



2021 and 2025 Draft LCR Study Results Greater Fresno Area

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Stakeholder Call

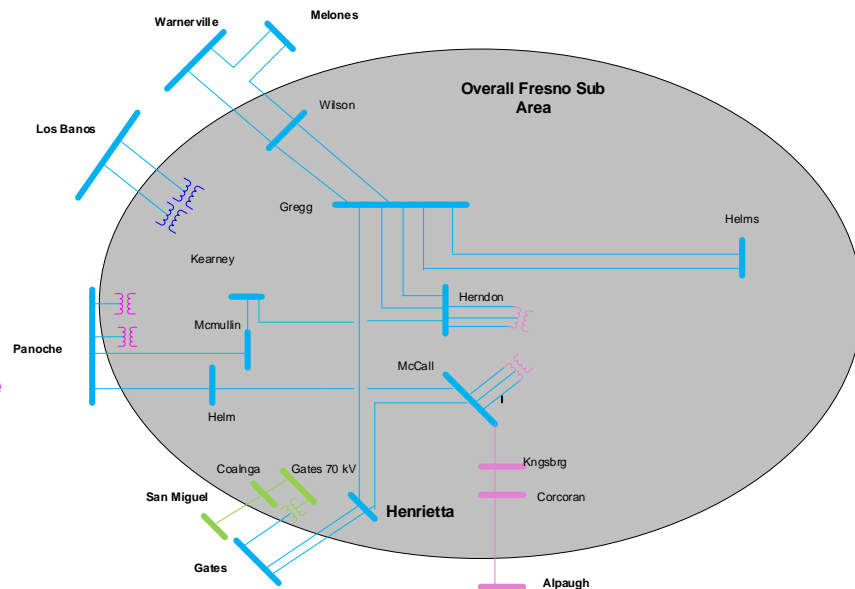
March 16, 2020

Greater Fresno Area

Electrical Boundaries and LCR Sub-Areas

Electrical Boundaries:

- Gates – Mustang #1 230 kV line
- Gates – Mustang #2 230 kV line
- Panoche – Tranquility #1 230 kV line
- Panoche – Tranquility #2 230 kV line
- Warnerville – Wilson 230 kV line
- Melones – Wilson 230 kV line
- Panoche 230/115 kV transformer #1
- Panoche 230/115 kV transformer #2
- Smyrna – Alpaugh – Corcoran 115 kV line
- Los Banos #3 230/70 kV transformer
- Los Banos #4 230/70 kV transformer
- San Miguel – Coalinga #1 70 kV line
- Gates 230/70 kV transformer #5



New major transmission projects

| Project Name | Expected ISD |
|--|---------------------|
| Oro Loma 70 kV Area Reinforcement | 20-May |
| Reedley 70 kV Reinforcement (Renamed to Reedley 70 kV Area Reinforcement Projects Include Battery at Dinuba) | 21-Dec |
| Wilson 115 kV Area Reinforcement | 23-May |
| Wilson-Le Grand 115 kV line reconductoring | 20-Apr |
| Panoche – Oro Loma 115 kV Line Reconductoring | 21-Apr |
| Northern Fresno 115 kV Area Reinforcement | 21-Mar |
| Bellota-Warnerville 230kV line Reconductoring | 23-Dec |
| Herndon-Bullard 230kV Reconductoring Project | 21-Jan |
| Gregg-Herndon #2 230 kV Line Circuit Breaker Upgrade | 21-Jan |

Power plant changes

Resource Additions:

- 1 new Solar/BESS resource (309 MW)

