



California ISO

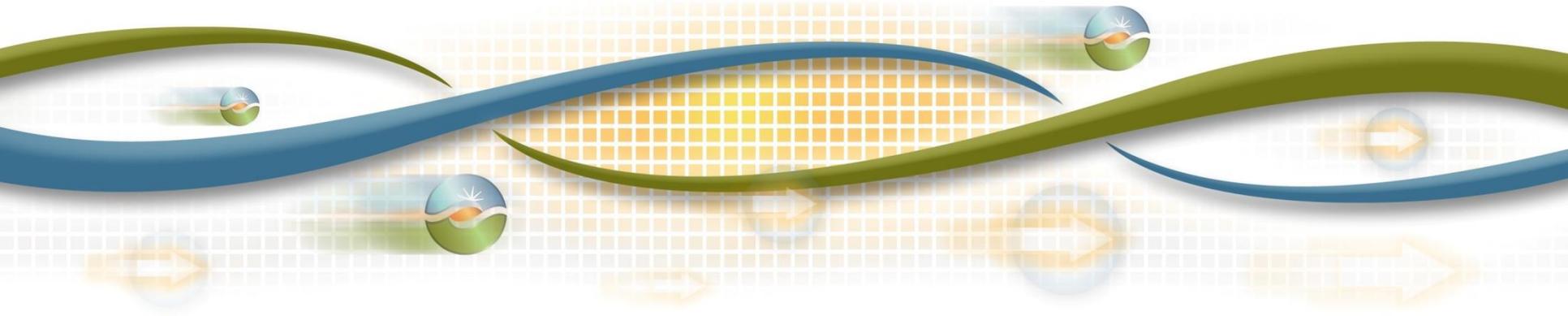
2018 & 2022 Draft LCR Study Results San Diego-Imperial Valley

