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Valley Clean Energy Board Meeting – Thursday, May 9, 2024

Item 11 – Resource Adequacy (RA) Slice of Day Presentation (Information)

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RESOURCE ADEQUACY
SLICE OF DAY TRAINING

THE ENERGY AUTHORITY

MAY 9TH, 2024

AGENDA

o Purpose of Resource Adequacy

o Changes to the RA Paradigm under Slice-of-Day

o Impacts of Slice-of-Day

WHAT IS RESOURCE ADEQUACY AND WHY DOES IT EXIST?

o **Capacity Products, boiled down**: a regulatory construct developed to ensure the region has sufficient resources available to serve electric demand under all but the most extreme conditions

o **Resource Adequacy in California:**

  o After the California Energy Crisis in 2001, the State Legislature enacted Section 380 of the Public Utility Code instructing the **CPUC, in cooperation with the CAISO,** to develop the RA program to *"maintain physical generating capacity and electrical demand response adequate to meet its load requirements, including, but not limited to, peak demand and planning and operating reserves"*

  o Bilaterally-structured program (unlike all other organized markets with a capacity paradigm)

    o Load Serving Entities, such as VCE, must purchase RA directly from suppliers/developers to meet their compliance obligation

  o This origin story & structure explain most of the *insanity* of the RA market in California

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TRADITIONAL RESOURCE ADEQUACY PRODUCTS

System RA

- **Goal:** Grid has enough resources to meet monthly system peak
- **Supply:** Any generator in the CAISO footprint or out-of-state resources that have transmission rights to flow into CAISO

est. 2004

Changing Under SOD

Local RA

- **Goal:** Grid has enough resources in local load pockets to maintain grid reliability amid transmission constraints
- **Supply:** Any System RA resource located in the area of need on transmission system

est. 2007

Flexible RA

- **Goal:** Grid has enough dispatchable & ramping resources committed as RA to meet load as it changes throughout the day
- **Supply:** Separate attribute that some generators in CAISO have; providing Flex RA brings additional bidding & operational obligations in the CAISO market

est. 2016

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ISSUES WITH THE TRADITIONAL RA PROGRAM

2006 Landscape	2024 Landscape
3 IOUs serving vast majority of load	3 IOUs, 25+ CCAs, 10+ ESPs
Relatively few renewables and use-limited generation	New generation is variable solar & wind and use-limited demand response & battery storage
Plenty of hydro, nuke, and gas-fired generation in WECC	Drought/warming conditions reducing hydro reliability on an annual basis On-going nuke & gas-fired retirements

- Flex RA was a band-aid applied to the RA program in 2016; cracks have been growing since then

- Each year has new RA policy decisions, resulting in a complex web of rule minutiae
    - Job security for RA policy wonks and RA procurement teams, questionable improvements to system reliability taken broadly

- **In late 2019 CPUC decided to wipe the slate clean via Restructuring of RA Program**
    - Slice of Day is the result, after 2.5 years of policy discussion

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CPUC'S GOALS IN RESTRUCTURING OF RA D.21-07-014

