



2019 & 23 Draft LCR Study Results Fresno Area

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Stakeholder Meeting

April 9, 2018

Fresno LCR Area



ISO Public

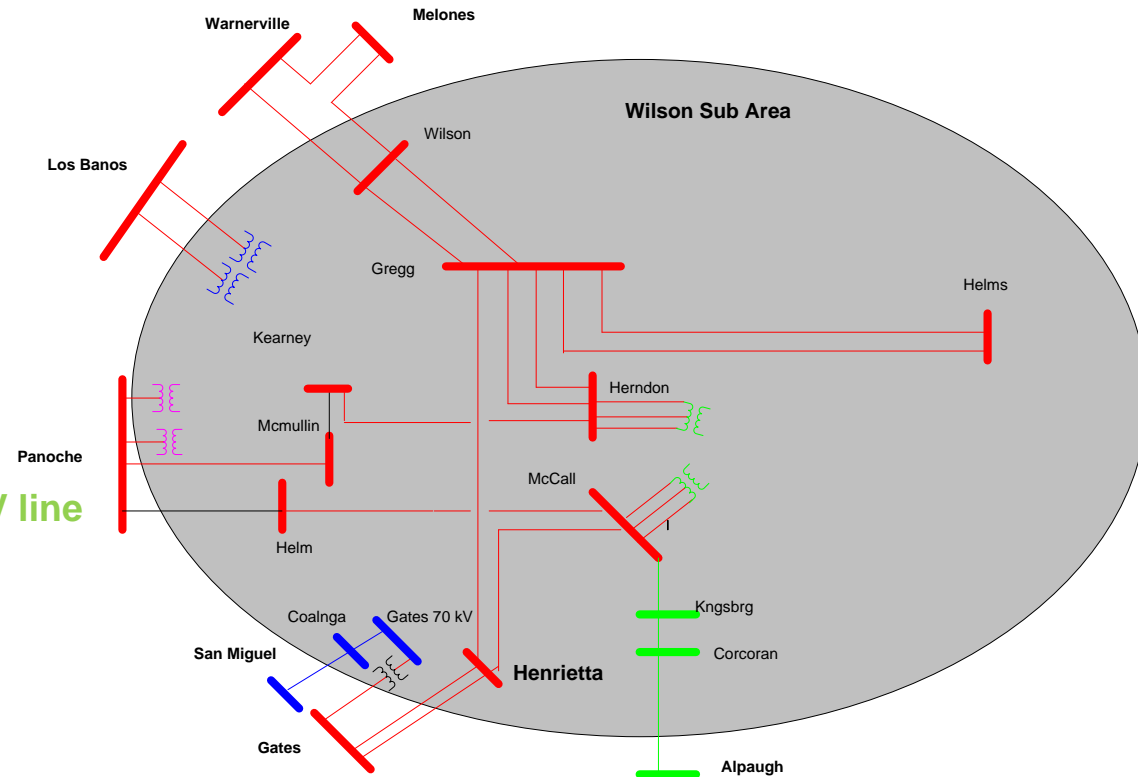
Greater Fresno Area

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 #1

LCR Sub-Areas:



Fresno Area Load and Resources (MW)

		2019	2023
Gross Load	=	3165	3276
AAEE	=	-33	-114
DG	=	-158	-35
Net Load	=	2974	3127
Transmission Losses	=	95	104
Net Load + Losses	=	3070	3231
Market Generation	=	3215	3215
Muni Generation	=	311	311
QF Generation	=	28	28
Total Qualifying Capacity	=	4357	4492

New transmission projects modeled:

1. Leemore 701kV Disconnect Switches Replacement (Jun 2018)
2. Los Banos-Livingston Jct-Canal 70kV Switch Replacement (Jun 2018)
3. Gates 500/230 TB#12 addition (Dec 2019)
4. Kearney-Caruthers 70kV reconductoring (2019)
5. Borden 230kV Voltage Support (2019)
6. Kearney-Herndon 230 kV Line Reconductor (2019)
7. Wilson 115kV SVC(2020)
8. Northern Fresno 115kV Reinforcement (Revised scope- 2020)
9. Wilson-Legrand 115 kV Reconductoring (2020)
10. Panoche-Oro Loma 115 kV Reconductoring (2020)
11. Oro Loma 70kV Reinforcement (2020)
12. Reedley 70 kV Reinforcement Projects (2021)
13. Herndon-Bullard Reconductoring Projects (2021)

Fresno Area LCR

Hanford Sub-Area

Limiting Contingencies:

