



2021 & 2025 Draft LCR Study Results for LA Basin and San Diego-Imperial Valley Areas

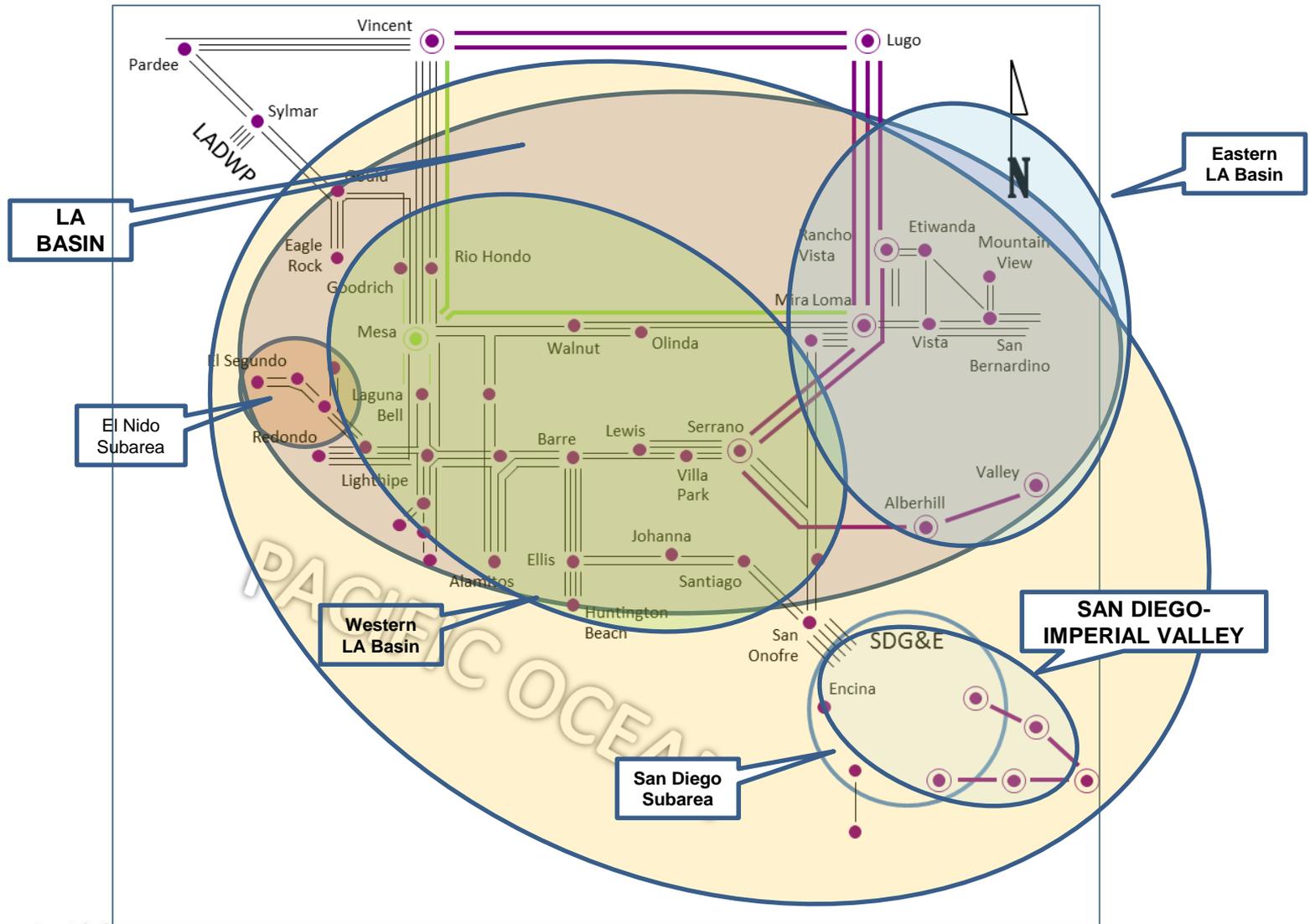
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Stakeholder Call

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LA Basin and San Diego-Imperial Valley Areas



Major New Transmission and Resource Assumptions

Project Name	Service Areas	Expected ISD
New Transmission Projects		
Imperial Valley – El Centro 230 kV (“S” line) upgrades	IID / SDG&E	12/31/2021
Mesa Loop-In Project (230kV Loop-In)	SCE	6/1/2021
Mesa Loop-In Project (500kV Loop-In)	SCE	3/2022
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	12/2020
Local Capacity Area Preferred Resources (EE, DR, BTM BESS)	SCE	6/1/2021*

Notes:

* Based on contract dates. The ISO is in the process of checking with SCE for actual implementation dates.

