

Procurement and Interconnection

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CPUC – IRP Procurement Orders

Table 1. CPUC Procurement Orders (MW NQC)

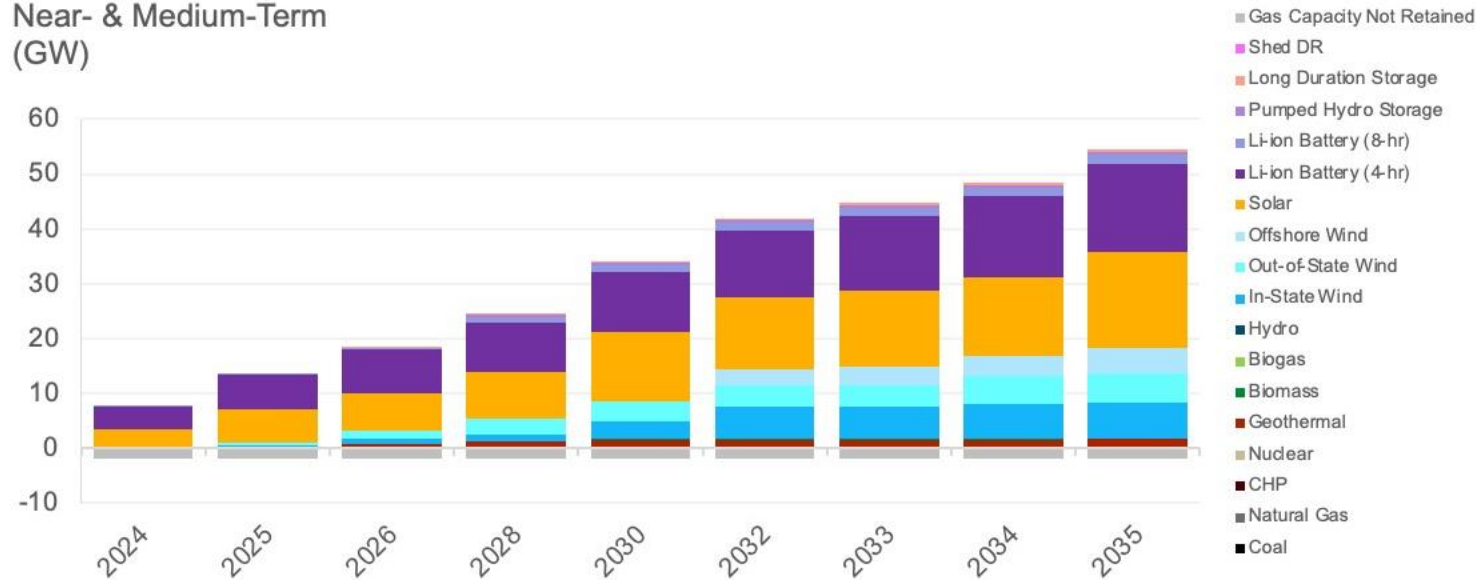
CPUC Orders	Total	2021	2022	2023	2024	2025	2026	2027	2028
D.19-11-016 Applies to 25 LSEs since 18/43 LSEs opted out.	3,300 MW	1,650 MW by Aug 1	825 MW by Aug 1	825 MW by Aug 1	n/a	n/a	n/a	n/a	n/a
D.21-06-035 (MTR) Applies to all CPUC-jurisdictional LSEs. No opt-outs allowed.	11,500 MW	n/a	n/a	2,000 MW by Aug 1	6,000 MW by June 1	1,500 MW ¹ by June 1	n/a ²	n/a	2,000 MW by June 1
D.23-02-040 (Supplemental MTR) Applies to all CPUC-jurisdictional LSEs. No opt-outs allowed.	4,000 MW	n/a	n/a	n/a	n/a	n/a	2,000 MW by June 1	2,000 MW by June 1	n/a
Cumulative Procurement Ordered	18,800 MW	1,650 MW	2,475 MW	5,300 MW	11,300 MW	12,800 MW	14,800 MW	16,800 MW	18,800 MW

(1) D.21-06-035 required 2,500 of the 9,000 MW required between 2023-2025 be "Diablo-Canyon Replacement".
 (2) D.21-06-035 required 2,000 MW of Long-Lead-Time Procurement by 2026, with an option to extend to 2028: 1,000 MW of long-duration storage and 1,000 MW of firm zero-emitting. D.23-02-040 automatically extends the procurement obligation to 2028.
 (3) In August 2023, the Commission can order back stop for the for remaining D.19-11-016 procurement obligations.

