

Flexible RA Reforms

RA Track 3 Proposals Workshop

March 13, 2019



About CESA



The **California Energy Storage Alliance (CESA)** is a 501c(6) membership-based advocacy group committed to advancing the role of energy storage in the electric power sector through policy, education, outreach, and research. CESA was founded in January 2009 by Janice Lin and Don Liddell.

CESA's mission is to make energy storage a mainstream energy resource in helping to advance a more affordable, clean, efficient, and reliable electric power system for all Californians.



California ISO
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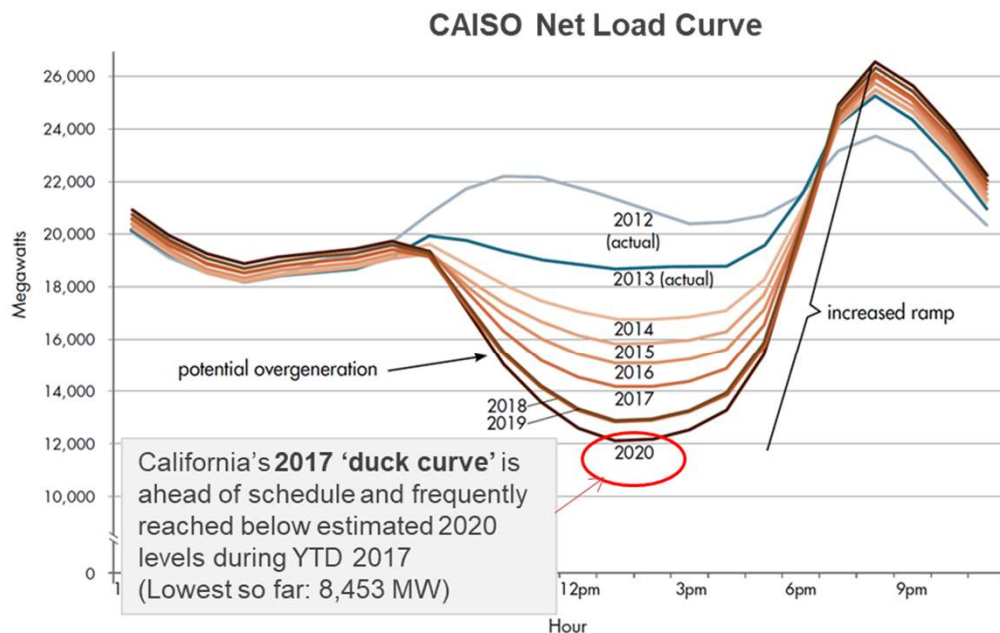
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CESA's Track 3 Proposals

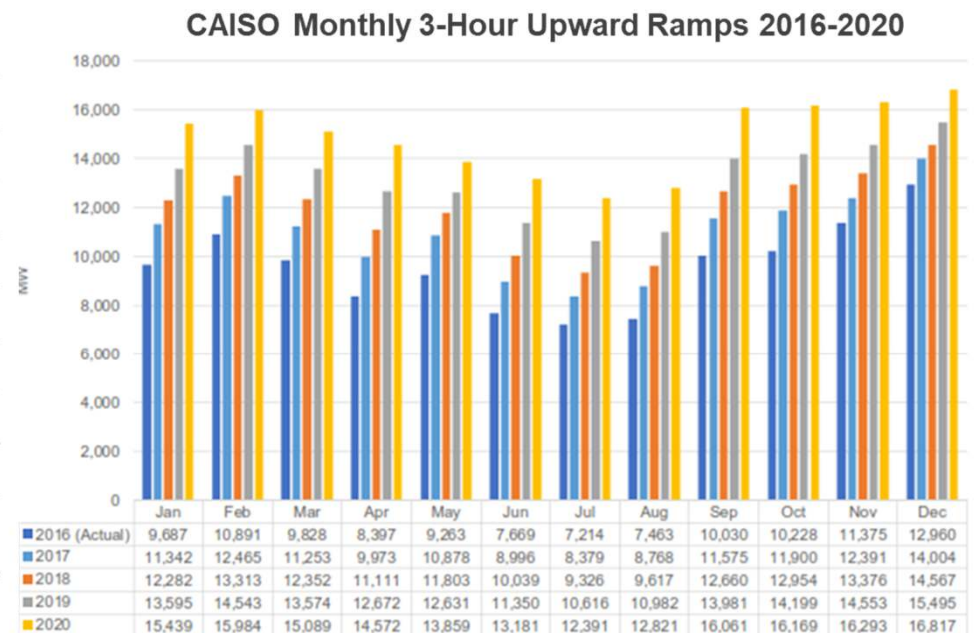
- For Track 3, CESA proposed the following proposals but will focus on the two highlighted below for this panel:
 - RA rules should establish that solar-plus-storage ELCC values can exceed traditional ELCC values
 - Solar-plus-storage ELCC values should be established based on forecasted 'Year 0' operations, and historical performance should inform RA values for Year 1 and beyond
 - Solar thermal resources should be able to access these updated ELCCs where appropriate
 - **Unbundling the system components of RA from the flexibility components of RA..**
 - **Adjust the Flex RA definition to fit with operational needs by 'counting' a resource's flexible capacity based on its ramping ability across a shorter period of time (15 and 5 minute flexibility)**
 - BTM and DER aggregations RA capacity counts should be established and explored for enhancements

