

DOCKETED	
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California ISO

ISO Transmission Planning Process Load Forecast Assumptions

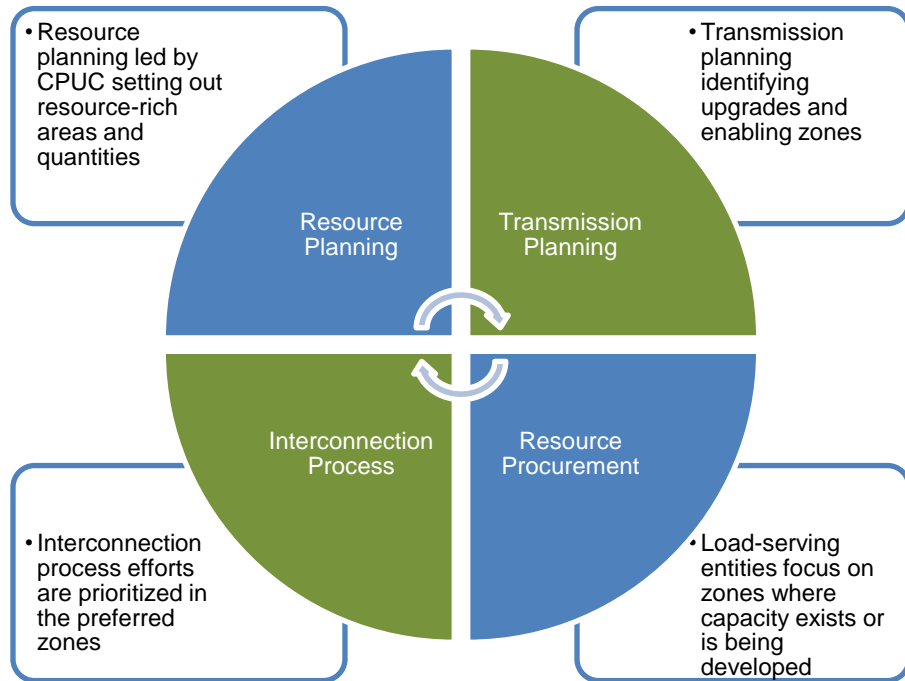
Jeff Billinton

Director, Transmission Infrastructure Planning

October 2, 2024

CEC IEPR Commissioner Workshop on Use of the Forecast in Electricity System Planning

Transmission Planning and Generation Interconnection are two of four fundamental and interwoven processes:



The CPUC/CEC/ISO Memorandum of Understanding signed in December, 2022 sets the strategic direction for process improvements to:

- Tighten the linkage between planning, procurement direction, and the ISO interconnection process to the greatest extent possible.
- Create formal linkage between CEC SB 100/IEPR activities and the ISO and CPUC processes
- Reaffirm the existing state agency and single forecast set coordination
- Update references to current processes and set direction to updating process documentation

The ISO leads the transmission planning process for our footprint, coordinated with load forecasts from the CEC and resource planning from the CPUC