Planned & Selected Capacity, Near- & Mid-Term (GW)

Solar and battery capacity grow steadily over time
 Long duration storage is also added (primarily 8-hr batteries) per LSE plans to meet MTR

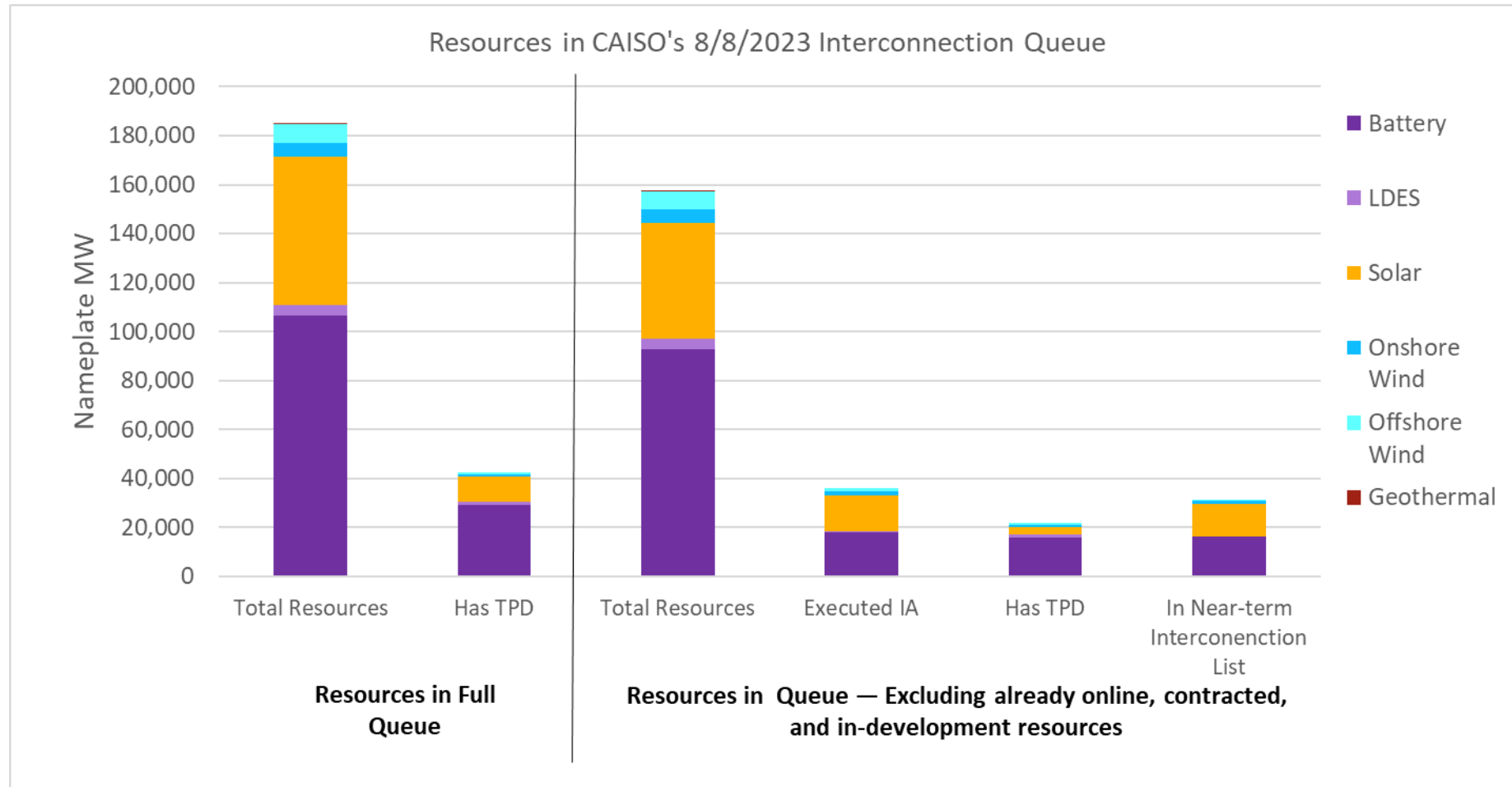
Generic Planned & Selected Capacity
 Near- & Medium-Term
 (GW)



All three categories of wind (in-state, out of state, offshore) also show steady growth. RESOLVE does not select offshore wind above the levels in the LSE plans.