Current Real-Time Operational Difficulties

- Planning models often focus on hourly ‘solutions’, which can blur out actual intra-hour ramps, outages, and other factors that make the real-time operation of the grid a growing challenge:



Source: CAISO (2013)

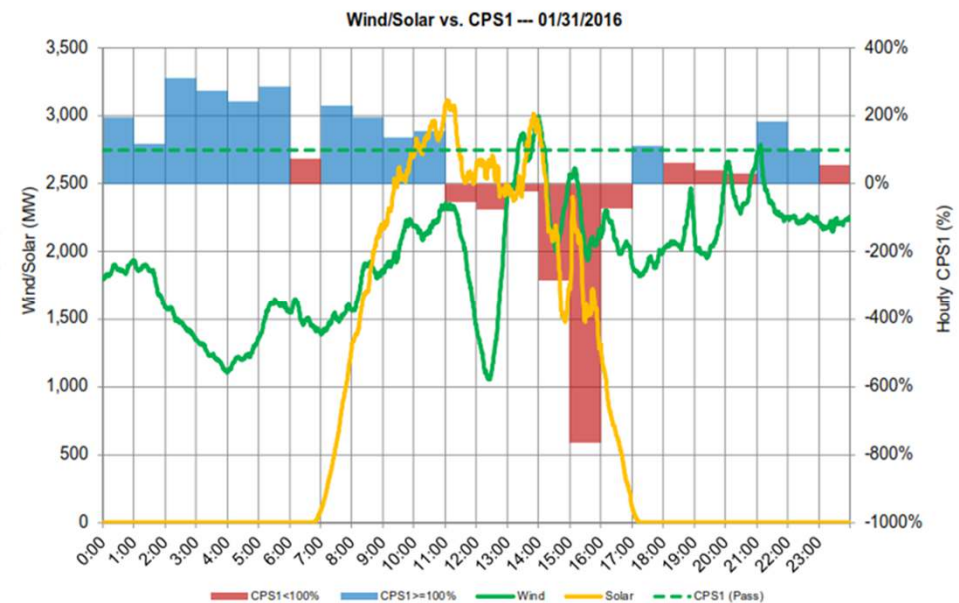
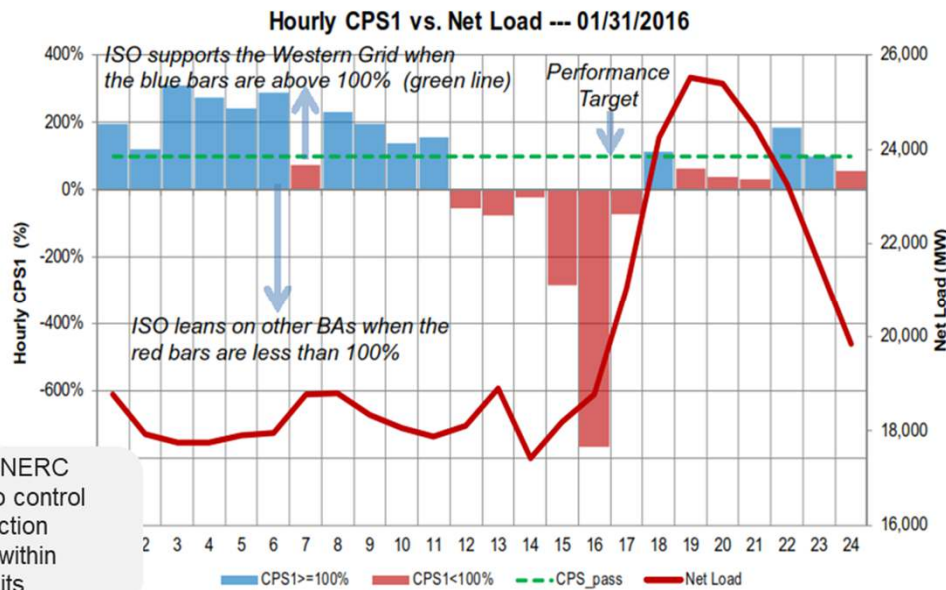