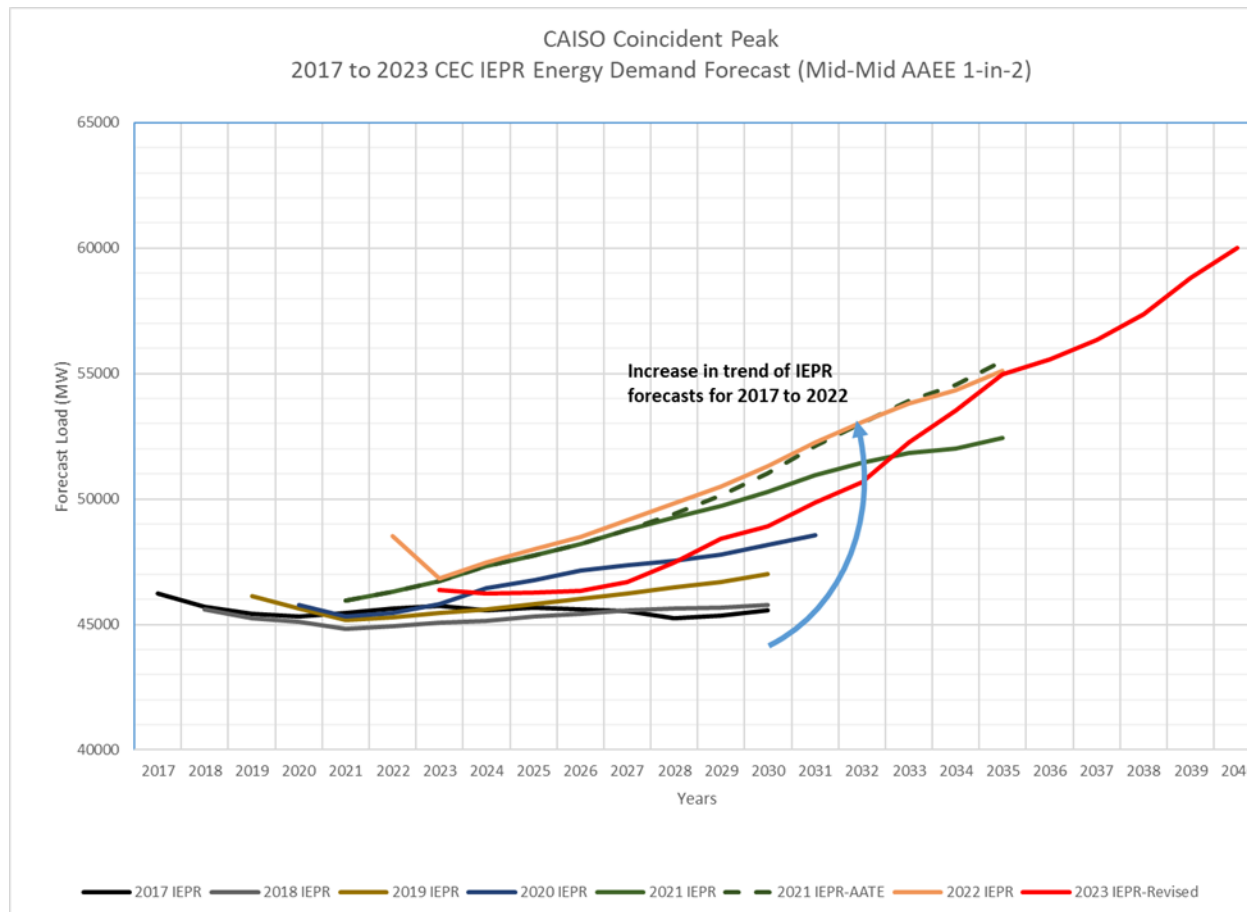
- Annual 10-Year transmission plan is the formal approval document for expansion planning in our footprint
 - Ramped from 10 year average of \$650 million per year to \$3 billion in 2021-2022 plan, \$8.1 billion in 2022-2023 plan and \$6.1 billion in the 2023-2024 plan
 - Responded to accelerating load growth and escalating renewable energy needs
 - Focuses on most efficient and effective long term solutions – including Grid Enhancing Technologies and non-wires solutions



- 20 Year Outlook assesses longer term needs
 - First prepared in 2022, updated in 2024
 - Establishes a longer term direction and strategy
 - Provides context for nearer term decision
 - Informs going-forward resource planning decisions

California's climate change goals are driving escalating load forecasts

The CEC's load forecast is used in both the CPUC's Integrated Resource Planning process and the ISO's transmission planning process.



