

CalCCA Reliability Perspective

IEPA Annual Meeting

September 19, 2023

2023 Resource Adequacy Market Was Challenging

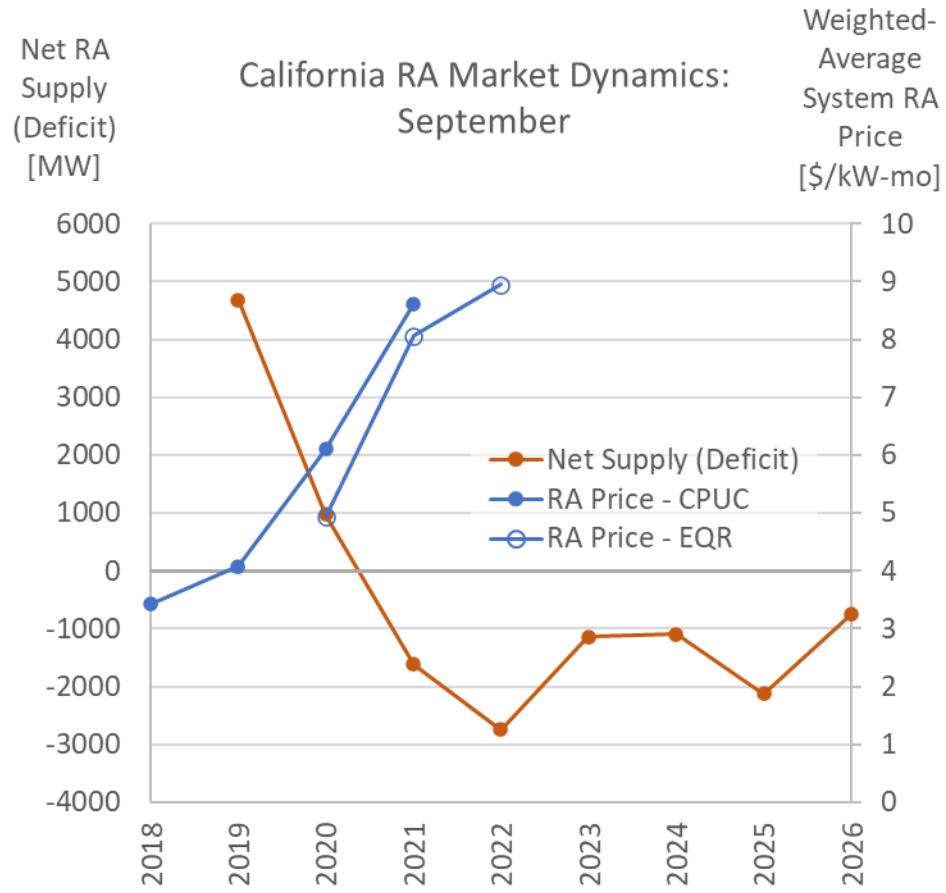
	Jun	Jul	Aug	Sep
1 CAISO 1-in-2 Load	42,354	45,510	46,074	46,829
2 Reserve Margin (16%)	6,777	7,282	7,372	7,493
3 Total RA Demand	49,131	52,792	53,446	54,322
4 2023 NQC List	47,640	48,308	48,066	48,373
5 Event-Based Demand Response	995	1,045	1,077	1,090
6 Imports	6,000	6,000	6,000	6,000
7 Thermal Plant Derate	(700)	(700)	(700)	(700)
8 Excess IOU Resources In IOU Supply Plans	(1,266)	(507)	(1,269)	(968)
9 Retention for Substitution	(619)	(619)	(619)	(619)
10 Total RA Supply	52,049	53,527	52,554	53,176
11 Surplus Supply (Deficit)	2,919	735	(892)	(1,146)

Further details available in the CalCCA RA Stack: "California's Constrained Resource Adequacy Market: Ratepayers Left Standing in a Game of Musical Chairs"