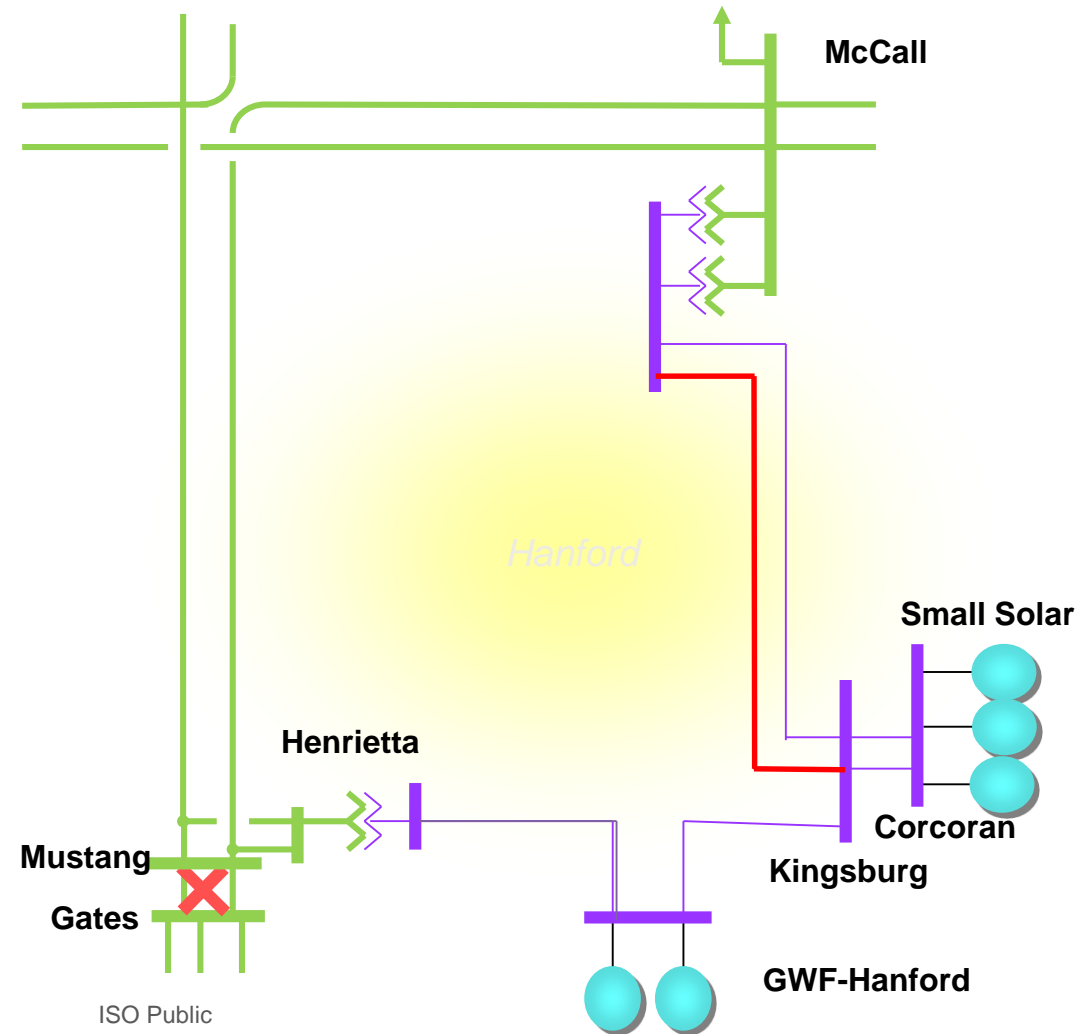
Category P7:

- L-2 Gates-Mustang #1 and Gates-Mustang #2 230kV Lines
- Constraint McCall-Kingsburg #1 115kV line

Category P1: No LCR need

LCR Results (MW):

Contingency	Cat. P7. P15 S-N
2019 LCR	56
2023 LCR	107



Fresno Area LCR

Coalinga Sub-Area

Limiting Contingencies:

