



California ISO
Shaping a Renewed Future

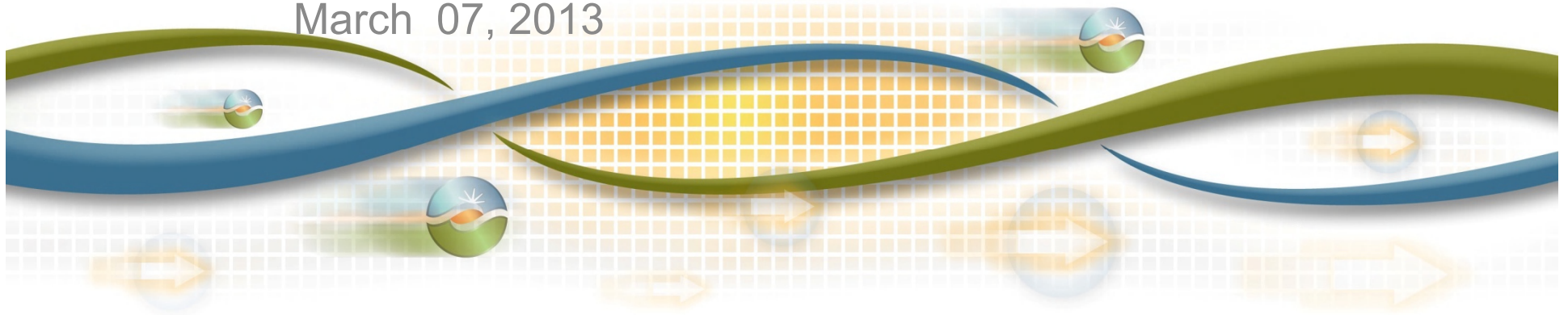
2014 and 2018 Draft LCR Study Results - Big Creek/Ventura and LA Basin

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March 07, 2013



LA Basin Area Loads & Resources

Load

| Year | Load (MW) | Pump Load (MW) | Transmission Losses (MW) | Total (MW) |
|------|-----------|----------------|--------------------------|------------|
| 2014 | 19560 | 21 | 113 | 19694 |
| 2018 | 20560 | 21 | 124 | 20705 |

Available Generation

| Year | QF/Wind (MW) | Muni (MW) | Nuclear (MW) | Market (MW) | Max. Qualifying Capacity (MW) |
|------|--------------|-----------|--------------|-------------|-------------------------------|
| 2014 | 1040 | 1166 | 2246 | 8567 | 13019 |
| 2018 | 1040 | 1166 | 2246 | 8620 | 13072 |

Critical Area Contingencies

Ellis Sub-area

No requirements due to Barre-Ellis 230 kV split project, as well as the use of Ellis SPS for N-1 followed by N2 conditions.

El Nido Sub-area – Category C

Contingency: Hinson-La Fresa 230 kV line out followed by Double Circuit Tower Line Redondo-La Fresa #1 and #2 230 kV lines

Limiting component: Voltage collapse

2014 LCR need: 514 MW (includes 51 MW of QF and Muni generation)

2018 LCR need: 536 MW (includes 51 MW of QF and Muni generation)

El Nido Sub-area – Category B

No requirement.

Critical Area Contingencies

West of Devers Sub-area – Category C

Contingency: San Bernardino-Etiwanda 230 kV line out followed by San Bernardino-Vista 230 kV line or vice versa

Limiting component: Voltage collapse

2014 LCR need: 485 MW (includes 2 MW of QF generation)

2018 LCR need: 468 MW (includes 2 MW of QF generation)

West of Devers Sub-area – Category B

No requirement.

Critical Area Contingencies

Valley-Devers Sub-area – Category C

Contingency: Palo Verde-Colorado River 500 kV line out followed by Alberhill-Serrano 500 kV line or vice versa

Limiting component: Camino -Iron Mountain 230 kV line

2014 LCR need (2 SONGS): 1726 MW (includes 182 MW of QF and Wind)

2014 LCR need (1 SONGS): 1817 MW (includes 182 MW of QF and Wind)

2014 LCR need (0 SONGS): 1889 MW (includes 182 MW of QF and Wind)

2018 LCR need (2 SONGS): 1689 MW (includes 182 MW of QF and Wind)

Valley-Devers Sub-area – Category B

No requirement.

Critical Area Contingencies

Western LA Basin Sub-area – Category C

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

Limiting component: Serrano-Villa Park #1 230 kV line

2014 LCR need (2 SONGS): 3,825 MW (includes 1,150 MW of QF, Muni and Wind)

2014 LCR need (1 SONGS): 4,005 MW (includes 1,150 MW of QF, Muni and Wind)

2014 LCR need (0 SONGS): 4,175 MW (includes 1,150 MW of QF, Muni and Wind)

2018 LCR need (2 SONGS): 4,211 MW (includes 1,150 MW of QF, Muni and Wind)

Western LA Basin Sub-area – Category B

Non binding – multiple combinations possible.