1. Balance ensuring a reliable grid while minimizing customer costs

2. Balance hourly energy sufficiency with CA environmental goals

3. Balance granularity & precision of meeting hourly RA needs with reasonable simplicity for users

4. Near-term implementation (2024)

5. Durable and adaptable grid
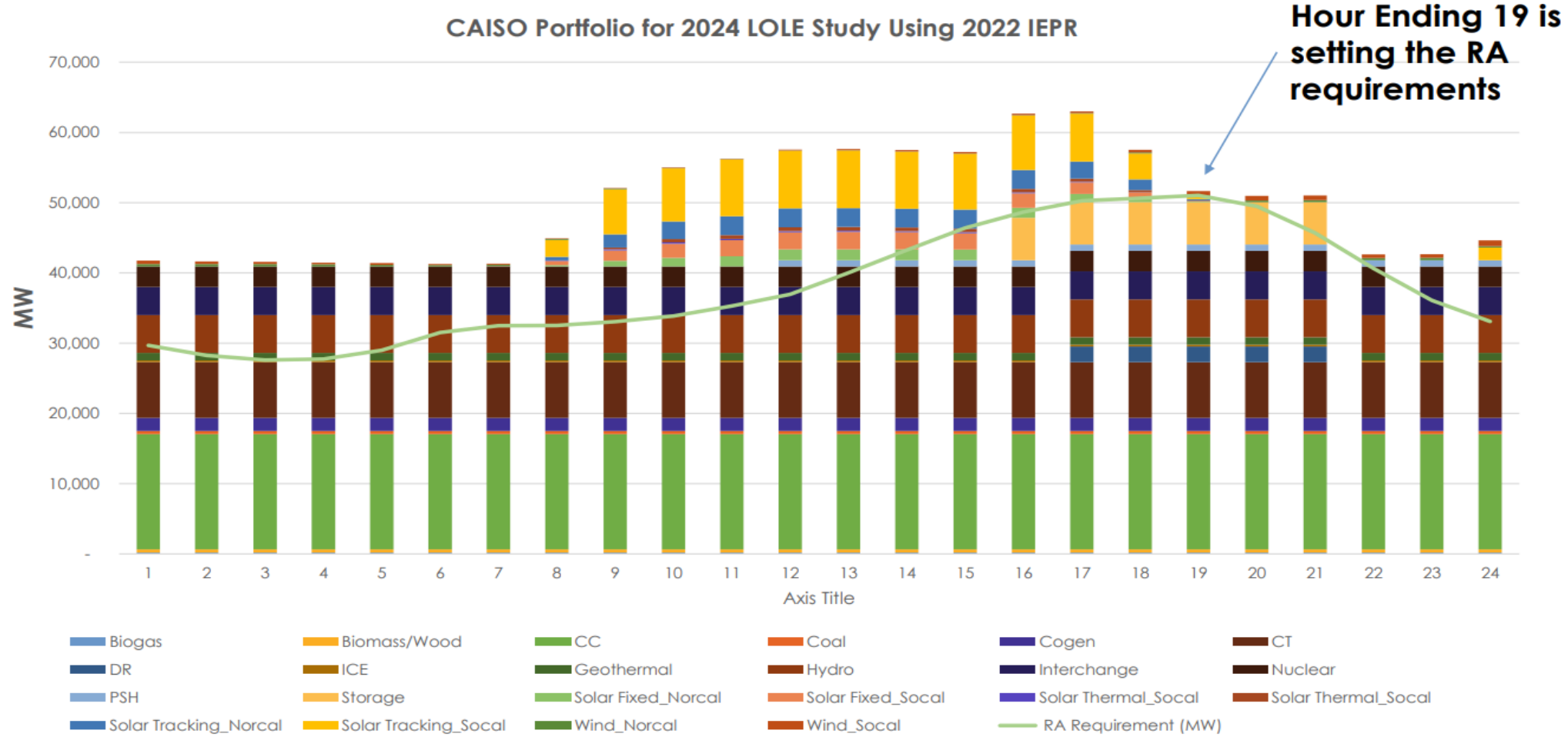
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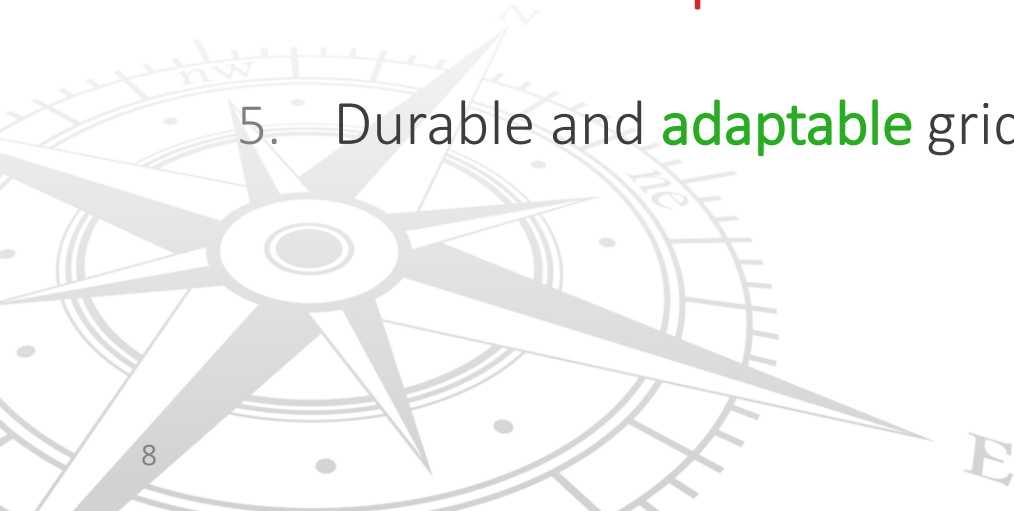
MOVING TO A SLICE-OF-DAY PARADIGM FOR RA
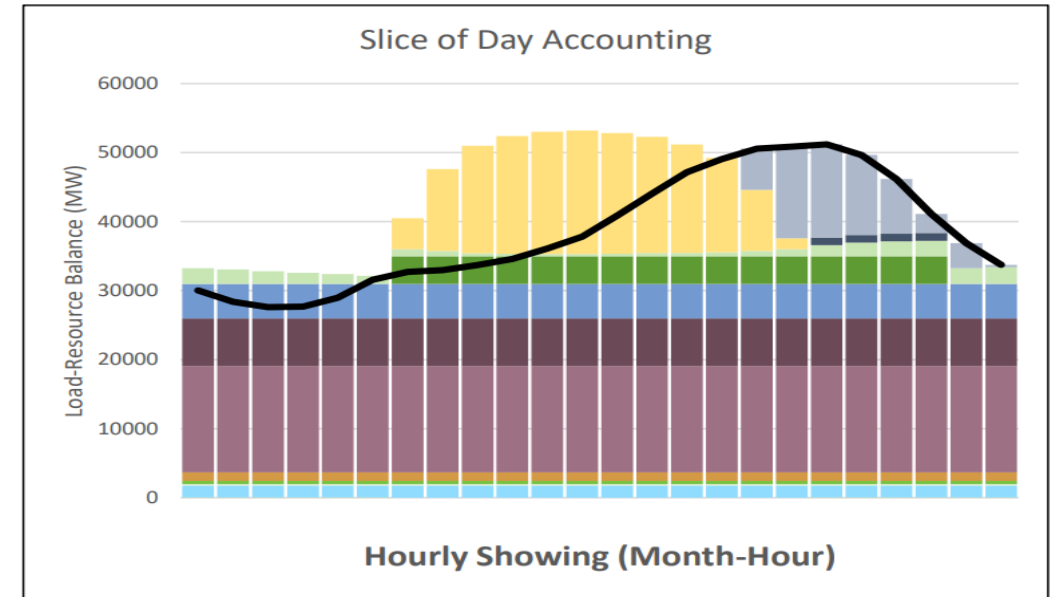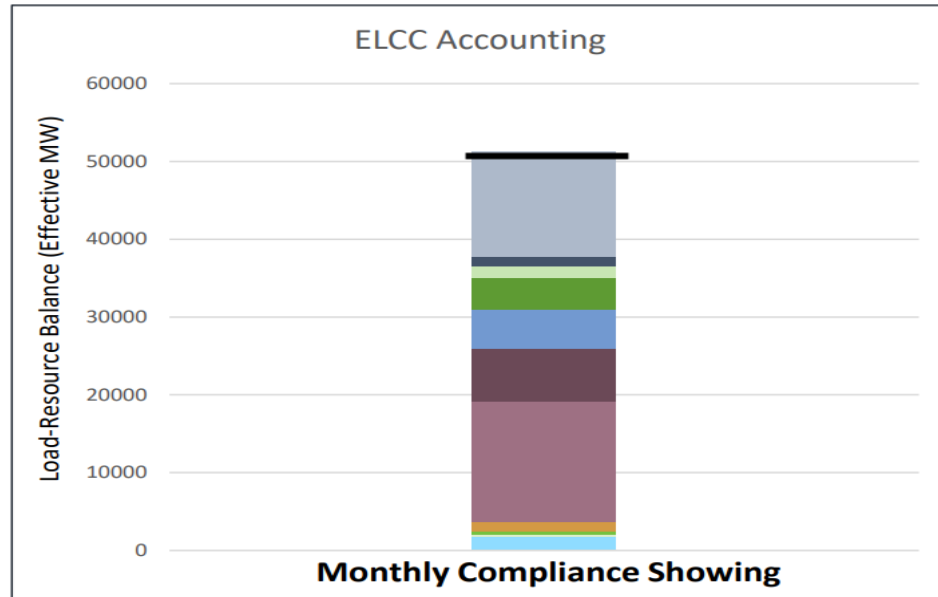
Trad

