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Resource Counting Under 24-Hourly Slices Framework

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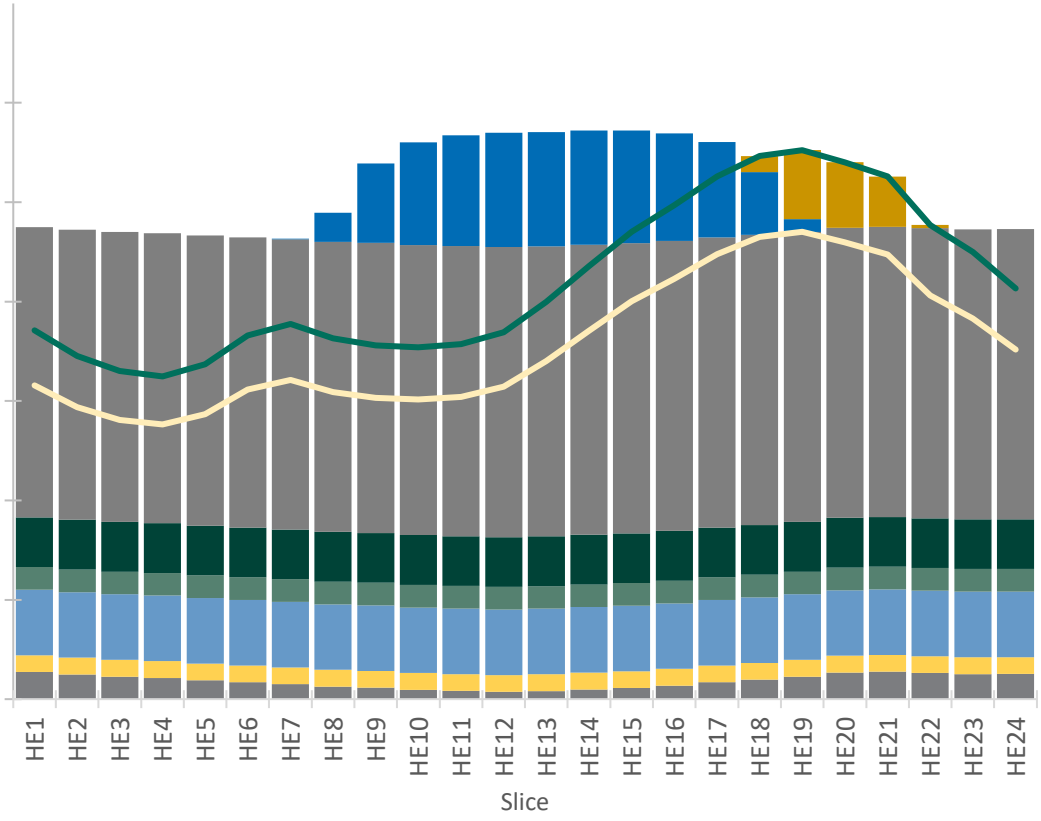
Agenda

- Recap of 24-Hourly Slices Framework (from SCE's 10/6 presentation)
- SCE-led discussion on potential approaches and considerations for resource counting under a 24-hourly slices framework

24-Hourly Slices: Basic Framework and Resource Counting

From 10/6 Workshop

Illustrative LSE Resource Showing



- For each month, each LSE must demonstrate it has enough capacity to satisfy its load profile + PRM in all 24 hours on the CAISO's "worst day" in that month
- Resource counting will generally be defined in the following manner:
  - **Solar and wind** will count based on their hourly profiles; Must be fully deliverable
  - **Standalone batteries** count based on their capacity and duration as shown by the LSE
  - **Use-limited resources** count based on their capacity and available duration as shown by the LSE
  - **Other resources** will have a single counting value (e.g., NQC)
  - **Contracted resources** (e.g., 16-hour imports) must be shown in their available hours
- Additional checks will be applied to confirm run-hour feasibility of use-limited resources:
  - **Standalone batteries** must demonstrate there is sufficient "excess capacity" in other hours for their dispatch (plus losses)
  - **Hydro** must have sufficient energy to support the shown capacity