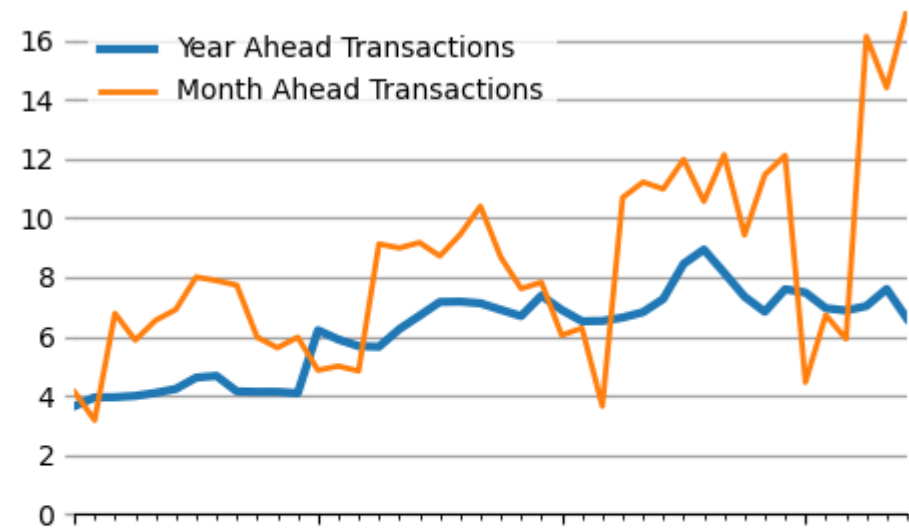
Tight Market Conditions Led to High RA Prices

A 6 GW drop in net RA supply over 2019-21 accompanied by doubling of the average RA price

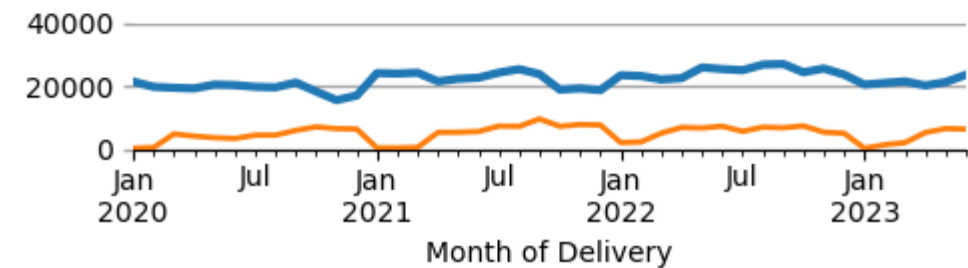
Highest RA prices occur after Year-Ahead filings



Weighted Avg. Capacity Price (\$/kW-mo)



Total Transaction Volume (MW)



Data Source: FERC EQRs

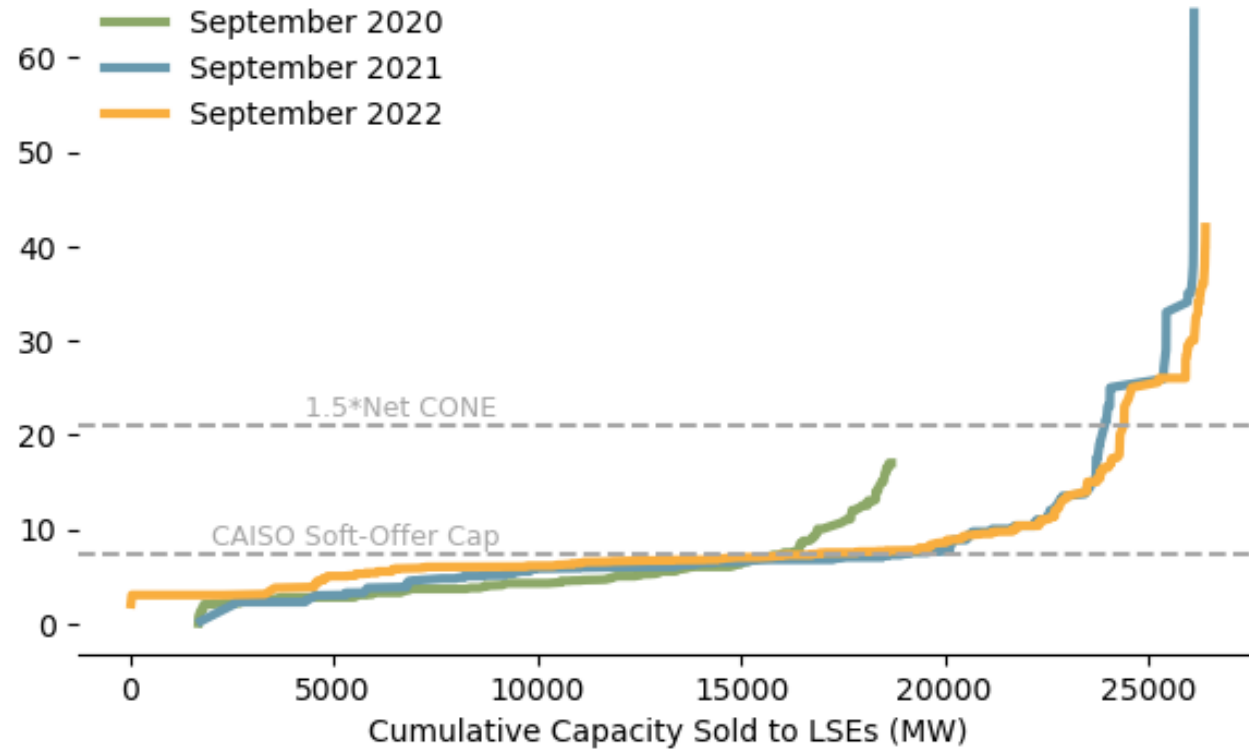
Data Sources: CalCCA RA Stack, CPUC Resource Adequacy Reports, FERC EQRs

