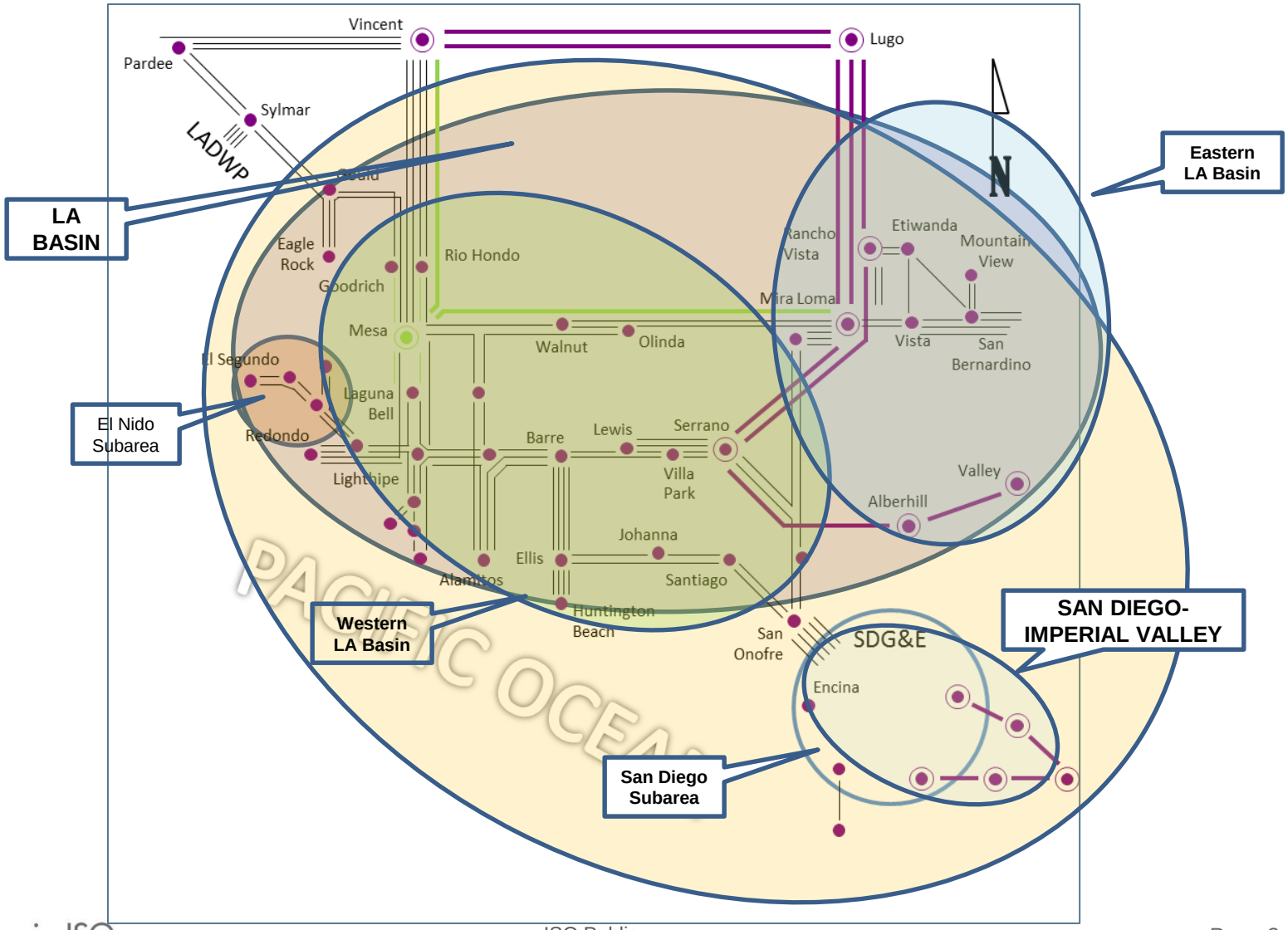
2025 & 2029 Final LCR Study Results for LA Basin and San Diego-Imperial Valley Areas

David Le
Senior Advisor Regional Transmission Engineer

Stakeholder Call
April 11, 2024

LA Basin and San Diego-Imperial Valley Areas



Major New Transmission and Resource Addition Assumptions

Project Name	Service Areas	Expected ISD	Modeled in 2025 LCR case	Modeled in 2029 LCR case
New Transmission Projects				
Imperial Valley – El Centro 230 kV ("S" line) upgrade	IID / SDG&E	Q1 2024	√	√
Ten West Link 500 kV line	DCRT, LLC	May 2024	√	√
Laguna Bell – Mesa #1 230kV line upgrade	SCE	To be provided		√
Southern Orange County Reliability Upgrade	SDG&E	In-service	√	√
New Serrano 4AA Bank & 230kV GIS Rebuild	SCE	12/2027		√
Alberhill 500 kV Method of Service	SCE	6/2029		√
New Resource Projects				√
Alamitos Repowering Project	SCE	2/7/2020	√	√
Huntington Beach Repowering Project	SCE	2/4/2020	√	√
Stanton Energy Reliability Center	SCE	6/1/2020	√	√
Alamitos 100 MW Battery Energy Storage System	SCE	1/2021	√	√
Additional Alamitos Battery Energy Storage System (82 MW)	SCE	7/2024	√	√
Cathode Battery Energy Storage System (200 MW)	SCE	4/2024	√	√
Local Capacity Area Preferred Resources in western LA Basin (EE, DR, BTM BESS)	SCE	6/1/2021	√	√
Various other battery energy storage systems in SCE and San Diego-Imperial Valley areas	SCE & SDG&E	2024-2028	√	√

LA Basin Area: Loads and Resources

Loads (MW)	2025	2029	Resources NQC* (MW)	2025	2029
Gross Load	19200	19043	Market/Net Seller/Wind	5670	5670
Sum of AAEE, AAFS & AATE	-72	333	Battery/Hybrid	2696	2696
Behind the meter DG (production)	-264	-193	Muni/QF	1157	1157
Net Load	**18864**	**19183**	LTPP LCR Preferred Resources (BTM BESS, EE, DR, PV)	175	175
Transmission Losses	433	413	Existing Demand Response	588	588
Pumps	0	0	Solar	10	10
Loads + Losses + Pumps	**19297**	**19596**	**Total Qualifying Capacity**	**10296**	**10296**

*August NQC for RA accounting purpose

San Diego-Imperial Valley Area: Loads and Resources

Loads (MW)	2025	2029	Resources NQC* (MW)	2025	2029
Gross Load	4874	5063	Market/Net Seller/Wind	3707	3707
Sum of AAEE, AAFS & AATE	4	125	Battery/Hybrid	1564	1904
Behind-the-meter DG (production)	-236	-282	MUNI/QF	3	3
Net Load	**4642**	**4906**	LTPP Preferred Resources	0	0
Transmission Losses	138	137	Existing Demand Response	26	26
Pumps	0	0	Solar production	169	169
Loads + Losses	**4780**	**5046**	**Total**	**5469**	**5809**

*August NQC for RA accounting purpose

El Nido Sub-area LCR (LA Basin)