Source: CAISO (2017)

Current Real-Time Operational Difficulties

- One key metric, ‘frequency’, is tracked and shows the growing difficulties of operating the grid, where more flexible solutions at the right time can help with this

CAISO's CPS1 Compliance



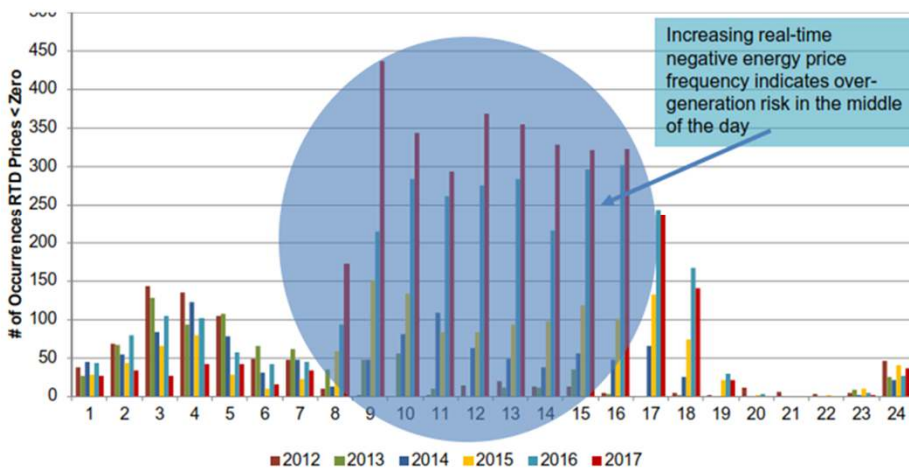
CPS1 is a NERC standard to control interconnection frequency within defined limits

Source: CAISO (2017)

Implications for California's Flexible Fleet

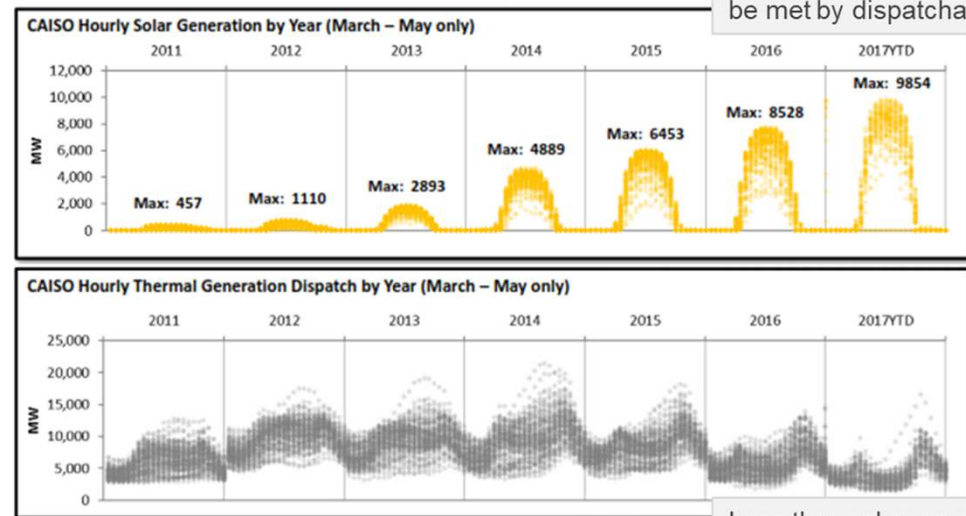
- Flexible ramping has been historically provided by the CAISO's gas fleet, which face financial hurdles due to GHG policies and lower (sometimes negative) energy prices