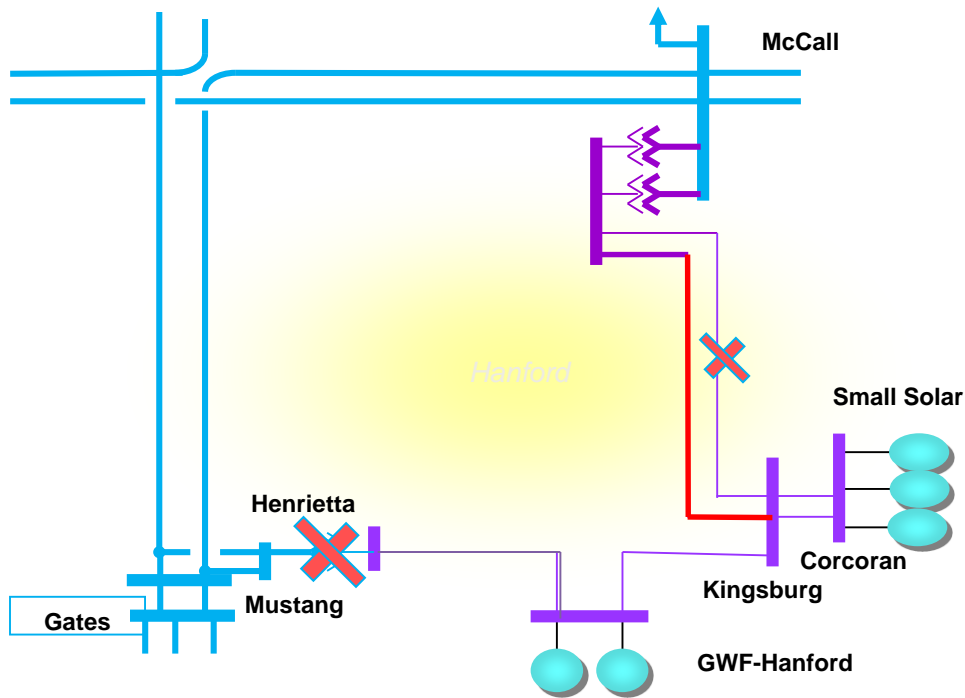
Resource Retirements:

- None

Hanford Sub-area: Load and Resources

| Load (MW) | 2021 | 2025 | Generation (MW) | 2021 | 2025 |
|------------------------------|------------|------------|----------------------------------|------------|------------|
| Gross Load | 207 | 209 | Market | 125 | 125 |
| AAEE | -1 | -1 | Solar | 25 | 25 |
| Behind the meter DG | -3 | -3 | MUNI | 0 | 0 |
| Net Load | 203 | 205 | QF | 0 | 0 |
| Transmission Losses | 6 | 5 | | | |
| Pumps | 0 | 0 | Total Qualifying Capacity | 150 | 150 |
| Load + Losses + Pumps | 209 | 210 | | | |

Hanford Sub-Area Requirements

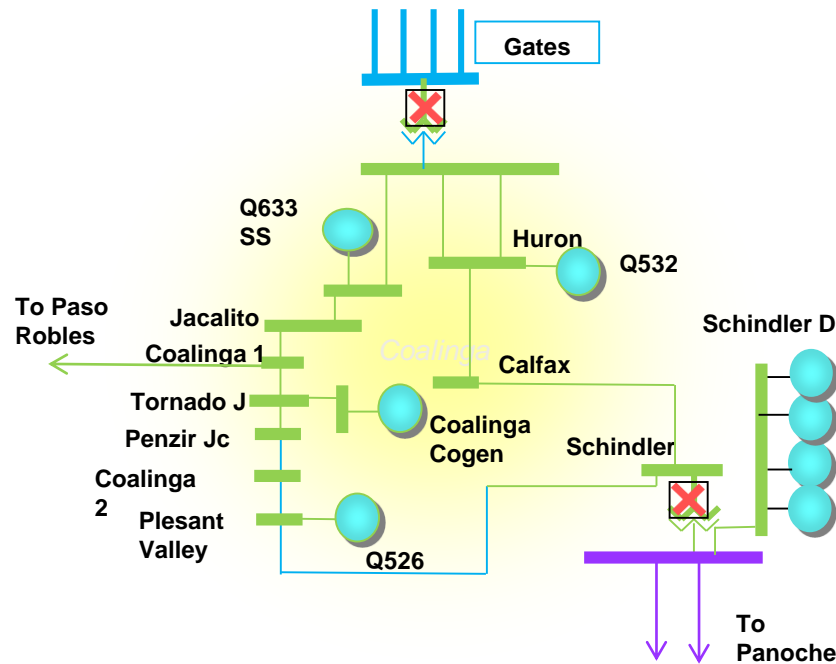


| Limit | Category | Limiting Facility | Contingency | 2021 LCR (MW) | 2025 LCR (MW) |
|-------------|----------|--------------------------------|---|---------------|---------------|
| First Limit | P6 | McCall-Kingsburg #2 115kV Line | McCall-Kingsburg #1 115kV line and Henrietta 230/115kV TB#3 | 58 | 58 |