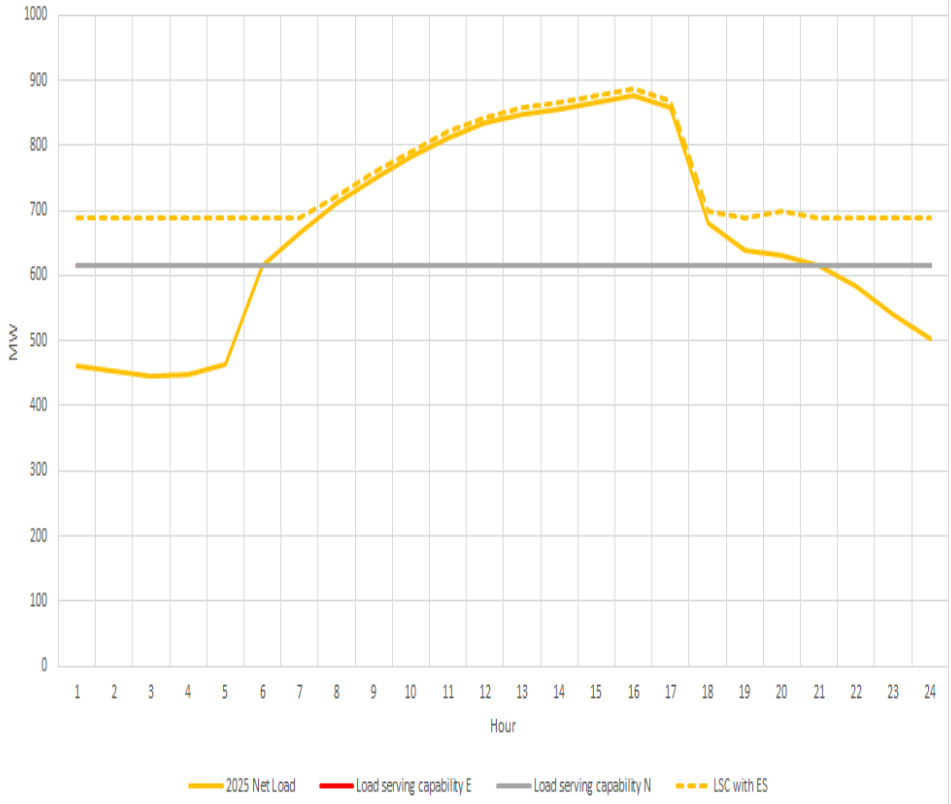
Year	Category	Limiting Facility	Contingency	LCR (MW)	2024 and 2028 LCR (MW)
2025	P7	La Fresa-La Cienega 230 kV	La Fresa – El Nido #3 & 4 230 kV lines	261	302
2029	P7	La Fresa-La Cienega 230 kV	La Fresa – El Nido #3 & 4 230 kV lines	284	347

Reasons for the changes in the LCR needs:

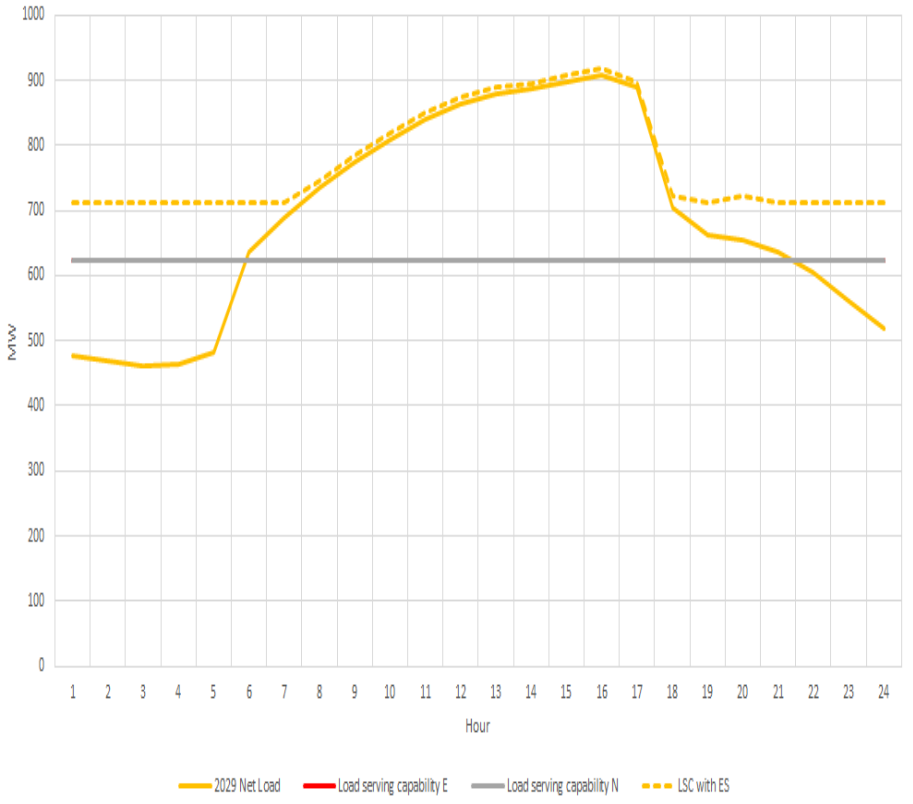
- LCR need decreases due to lower demand forecast for the El Nido sub-area.

El Nido Subarea Load Shape and Estimated Energy Storage Charging Capability Under Critical Contingency