Unreasonably High Prices Are Driving Up RA Costs

Delivery Month	Capacity Sold to LSE's at Prices Above:		Highest Observed Price in FERC EQRs
	CAISO Soft-Offer Cap	1.5*Net CONE	
September 2020	2,600 MW	0 MW	\$17/kW-mo
September 2021	7,100 MW	2,200 MW	\$60/kW-mo
September 2022	9,600 MW	2,000 MW	\$40/kW-mo

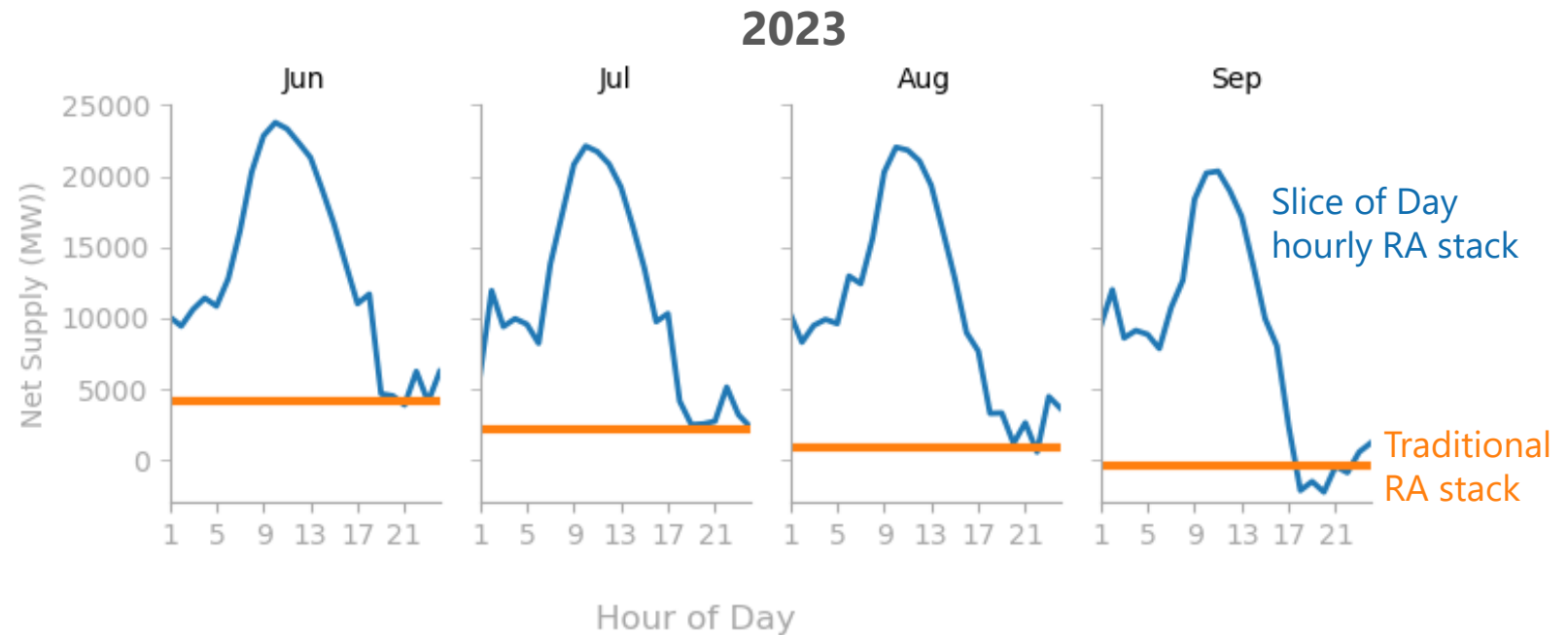
Note: 1.5*Net CONE is based on NYISO's approach to capping monthly capacity market prices at the Net Cost of New Entry. Here we estimate the net cost of new 4-hour battery storage.

