presenting moderate resistance to control but can be countered with direct attack by firefighters.
Flame Length (ft)	3.05
ROS (ch/h)	15.28
Growth Potential Index	3 - Active: The fire has an active potential due to its size and combination of potential growth in the next hour (if not contained).
1h-Perimeter (mi)	0.3
Area (a2/a1) (%)	450

• GR2

3 - High		
1h-Area (ac)	54	
Average Slope (%)	38	
Fire Behavior Index	3 - High: Fire spreads very rapidly presenting substantial resistance to control. Direct attack with firefighters must be supplemented with equipment and/or air support.	
Flame Length (ft)	6.32	
ROS (ch/h)	37.6	
Growth Potential Index	4 - Very Active: The fire has a very active potential due to its size and combination of potential growth in the next hour (if not contained).	
1h-Perimeter (mi)	0.9	
Area (a2/a1) (%)	273.6	

• GR4

Fuels Source: <u>Fuelcast App</u>



California 2023 Outlook: Déjà vu?

2017 CALIFORNIA WILDFIRES

Between June and December 2017, wildfires in California raged to historic levels. California's Department of Forestry and Fire Protection reported that a total of 9/15 Grap blaced through the state, burning over a million acres. That's an area several times larger than San Francisco. In October 2017, it was estimated the fires totaled more than i billion dollars in losses. The government of California estimated that the fires.



 The wet and snowy 2016/2017 winter was followed by robust wildfire activity in late 2017; will 2023 be a repeat?

 Potential is there, many factors will need to align once more

Remainder of 2023 Outlook Source: 2017 California Wildfires (nationalgeographic.org)



Northwest Region Four-month Significant Fire Potential



Above normal significant wildland fire potential indicates a greater than usual likelihood that significant wildland fires will occur. Significant wildland fires should be expected at typical times and intervals during normal significant wildland fire potential conditions. Significant wildland fires are still possible but tes likely than usual during forecasted below normal periods.



Next issuance June 1, 2023



Northwest Region Four-month Significant Fire Potential



Significant wildland fires should be expected at typical times and intervals during normal significant wildland fire potential conditions. Significant wildland fires are still possible but less likely than usual during forecasted below normal periods.



Significant wildland fires should be expected at typical times and intervals during normal significant wildland fire potential conditions Significant wildland fires are still possible but less likely than usual during forecasted below normal periods.

National Interagency Fire Center Boise, Idaho Issued May 1, 2023 Next issuance June 1, 2023



Next issuance June 1, 2023



Northwest Region Four-month Significant Fire Potential

<u>May – August 2023 Oregon/Washington Highlights</u>

- Outlooks through May and beyond continue to suggest a transition to warmer than usual conditions during Fire Season 2023.
- Normal (i.e. very low) risk of significant fires is expected over the Northwest Area until July and August when areas of central and southeast Oregon are expected to be above average potential for significant fires.


Great Basin Region Four-month Significant Fire Potential <u>May – August 2023 Nevada Highlights</u>

- Outlooks for May and June continue to reflect a normal fire risk model as the weather forecast calls for normal to cool conditions.
- As the weather model begins to warm and drier conditions in July and August the southern Idaho and northwest corner of Nevada will begin to reflect above normal fire potential with the remaining areas of the district remaining at normal risk



Weather Discussion: Drought Monitor

Oregon



Map released: Thurs. May 11, 2023

Data valid: May 9, 2023 at 8 a.m. EDT

Intensity None D0 (Abnormally Dry) D1 (Moderate Drought) D2 (Severe Drought) D3 (Extreme Drought) D4 (Exceptional Drought) No Data Authors

United States and Puerto Rico Author(s): Brad Pugh, NOAA/CPC Pacific Islands and Virgin Islands Author(s): Curtis Risanti, National Drought Mitigation Center



Washington

Map released: Thurs. May 11, 2023

Home > Washington

Data valid: May 9, 2023 at 8 a.m. EDT



Authors

United States and Puerto Rico Author(s): Brad Pugh, NOAA/CPC

Pacific Islands and Virgin Islands Author(s): Curtis Riganti, National Drought Mitigation Center

- Drought conditions will continue with forecasted below normal precipitation over the northwest
- Above normal temperatures are also forecasted



Drought



https://Fireforecast.caloes.ca.gov/









2022 CAISO SUMMER RECAP

Dave Delparte, Director Real Time Operations



Summer 2022 Review

Overview

- California load conditions were moderate until the end of August and early September.
- Aug 31 through September 9 conditions were extreme.