Coalinga Sub-area: Load and Resources

| Load (MW) | 2021 | 2025 | Generation (MW) | 2021 | 2025 |
|------------------------------|-----------|-----------|----------------------------------|-----------|-----------|
| Gross Load | 92 | 89 | Market | 0 | 0 |
| AAEE | -1 | -1 | Solar | 13 | 13 |
| Behind the meter DG | 0 | 0 | MUNI | 0 | 0 |
| Net Load | 91 | 88 | QF | 3 | 3 |
| Transmission Losses | 2 | 1 | Mothballed | 0 | 0 |
| Pumps | 0 | 0 | Total Qualifying Capacity | 16 | 16 |
| Load + Losses + Pumps | 93 | 89 | | | |

Coalinga Sub-Area Requirements

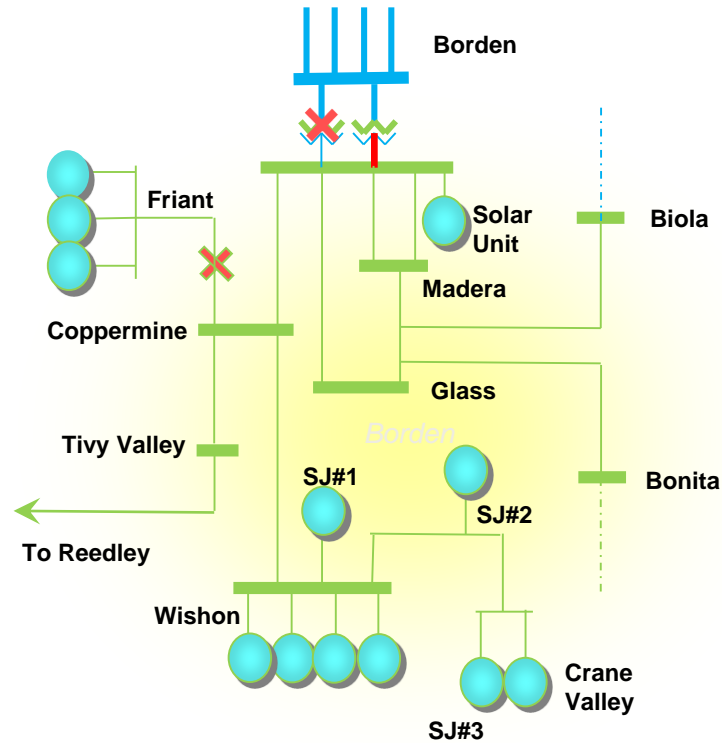


| Limit | Category | Limiting Facility | Contingency | 2021 LCR (MW) | 2024 LCR (MW) |
|-------------|----------|---|--|--------------------------------|--------------------------------|
| First Limit | P6 | Overload on San-Miguel-Coalinga 70kV Line and Voltage Instability | T-1/T-1: Gates 230/70kV TB #5 and Schindler 115/70 kV TB#1 | 57 (52 at Peak) (41 NQC) | 52 (47 at Peak) (36 NQC) |

Borden Sub-area: Load and Resources

| Load (MW) | 2021 | 2025 | Generation (MW) | 2021 | 2025 |
|------------------------------|------------|------------|----------------------------------|-----------|-----------|
| Gross Load | 132 | 136 | Market, Net Seller | 33 | 33 |
| AAEE | -1 | -1 | Solar | 13 | 13 |
| Behind the meter DG | 0 | 0 | MUNI | 0 | 0 |
| Net Load | 131 | 135 | QF | 0 | 0 |
| Transmission Losses | 2 | 2 | Mothballed | 0 | 0 |
| Pumps | 0 | 0 | Total Qualifying Capacity | 46 | 46 |
| Load + Losses + Pumps | 133 | 137 | | | |