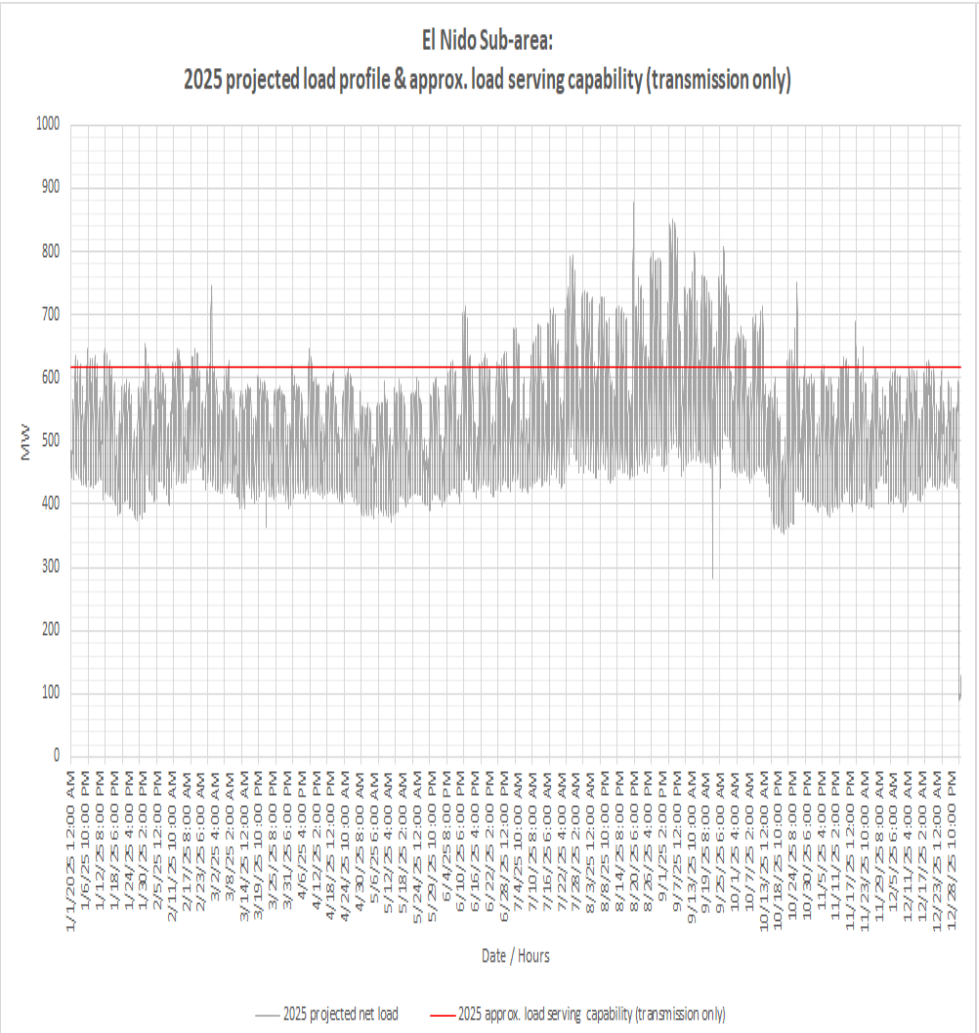
El Nido Sub-area:
2025 projected pk day load profile & approx. LSC (trans + LCR Gen + ES)
Approx storage size that can be added to this area from charging restriction perspective =
188 MW and 1420 MWh. Max 4-hr storage = 46 MW

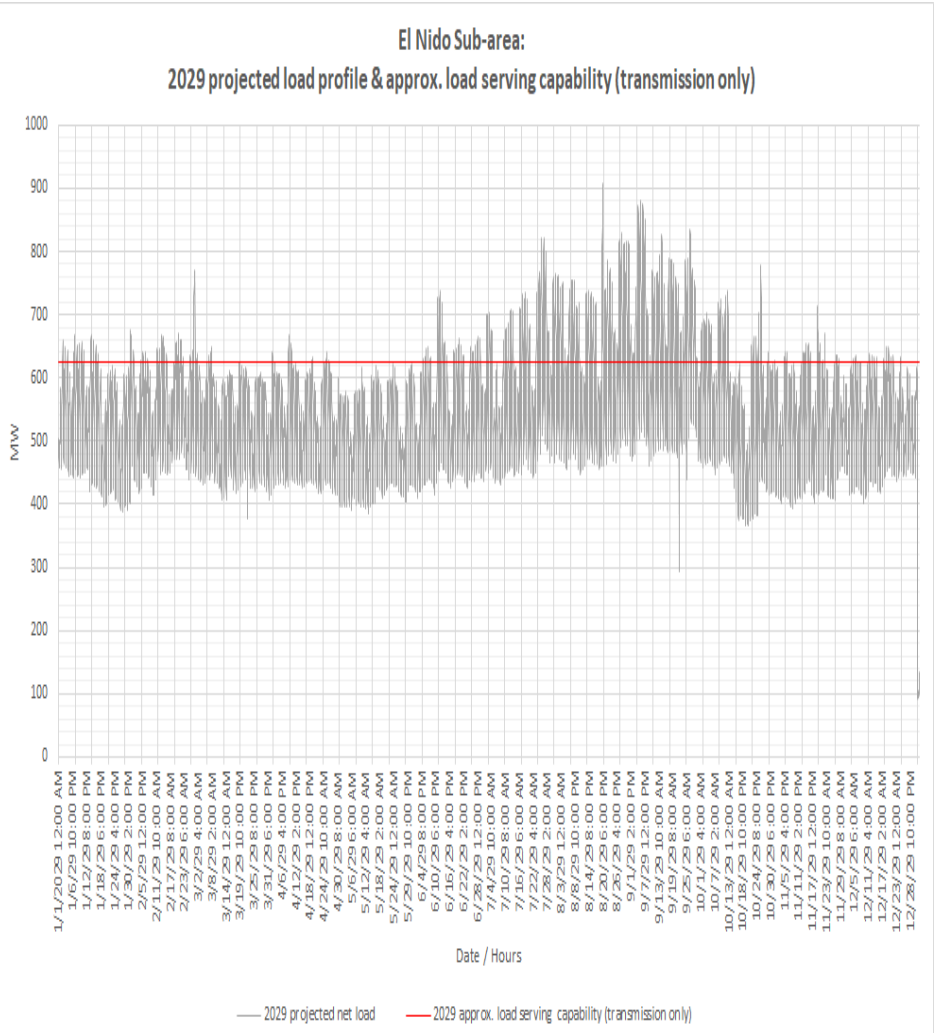


El Nido Sub-area:
2029 projected pk day load profile & approx. LSC (trans + LCR Gen + ES)
Approx storage size that can be added to this area from charging restriction perspective =
195 MW and 1469 MWh. Max 4-hr storage = 45 MW



El Nido Subarea Annual Load Profile and Load Serving Capability





Western LA Basin Sub-area LCR

Year	Category	Limiting Facility	Contingency	LCR (MW)	2024 and 2028 LCR (MW)
2025	P6	Laguna Bell – Mesa #1 230kV Line	Mesa-Redondo #1 230kV, followed by Mesa-Lighthipe 230kV line (or vice versa)	3715** (3041)*	3250* (5045)**
2029	P6	Mesa – Lighthipe 230kV Line	Mesa-Redondo #1 230kV, followed by Laguna Bell-Mesa #1 230kV line (or vice versa)	3053***	4130

Notes:

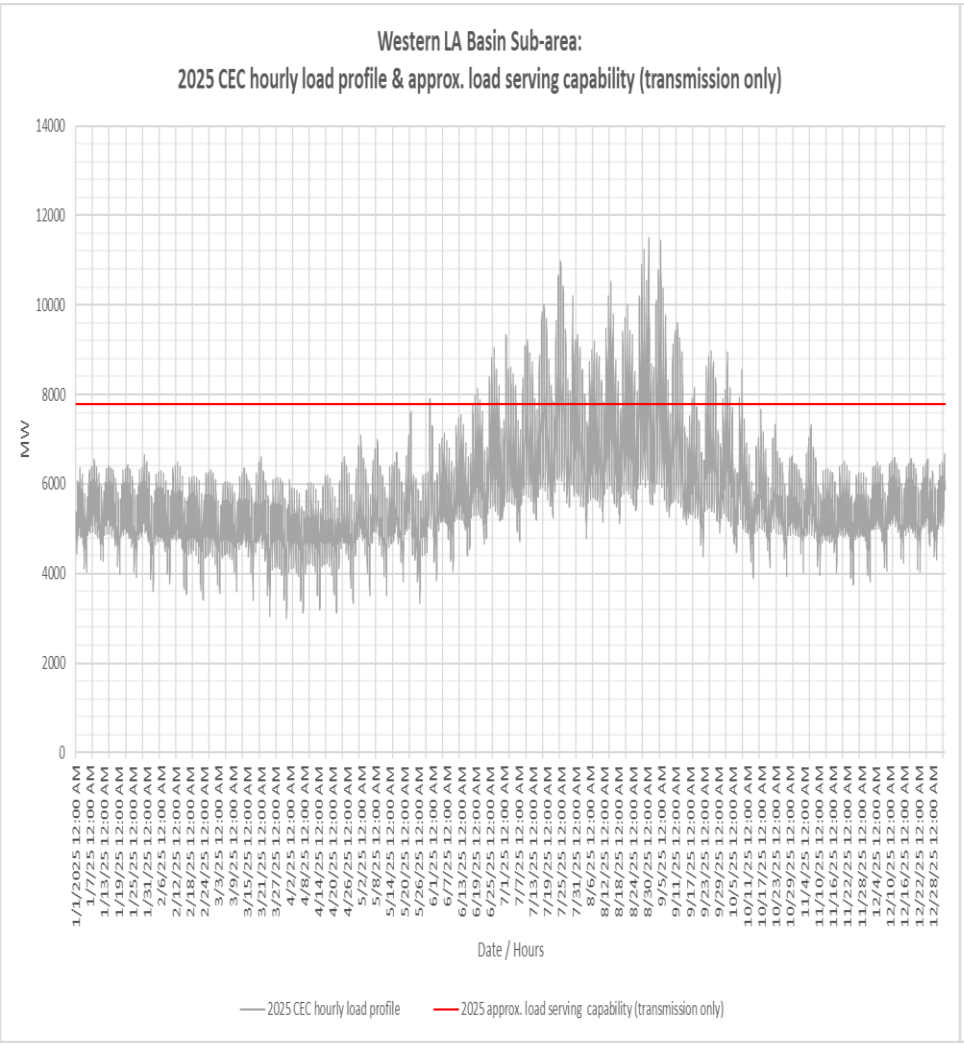
** Study results for the scenario where the Laguna Bell-Mesa #1 230kV line upgrade is assumed to be in-service.*

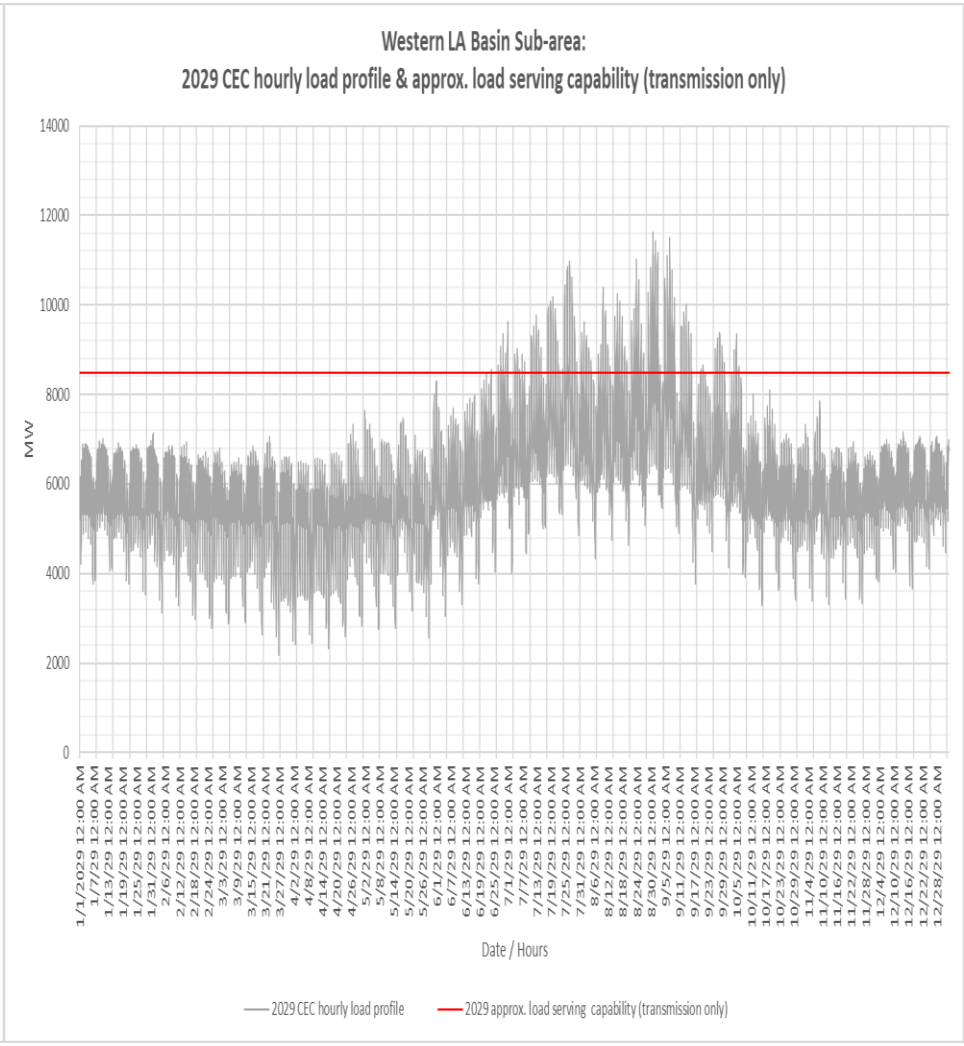
*** Study results with delay for the Laguna Bell-Mesa #1 230kV line upgrade. SCE anticipates providing updated in-service date to the CAISO later this summer (2024). Two battery energy storage projects, with in-service dates prior to June 1, 2025, help reduce LCR need.*

**** LCR requirements for 2029 are lower due to lower demand forecast, as well as two transmission projects in the LA Basin area assumed to be in-service (Laguna Bell-Mesa #1 230kV reconductoring, and Serrano 4th AA Bank (500/230kV).*

Western LA Basin Subarea Load Shape and Estimated Energy Storage Charging Capability Under Critical Contingency