LA Basin Area: Loads and Resources

Loads (MW)	2021	2025	Resources NQC (MW)	2021	2025
Gross Load	20234	21065	Market, Net Seller, Wind, IFM Battery, Solar	8090	5848
AAEE	-158	-382	Muni	1056	1056
Behind the meter DG (production)	-1450	-2159	QF	141	141
Net Load	18626	18524	LTPP LCR Preferred Resources (BTM BESS, EE, DR, PV)	331	331
Transmission Losses	284	282	Existing Demand Response	287	287
Pumps	20	20	Mothballed	0	0
Loads + Losses + Pumps	18930	18826	Total Qualifying Capacity	9905	7663

San Diego-Imperial Valley Area: Loads and Resources

Loads (MW)	2021	2025	Resources NQC (MW)	2021	2025
Gross Load	4443	4618	Market, Net Seller, Battery, Wind	3970	4087
AAEE	-28	-66	Solar (Production is "0" at 20:00 hr.)	356	356
Behind-the-meter DG	0	0	QF	2	2
Net Load	4415	4552	Muni	0	0
Transmission Losses	108	123	LTPP Preferred Resources	0	0
Pumps	0	0	Existing Demand Response	7	7
			Mothballed	0	0
Loads + Losses	4523	4675	Total Qualifying Capacity	4335	4452

El Nido Sub-area LCR (LA Basin)

Year	Category	Limiting Facility	Contingency	LCR (MW) (deficiency)	2020 and 2024 LCR (MW)
2021	P7	La Fresa-La Cienega 230 kV	La Fresa – El Nido #3 & 4 230 kV lines	394	365
2025	P7	La Fresa-La Cienega 230 kV	La Fresa – El Nido #3 & 4 230 kV lines	409	393

Reasons for the changes in the LCR needs:

- LCR need increases due to reallocation of higher substation loads in the El Nido subarea.

Western LA Basin Sub-area LCR

Year	Category	Limiting Facility	Contingency	LCR (MW) (deficiency)	2020 and 2024 LCR (MW)
2021	P3	Barre-Lewis 230 kV line	G-1 of new Huntington Beach combined cycle plant, system readjusted, followed by Barre-Villa Park 230 kV line outage	3249	3706
2025	P6	Mesa-Laguna Bell 230 kV	Mesa-La Fresa 230 kV, followed by Mesa-Lighthipe 230 kV line, or vice versa	3943	3783

Reasons for the changes in the LCR needs:

- 2021 - the 2021 LCR need is lower than 2020 LCR need due the following:
 - Mesa 230 kV loop-in portion of the Mesa Loop-In Project is completed, bringing new sources to Mesa substation. The 230 kV bus tie breaker is operated in the closed position (while 500kV portion is constructed) to help mitigate loading concern.
 - The CEC's demand forecast for Cities of Vernon and Anaheim being lower compared to 2020 LCR study.
- 2025 - the LCR need is higher than the 2024 LCR need due to the following:
 - Loads are allocated higher for some substations in the western LA Basin and lower in the Big Creek/Ventura area based on updated load distribution information from the CEC and SCE.

Eastern LA Basin Sub-area LCR

Year	Category	Limiting Facility	Contingency	LCR (MW) (deficiency)	2020 and 2024 LCR (MW)
2021	Extreme (N-1-2)	Post-transient voltage stability	Serrano-Valley 500 kV line, followed by Devers – Red Bluff 500 kV #1 and 2 lines	2867	2537
2025	Extreme (N-1-2)	Post-transient voltage stability	Serrano-Alberhill 500 kV line, followed by Devers – Red Bluff 500 kV #1 and 2 lines	2366	2477

Reasons for the changes in the LCR needs:

- 2021 - the LCR need for the Eastern LA Basin is higher than the 2020 LCR due to the following:
 - Bus loads at some locations in the Eastern LA Basin are reallocated higher than the 2020 LCR study based on updated load distribution information from the CEC and SCE.
 - Imports are higher due to lower availability of internal generation from based on updated lower NQC values for solar and wind generation in SCE and SDG&E areas (using latest ELCC values from the CPUC)
- 2025 - the LCR need for the Eastern LA Basin is lower due to the following reasons:
 - Lower import levels from the Southwest due to base-load generation retirement in Arizona. Lower import level results in less line voltage drop, lessening voltage stability concern.
 - Higher LCR level in the Western LA Basin results in lower voltage drop, lessening voltage stability concern.