A relatively small amount of gas (2 GW) is not retained, starting in 2024, as MTR, LSE plans to build beyond MTR, and RESOLVE selected resources for GHG reduction create a capacity surplus

Closer Look: Interconnection Queue vs. Procurement Opportunities



Source: CPUC staff analysis, Oct. 2023

New Online Energy Resources

New Resources Additions, Jan 2020 – Aug 30, 2023, Cumulative

Technology Type	Nameplate Capacity (MW)	Estimated Sept. Net Qualifying Capacity (NQC) MW	Number of Projects
STORAGE	4,919	4,556	69
SOLAR	3,993	345	64
HYBRID (STORAGE/SOLAR)	1,034	464	17
WIND	783	103	20
GEOHERMAL	41	31	1
BIOGAS, BIOGAS, HYDRO (2,3,4 Projects)	36	1	9
Subtotal Total New SB100 Resources, IN-CAISO	10,806	5,499	180
NATURAL GAS, incl. Alamitos & Huntington Beach	1,477	1,474	12
Total New Resources, IN-CAISO	12,282	6,973	192
New Imports, Pseudo-Tie or Dynamically Scheduled	1,689	727	13
Total New Resources, including Imports	13,971	7,701	205

Notes:

All data shown derived from CAISO [Master Generating Capability List](#), and CPUC [NQC Lists](#) with online dates between Jan 1, 2020 – Aug. 30, 2023. Nameplate Capacity is shown as “Net Dependable Capacity” in the CAISO Master Generating List file. Data shown excludes imports, except where specified. All NQC values are “September NQC” and subject to change based on counting rules. “Project” is defined as a unique CAISO resource ID. “Natural Gas” includes Alamitos Unit 7 (675 MW) and Huntington Beach (674 MW) added in Feb 2020.

MTR Requirements Summary

Mid-Term Reliability (MTR) Procurement Requirements by Tranche and Category (NQC MW)

	Procurement Category	2023	2024	2025	2026	2027	2028	Total
a	Total MTR Required Procurement by Year	2,000	6,000	1,500	2,000	2,000	2,000	15,500
b	Diablo Canyon Replacement (DCR)	←———— 2,500 —————→						2,500
c	Other/ General Procurement ²	←———— 7,000 —————→			2,000	2,000		11,000
d	Long Lead-Time - Long-Duration Storage						1,000	1,000
e	Long Lead-Time - Firm Zero-Emitting						1,000	1,000
= b + c + d + e	Total MTR Procurement	9,500			2,000	2,000	2,000	15,500

For the purpose of this presentation the following procurement obligation years are labeled as:

- 2023: Tranche 1
- 2024: Tranche 2
- 2025: Tranche 3
- 2026: Tranche 4
- 2027: Tranche 5
- 2028: Long Duration Storage: Tranche 6 LDES
- 2028: Firm Zero-Emitting: Tranche 6 Firm ZE

[1] The 2,500 MW shown in row "b" represents the portion of procurement shown in row "a" for 2023-2025 that is for the Diablo Canyon Replacement procurement obligation.

[2] The 7,000 MW shown in row "c" represents the portion of procurement shown in row "a" for 2023-2025 that is for the other/general procurement obligation.

