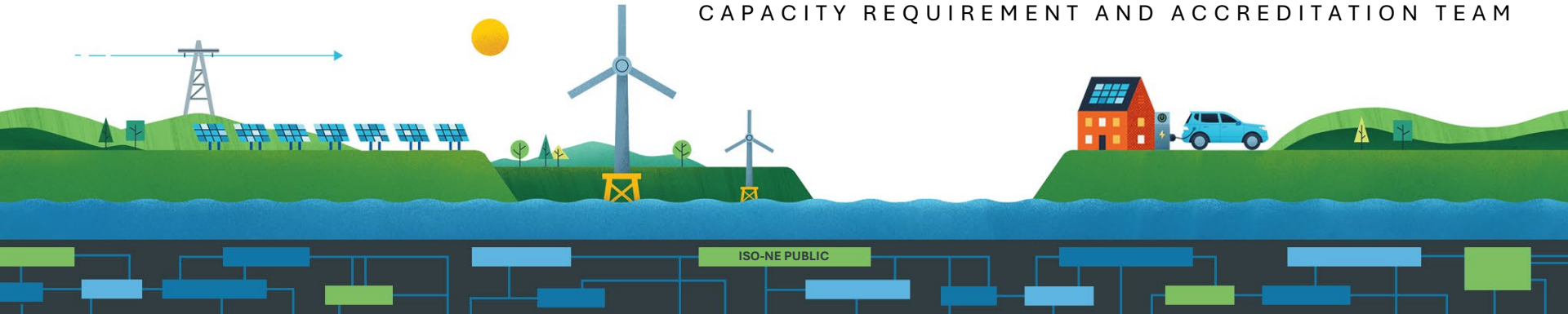
Resource Outlook Study

RSP 2025

CAPACITY REQUIREMENT AND ACCREDITATION TEAM



Purpose

- To introduce the resource outlook study and show the resource adequacy results that will be reflected in the 2025 Regional System Plan (RSP)

Background

- Historically, ISO has provided a 10-year outlook of resource adequacy by conducting Installed Capacity Requirement (ICR) studies to determine the region's capacity needs for the next 10 years
- This 10-year outlook was referred to as the "representative net ICR analysis"
  - For the first part of the study period, the FCM period, capacity needs were based on actual net ICRs (NICRs) that had been determined for each Capacity Commitment Period (CCP)
  - For the second part, beyond the FCM period, representative NICRs were calculated using the same calculation methodology used under the FCM
  - NICRs were compared to the amount of installed capacity to show the status of the region's resource adequacy
- The results of this resource adequacy outlook were published in the RSP

Transition Period

- The ISO is currently redesigning its capacity market as part of the Capacity Auction Reform Project
- Current representative net ICR analysis is succeeded by the resource outlook study
  - The resource outlook study will continue to provide information on the representative capacity needs for the region over the next 10 years
  - Once the CAR project is complete, it may be enhanced to provide additional information related to the capacity market, such as representative accreditation values

Resource Outlook Study During Transition Period

- The new market design under CAR is expected to be filed in late 2026. The modeling and accreditation methodologies are still under development
- There are challenges brought about by the transition
  - The new CAR design is not finalized or ready for implementation
  - Calculation of representative net ICRs based on the current FCM framework would not provide useful information as the new design may be very different
  - There is a need to continue to assess the region's resource adequacy in the interim
- For this transitional resource outlook study, the ISO has conducted a LOLE analysis
  - Assesses the region's resource adequacy directly, by providing a reliability metric[(a)] of the system for the 10-year study period
- The transitional study covers two periods:
  - FCM period: CCPs 2025-2026 through 2027-2028
  - Beyond FCM period: CCPs 2028-2029 through 2034-2035

[(a)] Loss of load expectation (LOLE) will be used to analyze the risk level. LOLE is a reliability metric calculated by simulating the system for thousands of years and calculating the probability of loss of load each day of the year. The sum of these daily probabilities across all days of the year is equal to the expected number of days with loss of load

RESOURCE OUTLOOK ASSUMPTIONS

CCPs 2025-2026 through 2027-2028

CCPs 2028-2029 through 2034-2035

FCM period: CCPs 2025-2026 through 2027-2028

- The resources assumed for the 2025-2026 through 2027-2028 CCPs are based on the values used in the determination of ICRs for the Annual Reconfiguration Auctions (ARAs) that will be conducted in 2025
  - These values and resulting ICRs have been accepted by FERC

- Background materials related to ICRs for the ARAs for 2025-2026, 2026-2027 and 2027-2028 CCPs are available at:
  - **2024 ARAs RC materials**
  - **2024 ARAs FERC filing**

CCPs 2028-2029 through 2034-2035

- Beyond FCM period: CCPs 2028-2029 through 2034-2035
  - The study assumptions used FCA 18 ICR-related values assumptions, with some notable updates
    - Resources
      - Excluding any cleared Retirement/Permanent de-list bids
      - Including new generating and demand resources that cleared FCA 18
      - Updated forced outage rates and maintenance weeks
    - Load
      - CELT 2025 load forecast

Summary of Resource Outlook Study Assumptions: CCPs 2025-2026 through 2027-2028

CCP	2024 CELT Load Forecast 50/50 Peak Load[(a)] (MW)	Assumed Resources[(b)] (MW)
2025-2026	27,050	35,135
2026-2027	26,974	35,993
2027-2028	26,926	35,086

a) The CELT 2024 loads used for the FCM period are gross loads (reconstituted for PDR), consistent with the pre-CELT 2025 forecast methodology. These loads also reflect the load reductions from the BTM PV forecast.

b) Assumed resources for the FCM period are based on those presented at the August 28, 2024, Power Supply Planning Committee. These assumptions were used to develop the ICRs for the ARAs to be conducted in 2025.