Borden Sub-Area Requirements

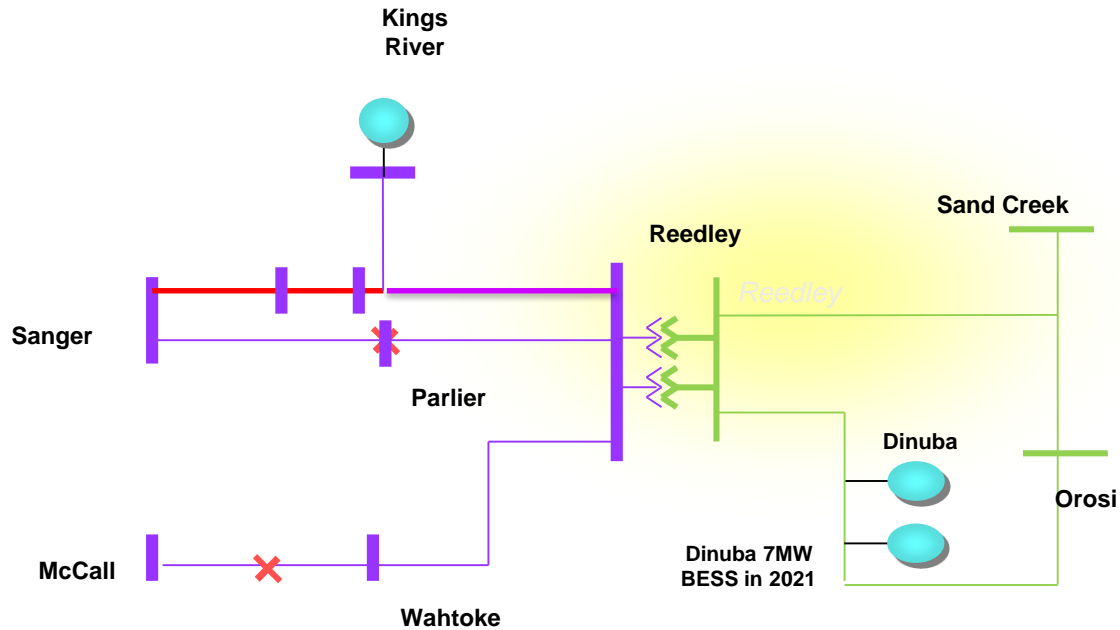


| Limit | Category | Limiting Facility | Contingency | 2021 LCR (MW) | 2025 LCR (MW) |
|-------------|----------|-------------------------|--|---------------|---------------|
| First Limit | P6 | Borden 230/70 kV TB # 1 | Friant - Coppermine 70 kV Line and Borden 230/70 kV TB # 4 | 0 | 4 |

Reedley Sub-area: Load and Resources

| Load (MW) | 2021 | 2025 | Generation (MW) | 2021 | 2025 |
|------------------------------|------------|------------|----------------------------------|-----------|-----------|
| Gross Load | 207 | 212 | Market | 51 | 51 |
| AAEE | -1 | -2 | Solar | 0 | 0 |
| Behind the meter DG | 0 | 0 | MUNI | 0 | 0 |
| Net Load | 206 | 211 | QF | 0 | 0 |
| Transmission Losses | 58 | 59 | | | |
| Pumps | 0 | 0 | Total Qualifying Capacity | 51 | 51 |
| Load + Losses + Pumps | 264 | 270 | | | |