Combined Overall LA Basin and San Diego-Imperial Valley LCR Assessment

San Diego Bulk Sub-area LCR

Year	Category	Limiting Facility	Contingency	LCR (MW) (deficiency)	2020 and 2024 LCR (MW)
2021	P6	Remaining Sycamore-Suncrest 230 kV	ECO-Miguel 500 kV line, system readjustment, followed by one of the Sycamore-Suncrest 230 kV	2270	2642
2025	P6	Remaining Sycamore-Suncrest 230 kV	ECO-Miguel 500 kV line, system readjustment, followed by one of the Sycamore-Suncrest 230 kV	2791	2898

Reasons for the changes in the LCR needs:

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

Overall San Diego – Imperial Valley Area LCR

Year	Category	Limiting Facility	Contingency	LCR (MW) (deficiency)	2020 and 2024 LCR (MW)
2021	P3	Imperial Valley – El Centro 230 kV Line (S-Line)	G-1 of TDM generation, system readjustment, followed by Imperial Valley-North Gila 500 kV line (N-1)	3888	3895
2025	P3	El Centro 230/92 kV Transformer	TDM generation, system readjustment, followed by Imperial Valley-North Gila 500 kV line (N-1)	3557	4025

Reasons for the changes in the LCR needs:

- Lower demand forecast results in lower LCR need.
- More effective units in the San Diego-Imperial Valley area are dispatched to mitigate the S line loading concern.
- Significant LCR need is reduced for 2025 timeframe due to implementation of the S-line upgrade and proposed battery energy storage system projects located in effective locations.

Overall LA Basin LCR associated with the San Diego – Imperial Valley LCR need

Year	Category	Limiting Facility	Contingency	LCR (MW) (deficiency)	2020 and 2024 LCR (MW)
2021	P3	Imperial Valley – El Centro 230 kV Line (S-Line)	G-1 of TDM generation, system readjustment, followed by Imperial Valley-North Gila 500 kV line (N-1)	6127	7364
2025	P3	El Centro 230/92 kV Transformer	TDM generation, system readjustment, followed by Imperial Valley-North Gila 500 kV line (N-1)	6281	6224

Reasons for the changes in the LCR needs:

- For 2021, significant LCR reduction is due to lower San Diego forecast demand and implementation of the Mesa 230kV loop-in and operating the Mesa bus-tie breaker in the closed position.
- For 2025, there is slight increase in the LCR need for LA Basin (associated with contingency in San Diego area) due to significant LCR reduction for the overall San Diego-Imperial Valley area.

Overall LA Basin LCR Need

Year	Limiting Facility	Limiting Facility	Contingency	LCR (MW) (deficiency)	2020 and 2024 LCR (MW)
2021	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	6116	6243
2021	P3	Imperial Valley – El Centro 230 kV Line (S-Line)	G-1 of TDM generation, system readjustment, followed by Imperial Valley-North Gila 500 kV line (N-1)	<u>6127</u>	7364
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	<u>6309</u>	6260
2025	P3	El Centro 230/92 kV Transformer	TDM generation, system readjustment, followed by Imperial Valley-North Gila 500 kV line (N-1)	6281	6224

- The underlined values indicate the preliminary LCR needs for the LA Basin for 2021 and 2025.
- The reasons for the changes in the LCR needs are provided for in the previous slide.

Changes Compared to Previous LCR Requirements

Subarea	2020		2021		2024		2025	
	Load	LCR	Load	LCR	Load	LCR	Load	LCR
El Nido	1519	365	1590	394	1442	393	1596	409
Western LA Basin	11291	3706	11420	3249	10988	3783	11291	3943
Eastern LA Basin	6634	2537	7502	2867	7210	2477	7510	2366
Overall LA Basin	17925	7364	18922	6127	18198	6260	18801	6309
San Diego Subarea	4644	2642	4523	2270	4835	2898	4675	2791
Overall San Diego – Imperial Valley Area	4644	3895	4523	3888	4835	4025	4675	3557

- Due to non-linearity performance results, please refer to each subarea and area for further detailed explanations on the reasons for differences between 2020 and 2021, 2024 and 2025 LCR results.
- The changes cannot be explained by changes in loads, but also by changes in system topology as well as resource additions in specific locations. The subareas and areas have further discussion on the reasons for the changes in LCR needs for each subarea and area.