

## **RC West Summer Readiness**

RC West May 15<sup>th</sup> 2024

**ISO PUBLIC** 

## Agenda

- 07:30 Continental Breakfast provided by RC West
- 08:00 Welcome and agenda review
- 08:10 Summer meteorological outlook CAISO
- 08:30 Western US fire risk outlook CAL FIRE
- 09:00 RC West Emergency Procedure Review and RC West Status Indicator
- 09:30 Break
- 09:40 CAISO Summer Operations Assessment RC West Operations Engineering
- 10:15 Natural Gas Company outlook
- 10:30- BA updates





## METEOROLOGICAL OUTLOOK SUMMER 2024

Amber Motley, Director, Short Term Forecasting

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### Winter 2024 Overview

- Average temperatures across California and much of the west
- Above average precipitation along the California coast









#### Precipitation

NOAA/NCEI Climate Division Precipitation Anomalies (in) Dec to Feb 2023-24 Versus 1991-2020 Longterm Average







## Precipitation as of April 14th

- California snowpack 76% of normal\*
- Cumulative precipitation:
  - Northern Sierra Precipitation:
    - 95% of average
  - San Joaquin Sierra Precipitation:
    - 89% of average
  - Tulare Basin Precipitation:

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- 85% of Average
- Statewide precipitation:
  - 90% of normal





\*Snow pack data is of April 1

# Above normal snow water equivalent across the mountains, but many reservoirs still below 50% capacity

Snow Water Equivalent





## Drought improved in California and Pac NW, increased drought in NM and AZ











Maps as of April 16, 2024

### 2023 Summer: Observations

- · Below normal temperatures for much of California
  - Hurricane Hilary brought unusual August rain
- Above normal temperatures for Pac NW and north central







## INPUTS TO THE SUMMER FORECAST

## ENSO forecast from the Climate Prediction Center (CPC)

- Sea surface temperatures (SSTs) are continuing to weaken across most of the Equatorial Pacific Ocean
  - Weakening El Niño
- Greater than an 80% chance of current El Niño to transition into ENSO-Neutral by early summer
  - About 60% chance of La Niña by summer





## "Typical" La Niña Summer

Northern Hemisphere Summer La Nina Impacts

- 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

Correlation Temperature Jun to Sep With Jun to Sep Nino3.4 1948 to 2022





## La Niña vs El Niño SST anomalies



## June – September SST Forecast





## 2016 Spring and Summer vs 2023





2016	2.5	2.1	1.6	0.9	0.4	-0.1	-0.4	-0.5	-0.6	-0.7	-0.7	-0.6
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	- <b>0.9</b>	-0.8	-0.9	-1.0	-1.0	-0.9	- <b>0.8</b>
2023	-0.7	-0.4	-0.1	0.2	0.5	0.8	1.1	1.3	1.6	1.8	1.9	2.0
2024	1.8	1.5										$ \Longrightarrow $

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## SUMMER FORECAST



## Similar years: 2020, 2019, 2016, 1998

- Focusing on years with similar SST and El Niño patterns
- Watching positioning of ridge
  - Shifting of the ridge of heat further west can allow for hotter temperatures further west



## Temperature Outlook June 2024 – August 2024

- Anticipating cooler June and July, heating up for August onward. Especially for interior areas across the West.
- The probability that the average temperature will be above average is the highest throughout the Desert Southwest and Rockies region.
- Low probability of above normal temperatures along coastal CA, with higher probabilities of above normal temperatures for interior CA.



## Precipitation Outlook June – August

- Drought likely to persist for the Desert SW, Pacific NW
- Leaning towards below normal summer rainfall for many monsoonal locations
- Potential for a less active hurricane season in the Pacific Ocean



## Weather Outlook August – October

- Potential for above normal temperatures in August and September, primarily for the Western interior centered around the four corners.
- Lower risk for above normal temperatures throughout coastal areas.
- Continued risk for below normal rainfall for Desert SW



## **SUPPLEMENTAL SLIDES**

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## "Typical" El Nino Summer

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



## Western US Fire Risk Outlook – CAL FIRE



## **RC West System Emergency Procedures**

Cody Smith, Grid Operations Manager – RC West

Samson Adigun, Grid Operations Manager – RC West



## **EEA Watch**

BA forecasts a potential energy or capacity deficiency

- Not an official NERC defined EEA
  - No specific RC requirements
- May be issued day-ahead or during the operating day
- May be used to meet initial emergency notification requirements
  - Allow requests for Emergency Energy

Broadcast to all WECC entities by GMS, raising awareness of capacity concerns

## EEA - 1

#### All available generation is in use

- All available generation committed to meet firm energy requirements
- Non-firm wholesale energy sales are curtailed
- Concern for maintaining Contingency Reserves