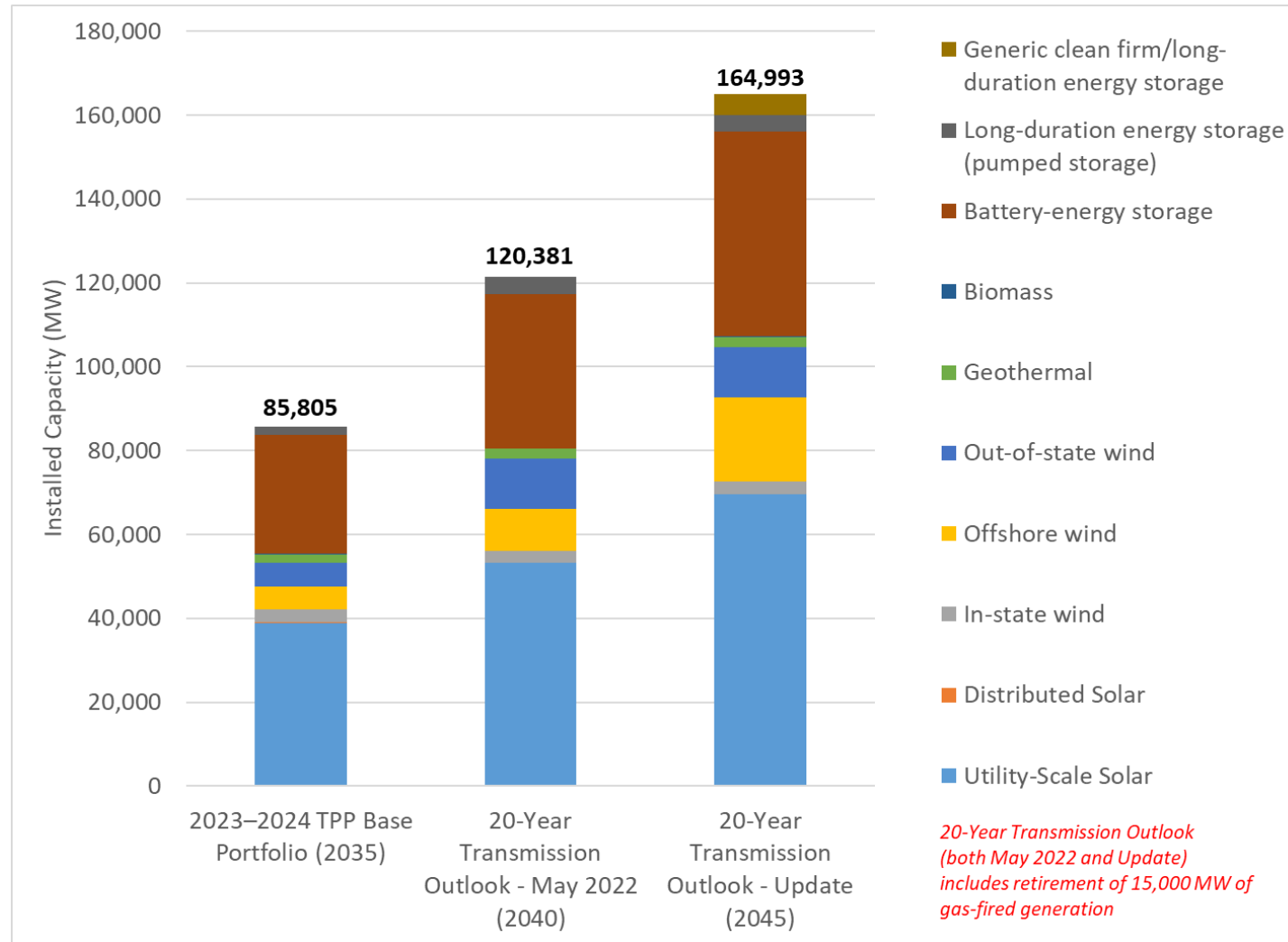
The ISO uses:

- Planning Scenario for Bulk, Policy and Economic studies
- Local Reliability Scenario for Local studies (including LCR studies)