Role the WEIM had on reliability

- During heat event EIM Transfers were very helpful, well over 1000 MW during Critical hours most days
- September 6 HE 18, 500 1000, HE 19 500 2200

Growth of storage

- Sept 1 2021 CASIO had ~1000 MW of storage
- Sept 1 2022 CAISO had ~3200 MW of storage
- Sept 1 2023 CAISO expects to add another 3000-4000 MW of storage



Recap of CAISO System Peak on September 6

1-in-2 peak demand forecast was 45,866 MW 1-in-10 peak demand forecast was 51,469 MW

	MW's	Above the
ISO instantaneous Peak demand 9/6 @ 16:58	52061	forecast
Total Generation	44789	
Hydro	4318	
Thermal	20597	
Peakers	5219	
Solar	9835	
Storage	1012	
Wind	993	
QF	2817	2009 MWs
Imports (includes dynamics)	7273	WEIM
Required OR	2972	
Actual OR	3386	



Historical resource mix during peak load

CAISO BA Peak Load & Energy trends 2012 to 2022





Sept 6

Trade Date	RMO	Flex Alert	EEA Watch	EEA 1	EEA 2	EEA 3
8/31	Yes	Yes	Yes	Yes		
9/1	Yes	Yes	Yes			
9/2	Yes	Yes				
9/3	Yes	Yes	Yes			
9/4	Yes	Yes	Yes			C
9/5	Yes	Yes	Yes	Yes	Yes	
9/6	Yes	Yes	Yes	Yes	Yes	Yes
9/7	Yes	Yes	Yes	Yes	Yes	
9/8	Yes	Yes	Yes	Yes	Yes	
9/9	Yes	Yes	Yes	Yes		



Sept 6 summary

We knew it was going to be a tough day. A long developing event

- Day ahead outlook (9/5) Peak Forecast of 51,144 MW, ~ 1900 MW deficiency for HE 20
 - RMO* 1200 2200
 - Flex Alert 1600 2000
 - EEA Watch 1700 2100
- 9/6 10:00 RC West declared CAISO BA in EEA1 1600 2100
 - Informed RC we anticipated requesting EEA-2 and EEA 3 later in the day
- Great coordination with the CAISO BA utilities (using SSU*) and the ELRP* Board
- 11:15, 3 transmission lines relay (Five Fire) ~800 MW of gen at risk
- During the day we at one time or another had ~ 1500 MW of resources trip. ~ 800 MW returned by the time of our peak load

*(RMO) Restricted Maintenance Operations (ELRP) Emergency Load Reduction Program (SSU) System Status Updates



Sept 6 summary

- Through the critical hours we enabled load reductions through the ELRP and State emergency programs. We also dispatched ~ 700 MW of RDRR*.
- 1600 we went to EEA2, called for SPAP* to come on line, additional ELRP MW
 - Performed out of market energy purchases, requested Emergency Assistance
- 1658 Reached a peak load of 52,061 MW
- 17:17 EEA-3 Counted 2000 MW of firm load that could be dropped within 10 minutes as Contingency Reserves (no firm load shed)
- ~17:50 Blast text from CAL OES requesting public reduce energy usage
- 20:00 CAISO BA reduced to EEA-2 (no longer using firm load for CR)
- 20:30 Ended dispatch of RDRR
- 21:10 CAISO BA to EEA-0 (ended emergency declarations)

*(RDRR) Reliability Demand Response Resources (SPAP) State Power Augmentation Program Page 118





September 1 Load Curve (Thursday)





Load Curve September 5 (Monday Holiday)





September 6 Load Curve





Thanks

- Thank you everyone, Governors Office, PTO, Scheduling Coordinators, ELRP Board, Energy Marketers, and the Western Interconnection BAAs.
- Thank you energy consumers for responding.
- From ISO perspective everyone was doing all they could to help, not 100% prepared for everything that came our way but felt it was the best prepared <u>we</u> have ever been.