CAISO Distribution of Negative Prices: Mar-May 2012-2017



Source: CAISO (2017)

CAISO Solar Generation vs. Thermal Dispatch



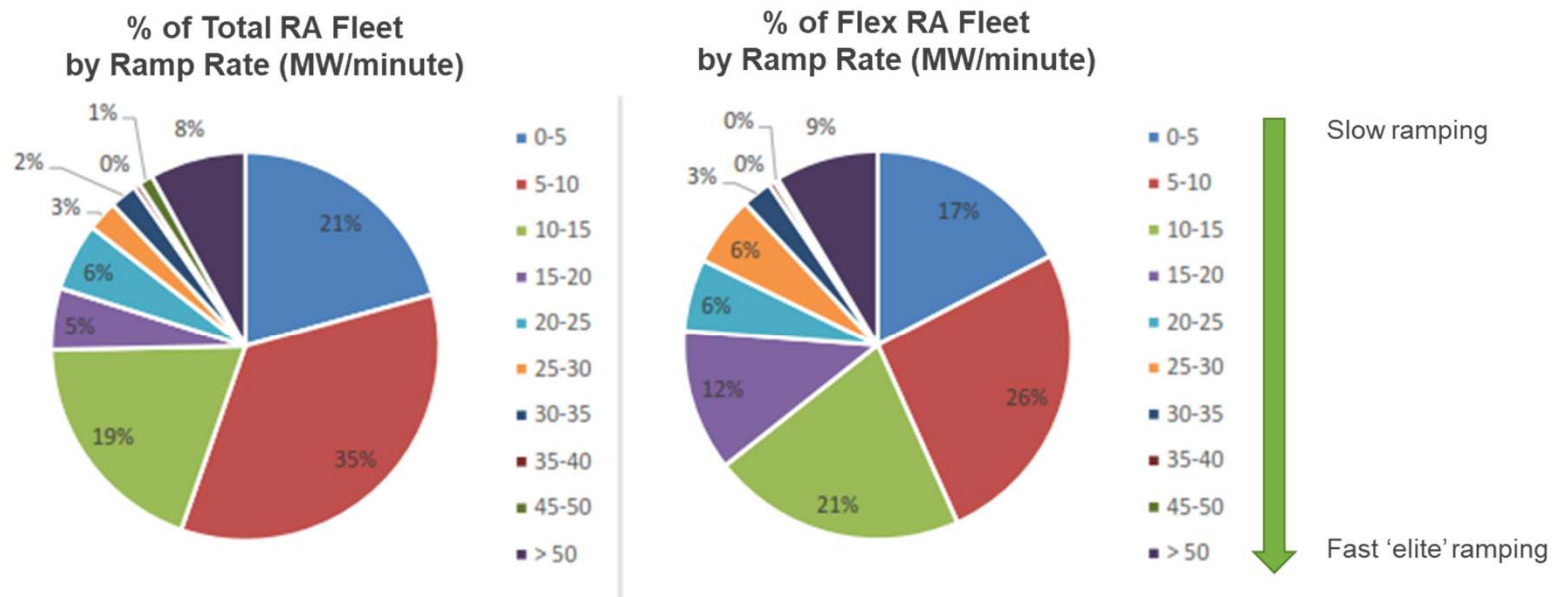
Increasing mid-day solar generation reduces net load to be met by dispatchable fleet

Source: E3 (2017)

Less thermal generation dispatch, but it is still needed for evening ramp and peak