Summary of Resource Outlook Study Assumptions: CCPs 2028-2029 through 2034-2035

CCP	2025 CELT Load Forecast 50/50 Peak Load[(a)] (MW)	Assumed Resources[(b)(c)] (MW)
2028-2029	25,124	30,789
2029-2030	25,347	30,789
2030-2031	25,557	30,789
2031-2032	25,821	30,789
2032-2033	26,123	30,789
2033-2034	26,486	30,705
2034-2035	26,897	30,705

a) 2025 CELT net load reflects the load reductions from the BTM PV forecast.
b) Assumed resources for the "beyond FCM period" reflect assumptions as noted in slide 8. The decrease from the "FCM period" to the "beyond FCM period" is driven primarily by changes in PDR modeling.
c) Note that new import capacity resources that cleared FCA 18, are not included in the assumed resource column for CCPs beyond CCP 2027-2028, representing a change from the "FCM period" assumed resources. Additionally, the decrease in assumed resources for the last two CCPs reflects the end of import contracts.

RESOURCE OUTLOOK RESULTS

CCPs 2025-2026 through 2034-2035

Resource Outlook Study Results

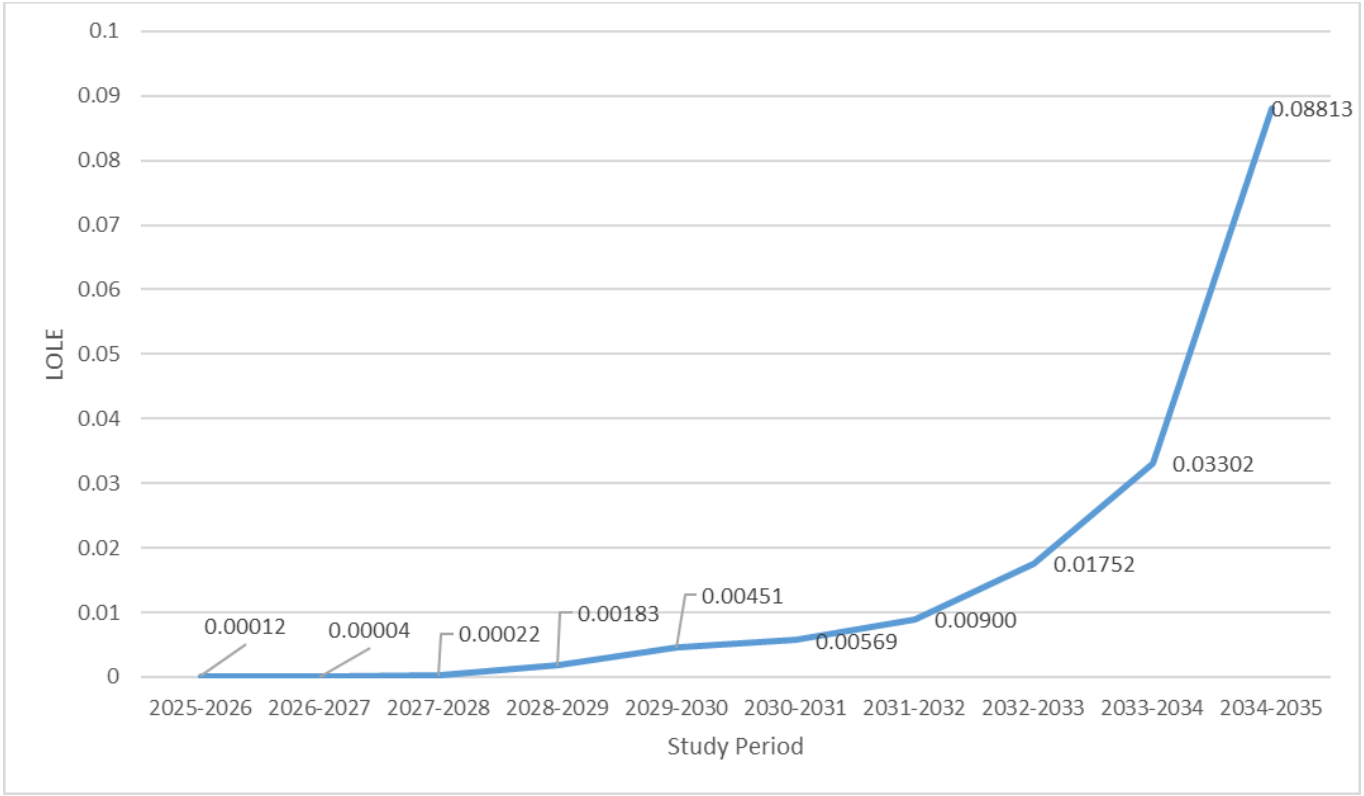
Reliability Metric – LOLE values

Period	CCP	LOLE
FCM Period	2025-2026	0.00012
	2026-2027	0.00004
	2027-2028	0.00022
Beyond FCM Period	2028-2029	0.00183
	2029-2030	0.00451
	2030-2031	0.00569
	2031-2032	0.00900
	2032-2033	0.01752
	2033-2034	0.03302
	2034-2035	0.08813

The smaller the resource surplus, the greater the marginal reliability impact of load growth. So, when increasing load without adding new capacity, LOLE grows at an increasing rate.

Resource Outlook Study Results contd.

Reliability Metric – LOLE



Summary and Observations

- For the entire study period, the reliability metric is less than 0.1 LOLE reliability criterion
  - For FCM Period, CCPs 2025-2026 through 2027-2028, there is very small risk (<0.5% of the reliability criterion)
  - Beyond FCM period, the metric begins to increase
    - Modeling the effect of a growing load forecast without adding additional resources
    - Larger marginal reliability impact of load growth as resource surplus shrinks

Questions