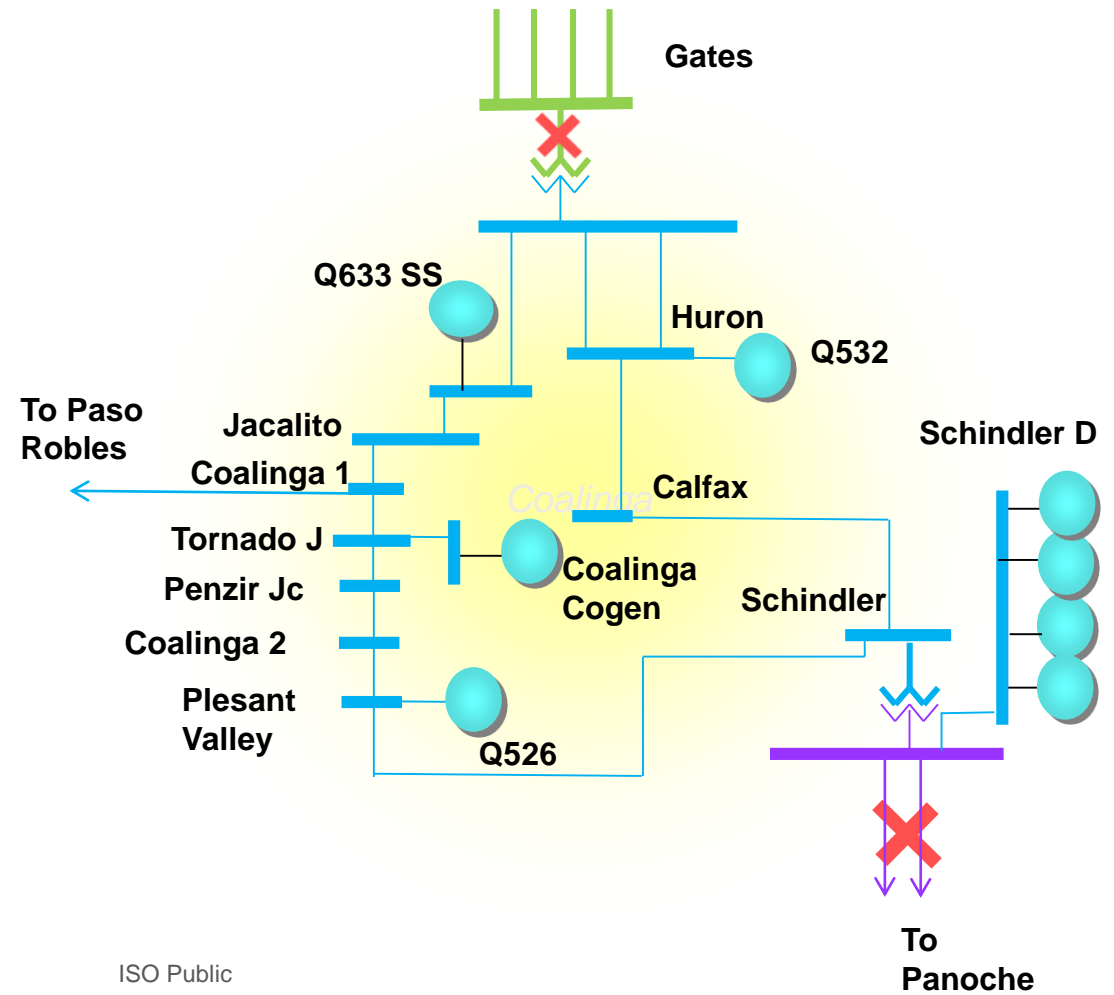
Category P1-P7:

- T-1/L-2: Gates 230/70kV TB #5 and Panoche-Schindler #1 & #2 115kV common tower lines
- Constraint: Voltage instability

Category P1: No LCR need

LCR Results (MW):

Contingency	Cat. P1-P7 N-S
2019 LCR	19
2023 LCR	16



Fresno Area LCR

Borden Sub-Area

Limiting Contingencies:

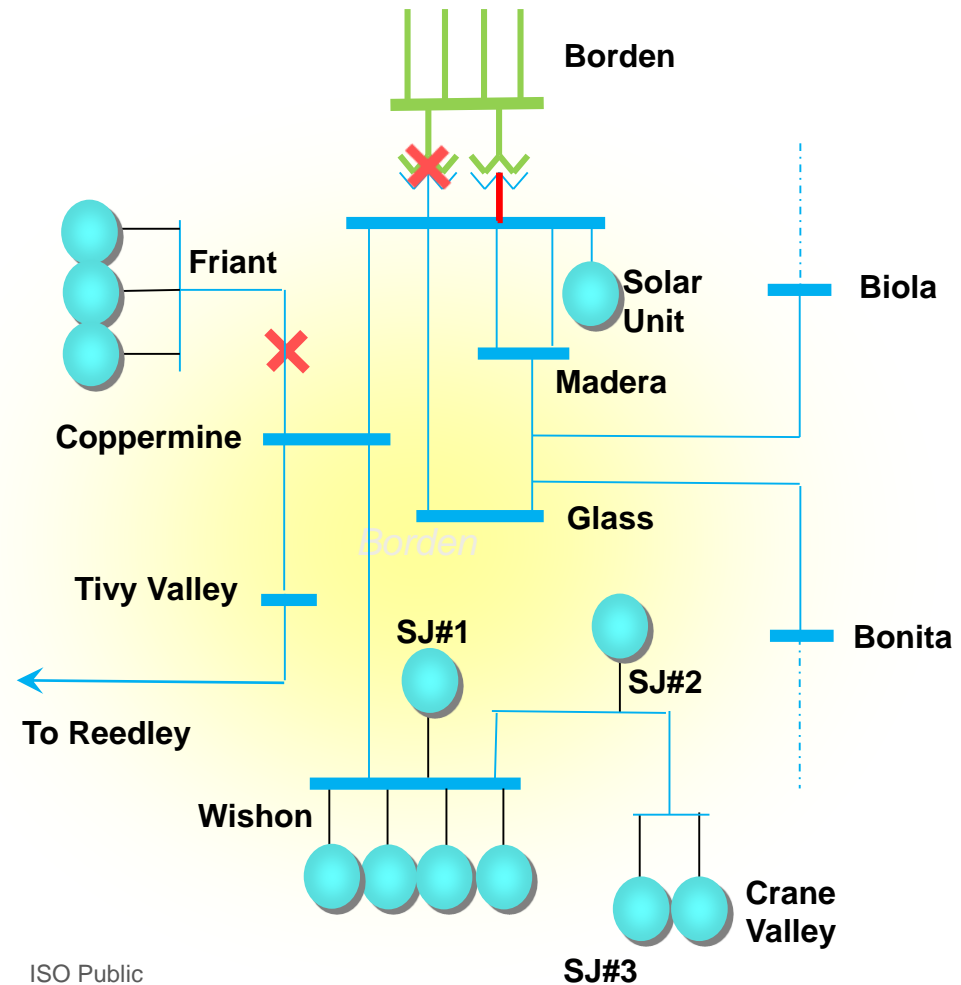
Category P1: No LCR need

Category P6:

- L-1/T-1: Friant - Coppermine 70 kV and Borden 230/70 kV # 2
- Constraint: Borden 230/70 kV # 1

LCR Results (MW):

Contingency	Cat. P6
2019 LCR	1
2023 LCR	8



Fresno Area LCR

Reedley Sub-Area

Limiting Contingencies:

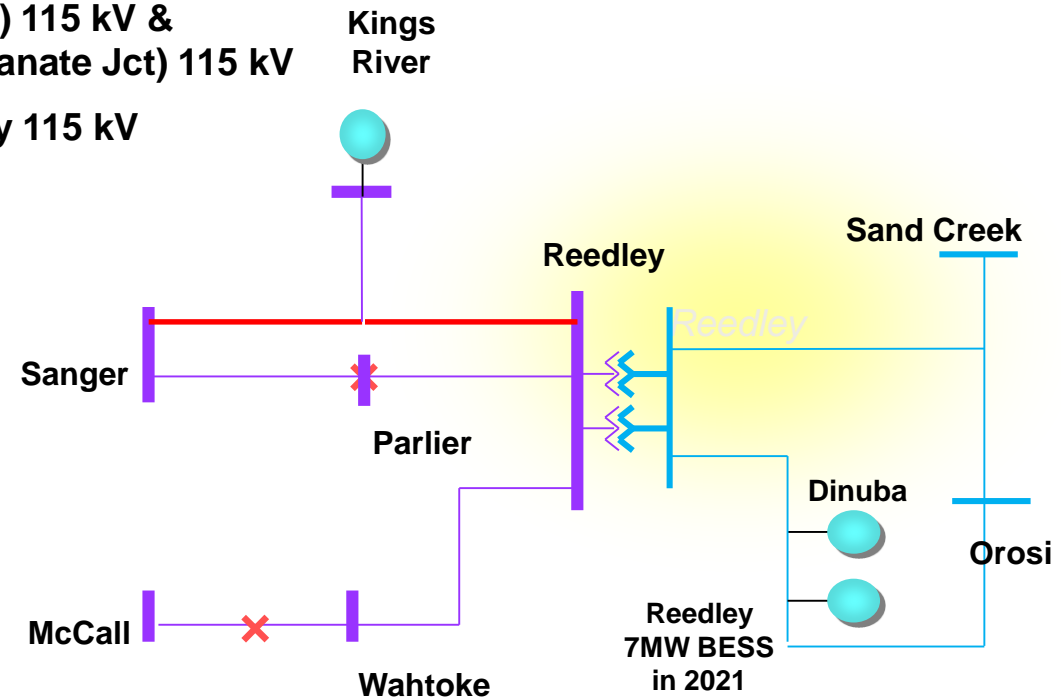
Category P6:

- L-1-1: McCall-Reedley (McCall-Wahtoke) 115 kV & Sanger-Reedley (Pomegranate-Pomegranate Jct) 115 kV
- Constraint: Kings River-Sanger-Reedley 115 kV

Category P1: No LCR need

LCR Results (MW):

Contingency	Cat. P6 S-N
2019 LCR	5
2019 Deficiency	1
2023 LCR	12
2023 Deficiency	1



Fresno Area LCR

2019 Herndon Sub-Area

Limiting Contingency:

Category P3:

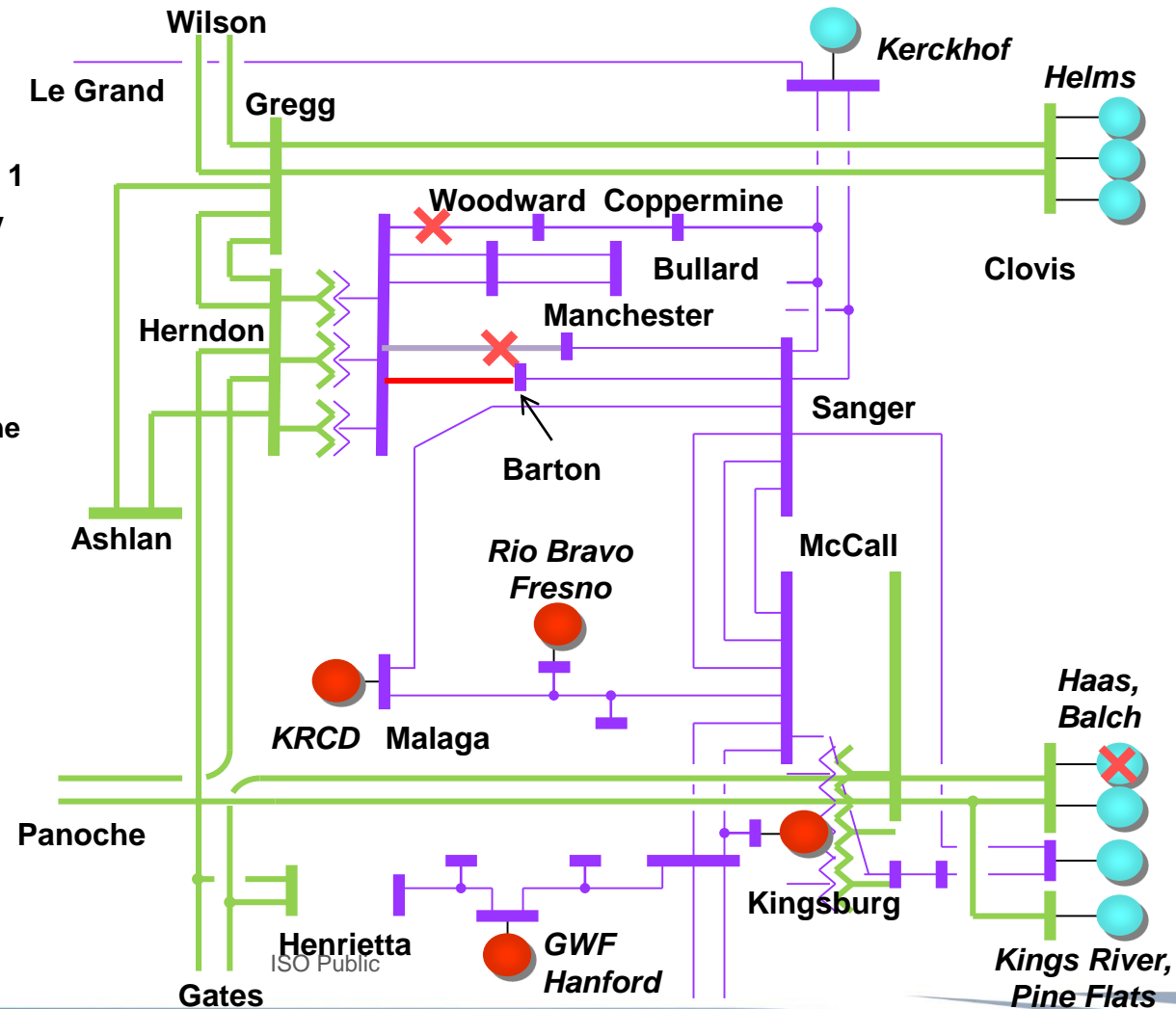
- G-1/L-1: Herndon-Barton 115kV & Balch 1
- Constraint: Herndon-Manchester 115 kV