Critical Area Contingencies

LA Basin Overall – Category B

Contingency: Palo Verde-Colorado River 500 kV line with the biggest G-1 out of service

Limiting component: South of Lugo 500 kV Path rating

2014 LCR need (2 SONGS): 10,466 MW (includes 2,206 MW of QF, Muni and Wind)

2014 LCR need (1 SONGS): 10,342 MW (includes 2,206 MW of QF, Muni and Wind)

2014 LCR need (0 SONGS): 10,063 MW (includes 2,206 MW of QF, Muni and Wind)

Contingency: Sylmar-Gould 230 kV line out with SONGS#3 already out of service

Limiting component: Sylmar-Eagle Rock 230 kV line

2018 LCR need (2 SONGS): 9,882 MW (includes 2,206 MW of QF, Muni and Wind)

LA Basin Overall – Category C

2014 LCR need (2 SONGS and 1 SONGS) same as above.

Contingency: Miguel-ECO 500 kV line followed by Imperial Valley-Suncrest 500 kV line

Limiting component: Voltage instability

2014 LCR need (0 SONGS): 10,430 MW (includes 2,206 MW of QF, Muni and Wind)

Contingency: Sylmar-Gould 230 kV line followed by Lugo-Victorville 500 kV line

Limiting component: Sylmar-Eagle Rock 230 kV line

2018 LCR need (2 SONGS): 11,071 MW (includes 2,206 MW of QF, Muni and Wind)

Changes

Since last year:

- 1) Load forecast is up by 234 MW vs. 2013
- 2) Total overall LCR with two SONGS in service is up by 171 MW
- 3) Studying three scenarios with assumptions of 2 SONGS units, 70% of SONGS #2 and 0 SONGS units in service, respectively
- 3) Segments of TRTP project
- 4) 2018 load forecast is up by 106 MW vs. 2017
- 5) Total overall Long-term LCR is up by 652 MW due to load increase and subarea LCR need changes

Your comments and questions are welcome.

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

Big Creek/Ventura Area Loads & Resources

Load

| Year | Load (MW) | Pump Load (MW) | Transmission Losses (MW) | Total (MW) |
|------|-----------|----------------|--------------------------|------------|
| 2014 | 4189 | 327 | 64 | 4580 |
| 2014 | 4421 | 327 | 66 | 4814 |

Available Generation

| Year | QF (MW) | Muni (MW) | Wind (MW) | Market (MW) | Max. Qualifying Capacity (MW) |
|------|---------|-----------|-----------|-------------|-------------------------------|
| 2014 | 752 | 381 | 46 | 3850 | 5029 |
| 2018 | 752 | 381 | 46 | 3669 | 4848 |

Critical Area Contingencies

Rector Sub-area – Category B

Contingency: Vestal-Rector #1 or #2 230 kV line with Eastwood out of service

Limiting component: Remaining Vestal-Rector 230 kV line

2014 LCR need: 453 MW (includes 7 MW of QF generation)

2018 LCR need: 462 MW (includes 7 MW of QF generation)

Rector Sub-area – Category C

Same as above.

Vestal Sub-area – Category B

Contingency: Magunden-Vestal #1 or #2 230 kV line with Eastwood out of service

Limiting component: Remaining Magunden-Vestal 230 kV line

2014 LCR need: 631 MW (includes 104 MW of QF generation)

2018 LCR need: 633 MW (includes 104 MW of QF generation)

Vestal Sub-area – Category C

Same as above.

Critical Area Contingencies

Santa Clara Sub-area – Category C

Contingency: Pardee-S. Clara 230 kV line followed by DCTL Moorpark-S. Clara #1 and #2 230 kV lines

Limiting component: Voltage collapse

2014 LCR need: 304 MW (includes 65 MW of QF generation)

2018 LCR need: 404 MW (includes 65 MW of QF generation)

Santa Clara Sub-area – Category B

No requirement.

Critical Area Contingencies

Moorpark Sub-area – Category C

Contingency: Pardee-Moorpark #3 230 kV line followed by DCTL Pardee-Moorpark #1 and #2 230 kV lines

Limiting component: Voltage collapse

2014 LCR need: 519 MW (includes 93 MW of QF generation)

2018 LCR need: 618 MW (includes 93 MW of QF generation)

Moorpark Sub-area – Category B

No requirement.

Critical Area Contingencies

Big Creek/Ventura Overall – Category C

Contingency: Sylmar-Pardee #1 or #2 230 kV line followed Lugo-Victorville 500 kV or vice versa

Limiting component: Remaining Sylmar-Pardee 230 kV line

2014 LCR need: 2,250 MW (includes 1,179 MW of QF, Muni and Wind)

2018 LCR need: 2,688 MW (includes 1,179 MW of QF, Muni and Wind)

Big Creek/Ventura Overall – Category B

Contingency: Sylmar-Pardee #1 or #2 230 kV line with Omond #2 out of service

Limiting component: Remaining Sylmar-Pardee 230 kV line

2014 LCR need: 2,156 MW (includes 1,179 MW of QF, Muni and Wind)

2018 LCR need: 2,397 MW (includes 1,179 MW of QF, Muni and Wind)

Changes

Since last year:

- 1) 2014 load forecast is down by 16 MW vs. 2013
- 2) Rector – Springville 230 kV line
- 3) Load reallocation between substations in the area
- 4) Segments of TRTP project
- 5) Overall LCR is up by 9 MW
- 6) 2018 load forecast is up by 182 MW vs. 2017
- 7) Overall long-term LCR is up by 117 MW

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