Elements of Current Resource Counting Approach That Should be Retained

- No unbundling of products
- Sales and showings of partial capacity allowed
- Resources subject to current full capability/all-hour must offer obligation for sold RA amount
- Must continue to be available for four consecutive hours to count for RA
- Capacity must be deemed deliverable to count for RA

Current vs. Potential RA Counting Rules and Considerations

Resource Type	Current Approach	Potential Approach/Considerations
Non-use-limited Dispatchable (Combined Cycle, Steam)	NQC based on Pmax MCC Cat 4 (24x7)	• NQC based on Pmax or UCAP • No showing restrictions (typical 24x7 resources)
Use-limited Dispatchable (Peaker)	NQC based on Pmax MCC Cat 4 (24x7 unless severely restricted by daily run hours)	• Pmax or UCAP • Should account for daily/monthly/annual/rolling 12-month start and run limits • Can the resource be counted in non-consecutive hours?
Solar	Single monthly effective load carrying capability (ELCC) factor multiplied by resource's nameplate capacity	• Monthly hourly profiles based on technology and/or location to be determined by the CPUC • Profiles can be exceedance or a reformed hourly "ELCC" • Resource-specific performance should be addressed through NQC adjustments
Wind	Single monthly ELCC factor multiplied by resource's nameplate capacity	Same as above
Imports	Contracted MW	Contracted amount and duration; showing shape matches contract type

Current vs. Potential RA Counting Rules and Considerations (cont'd)

Resource Type	Current Approach	Potential Approach/Considerations
Storage	Maximum output over a 4-hour period	• Consider limiting to one cycle for showing purposes because if more than one cycle is allowed, counting must consider downtime for another full charge • How to account for partial usage? • Can the resource be counted in non-consecutive hours?
Hybrid	Sum of renewable resource's energy to charge storage during the available charging hours and remaining renewable capacity multiplied by the ELCC factor	• Must consider that hybrids can be "oversized" in that they can deliver to the grid while charging the storage • Must consider whether the battery is designed to only charge using the underlying resource or if it is allowed to charge using the grid • Set default shape based on underlying configuration and allow custom allocation within the capability of the resource
Co-located - two separate resource IDs that CAISO can recognize	Same as hybrid	Consider showing both resources separately with capacity constraints

Current vs. Potential RA Counting Rules and Considerations (cont'd)

Resource Type	Current Approach	Potential Approach/Considerations
Non-dispatchable Cogeneration and Biomass	Month-specific average of the maximum of bids/self-scheduling/production during measurement hours	Same as current approach or UCAP; single value for all hours (flat shape)
Dispatchable Hydroelectric (and open loop PSH)	Monthly exceedance based on bids/self-scheduling from previous ten years	Same as current approach or UCAP; single counting value for all hours (flat shape)
Non-dispatchable Hydroelectric and Geothermal	Monthly average of past three years production during measurement hours	Same as dispatchable hydroelectric (flat shape)
Closed-Loop Pumped Storage Hydro or other storage technologies	None exist in CAISO; Monthly exceedance based on market offers from previous ten years	Same as standalone battery
Demand Response	Average expected load impact during measurement hours	Shown only within available hours

High-level Discussion Points

- How to account for monthly use-limits
  - Option 1: Monthly capacity check where sum of use-limited plans should be greater than total capacity demand
  - Option 2: MCC-buckets
  - Any others?
- Should we require use-limited thermal, hydro, storage, and DR to be shown in consecutive hours/slices?
  - If not, should any restrictions apply to resources that are shown in intermittent hours?
- If exceedance is to be used, what level is appropriate?
  - Can an LOLE assessment help inform the choice?
  - Is it appropriate to use different exceedances for different technologies?