Frank Chen - Regional Transmission Engineer Lead

David Le - Senior Advisor Regional Transmission Engineer

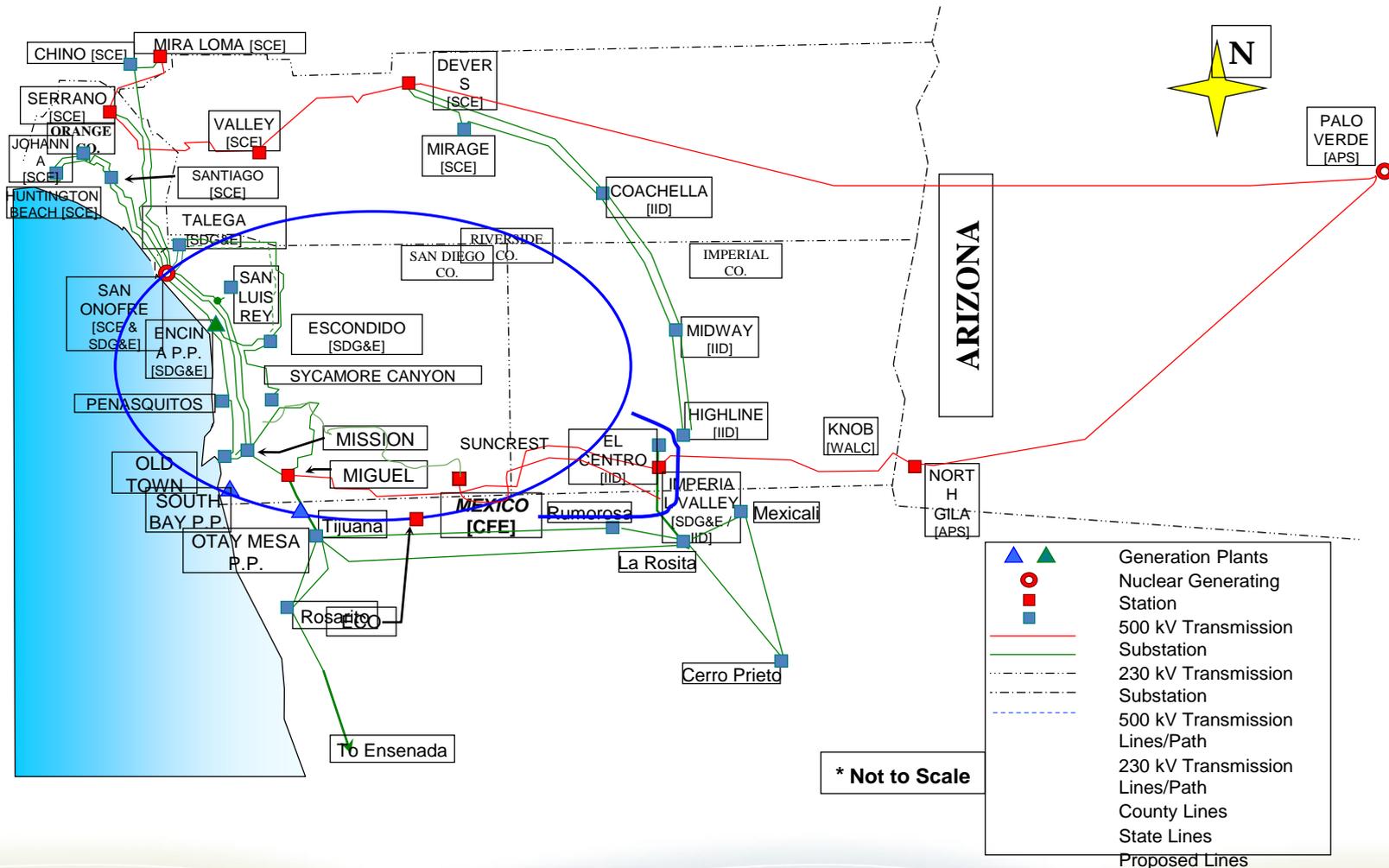
Stakeholder Meeting

March 9, 2017



The study results for the 2018 LCR needs for the LA Basin and San Diego-Imperial Valley LCR areas will be subject to change due to anticipated updated demand forecast for the San Diego area. The ISO will update the 2018 LCR study results for the LA Basin and the San Diego-Imperial Valley LCR areas upon having the CEC final adopted updated forecast for the San Diego area. In addition, the ISO will also provide the study results for these two LCR areas for the 2022 timeframe with the final updated demand forecast.

San Diego-Imperial Valley LCR Area



San Diego-Imperial Valley Area Load and Resources

		2018	2022
CEC Load Forecast	=	4,621	
Peak Shift Adjustment	=	138	
Adjusted Managed Peak	=	4,759	
Market Generation	=	5,071	
Muni Generation	=	0	
Wind Generation	=	136	
QF Generation	=	103	
Total Qualifying Capacity	=	5,310	

Major Network Upgrades Modeled by 2018

1. Reconductor of Mission-Mesa Heights 69 kV project
2. Reconductor of Kearny-Mission 69 kV line
3. TL6906 Mesa Rim Rearrangement
4. Salt Creek 69 kV Substation
5. Vine 69 kV Substation
6. South Bay 230 kV Substation
7. Sycamore-Penasquitos 230 kV line
8. Imperial Valley Phase Shifting Transformers
9. By-passing 500 kV series capacitor banks on SWPL and SPL
10. 2nd Hassayampa-North Gila 500 kV line
11. Sycamore Canyon - Penasquitos 230kV Line
12. Miguel Synchronous Condensers (2x225 Mvar)
13. San Luis Rey Synchronous Condensers (2x225 Mvar)
14. San Onofre Synchronous Condensers (1x225 Mvar)
15. Battery energy storage projects at Escondido (3x10 MW) and El Cajon (7.5 MW)
16. New capacitors at Pendleton and Basilone 69 kV substations

Additional Network Upgrades by 2022

1. TL632A Granite Loop-in and cancel TL631
2. Ocean Ranch 69 kV Substation
3. Reconductor of Stuart Tap-Las Pulgas 69 kV line (TL690E)
4. Reconductor of Japanes Mesa – Basilone – Talega Tap 69 kV lines (TL6971 and TL695B)
5. Upgrade TL633, Bernardo - R. Carmel 69kV line
6. Second San Marcos – Escondido 69kV line
7. Suncrest SVC project
8. Artesian 230kV Expansion With 69kV Upgrades
9. Second Poway to Pomerado 69 kV line
10. South Orange County Reliability Enhancement