Category P6:

- L-2: Herndon-Woodward 115kV line and Herndon-Barton 115kV
- Constraint: Herndon-Manchester 115kV line

LCR Results (MW):

Contingency	Cat. P3 N-S	Cat. P6 N-S
2019 LCR	267	792



Fresno Area LCR

2023 Herndon Sub-Area

Limiting Contingency:

Category P3:

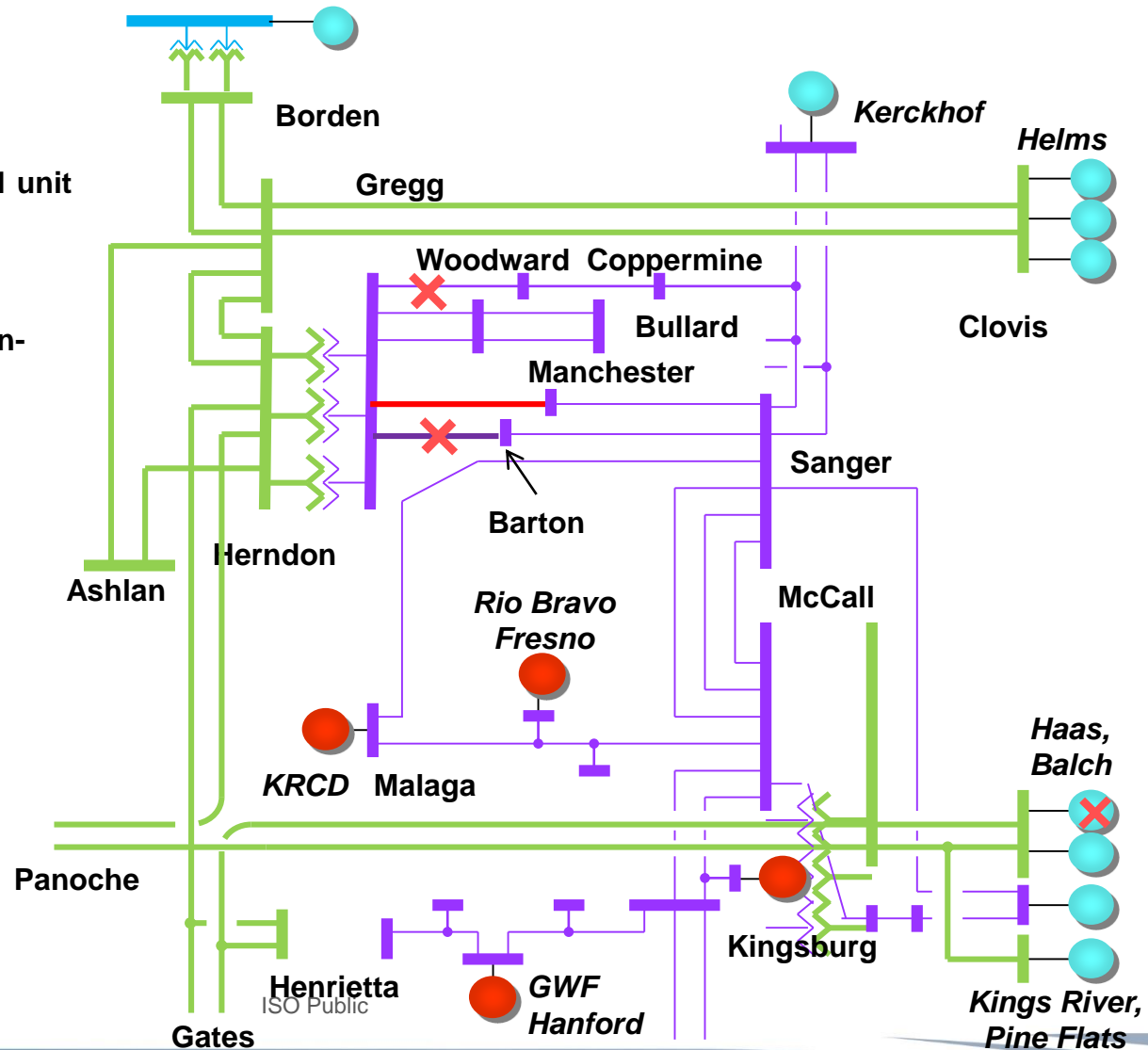
- G-1/L-1: Herndon-Barton 115 kV line and Balch 1 unit
- Constraint: Herndon-Manchester 115 kV line

Category P6:

- L-2: Herndon-Woodward 115kV line and Herndon-Barton 115kV
- Constraint: Herndon-Manchester 115kV line