Western LA Basin Subarea Annual Load Profile and Load Serving Capability





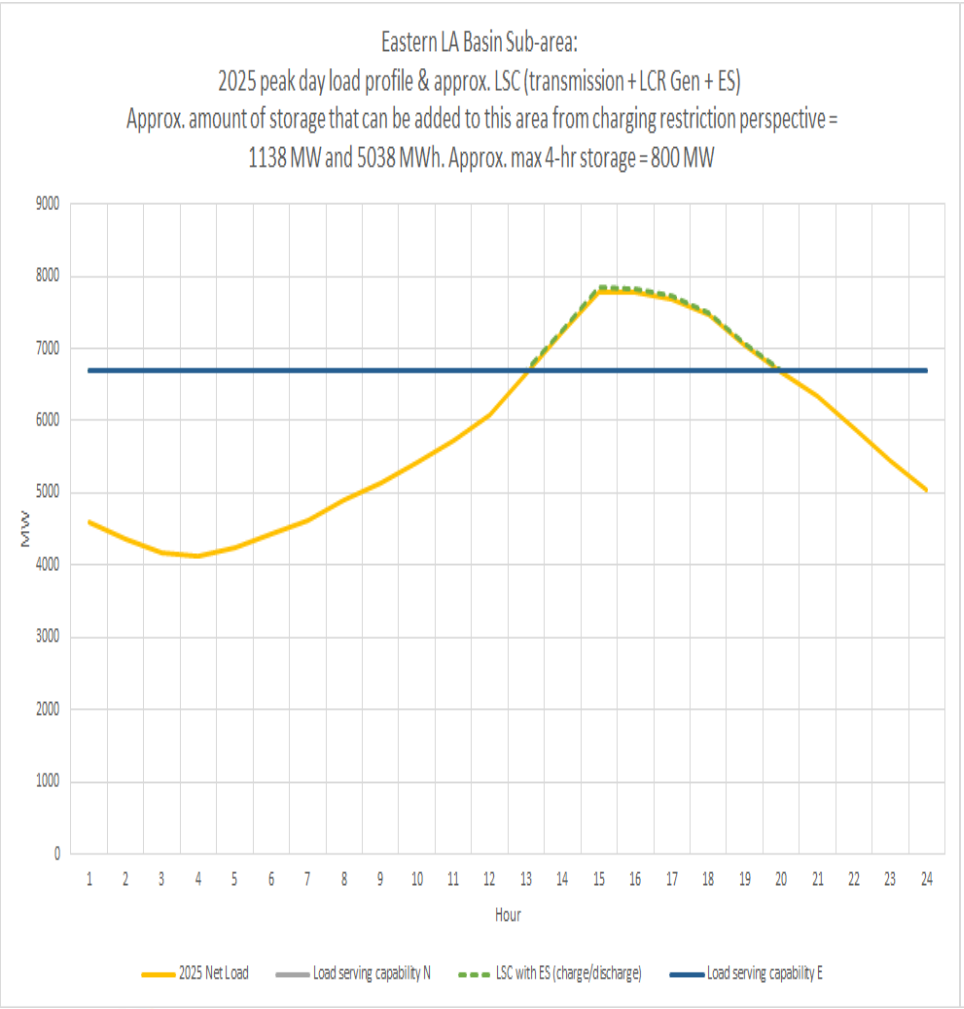
Eastern LA Basin Sub-area LCR

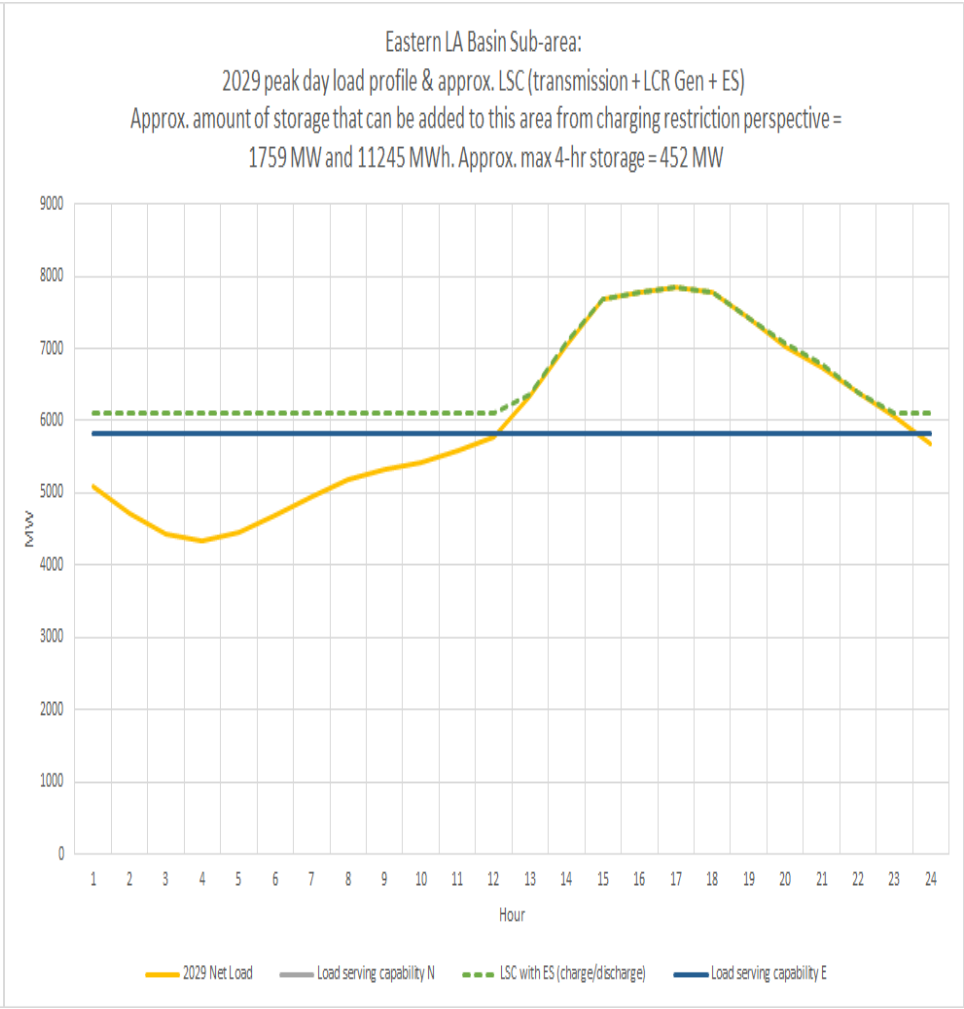
Year	Category	Limiting Facility	Contingency	LCR (MW)	2024 and 2028 LCR (MW)
2025	P1 & P7	Voltage stability	Lugo – Rancho Vista 500 kV line, followed by N-2 of Lugo – Mira Loma #2 and #3 500 kV lines (common structure)	1082	1163
2029	P1 & P7	Voltage stability	Lugo – Rancho Vista 500 kV line, followed by N-2 of Lugo – Mira Loma #2 and #3 500 kV lines (common structure)	2023	1810

Notes:

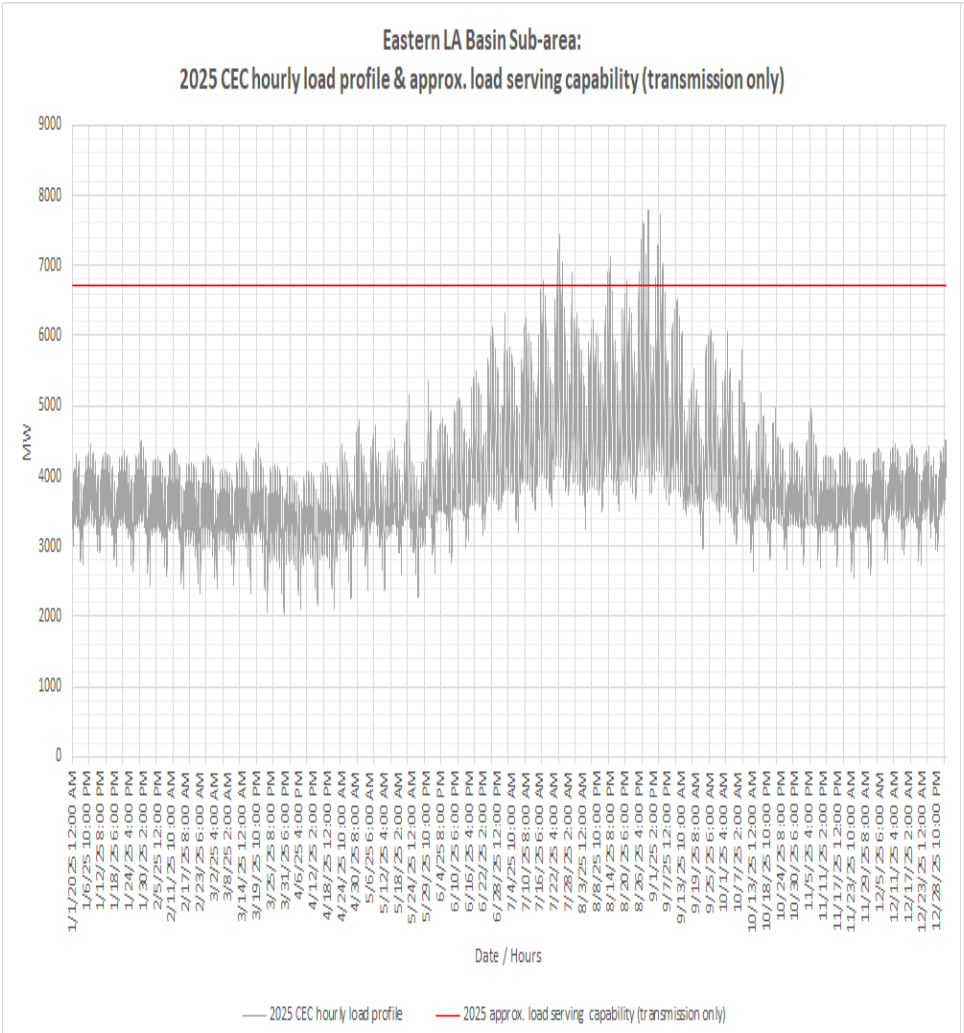
2025: The LCR need decreases due to lower demand forecast.
2029: The LCR need increases due to having lower western LA Basin LCR requirement.

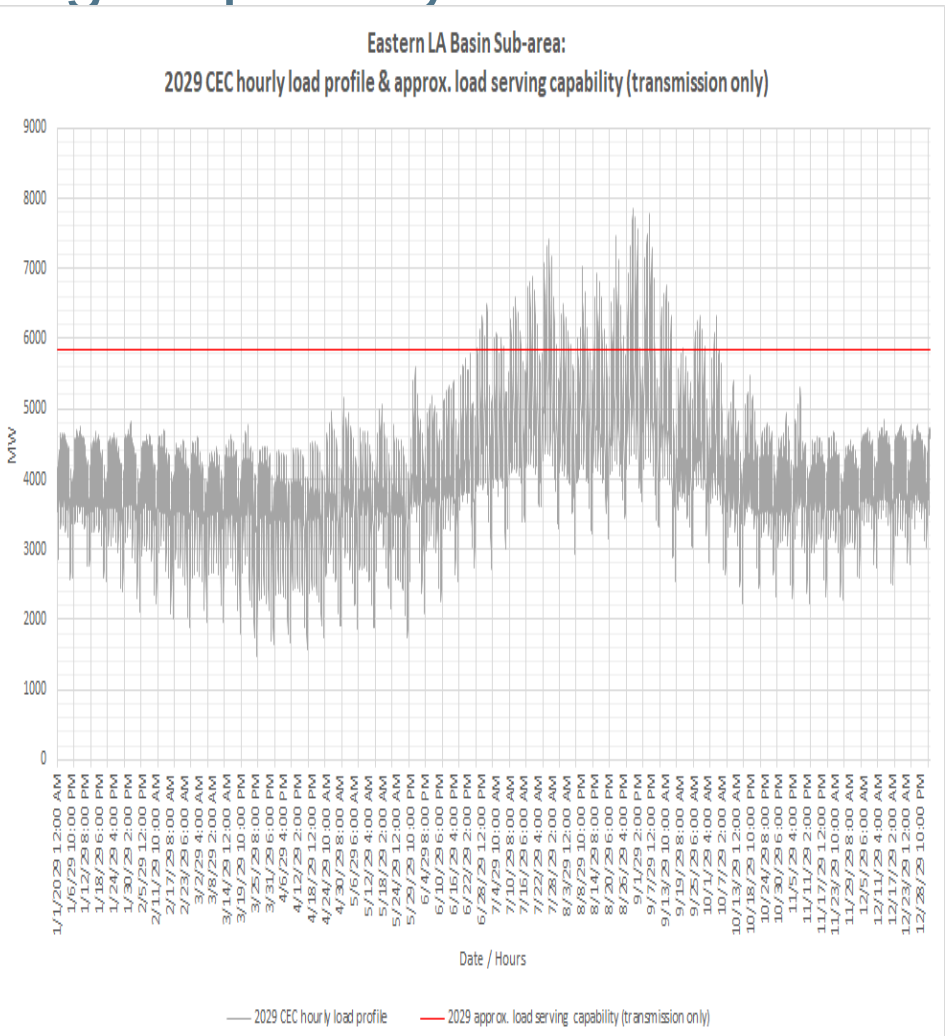
Eastern LA Basin Subarea Load Shape and Estimated Energy Storage Charging Capability Under Critical Contingency





Eastern LA Basin Subarea Annual Load Profile and Load Serving Capability





Overall LA Basin LCR Need

Year	Limiting Facility	Limiting Facility	Contingency	LCR (MW)	2024 and 2028 LCR (MW)
2025	Sum of Western and Eastern LA Basin LCR needs	See Western and Eastern LA Basin LCR results	See Western and Eastern LA Basin LCR results	4797** (4123)*	4413* (6208)**
2029	Sum of Western and Eastern LA Basin LCR needs	See Western and Eastern LA Basin LCR results	See Western and Eastern LA Basin LCR results	5076	5940

Notes:

** Results with Laguna Bell – Mesa #1 230kV upgrade project implementation delay scenario

* Results with Laguna Bell-Mesa #1 230kV upgrade project in-service

- The overall LA Basin LCR requirements decrease due to lower demand forecast for both 2025 and 2029

Total LA Basin Energy Storage Charging Capability

	Total MW of Energy Storage	Total MWh of Energy Storage	Maximum 4-hour Energy Storage (MW)
Year 2025			
Western LA Basin	1957	14205	687
Eastern LA Basin	1138	5038	800
Overall LA Basin	3095	19243	1487
Year 2029			
Western LA Basin	1837	11658	654
Eastern LA Basin	1759	11245	452
Overall LA Basin	3596	22903	1106