Capacity Transactions (\$/kW-mo)



Slice of Day RA Mechanism Will Not Address Thin Supply Margins

- Tight RA market through 2026, Slice of Day begins in 2025
- Assess impact by comparing traditional RA stack with SOD stack using similar resources and assumptions for 2023
- Use CPUC's Master Resource Database; hourly demand, wind, and solar; and optimized storage dispatch



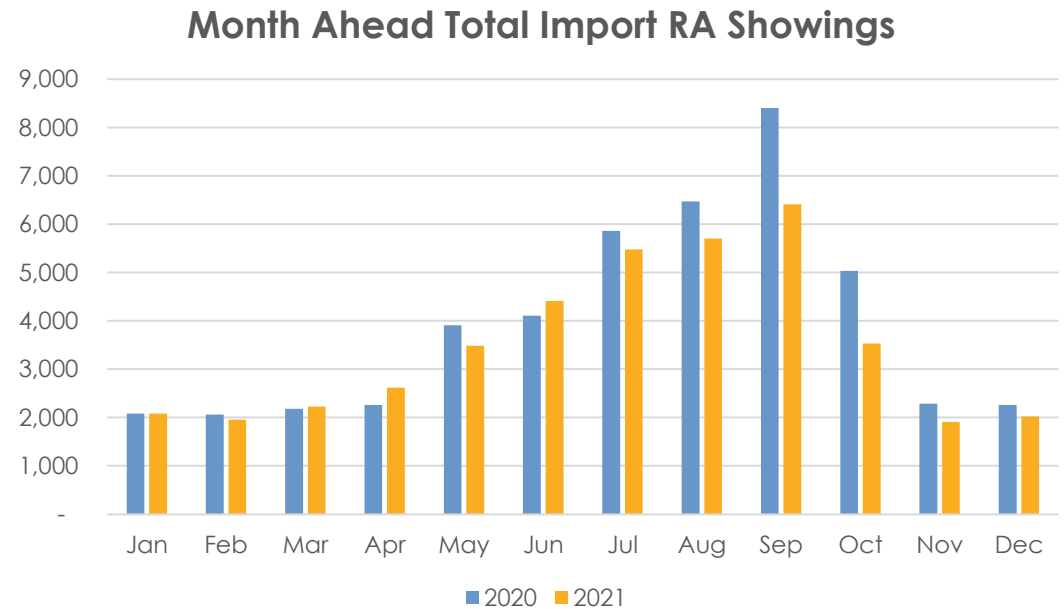
In September, net RA supply is scarcer with Slice of Day because of lower contribution of solar to reliability than traditional ELCC approach