- o **Resource Counting:** how much can each resource contribute during the hour the grid is most strained for each month (12 capacity values per resource)

- o **LSE Compliance:** each LSE procures to meet its load + 15% planning reserve margin for peak hour for each month (12 compliance targets per LSE)
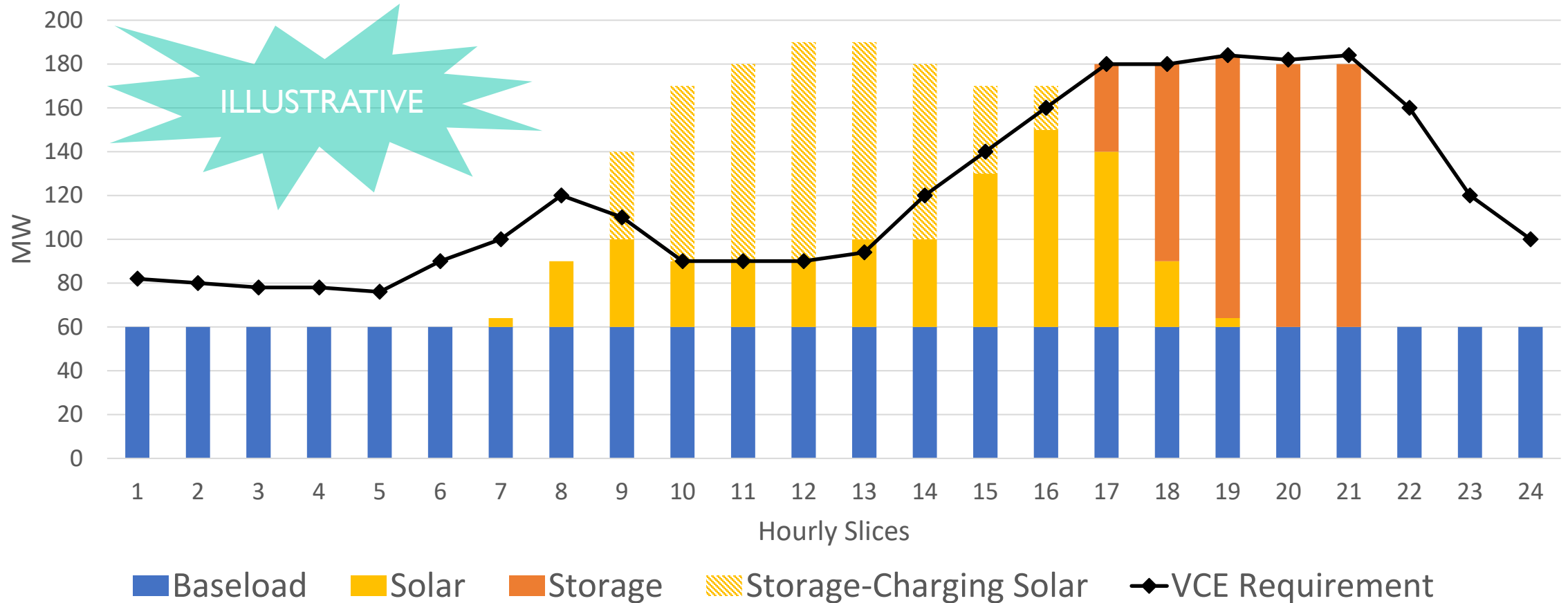
SOD

- o **Resource Counting:** how much is each resource expected to contribute on an *hourly* basis on the day the grid is most strained for each month (12 * 24 = **288 capacity values per resource**)

- o **LSE Compliance:** each LSE procures to meet its *hourly* load + **X** planning reserve margin on the day the grid is most strained for each month (12 * 24 = **288 compliance targets per LSE**)