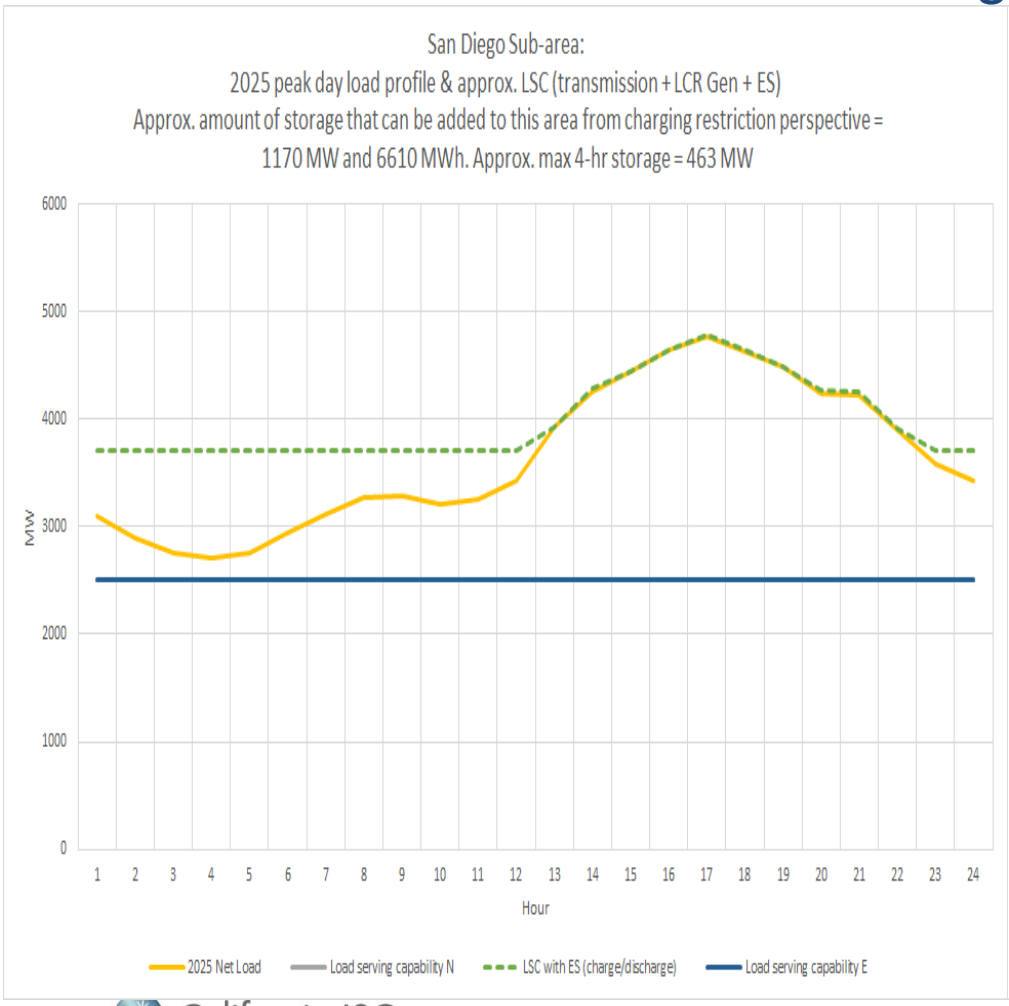
San Diego Bulk Sub-area LCR

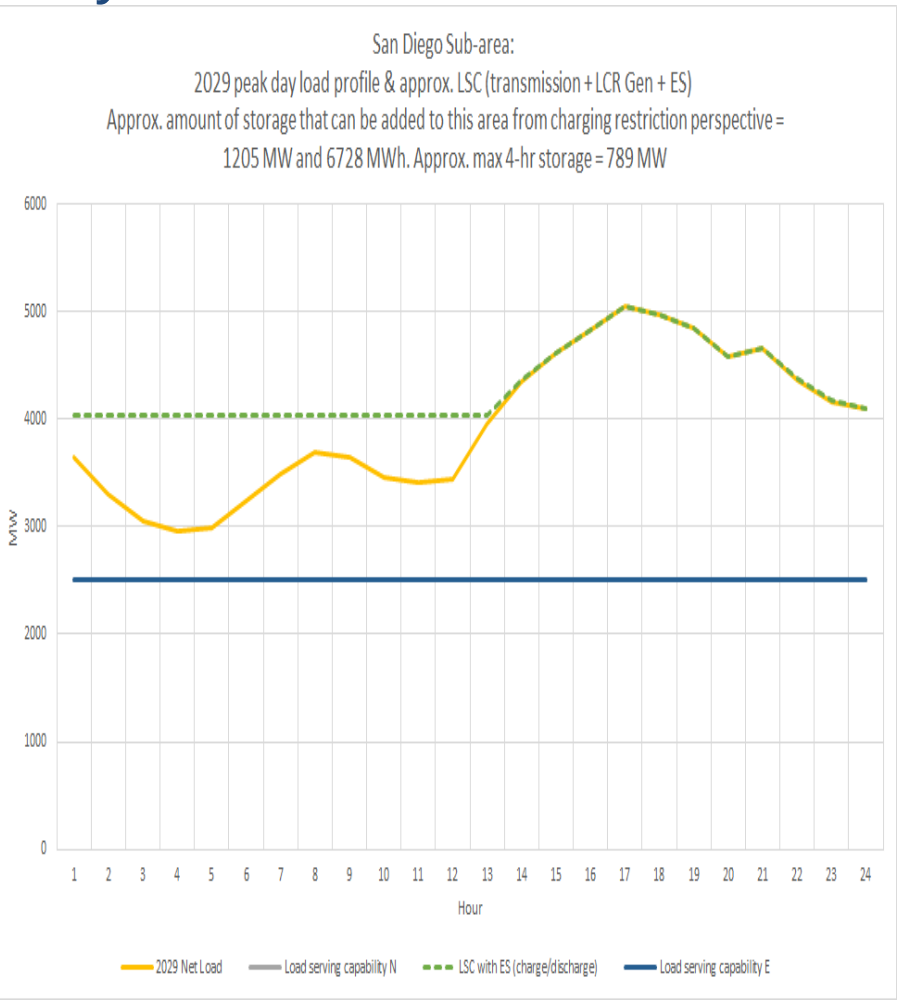
Year	Category	Limiting Facility	Contingency	LCR (MW)	2024 and 2028 LCR (MW)
2025	P6	Remaining Sycamore-Suncrest 230 kV line	ECO-Miguel 500 kV line, system readjustment, followed by one of the Sycamore-Suncrest 230 kV	2709	2834
2029	P6	Remaining Sycamore-Suncrest 230 kV line	ECO-Miguel 500 kV line, system readjustment, followed by one of the Sycamore-Suncrest 230 kV	3121	3575

Reasons for the changes in the LCR needs:

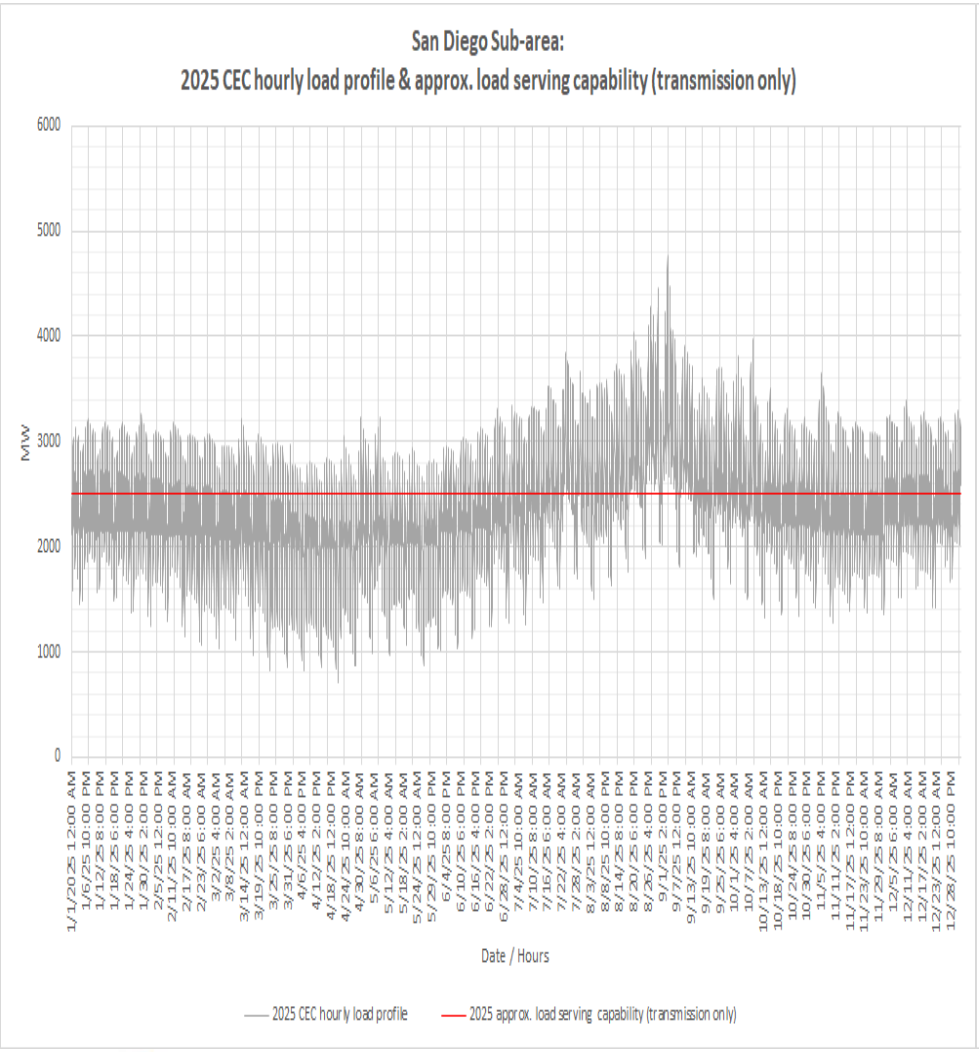
- The LCR need is lower due to lower demand forecast from the CEC for the San Diego area.

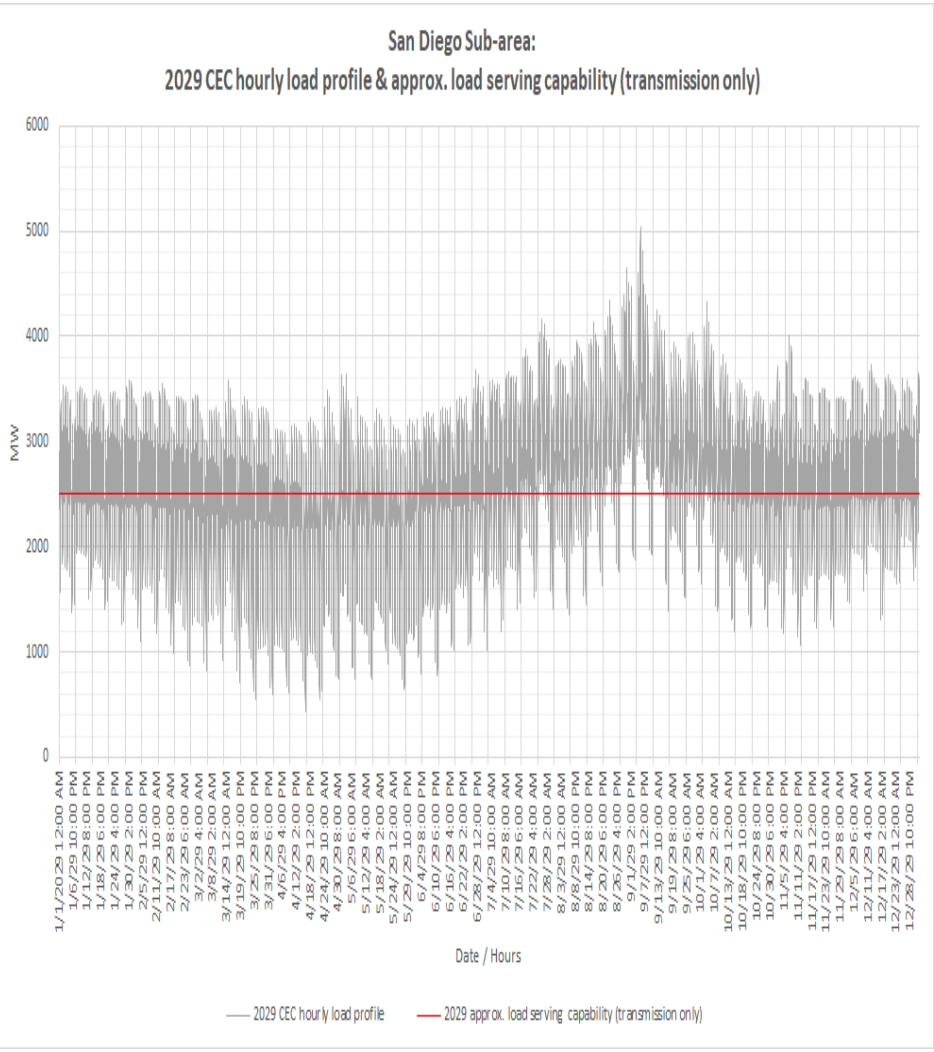
San Diego Subarea Basin Subarea Load Shape and Estimated Energy Storage Charging Capability Under Critical Contingency





San Diego Subarea Annual Load Profile and Load Serving Capability





Overall San Diego – Imperial Valley Area LCR

Year	Category	Limiting Facility	Contingency	LCR (MW)	2024 and 2028 LCR (MW)
2025	P6	Remaining Sycamore-Suncrest 230 kV line	ECO-Miguel 500 kV line, system readjustment, followed by one of the Sycamore-Suncrest 230 kV	2709	2834
2029	P6	Remaining Sycamore-Suncrest 230 kV line	ECO-Miguel 500 kV line, system readjustment, followed by one of the Sycamore-Suncrest 230 kV	3121	3575

Reasons for the changes in the LCR needs:

- The LCR need is lower due to lower demand forecast from the CEC for the San Diego area.