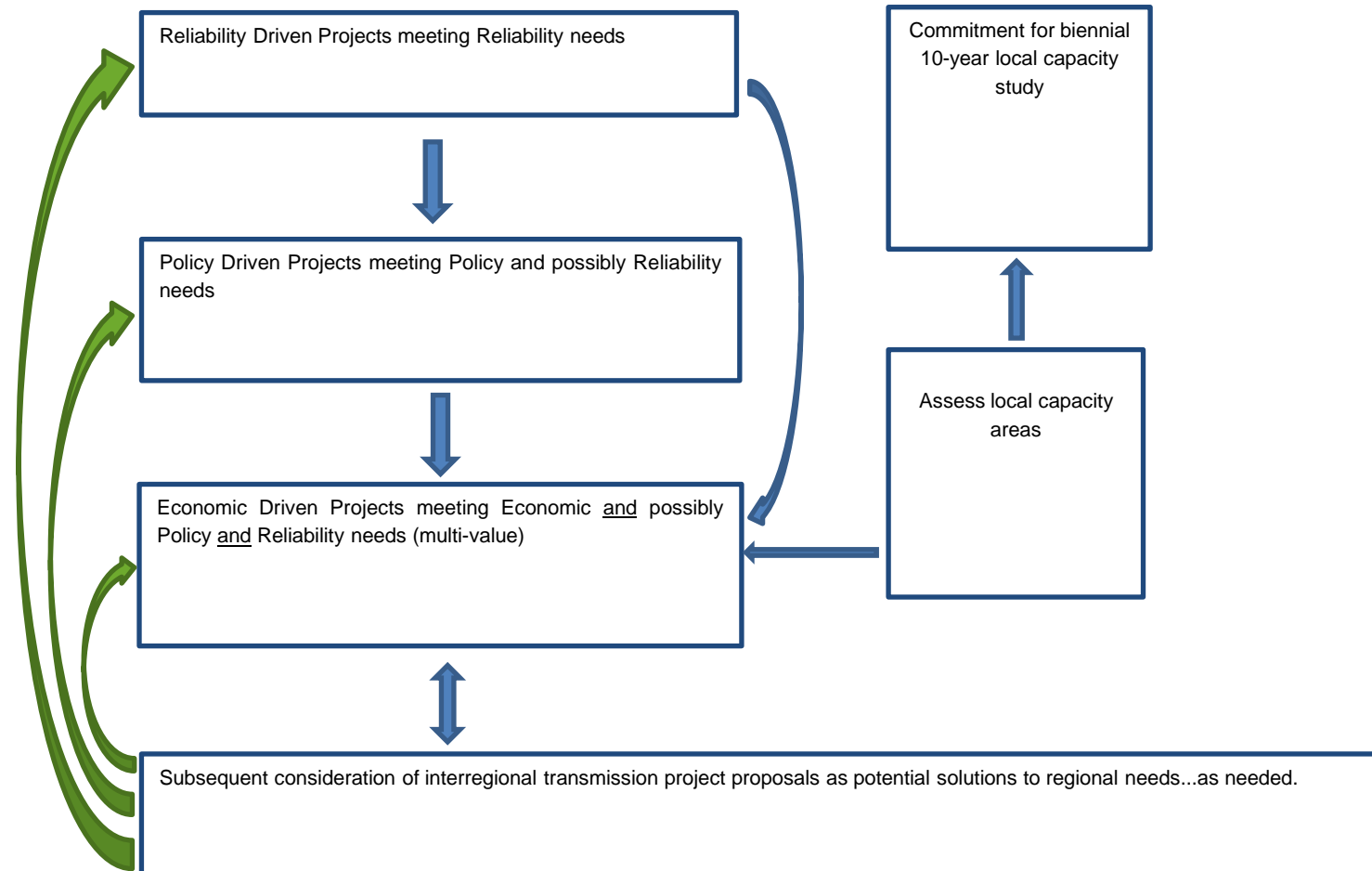
Weather events:

- 1-year-in-10 weather event forecast for local reliability studies
- 1-year-in-5 weather event forecast for bulk system reliability-driven and policy-driven studies
- 1-year-in-2 weather event forecast for economic (market efficiency) studies

Portfolios – 2023-2024 Transmission Planning Process and 20-Year Transmission Outlook