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CAISO Portfolio for 2024 LOLE Study Using 2022 IEPR
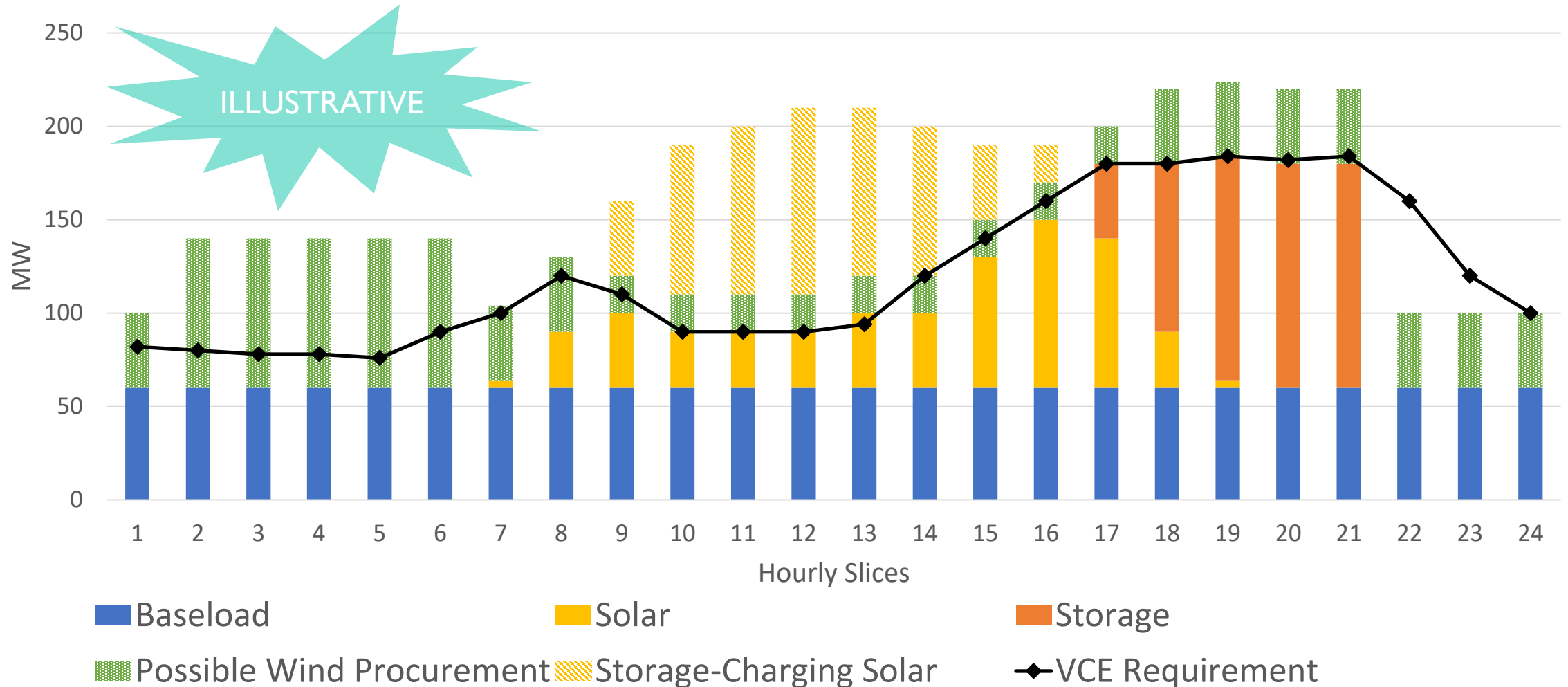
Hour Ending 19 is setting the RA requirements