Reedley Sub-Area Requirements

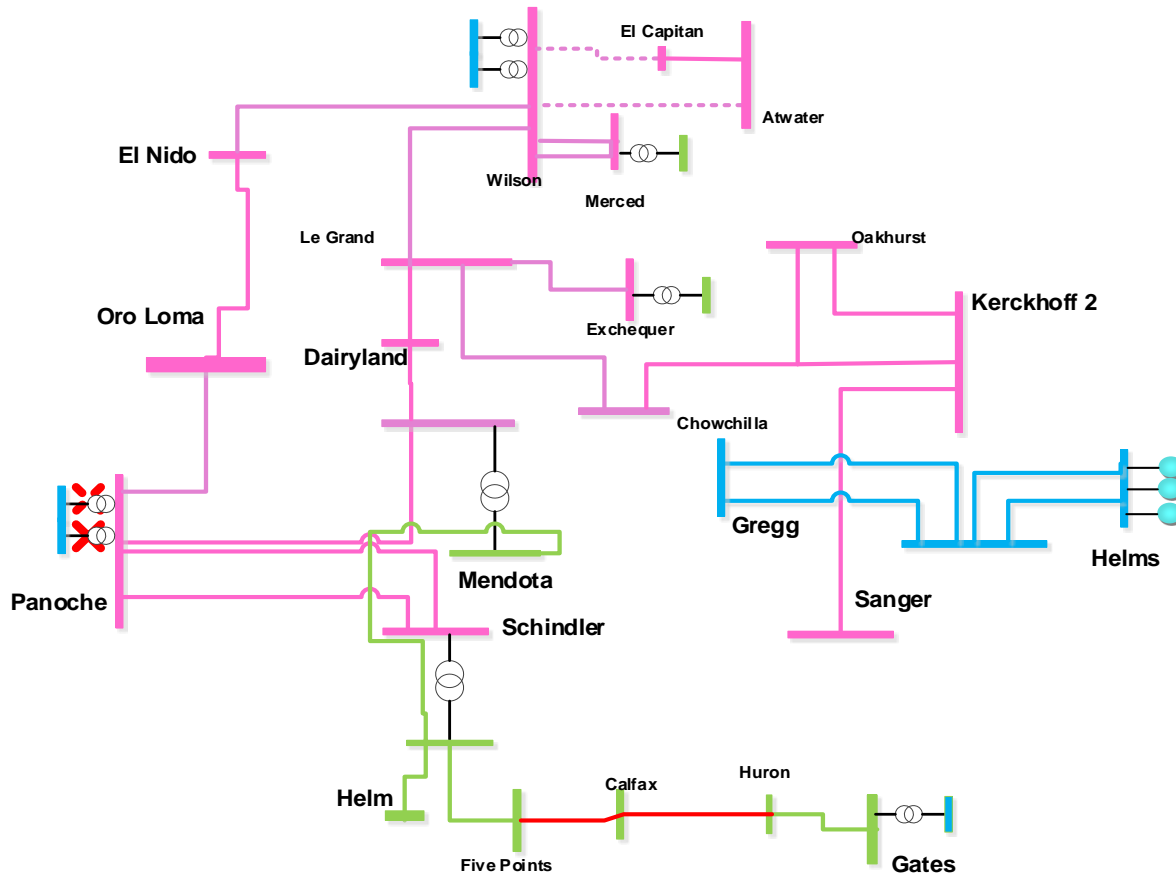


| Limit | Category | Limiting Facility | Contingency | 2021 LCR (MW) | 2025 LCR (MW) |
|-------------|----------|--|---|---------------|---------------|
| First Limit | P6 | Kings River-Sanger-Reedley 115kV line with Wahtoke load online | McCall-Reedley 115kV Line & Sanger-Reedley 115kV line | 82 (31) | 84 (33) |

NEW Panoche 115-70kV Sub-area: Load and Resources

| Load (MW) | 2021 | 2025 | Generation (MW) | 2021 | 2025 |
|------------------------------|------------|------------|----------------------------------|------------|------------|
| Gross Load | 415 | 427 | Market/Net Seller | 282 | 282 |
| AAEE | -2 | -4 | Solar | 89 | 89 |
| Behind the meter DG | -1 | -1 | MUNI | 100 | 100 |
| Net Load | 412 | 422 | QF | 3 | 3 |
| Transmission Losses | 12 | 8 | | | |
| Pumps | 0 | 0 | Total Qualifying Capacity | 474 | 474 |
| Load + Losses + Pumps | 424 | 430 | | | |