SUPPLEMENTAL SLIDES IF NEEDED



Sept 6 peak and net peak resource stack









EMERGENCY PLAYBOOK

Tricia Johnstone, Director Operational Readiness



Key takeaways from summer 2022

- Create and post on <u>www.caiso.com</u> public version of the "Emergency Playbook" to share and reference for Summer Heat Event – Process and Communications
- Consistent w/ Playbook add "Forecasted System Conditions" section to Procedure 4420 – System Emergency
- Improve coordination of internal CAISO communication roles and responsibilities
- Improve look ahead data and information & System Operations tools
- Strengthen criteria for the California Flex Alert
- Clarify emergency notice language for CAISO BA EEA 3
- Improve de-escalation notices



Emergency Playbook: 1 – 7 days out

	2-7 Days Out	1-4 Days Out
Operational Assessments	Monitors demand forecast 7 days out, assesses resource adequacy, system conditions, weather, and other potential grid impacts, and plans for next possible steps	Reviews and validates most current information on actual and potential system conditions, resource adequacy, weather, and other potential factors impacting the grid.
Operational Coordination with External Entities	 Depending on actual and potential system conditions, outreach and coordination re: possible extreme event to: Governor's Office (GO) Long-start strategic reserve resource scheduling coordinators (LS-SRR SCs) Consider need for DOE 202c orders and whether other government agency assistance may be needed 	 To prepare entities for possible conservation efforts and free up additional supply, CAISO may take the following actions: Initiate communication to: Water agencies (CDWR, MWD) Neighboring Balancing Areas Emergency Load Reduction Board (ELRP) Board Utilities RC West Regulatory Agencies Coordinate the following: Requests for DOE 202c Orders Emergency supply above approved permit and/or GIA GO Proclamation of a State of Emergency and/or GO Executive Orders
Public and Customer Communications	 CAISO may issue High temperature heads up via CAISO website CAISO social media 	CAISO may issue Restricted Maintenance Operations (RMO) via: • ISO Today mobile app • MNS • Email • Today's Outlook Also publicly posted: • DOE Orders • GO Proclamations and Orders

Emergency Playbook: 1 day out – Operating day

	1 Day Out	Operating Day
Operational Assessments	Reviews and validates Day Ahead Market results and most current information on actual and potential system conditions, resource adequacy, weather and other potential factors impacting the grid.	Reviews actual and potential system conditions and takes actions in accordance with Operating Procedures.
Operational Coordination with External Entities	Operational coordination with: • Utilities • Neighboring BAs • ELRP Board • RC West	Operational coordination with: • Utilities • Neighboring BAs • ELRP Board • RC West
Public and Customer Communications	CAISO may issue Flex Alert and/or EEA Watch notice via: ISO Today mobile app MNS Email News release Daily Briefing notice Social media FlexAlert.org	CAISO may issue Flex Alert and/or EEA Watch notice via: ISO Today mobile app MNS Email Today's Outlook News release Daily Briefing notice Social media FlexAlert.org De-escalate/ all-clear notices issued via: ISO Today mobile app MNS Email Today's Outlook Page 129

Operating Procedure 4420 – System Emergency

	Changes for 2023
Restricted Maintenance Operations	None
Transmission Emergency	None
Flex Alert	Criteria aligned with EEA Watch, when indicating supply shortfalls for 1 or more hours
Energy Emergency Alert Watch (EEA Watch)	None
EEA 1	None
EEA 2	None
EEA 3	 EEA 3 Notice title in ISO Today mobile app, email and MNS is just "EEA 3" Notice language will indicate – using firm load as contingency reserves, no instructions for firm load shedding at this time News release and Social media title will be: "EEA 3 – Using load as reserves" Notice language will indicate – using firm load as contingency reserves, no instructions for firm load shedding at this time
EEA 3 – Firm Load Interruption	

http://www.caiso.com/Documents/Emergency-Notifications-Fact-Sheet.pdf



CAISO Firm Load Interruption > Utility Rotating Outage Notifications

- Whenever possible CAISO will notify utilities in advance using EEA Watch and EEA Watch updates
 - Reason field include predicted EEA 1, 2, 3 conditions for future hours
 - For predicted EEA 3 conditions utilities will determine when to initiate customer notifications
 - CAISO will utilize "prorata" allocations whenever possible reference OP 4510A
 - The number of customers notified by each utility is based on the magnitude of the forecasted shortfall
- It is possible in such cases as CAISO declared System or Transmission Emergencies that the CAISO could order one or more utilities to shed load immediately whether or not the ISO has previously issued any alert
 - In this scenario, the first priority is to shed the required load to preserve the security of the Electric System
 - In this scenario, utilities will notify customers and county and state emergency management entities as soon as possible



Cody Smith, Grid Operations Manager

RC WEST HOT DAY PREPARATIONS



Pre-Summer Training

- RC Summer Assessment
 - Weather and fire forecasts
 - Entity submitted system concerns and changes
 - New overview displays that are available
- Reserve Deficiency Drills with RC and BA Operators
- IROL and Restoration simulations

"What do we expect?" & "What is the worst that could happen?"