VCE Initial September 2025 Position

Note: This position is for RA planning and compliance purposes only; operationally, VCE's load will always be served by the CAISO Day Ahead market regardless of RA position
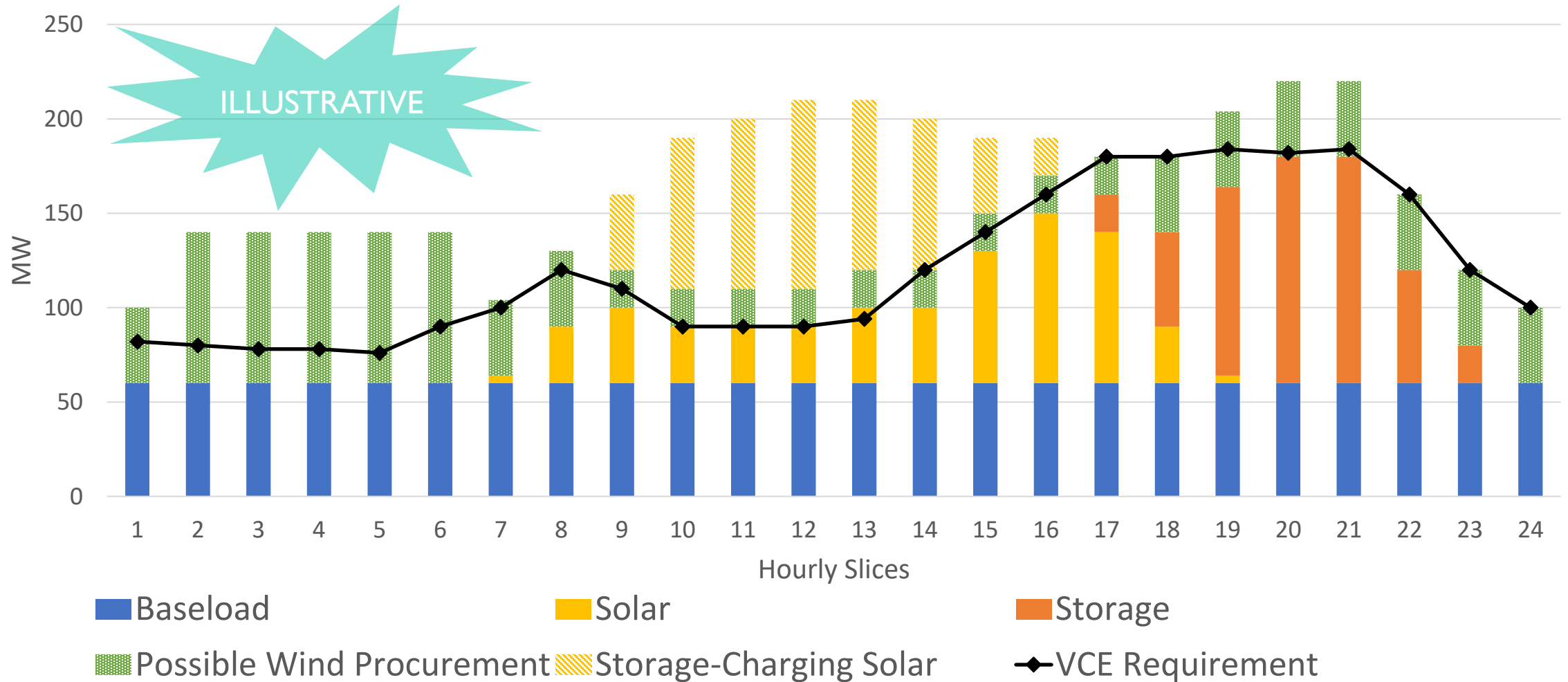
VCE Sep 2025 Position - Buy Wind

ILLUSTRATIVE

Legend:
- Baseload
- Solar
- Storage
- Possible Wind Procurement
- Storage-Charging Solar
- VCE Requirement

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VCE Sep 2025 Position - Redeploy Storage

ILLUSTRATIVE

Legend: Baseload | Solar | Storage | Possible Wind Procurement | Storage-Charging Solar | VCE Requirement

Y-axis: MW

X-axis: Hourly Slices (1-24)

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SLICE-OF-DAY RA BOTTOM LINE

- **RA restructuring *is* necessary for a 100% clean grid**; RA Slice-Of Day is challenging for the current transitioning grid

- **Significant cost increases** likely for LSEs with predominately solar, wind, and storage portfolios – in a market up 300% in the past two years

- Policy decisions have not considered **complex commercial realities of a bilateral market**

  - 2025 will be a game of musical chairs with large number of losers

- **"Reasonable simplicity" and "minimizing customer costs" goals not achieved**

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Item 12 – VCE's Load Management Standards Plan