Panoche 115-70kV Sub-Area Requirements



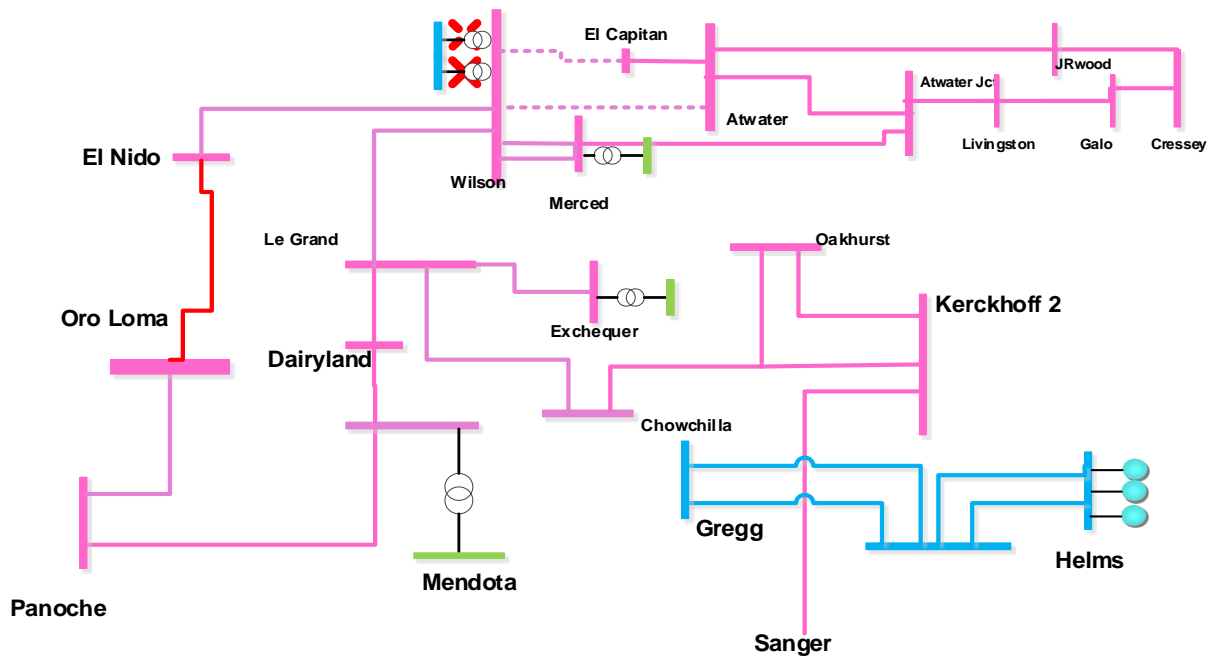
| Limit | Category | Limiting Facility | Contingency | 2021 LCR (MW) | 2025 LCR (MW) |
|-------------|----------|-----------------------------------|---|---------------|---------------|
| First Limit | P6 | Five Points-Huron-Gates 70kV line | Panoche 230/115kV TB #2 and Panoche 230/115kV TB #4 | 198 | 164 |



NEW Wilson 115 kV Sub-area: Load and Resources

| Load (MW) | 2021 | 2025 | Generation (MW) | 2021 | 2025 |
|------------------------------|-------------|-------------|----------------------------------|------------|------------|
| Gross Load | 1421 | 1623 | Market/Net Seller | 705 | 705 |
| AAEE | -6 | -58 | Solar | 54 | 54 |
| Behind the meter DG | -1 | -3 | MUNI | 100 | 100 |
| Net Load | 1414 | 1563 | QF | 1 | 1 |
| Transmission Losses | 24 | 31 | | | |
| Pumps | 0 | 0 | Total Qualifying Capacity | 860 | 860 |
| Load + Losses + Pumps | 1438 | 1594 | | | |