25 MMT Core Case

Planned & Selected Capacity, Long-Term (GW)

- Along with increasing solar, RESOLVE selected long duration li-ion batteries become a larger part of the portfolio in the late 2030s and beyond

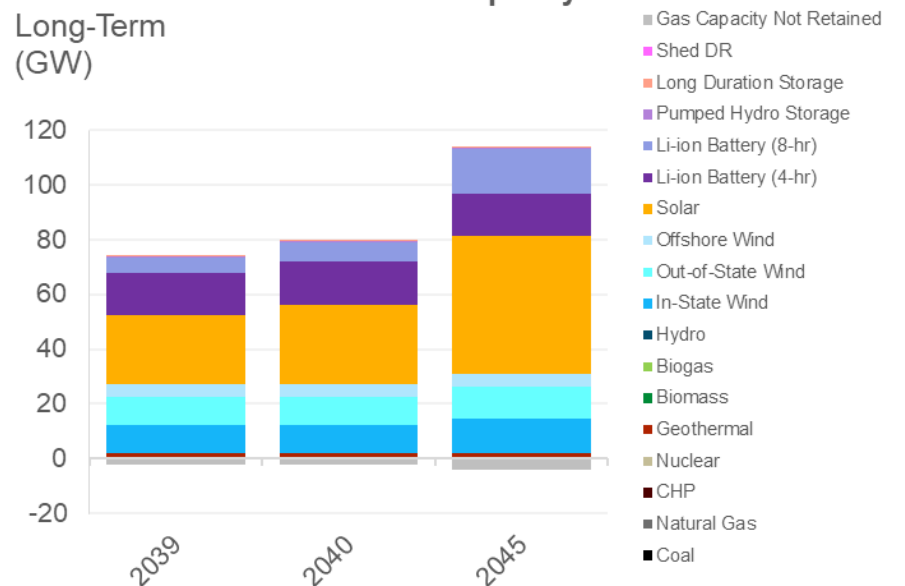
RESOLVE is currently set up to select either 4hr li-ion, 8-hr li-ion, 12-hr pumped storage, or 24-hr A-CAES. RESOLVE sees increased value from longer durations due to:

- Resource adequacy value as additional duration provides additional ELCC
- Greenhouse gas reduction from shifting continuously growing solar power
- Transmission availability, since longer duration batteries are modeled as requiring the same amount of transmission as 4-hour (but provide more resource adequacy per MW of capacity)

By 2035, the average duration of battery resources is 4.7 hours, increasing to 6.4 hours by 2045.

The specific optimal mix of storage durations is subject to the future cost of increased duration relative to the market value of that duration as captured in LSE procurement solicitations.

Generic Planned & Selected Capacity
Long-Term
(GW)



25 MMT Core Case

Planned & Selected Capacity (GW)

Resource Category	2024	2025	2026	2028	2030	2032	2033	2034	2035	2039	2040	2045
Geothermal	-	-	0.8	1.1	1.5	1.6	1.6	1.6	1.6	1.7	1.7	1.7
Biomass	-	-	-	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
In-State Wind	0.3	0.4	0.8	1.1	5.4	7.4	8.1	8.1	8.5	10.4	10.4	12.7
Out-of-State Wind	0.0	0.6	1.7	3.4	4.6	4.6	4.6	5.3	6.3	10.2	10.2	11.6
Offshore Wind	-	-	-	-	-	2.7	3.3	3.9	4.5	4.5	4.5	4.5
Solar	3.0	6.0	6.5	8.5	14.8	15.3	16.1	16.4	19.0	25.2	29.1	50.6
Li-ion Battery (4-hr)	4.3	6.3	8.0	9.0	11.6	12.7	14.0	15.0	15.7	15.7	15.7	15.7
Li-ion Battery (8-hr)	0.0	0.0	0.4	1.0	1.2	1.4	1.4	1.7	2.8	5.7	7.3	16.1
Pumped Hydro Storage	-	-	-	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Long Duration Storage	-	-	0.1	0.3	0.3	0.4	0.4	0.5	0.5	0.5	0.5	0.5
Shed DR	-	-	-	-	-	-	-	-	-	-	-	-
Gas Capacity Not Retained	(2.1)	(2.1)	(2.1)	(2.1)	(2.1)	(2.1)	(2.1)	(2.1)	(2.1)	(2.1)	(2.1)	(4.0)
Total	5.5	11.2	16.2	23.0	37.9	44.5	48.1	50.9	57.5	72.4	78.0	110.1