RA Program Impacts On The Market

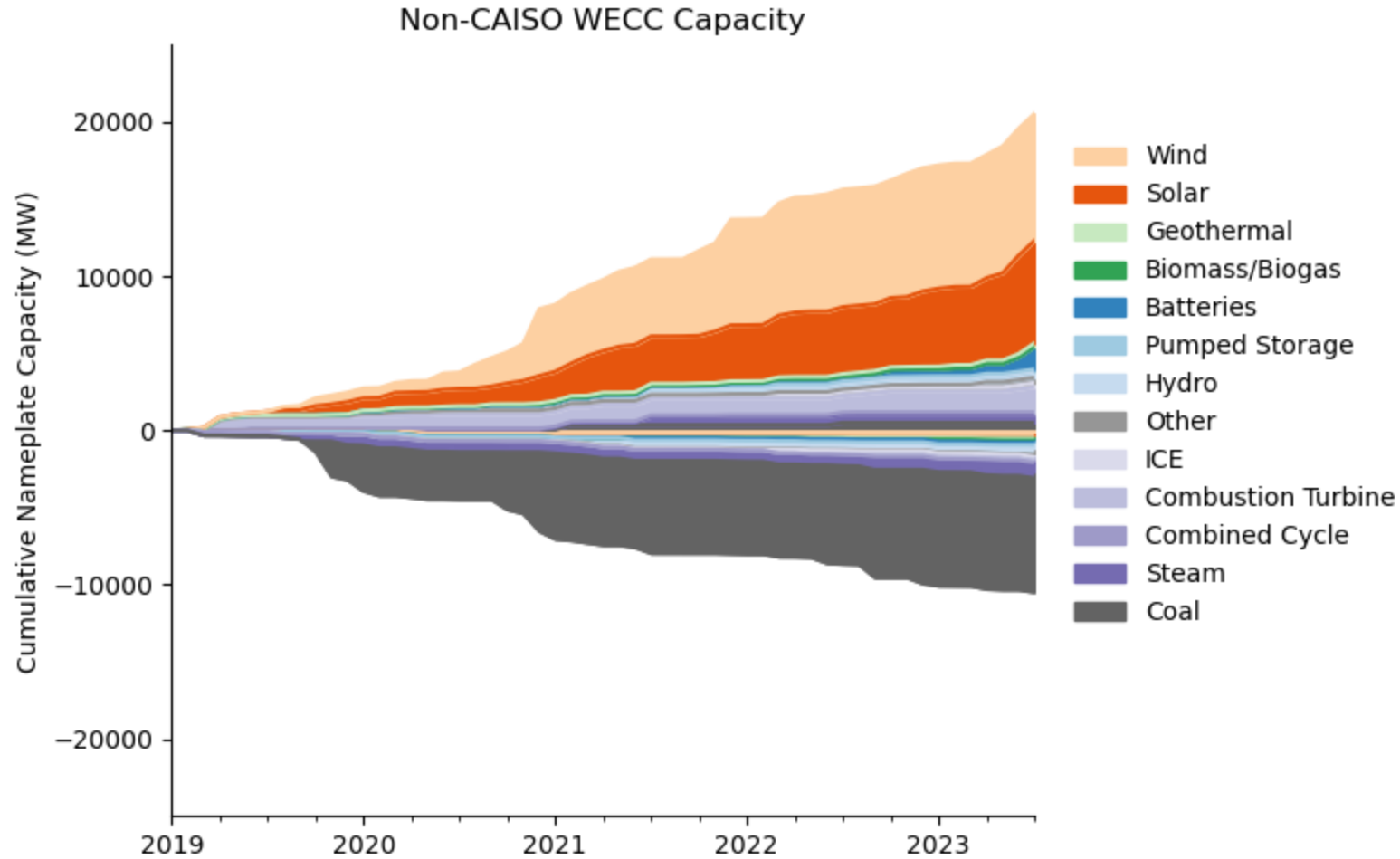
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Why are RA Imports Declining?

Year Ahead RA Showings				
Year	CAISO Inteconnected Generation	Non-Specific Import	Specified Import	Total Import
2019	87.17%	9.20%	3.63%	12.83%
2020	86.38%	9.97%	3.65%	13.62%
2021	89.81%	5.18%	5.00%	10.19%
2022	91.93%	3.01%	5.06%	8.07%



Change in WECC Capacity Characteristics is Pushing Competition for RA Capacity



Data Source: EIA Form 860M from January 2019-July 2023

Do Maximum Energy Bid Requirements Make CA RA Market Less Attractive to Imports?

Table 1: Percent of AAH Where CAISO marginal cost of energy (MCE) is Less than Estimated Example Peaker Generating Costs

Percent of AAH Where CAISO MCE is Less Than Estimated Example Peaker Generating Cost				
	June	July	August	September
Low Gas Price	47%	48%	5%	29%
High Gas Price	91%	91%	56%	65%

California Community Choice Association's Proposals in Response to Assigned Commissioner's Amended Scoping Memo and Ruling R.21-10-002 January 20, 2023

Is the RA Fleet Being Cannibalized by Excess Procurement?