Day-Ahead Preparation

- Day-Ahead Operational Planning Analysis (OPA)
 - Available to RC and Members to asses next day
- RC Daily Report posted to RC Portal
- Notifications from RC members
 - Contacting RC if concerns are emerging
 - Restricting maintenance, returning outages, revising limits
- EEA Watch
 - BA forecasts a capacity deficiency day-ahead
- Assessing supplemental staffing
 - Additional RCs, Grid Ops Managers, Engineers, etc.

Gathering and distributing information Formulating Plans

Early Morning Preparation

- Morning Conference Calls
 - Northwest, Southwest, and WECC RC
- Checking-in on members with concerns
- Discussing potential scenarios internally

"Are the Day-Ahead conditions still accurate?"



Approaching Peak

- Monitoring conditions
 - Overloads
 - Reserve requirements
- Maximizing use of transmission system
 - Developing post-contingency action plans
 - Unscheduled Flow Mitigation
- Declaring Energy Emergency Alerts (EEAs) and other Emergencies as they appear

Coordinating actions to maintain reliability



PI RC Situational Awareness Display



Displays most critical system values on a single, graphical display



Dave Delparte, Director, Real-Time Operations

CAISO 2023 SUMMER OUTLOOK PREPARING FOR PEAK LOAD DAYS



Managing peak load days

- Todays Outlook
- Communicate with other BAAs, Our TOPs, Water Agencies
- RMOs
- Summer Play Book,
- SSU (System Status Updates), ELRP Board Meetings
- Review DA Market Results, Fires, Outages, RUC Adjust
- Flex Alert EEA Watch
- SRR Strategic Reliability Reserve 291 MW, ELRP ~300 350 MW
- Manually commit Resource Adequacy (RA) resources outside of market if available, Capacity Payment Mechanism (CPM) – manually commit non-RA resources day ahead or day of
- Purchase Energy As Available On The Interties
- Emergency Procedures





WESTERN BA'S PREPARATIONS FOR PEAK LOAD DAYS

Round Table, BPA | PAC | APS | SRP | LDWP





RC West Summer Readiness Drill 2023

May 23rd 2023

Tim Beach - Director, Reliability Coordination

Drill Purpose



- Using Sept 4-6th 2022 as framework to walk through multiple day extreme heat event
- Interactive discussion by RCW and BA/TOP pro-active preparatory steps
- Interactive discussion RCW and BA/TOP response to system events



Sept 4th 2022

CAPITAL WEATHER GANG

Unrelenting September heat wave grips California and western U.S.

The historic heat wave, expected to last another five days, has been fueling fires and endangering health



RC Daily Report for Sept 4th



RC West Daily RC Report 09/04/2022

RC West Peak Load Information

Peak Load Type	Megawatts	Date/Time
All Time Peak	127,643	08/18/2020
Yesterday	114,171	HE 18
Today's Forecast	116,634	HE 18

IROLs in Effect

IROL Name	Туре	IROL	Cause / Related Eqt. OOS
NW WA Area Import	Voltage Stability	9,500 MW	
Oregon Export	Voltage Stability	6,000 MW	


2 Days Out (Sept 4th) RC West (RCW) 0300/0400 PNW/PSW Conference calls

- Due to the numerous heat advisories and excessive heat warnings in place across the west along with a heightened fire risk for the PNW and PSW regions
- ➢ PNW region forecasted to be near 100°F
- California and the desert SW region forecasted highs well above the 100°F
- ➢ RCW forecasted Peak Load 116,634 MW for HE 18



2 Days Out (Sept 4th)

RC West (RCW) 0300/0400 PNW/PSW Conference calls



Remind entities that if they are concerned with sustaining operating reserves for any hour today that they may request an EEA Watch declaration or EEA level 1 declaration at any time to help with procuring additional resources