Alert declaration is made by the RC and broadcast by GMS and RCIS

## EEA - 2

Load Management or other Emergency Operating Plans are implemented to maintain reserves

- BA is considered an "energy-deficient entity"
  - Would be reserve deficient without emergency procedures
- Currently able to maintain minimum reserve requirements
- Must provide updates to the RC at least every hour

Non-emergency Demand Response that is implemented by regular operating practice does not necessitate an EEA 2

## EEA - 3

Firm load shedding is imminent or in progress to maintain ACE

- BA is no longer able to meet minimum reserve requirements
- Significant contingency would require load shedding
- Load that can be shed within ten minutes may be designated as reserves when BA is in an EEA3
  - Up to 100% of reserve requirements
- Must provide updates to the RC at least every hour

## EEA 3 Transmission Operations

- RC will allow post-contingent load shedding mitigation for RTCA overloads, if mitigation adjustments would impact the delivery of energy to a BA in an EEA3
  - Provided Contingency does not result in instability, cascading or uncontrolled separation



Example: Loss of Line #1 results in Line #2 loading to 108% of Highest Emergency Rating. Only mitigation is shedding load in deficient BA. RC will allow post-contingency load shedding plan

## **Transmission Emergency**

Load shed is imminent or in-progress due to transmission issues

- Load shed consideration is not due to BA capacity
- Load shedding to correct Voltage, overloads, IROLs, stability concerns, or impacts of natural disasters



## **Insecure Operating State**

Indications similar to an IROL condition in real-time

- Indication that a credible contingency will result in instability, cascading or voltage collapse affecting multiple BES stations
- Must be mitigated within 30 minutes, once the condition is validated
- Declaring an IOS is at the discretion of the RC Operator
- RC0310C contains specific thresholds for an IOS

## Transmission Emergency Due to Wildfire

Additional actions for notification and coordination

- TOP should notify RC of fires that threaten BES
- RC monitors for reported fires within two miles of BES
  RC will confirm threat with TOP
- RC and TOP will determine if a new Credible Multiple Contingency is needed
- If RC identifies Adverse Reliability Impacts or RAS action from the Contingency, RC will send an Informational Wildfire GMS message to All Reliability
  - Message contains instructions on how to view the Contingency Details in HANA

## RC West Transmission Emergency Scenarios – Samson Adigun

- Path 80
- Potential Open Loop



#### Transmission Emergency Scenarios 1. Severe SOL Overloads due to heavy S-N flows on Path 80 (RC9330)



- Impacts to RC seams with SPP, and several TOPs.
- RC Operating Guide steps include adjusting PSTs, RAS settings if possible, cutting path TTC/schedules, low-impact transmission reconfiguration, coordinated manual generation re-dispatch.
- Sustained overloads above 125%, RC Transmission Emergency declared, once above steps exhausted:
  - RC may cut other parallel path TTCs/schedules
  - RC may open Path 80 tie.

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## Transmission Emergency Scenarios 2. Potential Open-Loop Due to Fire Threat (RC9000)



- With fire threats, select contingencies can be declared credible, and system in Potential Open-Loop,
  - 1. Curtail NWACI/Path 66 flows/TTC to 600 MW N-S/S-N
  - 2. OREX IROL to 2400 MW
  - 3. Disable NE/SE Separation Scheme of WECC-1 RAS

### 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") <sup>10</sup>	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

## Proposed Improvements to RC Regional Conference Calls when Extreme Weather Forecasted (RC0320).

- Lesson Learned from Cold Weather event in January.
  - Encourage sharing of relevant reliability information during conference calls to better anticipate potential for capacity concerns.
- RC request via GMS Response Required Message for each entity to share specific BA forecast information for next day, such as
  - Expected peak load and All-time peak,
  - Forecast Contingency Reserve Obligation, MSSC,
  - Major transmission Outages that limit imports
  - Does the BA anticipate use of demand response?
  - Does the BA anticipate to be in any EEA level?
- Requested information to be provided prior to 0300 / 0400 Conference Calls.

## Additional Criteria for Transmission Emergency in RC0410 – Proposed Effective June 1

#### 3.2. Transmission System Emergencies

TOPs are expected to have Operating Plans reviewed by the RC entity to mitigate transmission system Emergencies in their area, and to notify the RC operator in real-time when the TOP is experiencing an Emergency.<sup>9</sup> A Transmission system Emergency may include, but is not limited to:

- An actual or potential IROL exceedance,
- An actual or potential SOL exceedance with potential Adverse Reliability Impact,
- Unacceptable voltage levels with potential Adverse Reliability Impact,
- Loss of reactive reserves with potential Adverse Reliability Impact,
- Loss or potential loss of transmission elements due to fires, earthquakes, storms, physical attacks, vandalism or other reasons, with potential Adverse Reliability Impact,
- A single or credible multiple Contingency will result in instability, uncontrolled separation, or cascading outages that adversely impact the reliability of the BES,
- RC Real-time Assessment indicate unplanned loss of 300 MW of load or greater for the next credible contingency.
- System separation, islanding or open loop,
- Extraordinary Contingency, and
- Any other transmission event that result in Adverse Reliability Impact.