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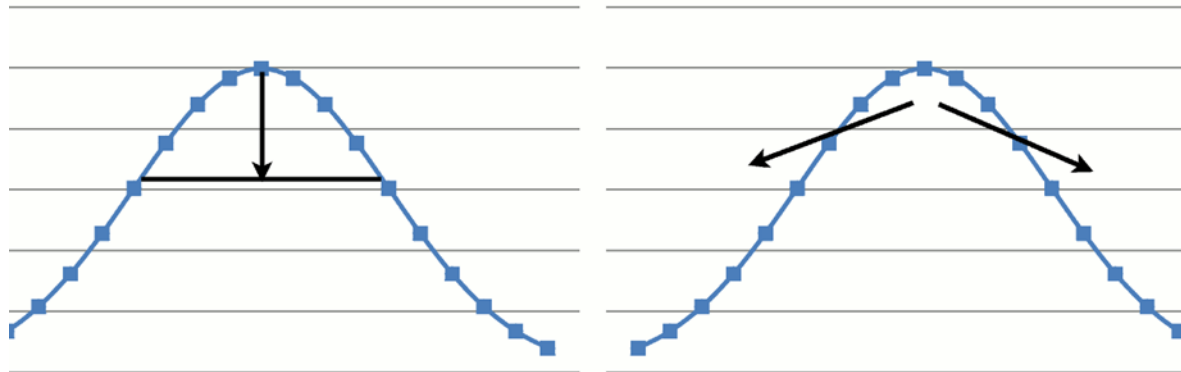Emailed comments received **before** the item has concluded will be read into the record.

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"Aligning electricity use with generation and capacity using energy storage" -
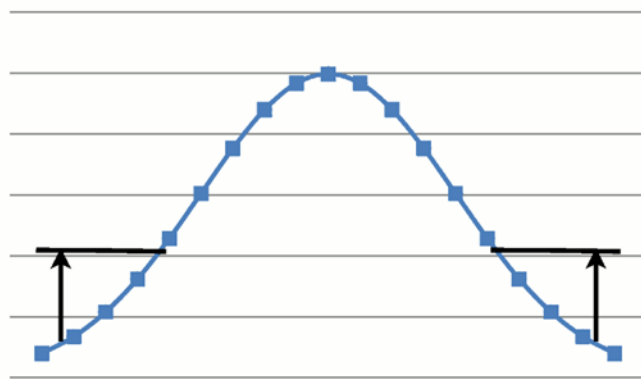
Load Management Standards

Peak Clipping

Load Shifting

Valley Filling

Achieving Alignment

Utilizing smart devices and incentivizing behavior to reduce, shift, and shape energy usage according to the needs of the grid - dynamic hourly prices

Load Management Standards (LMS) Requirements

1. Maintain the publicly available rate database with all time varying rates

2. Support 3rd party demand response and load management services with access to rate information

3. Develop and submit hourly locational rates that reflect marginal wholesale costs – dynamic rates

4. Educate customers on rates and automation technologies

VCE's LMS Plan Analyses

To understand the potential of dynamic rates/programs across all customer classes, VCE studied the:

1. Cost Effectiveness

2. Equity

3. Technological Feasibility

4. Customer and Grid Benefits

VCE researched the works of other CCAs, PG&E, and SMUD, as well as studies by Lawrence Berkely National Laboratory and the California Energy Commission for our analyses on dynamic prices

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Future of VCE's LMS Plan

When approved, our LMS Plan will be finalized and delivered to the CEC within 30 days

Going Foreword

o   LMS Plan will be updated every three years

o   Implementation efforts will be evaluated on a yearly basis and reported to the CEC

o   Any significant changes to the plan will be brought before the Board

Conclusion and Staff Recommendation

Currently there is insufficient data available to recommend the development and implementation of one or more marginal cost-based rates for all customer classes

VCE seeks to:

o   Continue to spearhead and participate in dynamic price pilots

o   Research and collect new data on dynamic rates and the success of pilot programs

o   Remain flexible and open to new information and opportunities

Staff recommends that the Board approve VCE's Draft LMS Plan