Areas and sub-areas studied:

- El Cajon sub-area
- Mission sub-area
- Esco sub-area
- Pala sub-area
- Miramar sub-area
- Border sub-area
- San Diego sub-area
- San Diego-Imperial Valley area

El Cajon Sub-area Critical Contingencies

Category C:

2018:

Contingency: loss of El Cajon-Jamacha 69 kV (TL624) followed by the loss of Miguel–Granite–Los Coches line 69 kV (TL632) or vice versa

Limiting component: El Cajon-Los Coches 69 kV (TL631) overloaded

LCR need: 63 MW (includes 7.5 MW of QF generation)

2022:

Contingency: loss of Granite – Los Coches 69 kV line #1 and #2

Limiting component: El Cajon-Los Coches 69 kV (TL631) overloaded

LCR need: 25 MW (includes 7.5 MW of QF generation)

Category B:

Contingency: loss of El Cajon Unit 2 followed by the loss of Miguel–Granite–Los Coches 69 kV (TL632)

Limiting component: El Cajon -Los Coches 69 kV (TL631) overloaded

2018 LCR need: 62 MW (includes 0 MW of QF generation)

2022 LCR need: 0 MW

Mission Sub-area Critical Contingency

Category C:

No LCR requirement is identified for 2018 and 2022 as the Mesa Heights 69 kV project and the reconductoring Kearny-Mission 69 kV line project would eliminate the Kearny - Clairmont Tap 69kV line (TL600) for the loss of Mission-Kearny 69 kV (TL663) followed by the loss of Mission-Mesa Heights 69kV (TL676) or vice versa.

It is recommended to retain at least 22 MW of Kearney peakers operational until the two projects are in service by June of 2018.

Category B:

No LCR requirement.

Esco Sub-area Critical Contingency

Category C:

2018:

Contingency: loss of either of the Sycamore-Pomerado 69 kV lines (TL6915 or TL6924), followed by loss of Esco-Escondido 69kV (TL6908)

Limiting component: remaining Sycamore-Pomerado 69 kV line overloaded

LCR need: 5 MW (includes 0 MW of QF generation)

2022:

Contingency: loss of either one of the two Sycamore-Pomerado 69 kV (TL6915 or TL6924) lines followed by loss of Artisian 230/69kV bank or vice versa

Limiting component: remaining Sycamore-Pomerado 69 kV line overloaded

LCR need: 25 MW (includes 0 MW of QF generation)

Category B:

No requirements.

Pala Sub-area Critical Contingency

Category C:

Contingency: loss of Pendleton-San Luis Rey 69 kV line (TL6912) followed by loss of Lilac-Pala 69kV (TL6908)

Limiting component: Melrose-Morro Hill Tap 69kV (TL694) overloaded

2018 LCR need: 20 MW (includes 0 MW of QF generation)

2022 LCR need: 24 MW (includes 0 MW of QF generation)

Category B:

No requirements.

Border Sub-area Critical Contingency

Category C:

Contingency: loss of Bay Boulevard-Otay 69 kV #1 (TL645) followed by loss of Bay Boulevard-Otay 69 kV #2 (TL646)

Limiting component: Imperial Beach-Bay Boulevard 69 kV (TL647) overloaded

2018 LCR: 40 MW (includes 5 MW of QF generation)

2022 LCR: 41 MW (includes 5 MW of QF generation)

Category B:

No requirements.

Miramar Sub-area Critical Contingencies

Category C:

No requirement is identified in 2018 and 2022 as the Sycamore Canyon - Penasquitos 230kV Line project would eliminate the Sycamore-Scripps 69 kV (TL6916) overload for loss of the Miguel-Silvergate 230 kV line followed by outage of Sycamore-Palomar 230 kV line or vice versa. It is recommended to retain at least 50 MW of Miramar Energy Center operational until the project is in service by June of 2018.