CPUC Excess Resources Report – RA Compliance Materials*

IOU Supply Plan Summer Reliability MW Amount						
IOU	Report Date	Jun-23	Jul-23	Aug-23	Sep-23	Oct-23
PG&E	6/16/2023	517	250	250	300	466
SCE	6/19/2023	653	207	997	552	379
SDG&E	6/15/2023	96	50	22	116	89
Total		1,266	507	1,269	968	934

August 2023 MA CPM Designation Report **

Resource ID	CPM MWs	Designated Start Date	CPM Type	Price \$/kW-mon	Tac Area
ELCAJN_6_LM6K	48.10	8/1/2023	CADEF	6.31	SYS
MRCHNT_2_PL1X3	82.25	8/1/2023	CADEF	6.31	SYS
CHINO_2_PESBT1	10.00	8/1/2023	CADEF	6.31	SYS
MARVEL_2_MARBT3	45.71	8/1/2023	CADEF	6.31	SYS

Reason for CPM Exceptional Dispatch Designations:

The California ISO issued capacity procurement mechanism (CPM) designations to the resources identified above. Multiple scheduling coordinators failed to show sufficient resource adequacy capacity on August 2023 monthly Resource Adequacy Plans, which caused an overall net deficiency of 186.06 MW in meeting the total monthly demand and reserve margin requirements. The ISO issued the CPM designations under tariff section 43A.2.3 to address the deficiency.

* - <https://www.cpuc.ca.gov/industries-and-topics/electrical-energy/electric-power-procurement/resource-adequacy-homepage/resource-adequacy-compliance-materials>

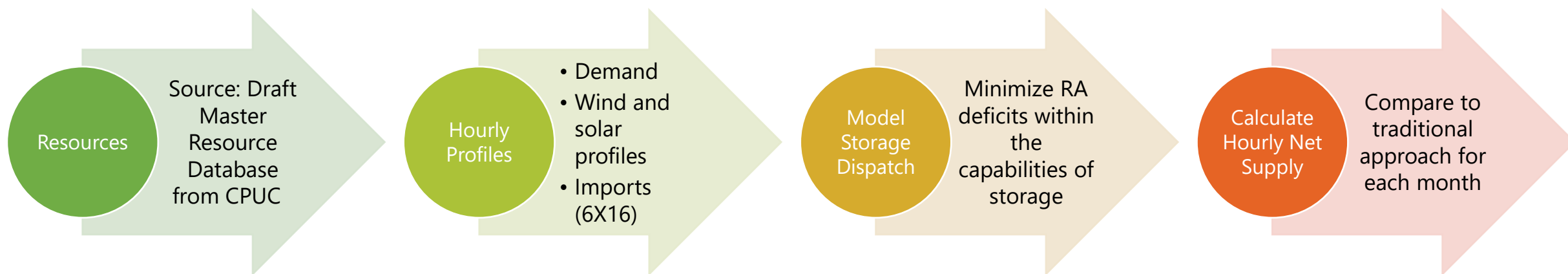
** - <http://www.caiso.com/Documents/August2023MonthAheadCPMDesignationReport.pdf#search=august%202023%20cpm>

Who is Minding the Store?

- The CPUC does not have jurisdiction over wholesale transactions
 - RA prices cannot be mitigated by the CPUC
- FERC has jurisdiction, but the bilateral market is not squarely within the scope of CAISO tariff
 - Department of Market Monitoring has no obligation to evaluate the competitiveness of the RA market
- The CAISO CPM does have a FERC jurisdictional tariff with a soft-offer cap
 - With the threat of penalties and CPM cost allocation up to \$32.95/kw-Month, the soft-offer cap is not much of a price mitigant
- Short of an entity filing a complaint, FERC is unlikely to step in

Appendix

Slice of Day Analysis Approach



Note: This approach pools all resources and demand to calculate net supply. Actual slice of day implementation requires each LSE to meet their hourly demand with a portfolio of resources without hourly transactions, making the pooled approach overly optimistic.