



California ISO

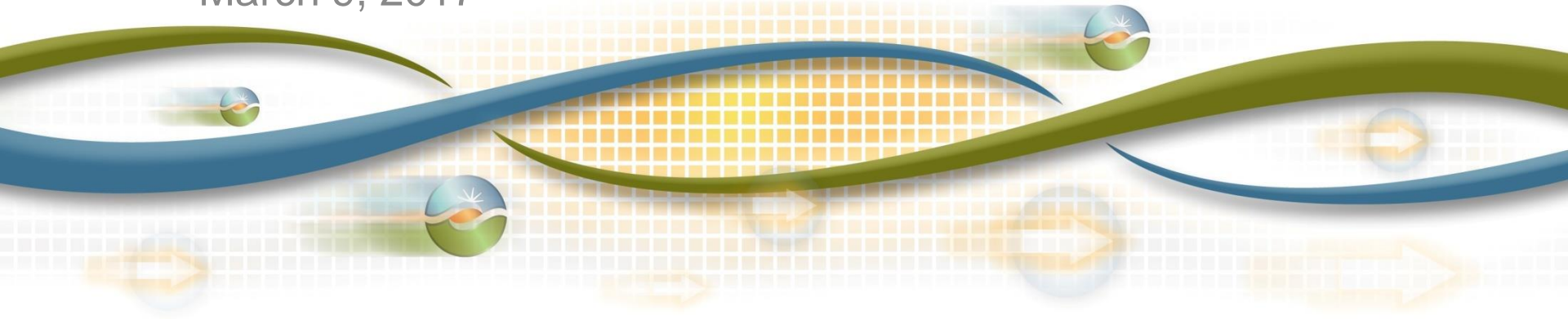
# 2018 & 22 Draft LCR Study Results LA Basin Area

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.**

# LA Basin Area Loads & Resources

## Loads

Year	Managed Peak Load (MW)	Peak Shift (MW)	Pump Load (MW)	Transmission Losses (MW)	Total (MW)
2018	18970	146	22	83	19221

The above total load for the LA Basin represents the geographic area load, which would correspond to the CEC demand forecast peak for the LA Basin, with Saugus load included. The electrical boundary load, without Saugus load, is 18466 MW. Saugus substation is located in the LA County and is considered part of the LA Basin geographic area.

## Available Resources

Year	QF/Wind (MW)	Muni (MW)	Nuclear (MW)	Market (MW)	Max. Qualifying Capacity (MW)
2017	440	1175	0	8960	10575

# Major Transmission & Generation Assumptions

- San Luis Rey, San Onofre, Miguel and Santiago synchronous condensers (in-service anticipated prior to summer 2018);
- Huntington Beach Units 3 & 4 synchronous condensers retired at the end of 2017);
- Encina Unit 1 retired by the end of Q1 2017 (to allow related generation interconnection for the new Carlsbad Energy Center, targeted to be on-line by Q4 2018);
- Carlsbad Energy Center is assumed to be delayed until Q4 2018; Encina Units 2 – 5 are on standby, assumed that OTC schedule is extended until Carlsbad Energy Center achieves commercial operation.
- Imperial Valley phase shifting transformers (230/230kV 2x400 MVA) in-service by June 2017;
- Sycamore – Penasquitos 230 kV transmission line;
- 20-minute Demand Response resources.

# Critical Area Contingencies

## **El Nido Sub-area – Category C**

Contingency: Hinson – La Fresa 230 kV line out followed by double-circuit tower line La Fresa - Redondo #1 and #2 230 kV lines

Limiting component: Voltage Collapse

2018 LCR need: 196 MW (includes 2 MW of QF and Muni generation )

## **El Nido Sub-area – Category B**

No requirements.

# Critical Area Contingencies

## **Western LA Basin Sub-area – Category C**

Contingency: Serrano-Villa Park #2 230 kV line, followed by Serrano-Lewis #1 or #2 230 kV line, or vice versa

Limiting component: Thermal loading on the Serrano-Villa Park #1 230 kV line

2018 LCR need: 4000 MW (includes 787 MW of QF, Muni, and wind resources; 143.5 MW of LTPP preferred resources and 321 MW of 20-min. DR)

## **Western LA Basin Sub-area – Category B**

Non binding – multiple combinations possible.

# Critical Area Contingencies

## Eastern LA Basin Subarea – Category C

The Eastern LA Basin subarea LCR need includes the LCR needs from the West of Devers subarea and Valley – Devers subarea. Both of these share the same limiting contingency and constraint.

- Contingency: Palo Verde – Colorado River 500 kV line out, followed by Serrano – Valley 500 kV line or vice versa
- Limiting component: Iron Mountain – Eagle Mountain 230 kV line
- 2018 LCR need: 2136 MW (including 159 MW of 20-minute demand response)

Break-downs:

- West of Devers subarea LCR need: 362 MW (including 12.5 MW 20-minute demand response)
- Valley – Devers subarea LCR need: 1774 MW (including 146.5 MW 20-minute demand response)

# 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](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 limitation.

# Changes

## Since last year:

- 1) The 2018 adjusted peak demand forecast for the LA Basin is lower by about 627 MW for the geographic LA Basin area when compared to last year study for 2017.
- 2) When compared to the overall LA Basin LCR need for 2017, based on the previously studied Aliso Canyon gas constraint scenario in the 2017 LCR assessment, the overall 2018 LA Basin LCR need is lower by 116 MW due to lower demand forecast and implementation of transmission upgrades.
- 3) Due to the benefit of gas balancing rules as discussed on the previous slide, the ISO did not perform a sensitivity analysis that would involve balancing the LA Basin resources with San Diego resources for the 2018 LCR study. However, 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, which would require further study to understand the meaning and extent of the tubing only production limitation.

**Your comments and questions are welcome.**

**For written comments, please send to: [RegionalTransmission@caiso.com](mailto:RegionalTransmission@caiso.com)**