Inadequate Flexibility Tools for the CAISO

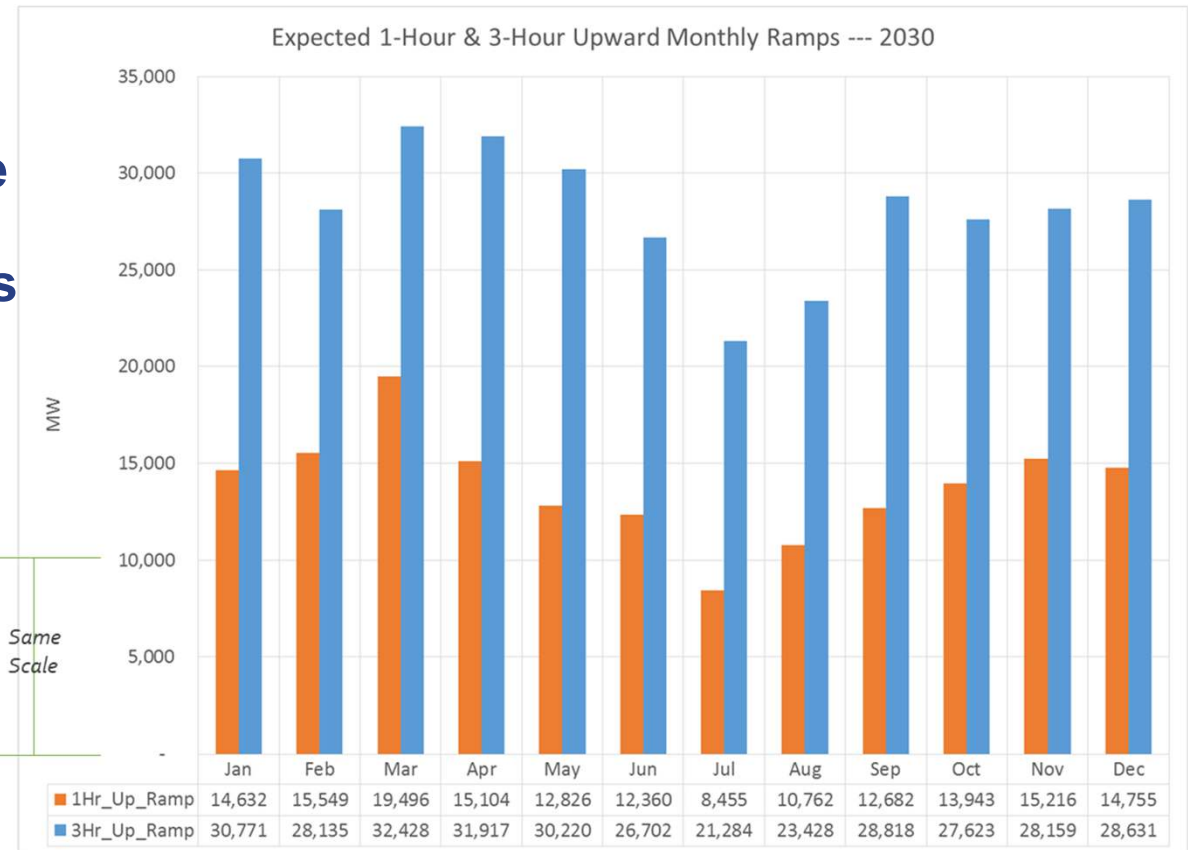
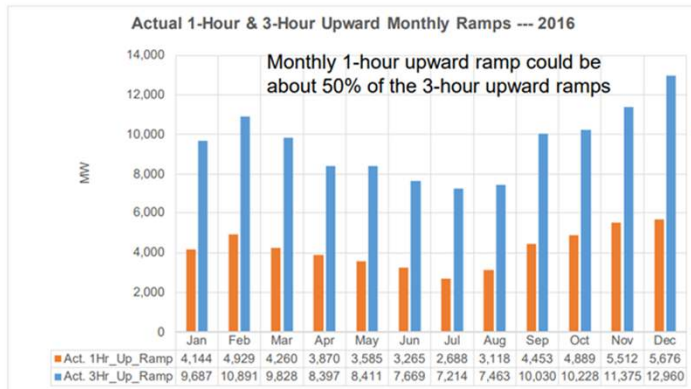
- California is not incentivizing flexible resources that are fast-ramping, quick starting, and have low minimum operating levels (Pmin) – *i.e.*, System and Local RA looks like Flex RA!



Source: CAISO (2017)

In 2030 Much More Flexibility Will Be Needed

- Adding the Proposed Reference System Plan from the IRP will increase ramp rates as well as downward ramping needs