Wilson 115 KV Sub-Area Requirements

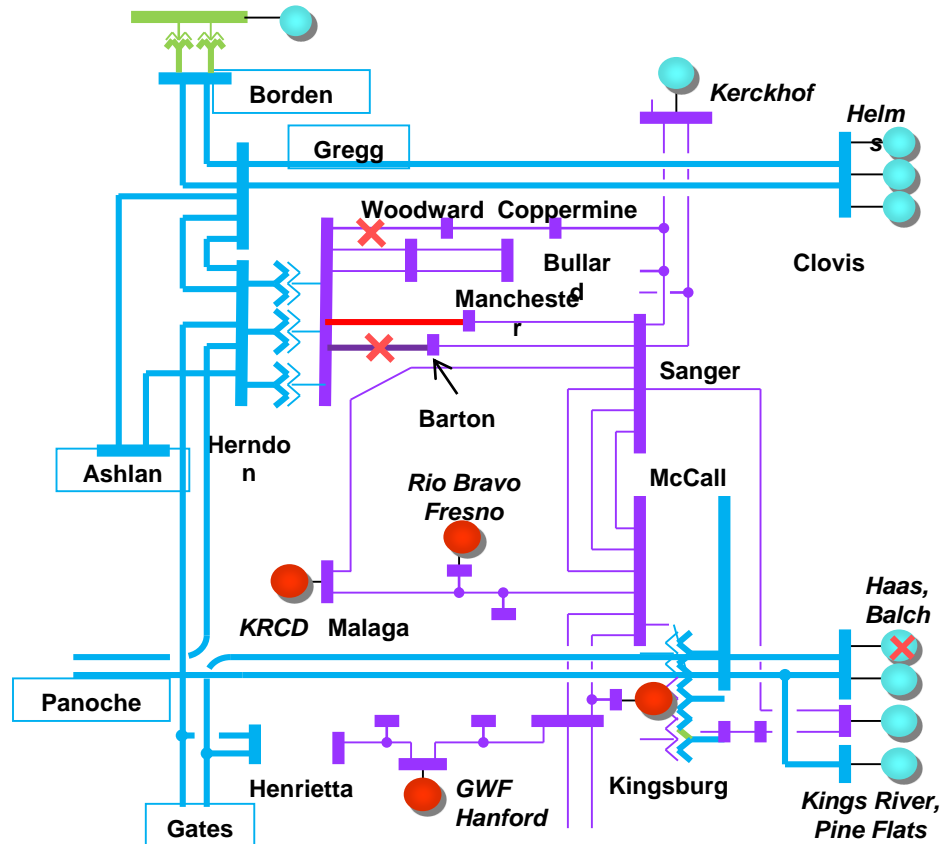


| Limit | Category | Limiting Facility | Contingency | 2021 LCR (MW) | 2025 LCR (MW) |
|-------------|----------|--|--|---------------|---|
| First Limit | P6 | Wilson-Oro Loma 115 kV Line (El Nido-Oro Loma 115 kV) | Wilson 230/115kV TB #1 and Wilson 230/115kV TB #2 | 697 | None due to the 3 rd Wilson 230/115kV TB |

Herndon Sub-area: Load and Resources

| Load (MW) | 2021 | 2025 | Generation (MW) | 2021 | 2025 |
|------------------------------|-------------|-------------|----------------------------------|-------------|-------------|
| Gross Load | 1471 | 1523 | Market | 997 | 997 |
| AAEE | -6 | -13 | Solar | 63 | 63 |
| Behind the meter DG | -3 | -3 | MUNI | 98 | 98 |
| Net Load | 1462 | 1507 | QF | 1 | 1 |
| Transmission Losses | 24 | 25 | | | |
| Pumps | 0 | 0 | Total Qualifying Capacity | 1159 | 1159 |
| Load + Losses + Pumps | 1486 | 1532 | | | |

