

SEAMS – ALIGNING THE
WESTERN RESOURCE
ADEQUACY PROGRAM (WRAP)
AND CALIFORNIA RESOURCE
ADEQUACY PROGRAM

Panelist:

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Resource Adequacy in California

California RA programs are joint between CAISO and Local Regulatory Authorities (LRAs)

LRAs determine resource counting rules and reserve margin (PRM) applicable to their Load Serving Entities (LSEs)

CAISO determines resource deliverability and energy market obligations

Forwardness of showing

Year-ahead:

In October of each year, LSEs are required to show they have contracted with capacity to meet 90% of RA requirement in June-September of following year

Monthly:

LSEs must also 100% of RA requirement 45 days in advance of month

Resource Counting

Varies by resource type and LRA.

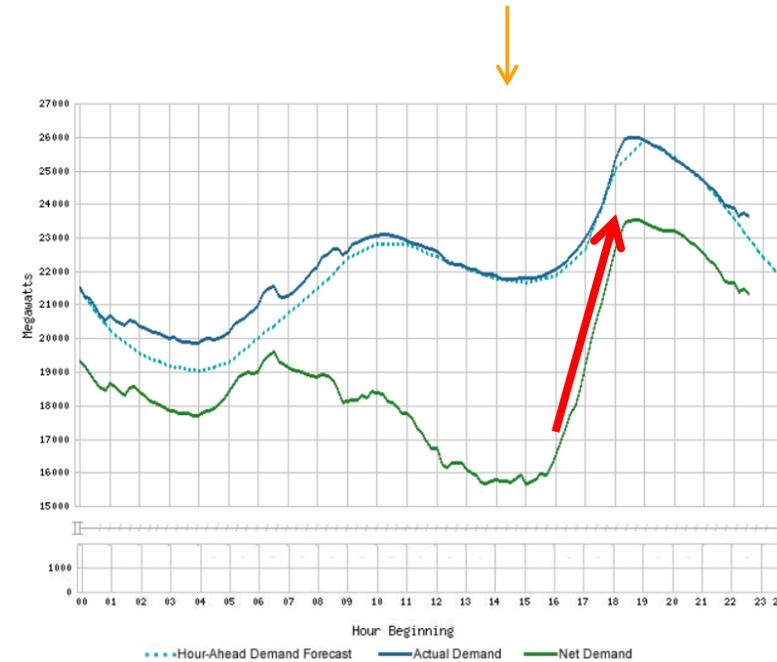
Three Types of RA Capacity in California

1 - System



2 - Local

3 - Flexible



California utilities are required to procure *system* and *local* capacity to meet peak demand, along with *flexible* capacity to meet steepening net load ramps.



California RA Today: Summary of Current RA Products

Questions	System RA	Local RA	Flexible RA
What problem is being solved?	Ensuring enough resources in market to maintain reliability during peak demand	Ensuring enough resources in a local area to maintain reliability for contingency events	Ensuring enough resources to meet intraday upward ramping needs
How do we set the system's RA requirement?	115% of monthly forecasted 1-in-2 peak load of CAISO system	100% of forecasted need in August after N-1-1 contingency event	Maximum forecasted 3-hour ramp in the month + MAX(most severe potential single contingency, 3.5% of forecasted peak load) + error term
How do we allocate the system's requirement?	Peak load ratio share for each LSE	Peak load ratio share for each LSE in TAC area	<ul style="list-style-type: none"> Each LRA is allocated by CAISO the sum of the jurisdictional LSEs' contribution to the CAISOs largest net load ramp CPUC allocates to each LSE by peak load ratio share
How do resources count towards the requirement?	<ul style="list-style-type: none"> LRA determines QC and MCC buckets CAISO determines NQC 	<ul style="list-style-type: none"> LRA determines QC CAISO determines NQC 	<p>CAISO determines EFC:</p> <p>Start-up time > 90 minutes: EFC = MIN (NQC – Pmin, 180 min & Average Ramp Rate)</p> <p>Start-up time < 90 minutes: EFC = MIN (NQC, (Pmin + (180 min – Start-up Time) * Average Ramp Rate))</p> <p>3 Flexible RA Categories</p>
What is the market participation requirement for RA resources? (MOO)	Bid or self-schedule into DA & RT energy markets for the entire month	Bid or self-schedule into DA & RT energy markets for the entire month if shown as Local RA for that month	Bid into DA & RT energy markets every day from 5 am to 10 pm if shown as Flex RA

SOLVING A PROBLEM

» What WRAP does:

- » Implements a **binding forward showing** framework that requires entities to demonstrate they have secured their share of the regional capacity need for the upcoming season

»Sets a reliability metric, evaluates capacity contribution of resources, requires demonstration of physical resources and firm/conditional firm transmission

- » Implements a **binding operational program** that obligates members with calculated surplus to assist participants with a calculated deficit on the hours of highest need

- » Leverages regional supply and load diversity and the binding nature of the operational program, to **safely lower the requirements** in the forward showing while **maintaining the reliability metric**

»Reliability program value proposition relies on accessing diversity in the operating time horizon

- » WRAP Participants **must forward secure capacity from an identified source** (can be unit-specific or a system sale that has been validated as real capacity) with transmission for deliverability
 - Access to these resources (or same-quality resources) and transmission on the worst of days is necessary to maintain business case
- » **Holdback: a MW value for potential delivery** on identified hours of need of the operating day
- » **Energy Delivery Obligations: a MW value for a specific hour, counterparty, delivery point**



CA RA VS.
WRAP
COMPARISON

	California RA	WRAP
RA Planning Term	Annual: June – September Monthly: January-December	Winter: November – March 15 Summer: June – September 15
Net Load Peak or Peak Load	System: Peak Load Local: 1-in-10 August peak load Flexible: Max 3-hr Ramp plus contingency	Net Peak Load
Reliability Metric	CPUC: 1-in-10 LOLE	1-in-10 LOLE
Planning Reserve Margin Range for 2024	System: 1-in-2 load 17%	NW: 12.1% - 21.9% SW: 10.3% - 26.9
Planning Reserve Margin Range for 2027	System: TBD	NW: 14.7% - 32.2% SW: 10.5% - 27.5%
Transmission Requirement	All capacity must be fully deliverable to all load on system.	75% of load
Qualifying Capacity Method	<p>Wind and Solar : ELCC Hydro: Exceedance based on 10-yr history with greater weight given to low hydro years Thermal: PMax Short Term Storage: PMax Hybrid Resource: “Sum of parts” method: ELCC for renewable and PMax storage Demand Response (supply-side): Econometric estimation of load responsiveness Demand Response (load-side); modifier to requirements</p>	<p>Wind and Solar : ELCC Run-of-River Hydro: ELCC Storage Hydro: WPP-developed hydro model that considers the past 10 years generation, potential energy storage, and current operational constraints Thermal: UCAP Short Term Storage: ELCC Hybrid Resource: “Sum of parts” method: ESR will use ELCC and generator will use appropriate method Customer Side Resources: load modifier or capacity resource</p>