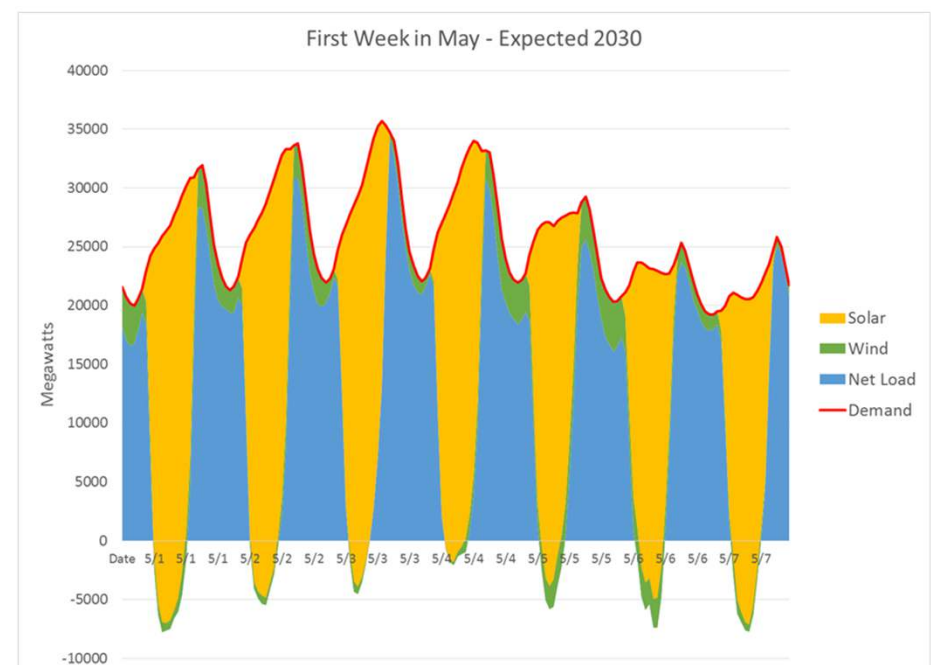
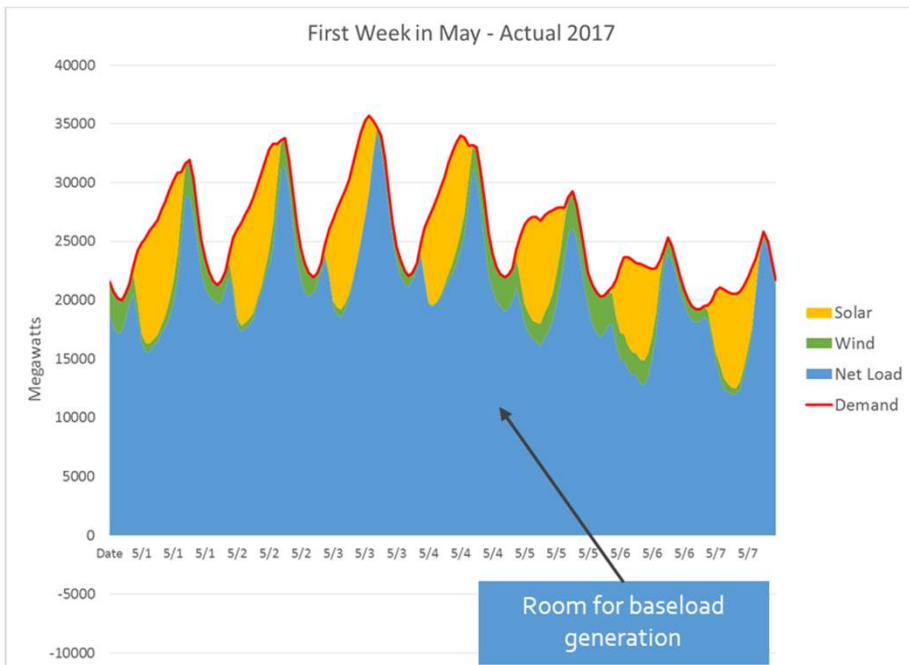
Source: CAISO OASIS data (2016)

Source: CAISO OASIS data (2016), 2030 IRP Proposed Reference System Plan Scenario

Grid Operations with Renewables: Spring

Today: Net load is met by Flexible Gas, Baseload Gas, Nuclear, Geothermal, Imports/Exports, and Curtailments

2030: Net load will need to be met by a combination of Flexible Resources, Imports/Exports, and Curtailment