Category B:

No requirements

San Diego Sub-area and San Diego-Imperial Valley Area

Overall LA Basin and San Diego-Imperial Valley Critical Contingencies

Category B & C

The LCR need for the LA Basin is driven by the common limiting contingency and limiting constraint that also require the LCR need for the San Diego-Imperial Valley area. The voltage instability concern previously identified is mitigated by implementing the dynamic reactive support projects in SCE's Orange County and SDG&E's San Diego area.

Contingency: G-1 (TDM), system readjustment, followed by N-1 of Imperial Valley-N.Gila 500kV

Limiting component: Imperial Valley – El Centro 230 kV line thermal loading

- LA Basin 2018 LCR need : 7,252 MW (including 1,615 MW of QF, wind and Muni generation, as well as 143.5 MW of local capacity preferred resources and 321 MW of 20-minute demand response)
- San Diego subarea 2018 LCR need: 2,663 MW (includes 103 MW of QF and wind generation, as well as 19 MW of 20-minute demand response and 37.5 MW of battery energy storage)
- San Diego-Imperial Valley LCR area 2018 LCR need: 4,192 MW (includes 103 MW of QF, 136 MW of wind generation (NQC value), 19 MW of 20-minute demand response and 37.5 MW of battery energy storage)

Overall LA Basin and San Diego-Imperial Valley Critical Contingencies

FYI - Secondary Category C:

Contingency: Lugo-Victorville 500 kV, system readjustment, followed by Sylmar-Gould 230 kV line out

Limiting component: Sylmar – Eagle Rock 230 kV line

- LA Basin LCR need: 6,902 MW (including 1,615 MW of QF, wind and Muni generation, as well as 143.5 MW of local capacity preferred resources and 321 MW of 20-minute demand response)
- San Diego subarea: 2,663 MW (includes 103 MW of QF and wind generation, as well as 19 MW of 20-minute demand response and 37.5 MW of battery energy storage)
- San Diego-Imperial Valley LCR area 2018 LCR need: 4,192 MW (includes 103 MW of QF, 136 MW of wind generation (NQC value), 19 MW of 20-minute demand response and 37.5 MW of battery energy storage)

Updated considerations related to the Aliso Canyon gas storage constraint scenarios

- The ISO also evaluated whether the Aliso Canyon gas storage constraint would affect the LCR need in the LA Basin and San Diego areas
 - Based on the recent CPUC Public Utilities Code Section 715 report, dated January 17, 2017 (http://www.cpuc.ca.gov/uploadedFiles/CPUC_Public_Website/Content/News_Room/News_and_Updates/AlisoGas1-9-715.pdf), the CPUC has recognized the effectiveness of tighter non-core balancing rules. On page 15 of the report, the CPUC indicated that the 150 mmcf potential imbalance has been offset by the new balancing rules and thus directly reduces the amount of the original curtailment identified in the four Summer Technical scenarios. Accounting for the reduction allows Scenario 2 to be solved without the use of Aliso. It also reduces the amount needed to solve for Scenario 4, and by default, Scenario 3.
 - Due to this balancing rules benefit, the LCR study evaluated here does not include resource balancing as previously considered under the Aliso Canyon gas storage constraint study scenario.
 - However, as Southern California Gas Company has informed the CPUC in its February 17, 2017 Storage Safety Enhancement Plan, it is important to note that there are potential deliverability impacts due to tubing flow only operation of the remaining gas storage fields at Goleta, Playa Del Rey and Honor Rancho. More study is necessary to understand the meaning and the extent of the tubing only production.

Changes

Since last year:

- 1) The 2018 adjusted managed peak demand for the San Diego area is lower by about 81 MW when compared to last year study for the 2017 LCR.
- 2) The total of the overall San Diego-Imperial Valley LCR need for 2018 is increased by 622 MW compared to reported value in the 2017 LCTA report. In the 2017 report, the San Diego-Imperial Valley study and the LA Basin-San Diego overall study had inconsistent assumptions regarding LA Basin resources.

Your comments and questions are welcome

For written comments, please send to: RegionalTransmission@caiso.com