Herndon Sub-Area Requirements

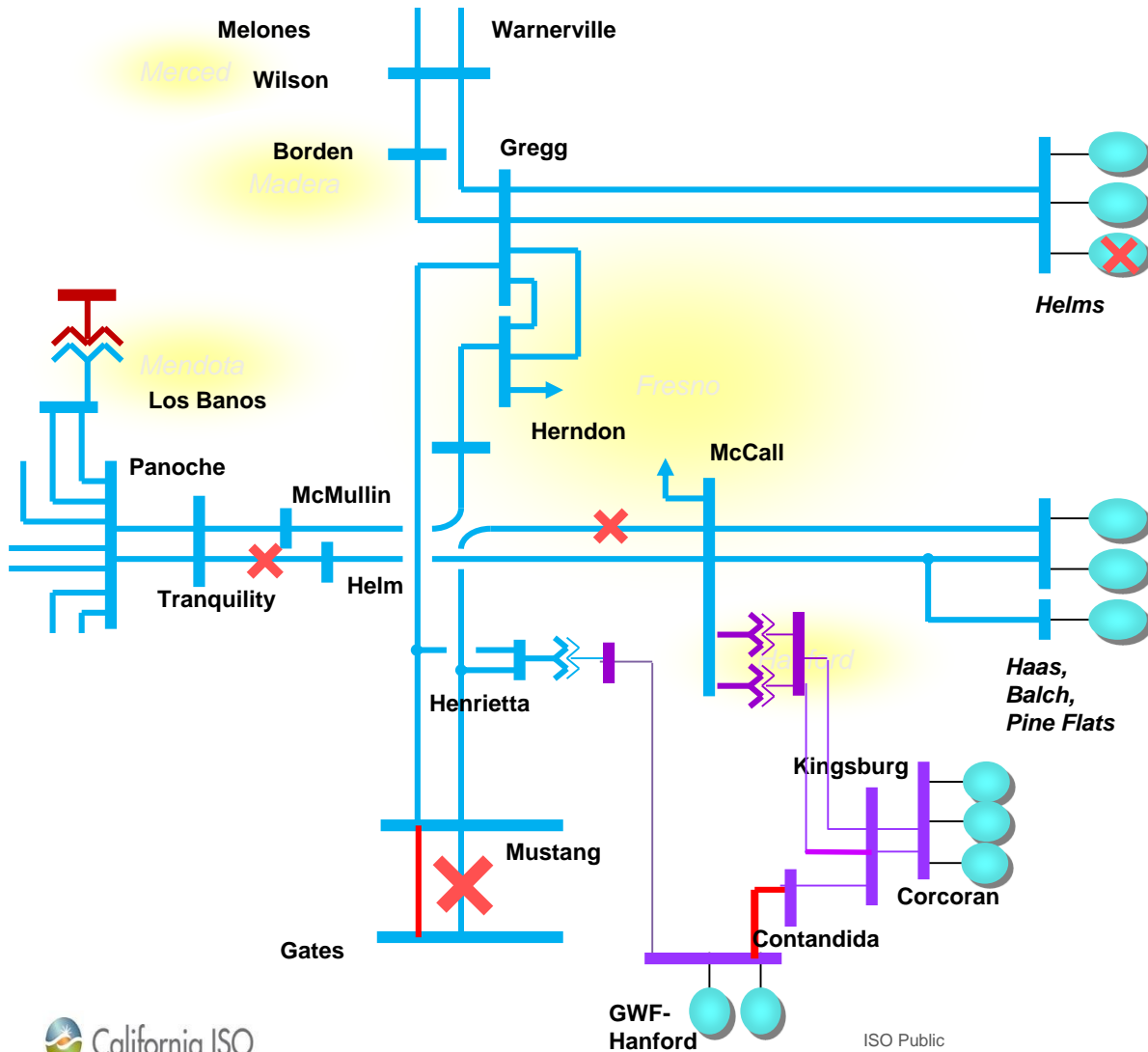


| Limit | Category | Limiting Facility | Contingency | 2021 LCR (MW) | 2025 LCR (MW) |
|-------------|----------|--------------------------------|---|---------------|---------------|
| First limit | P6 | Herndon-Manchester 115 kV line | Herndon-Woodward 115 kV line and Herndon-Barton 115 kV line | 334 | 441 |

Overall Load and Resources

| Load (MW) | 2021 | 2025 | Generation (MW) | 2021 | 2025 |
|------------------------------|-------------|-------------|----------------------------------|-------------|-------------|
| Gross Load | 3099 | 3217 | Market/Net Seller | 2515 | 2515 |
| AAEE | -12 | -26 | Solar | 320 | 320 |
| Behind the meter DG | -5 | -5 | MUNI | 212 | 212 |
| Net Load | 3082 | 3186 | QF | 4 | 4 |
| Transmission Losses | 106 | 93 | Battery | 300 | 300 |
| Pumps | 0 | 0 | | | |
| Load + Losses + Pumps | 3189 | 3279 | Total Qualifying Capacity | 3351 | 3351 |

Overall Sub-Area Requirements



Overall Fresno Area : Requirements

| Limit | Category | Limiting Facility | Contingency | 2021 LCR (MW) | 2025 LCR (MW) |
|-------------|----------|---------------------------|---|---------------|---------------|
| First limit | P6 | GWF-Contandida 115kV Line | Panoche-Helm 230kV Line and Gates-McCall 230kV line | 1694 | 1971 |

| Study Year | Existing Generation Capacity Needed (MW) | Deficiency (MW) | Total MW Need |
|------------|--|-----------------|---------------|
| 2021 | 1,694 | 72 | 1,766 |
| 2025 | 1,971 | 69 | 2,040 |

Changes Compared to Previous LCR Requirements

| Sub-area | 2020 | | 2021 | | 2024 | | 2025 | |
|---------------------|------|------|------|---------|------|------|------|---------------------------|
| | Load | LCR | Load | LCR | Load | LCR | Load | LCR |
| Hanford | 226 | 82 | 209 | 58 | 231 | 93 | 210 | 58 |
| Coalinga | 91 | 35 | 93 | 57 (41) | 89 | 33 | 89 | 52 (36) |
| Borden | 143 | 19 | 133 | 0 | 148 | 19 | 137 | 4 |
| Reedley | 244 | 35 | 264 | 83 (31) | 265 | 31 | 270 | 84 (33) |
| New Panoche 115kV | N/A | N/A | 424 | 198 | N/A | N/A | 430 | 164 |
| New Wilson 115/70kV | N/A | N/A | 1438 | 697 | N/A | N/A | 1563 | Eliminated due to Project |
| Herndon | 1569 | 436 | 1486 | 334 | 1594 | 465 | 1532 | 441 |
| Overall | 3287 | 1694 | 3189 | 1694 | 3337 | 1711 | 3279 | 1971 |

LCR increase mostly due to changes to the LCR criteria.