When the RC operator receives a notification from a TOP of a BES Emergency on the transmission system, or if RC west analysis indicate that an Emergency condition exists,

## **RC West Status Indicator – Tim Beach**



## **RC West Daily Condition Status**

The purpose of the Daily Condition Status is to provide visual status representation.

RC West Condition Status Legend	
RED - Existing condition poses risk to BPS reliabiltiy or Firm Load	
ORANGE - Exsiting or Emerging condition may present risk to BPS reliability OR Firm LOAD	
YELLOW - Conditions warrant elevated monitoring of potential threats to BPS reliabiltiy or Firm load	
GREEN - Conditions do not indicate an elevated risk or abnommal threat to BPS reliability	

RC West will provide status for RC West North and South zones. The indicator can be different for each zone. In some scenarios the indicator will be the same.

E.g. if there is an EEA-3 with firm load shedding then each zone will be red.

But if there is a EEA-3 declared with no load shedding, then the zone with the BA in EEA-s will be orange, while the other could be yellow or green.

## Day 7 to Day 4 weather coordination-

D4-D7 status triggers are used for forecasted extreme weather conditions. Purple or Pink composite weather score triggers conditions yellow

No Actions	GMS notification for potential extreme weather conditions	Criteria not selectable- No actions	Criteria not selectable- No actions

Va	lue	Percentile	Temperature Impact
	1	Within normal range	None
-2 2		80%	Moderate
-3	3	90%	High
-4	4	95%	Major
-5	5	98%	Extreme

## Day 3 to Day 0 weather coordination-

D3-D0 status triggers are used for forecasted extreme weather conditions. Pink/Purple trigger condition orange. Dark Blue/Red trigger condition yellow

No Actions	GMS posting for potential extreme weather conditions	Posting and Notification: GMS-JIC-RTWG- WECC SA	Criteria not selectable- No actions
		Initiate 0300/0400 RC- BA/TOP daily conference call	

Va	lue	Percentile	<u>Temperature Impact</u>
	1	Within normal range	None
-2 2		80%	Moderate
-3	3	90%	High
-4	4	95%	Major
-5	5	98%	Extreme

## CAISO Summer Operations Assessment – RC West Operations Engineering



## **RCWEST TOP's**



## 2024 Summer Assessment

- RC West performs a coordination and facilitation role in the seasonal planning process for its RC Area.
- 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.

## TOP's Summer assessment Studies:

- RCWEST evaluated 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 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 Summer assessment Studies:

- No new IROL's have been identified.
- With the expected completion of uprating work on California-Oregon Intertie (COI) CAISO's transfer analysis studies have indicated that the limits will go back up to 4800 MW in North-to-South direction and 3675 MW in South-to-North direction.
- These increased limits should help reduce congestion in summer with the expected transfers between California and Oregon

## COI (Path 66)

## COI Interface:

- Malin Round Mountain • No.1 500 kV line
- Malin Round Mountain ٠ No.2 500 kV line
- Captain Jack Olinda ٠ 500 kV line

## • Path Rating:

- 4800 MW in North-to-South direction
- 3675 MW in South-to-• North direction



## TOP's Summer assessment Studies:

- With the planned energization of the Delaney Colorado River 500 kV line this summer, Path 49 participants are performing studies to update the TTC value.
  - APS, DCRT, DWP, IID, NVE, SCE, SDG&E, SRP, WALC
- The Southern Nevada Transmission Interface (SNTI)+, Path 89, consists of the original path 81, 21 different transmission lines located in southern Nevada, and the Harry Allen-Eldorado 500 kV line. NV Energy calculated TTC for SNTI + for summer.

## Conclusions:

- 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.



## **Natural Gas Company – Outlook**

## Williams –

## Jordan McDonough, Commercial Optimization Lead – Northwest Pipeline



## **BA Round Table Updates**

- 1. BPA-Sanford?
- 2. CAISO Brian Murray
- 3. PACW-PACE Daniel Koppes
- 4. PGE Lee Recchia
- 5. SRP Stephanie Conn
- 6. APS Matt Kura
- 7. NVE Kendziorski, Tim
- 8. PNM Aidan Gallegos
- 9. LDWP Bryan Baker
- 10. SMUD/BANC Chris Hofmann
- 11. IPCO Eric Hartruft
- 12. NWE Patrick Powers

## Adjourn Café open for lunch



## Thank You

More Information: RC Portal: <u>https://rc.caiso.com/</u>