2 Days Out (Sept 4th) Daily 0600 Adjacent RC Conference call

- ✓ Peak Load forecast of approx. 116,634 MW HE 18
- ✓ OREX IROL 6,000 MW
- ✓ NWWA IROL 9,500 MW
- ✓ Path 66 at 4800 MW
- ✓ Path 49 at 10,000 MW
- ✓ Cooler weather in Washington and Oregon but still hot across the rest of the RC West footprint
- ✓ Excessive heat continues across the west especially California
- \checkmark No new outages impacting the system



2 Days Out (Sept 4th) Daily 0600 Adjacent RC Conference call



- ✓ AESO reports load forecast 10,500 MW no major outages.
- ✓ BCRC reports load forecast 7,850MW seasonal weather.
 - Battleship wildfire that could threaten GMS substation and approx. 2000MW of generation
- ✓ SPPRC reports no new outages



Sept 4th Roundtable



- Actions taken by RCW
- Actions taken by BA's
- Questions



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Events Occurring During the Day



- 1900 RC West observes wildfire .92 miles east of Malin-Round Mountain 1 and 2 500kV lines
- No indications of fire apparatus on site
- Notified CAISO of potential wildfire, also that airborne tanker appears traveling in that direction



Sept 4th Roundtable



- Actions taken by RCW
 - Wildfire
 - Other
- Actions taken by BA's
 - Wildfire
 - Other
- Questions



Events Occurring During the Day



19:44 CAISO reports to RC West that the wildfire is 1/8 acre in size and fully contained with no threat to transmission equipment.



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Sept 4th Roundtable



- Actions taken by RCW
- Actions taken by BA's
- Questions



Actuals Events Sept 4th



RCW Actual Peak Load 115,521 MW HE 18

Emergency Declarations

RMO- No Touch	5
EEA-W	1
EEA-1	0
EEA-2	0
EEA-3	0



Sept 5th 2022





RC Daily Report for Sept 5th



RC West Daily RC Report 09/05/2022

RC West Peak Load Information

Peak Load Type	Megawatts	Date/Time
All Time Peak	127,643	08/18/2020
Yesterday	115,521	HE 18
Today's Forecast	120,505	HE 18



1 Day Out (Sept 5th) RC West (RCW) 0300/0400 PNW/PSW Conference calls

- Due to the numerous heat advisories and excessive heat warnings in place across the west along with a heightened fire risk for the PNW and PSW region
- ➢ PNW region forecasted to be near 100°F
- California and the desert SW region forecasted highs well above the 110-113F, and above average fire risk
- ➢ RCW forecasted Peak Load 120,505 MW for HE 18



1 Day Out (Sept 5th) RC West (RCW) 0300/0400 PNW/PSW Conference calls

Duration	Status
3h	
	Duration 3h

Effective 1530 PPT, CAISO is forecasting being in an EEA from 1700 PPT to 2100 PPT on 9/6/2022. Please contact the entity at (916) 351-2495 if you can provide assistance.

Entitles requested to monitor GMS for Emergency Assistance calls

Remind entities that if they are concerned with sustaining operating reserves that they may request an EEA Watch declaration or EEA level 1 declaration at any time to help with procuring additional resources



1 Day Out (Sept 5th) Daily 0600 Adjacent RC Conference call

- ✓ Peak Load forecast of 120,505 MW HE 18
- ✓ OREX IROL 6,000 MW
- ✓ NWWA IROL 9,500 MW
- ✓ Path 66 at 4800 MW
- ✓ Path 49 at 10,000 MW
- Cooler weather in Washington and Oregon but still hot across the rest of the RC West footprint
- ✓ Excessive heat continues in California
- ✓ No new outages impacting the system



1 Day Out (Sept 5th) Daily 0600 Adjacent RC Conference call

- ✓ AESO reports load forecast 10,100 MW no major outages.
- ✓ BCRC reports load forecast 7,500 MW seasonal weather
 - ✓ Battleship wildfire that could threaten GMS substation and approx. 2000MW of generation
- ✓ SPPRC reports no new outages.