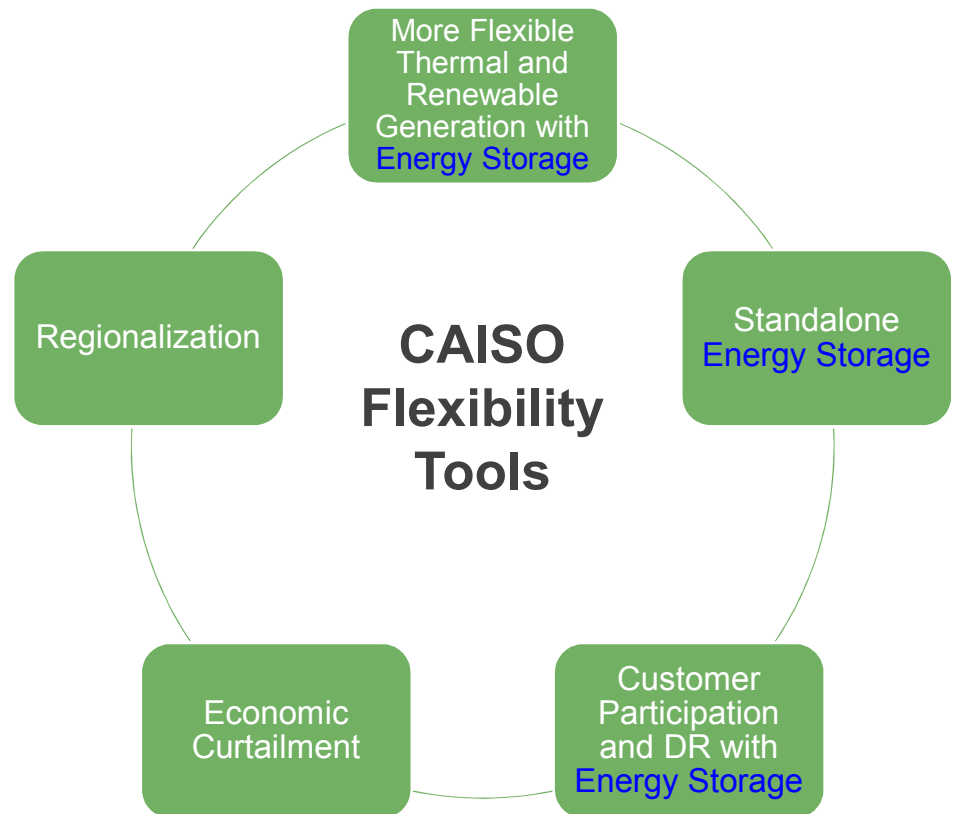


Source: CAISO OASIS data (2016)

Source: CAISO OASIS data (2016), 2030 IRP Proposed Reference System Plan Scenario

Flex RA Program is Strategically Important To Develop Flexible Toolkit

- **Flex RA Program Should Provide Economic Signal for Grid Needs:**
 - Value ramping speed and low Pmin
 - Value 'negative generation' contributions (charging)
 - Develop short duration products (5-min, 15-min, hourly), in addition to 3-hour product
- **Flex RA Program Reform should happen ASAP, in parallel to IRP – key to begin developing flexible fleet**



Proposal 1: Unbundling Flex RA

- **CESA proposes that the Commission’s RA rules explicitly unbundle the sale and counting of Flexible RA attributes from those of Local and/or System RA:**
 - Establish of a separate pathway for determining flexible deliverability – i.e., EFC – instead of through the FCDS study, as is used today to determine the net qualifying capacity
 - Separate pathway allows for least-cost sizing and deployment of solutions focused on deliverability of flexible capacity services during a subset of hours when flexibility need is greatest, rather than across multiple hours for peak capacity needs
 - The CAISO has signaled a willingness to explore unbundling in their jurisdictional roles in a new flexible capacity deliverability study that confirms how a resource could be ramped from Pmin to Pmin+EFC during the most stressed flexibility conditions

Proposal 2: Fast Flexibility Capacity

- **CESA proposes that a shorter-duration Flexible RA product would be a more appropriate period, where 5-minute or 15-minute flexibility is needed:**
 - Two Ideas:
 - Need determination based on flexible capacity needs for real-time
 - Tighten EFC 'counting' only for ramping ability in shorter periods (*e.g.*, 15-minutes)
 - Sub-hourly, dispatchable, and fast-ramping resources can address system uncertainty and balancing needs
 - The CPUC and CAISO should work together with stakeholders to determine the appropriate must-offer obligation, eligibility criteria, and other performance requirements (*e.g.*, startup time)
 - Market products for flexibility need to value and compensate for such capability to incentivize entry of more flexible resources

Thank you

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