LCR Results (MW):

Contingency	Cat. P3	Cat. P6
2023 LCR	293	821



Fresno Area LCR

2019 Overall (Wilson Sub-Area)

Limiting Contingencies:

Category P3:

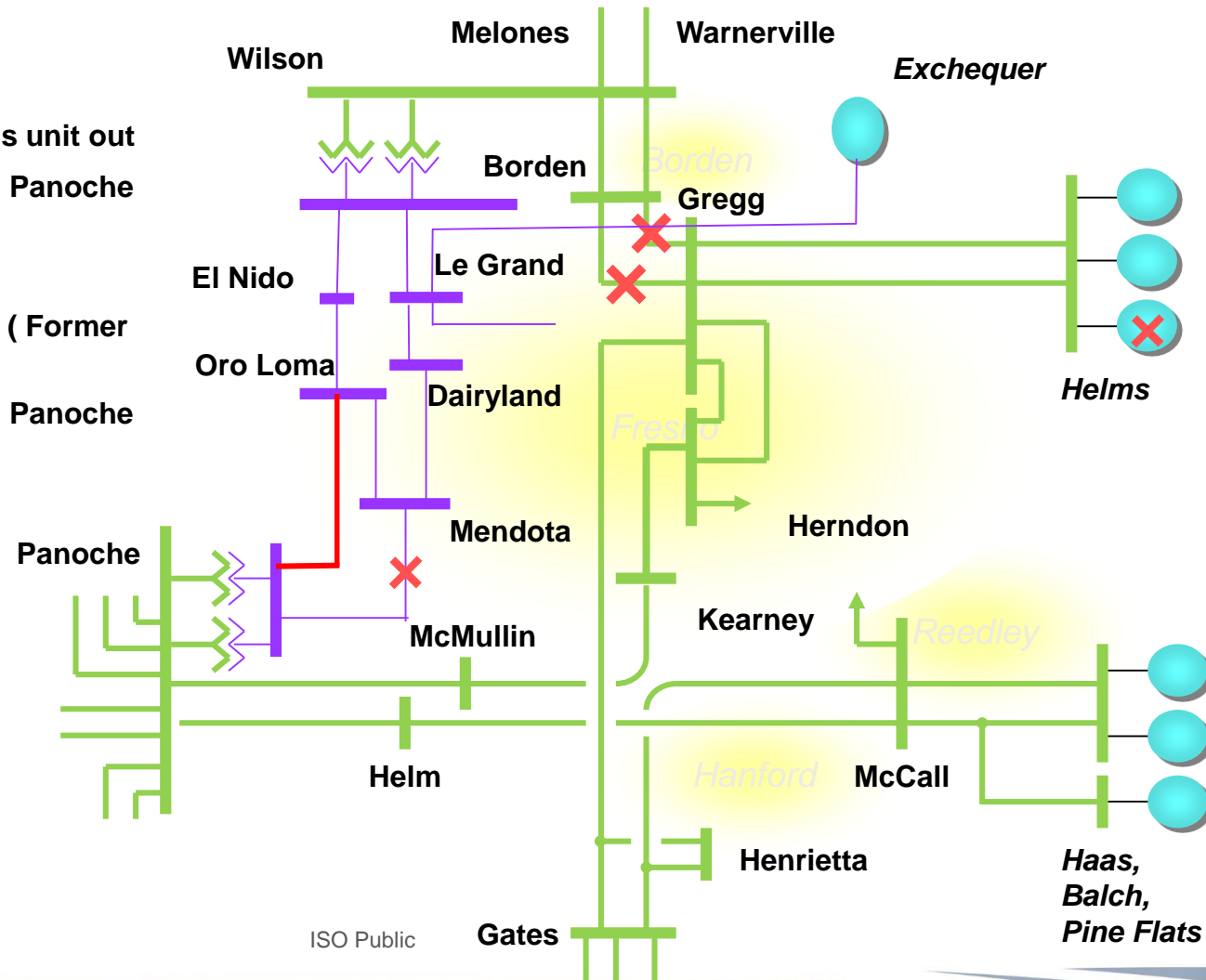
- L-1: Panoche-Mendota 115 kV line & one Helms unit out
- Constraint: Panoche-Oro Loma 115 kV- (From Panoche Jn To Hammonds)

Category P7:

- L-2: Borden-Gregg 230kV line #1 and #2 DCTL (Former Wilson-Gregg 230kV line and Borden-Gregg)
- Constraint: Panoche-Oro Loma 115 kV- (From Panoche Jn To Hammonds)

LCR Results (MW):