Roundtable



- Actions taken by RCW
- Actions taken by BA's
- Questions



Events Occurring During the Day

by 🛔 RC WEST CAISO (RC_WEST)

Related Incident: INCIDENT_ID-5067587705

∧ Medium 🔰 RC West Only Templates 🗉 RC West - No Response Required

OVERVIEW USER DELIVERY MESSAGE LOG

RC West RTCA has identified a post-contingency angular difference greater than the maximum closing angle on the N. Gila - I. Valley 500 kV transmission line. Please review procedure RC9550. Notify RC West if you would like to request a conference call to discuss mitigating actions.

0706: RC West posts to GMS

- RTCA has identified a post-contingency angular difference greater than the maximum closing angle on the N. Gila - I. Valley 500 kV transmission line. Please review procedure RC9550.
- Notify RC West if you would like to request a conference call to discuss mitigating actions.



Events Occurring During the Day

1750 OREX IROL Margin less than 750MW (Limit 6000 MW)





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Roundtable



- Actions taken by RCW
 - Phase Angle Reduction Plan
 - OREX IROL
- Actions taken by TOP/BA's
 - Phase Angle Reduction Plan
 - OREX IROL
- Questions



Actuals Events Sept 5th



RCW Actual Peak Load 123,403 MW HE 18

Emergency Declarations

RMO- No Touch	5
EEA-W	2
EEA-1	2
EEA-2	1
EEA-3	1



Sept 6th 2022





RC Daily Report Sept 6th



RC West Daily RC Report 09/06/2022

RC West Peak Load Information

Peak Load Type	Megawatts	Date/Time
All Time Peak	127,643	08/18/2020
Yesterday	123,403	HE 18
Today's Forecast	124,778	HE 18



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Peak Load Day (Sept 6th) RC West (RCW) 0300/0400 PNW/PSW Conference calls



- Excessive Heat Warnings continue in California, Arizona, and Nevada
- Heightened wildfire risk present
- RC West Footprint Peak Load 124,778 MW HE 18 (actual loads have exceeded forecasts). Potential for new historic peak load



Peak Load day (Sept 6th) RC West (RCW) 0300/0400 PNW/PSW Conference calls



- EEA 2 and 3's were declared during evening hours for some entities in the Southern part of the RC West footprint
- Expect Emergency Assistance requests during peak and net-peak periods,1700-2200 hrs



Peak Load day (Sept 6th) Daily 0600 Adjacent RC Conference call

- ✓ Peak Load forecast of 124,778 MW HE 18. Potential for new historic peak load
- ✓ OREX IROL 6,000 MW
- ✓ NWWA IROL 9,500 MW
- ✓ Path 66 at 4800 MW
- ✓ Path 49 at 10,000 MW
- Cooler weather in Washington and Oregon but still hot across the rest of the RC West footprint
- ✓ Excessive heat continues across the west especially California
- $\checkmark\,$ No new outages impacting the system

California ISO

Peak Load day (Sept 6th) Daily 0600 Adjacent RC Conference call

- ✓ AESO reports load forecast 10,000MW no major outages.
- ✓ BCRC reports load forecast 7,913 MW seasonal weather.
 - ✓ Battleship" fire that could threaten GMS substation and approx. 2000MW of generation
 - ✓ Path 3 TTC raised to 2700MW to assist getting more power into California.
- SPPRC reports no new outages. Expected high heat in Rocky Mountain and Desert Southwest area.



Roundtable



- Actions taken by RCW
- Actions taken by BA's
- Questions



Events Occurring During the Day

06:33 CAISO reports potentially going deeper into Emergency Procedures later today. (EEA-3)

13:00 RC West notified of wildfire .5 miles west of Capitan-Jack Olinda 500kV line, and 1.8 miles west of Malin-Round Mountain 1 and 2 500kV lines. (this event added for the purposes of the drill)

- Aided by moderate westerly wind, the fire is burning toward the lines
- Fire fighting and air tankers are in route to fire
- Unless stopped fire will reach Captain Jack- Olinda in 1 hour



Roundtable



- Actions taken by RCW
 - Wildfire
 - EEA
- Actions taken by BA's
 - Wildfire
 - EEA
- Questions



Actuals Events Sept 6th



RCW Actual Peak Load 130,986 MW HE 18 WECC Historic Peak 167,499 MW (previous 160,240)

RMO - No Touch	5	3
EEA-W	1	
EEA-1	3	
EEA-2	2	
EEA-3	3	



Thank you