Studies are coordinated as a part of the transmission planning process



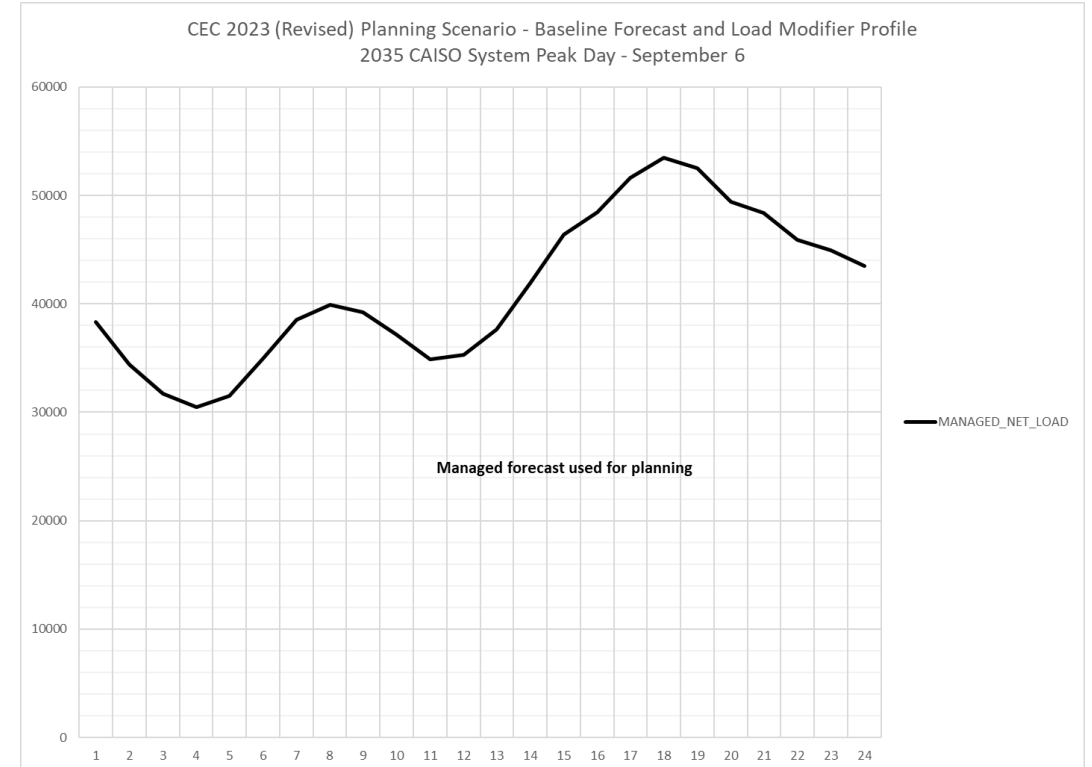
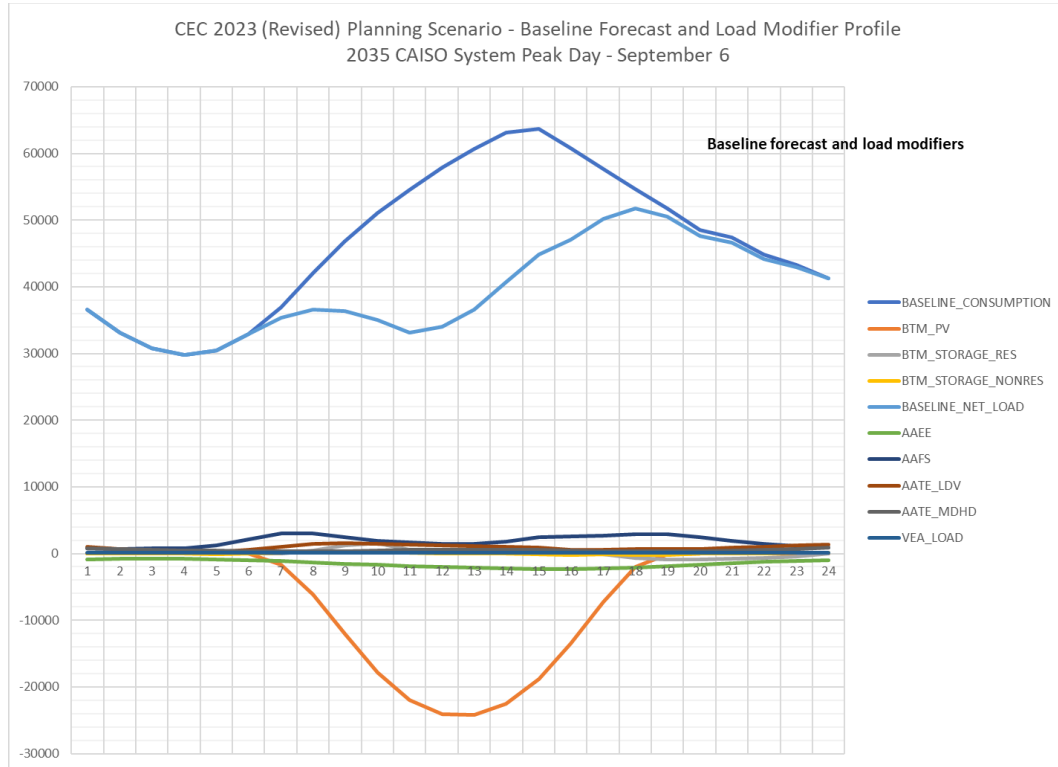
ISO 2024-2025 Transmission Planning Process – Study Plan