Contingency	Cat. P3 S-N	Cat. P7 S-N
LCR	1406	1670



Fresno Area LCR

2023 Overall

Limiting Contingencies:

Category P3:

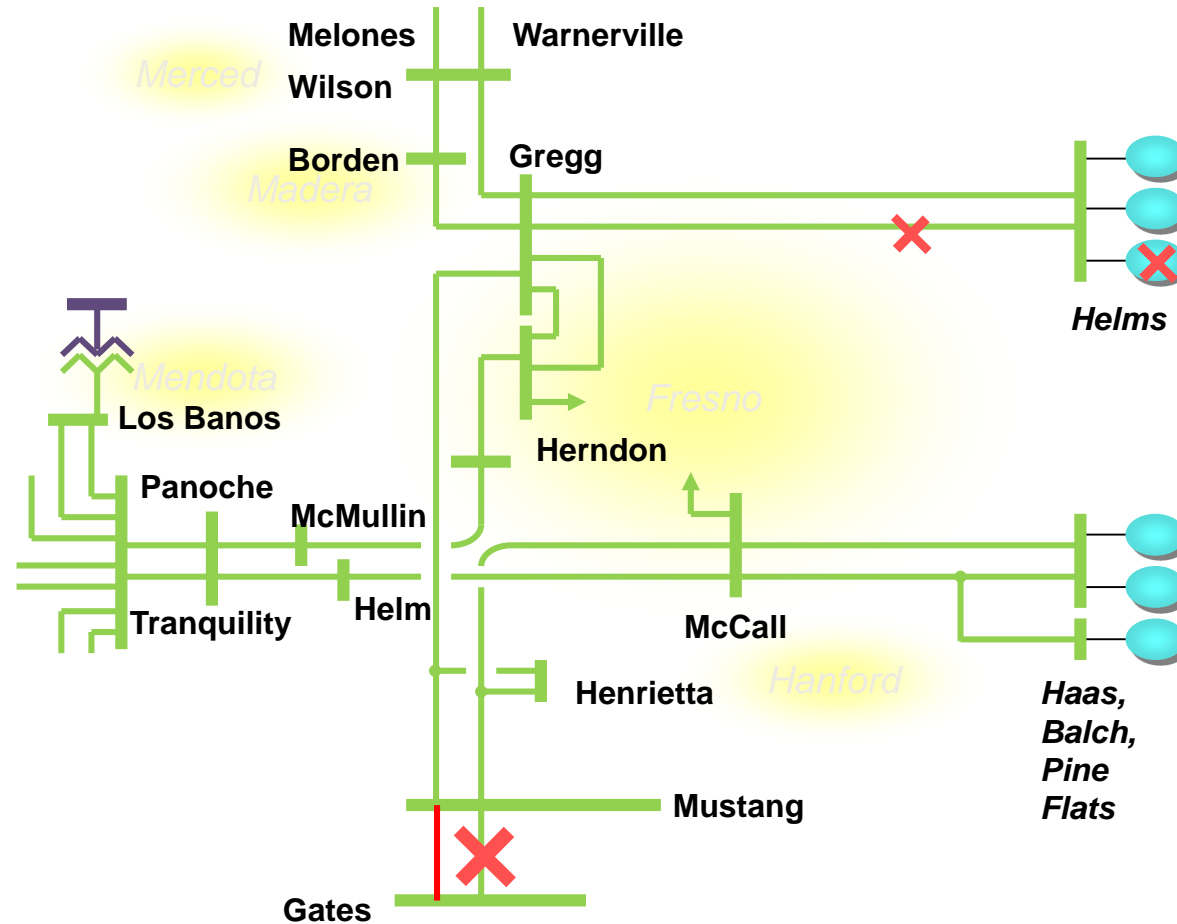
- G-1/L-1: Gates-Mustang 230kV #1 or #2 line and one Helms unit out
- Constraint: Remaining Gates-Mustang 230kV line

Category P6:

- L-2: Gates-Mustang 230kV #1 or #2 line and Helms-Gregg 230kV line
- Constraint: Remaining Gates-Mustang 230kV line

LCR Results (MW):

Contingency	Cat. P3 S-N	Cat. P6 S-N
LCR	1688	1688



Changes

Since last year:

- 1) Updated NQC
- 2) 2019 load decreased by 220 MW vs. 2018
- 3) LCR has decreased by 410 MW due to load decrease and new projects.
- 4) 2023 load decreased by 121 MW vs 2022
- 5) LCR has decreased by 171 MW due to load decrease and the new Gates 500/230kV transformer bank.

THANK YOU

Your comments and questions are welcome.

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