Section - 2.5.2 Methodologies to Derive Bus Level Forecast

- CEC Staff Methodology for Load Modifier Allocation to Load Busses
- Each Participating Transmission Owner has specific methodologies
 - Pacific Gas & Electric
 - Southern California Edison
 - San Diego Gas & Electric
 - Valley Electric Association

<https://stakeholdercenter.caiso.com/InitiativeDocuments/Final-Study-Plan-2024-2025-Transmission-Planning-Process.pdf>

Hourly forecast used in transmission planning



<https://efiling.energy.ca.gov/GetDocument.aspx?tn=257302&DocumentContentId=93164>

2024-2025 Transmission Planning Process

Example of Load and Load Modifier Assumptions – SCE Main Planning Area

Baseline Scenarios

Case ID	Study Case Name	Description
B1	B1-26SP	2026 summer peak load at HE16, 8/31
B2	B2-29SP	2029 summer peak load at HE17, 8/29
B3	B3-34SP	2034 summer peak load at HE18, 9/6
B4	B4-39SP	2039 summer peak load at HE18, 9/7
B5	B5-29SumOP	2029 summer off-peak case at HE15, 8/29
B6	B6-34WP	2034 winter peak case at HE18, 11/1
B7	B7-26OP	2026 spring off-peak load at HE19, 4/29
B8	B8-29OP	2029 spring off-peak load at HE13, 3/25
B9	B9-34OP	2034 spring off-peak load at HE13, 3/26
B10	B10-39OP	2039 spring off-peak load at HE13, 3/27

Sensitivity Scenarios

Case ID	Study Case Name	Description
S1	S1-29SP-HLOAD	2029 summer peak with high CEC load forecast
S2	S2-26SP-HiRenew	2026 summer peak with heavy renewable output
S3	S3-26OP-BCharging	2026 spring off-peak with BES charging in load pocket
S4	S4-39SP-High Gas Retire	2039 summer peak load with high gas retirement

Load Demand Assumptions (1-in-10)– SCE Main

Study Case	Scenario	Gross Load (MW)	AAEE	AAFS	ATE	BTM-PV		Net Load (MW)	Including		Demand Response*	
						Installed Capacity	Impact		Pump	Loss	D1 (PDR)	D2 (fast RDRR)
B1-26SP	Baseline	27994	-351	169	299	7114	2846	25265	432	685	-428	-335
B2-29SP		26861	-500	715	640	9422	2073	25643	432	520	-428	-335
B3-34SP		25643	-690	2117	1610	12517	751	27929	451	525	-428	-335
B4-39SP		24221	690	4230	2420	13505	810	30751	451	595	-428	-335
B5-29SumOP		29056	-497	679	885	9422	4993	25130	497	701	-428	-335
B6-34WP		17279	-434	2008	1102	12517	125	19830	451	426	-428	-335
B7-26OP		15586	-208	93	264	7114	71	15664	432	291	-428	-335
B8-29OP		9289	-248	253	702	9422	6406	3590	432	542	-428	-335
B9-34OP		12431	-375	654	1589	12517	10389	3910	451	640	-428	-335
B10-39OP		15206	0	0	0	13505	11208	3998	451	727	-428	-335
S1-29SP-HLOAD	Sensitivity	27509	-500	715	582	9422	2073	26233	432	518	-428	-335
S2-26SP-HiRenew		28021	-351	169	272	7114	2846	25265	432	903	-428	-335
S3-26OP-BCharging		15586	-208	93	264	7114	71	15664	432	353	-428	-335
S4-39SP-HighGasRetire		24192	690	4230	2449	13505	810	30751	451	610	-428	-335

Note: DR are modeled offline in starting cases.

<https://stakeholdercenter.caiso.com/InitiativeDocuments/Presentation-2024-2025-Transmission-Planning-Process-Sep-23-2024.pdf>

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