2014 and 2018 Final LCR Study Results - Fresno and Kern

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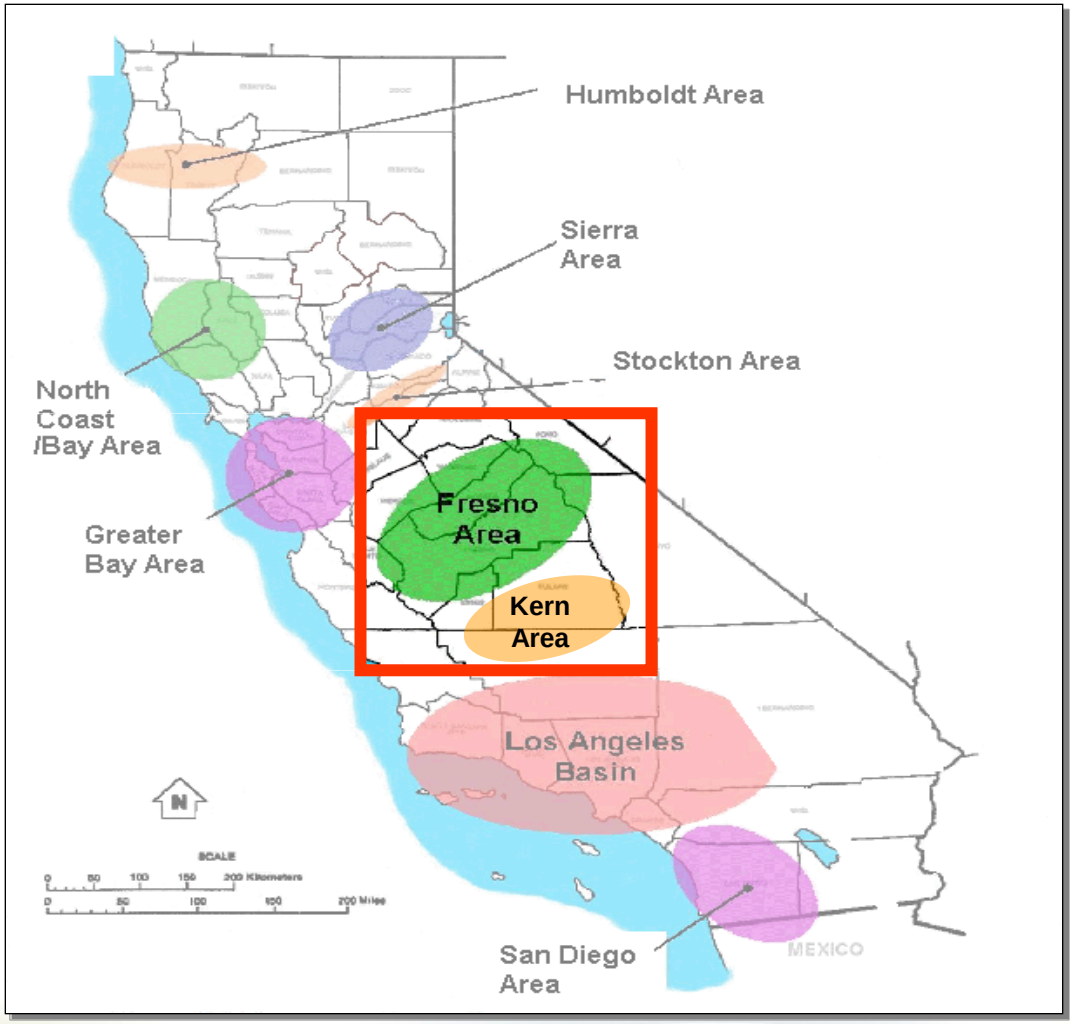
Stakeholder Conference Call

April 4, 2013

Fresno and Kern LCR Areas



Kern Area Overview
Area Generation, Load and Transmission

Kern LCR Area

Total Generation and Load for 2014:
- **Generation (NQC plus new unit): 677**
- **Load (1-in-10 Summer-Peak): 1281 MW**

Total Generation and Load for 2018:
- **Generation (NQC plus new unit): 677**
- **Load (1-in-10 Summer-Peak): 1324 MW**

Kern Area LCR

2014 West Park Sub-Area

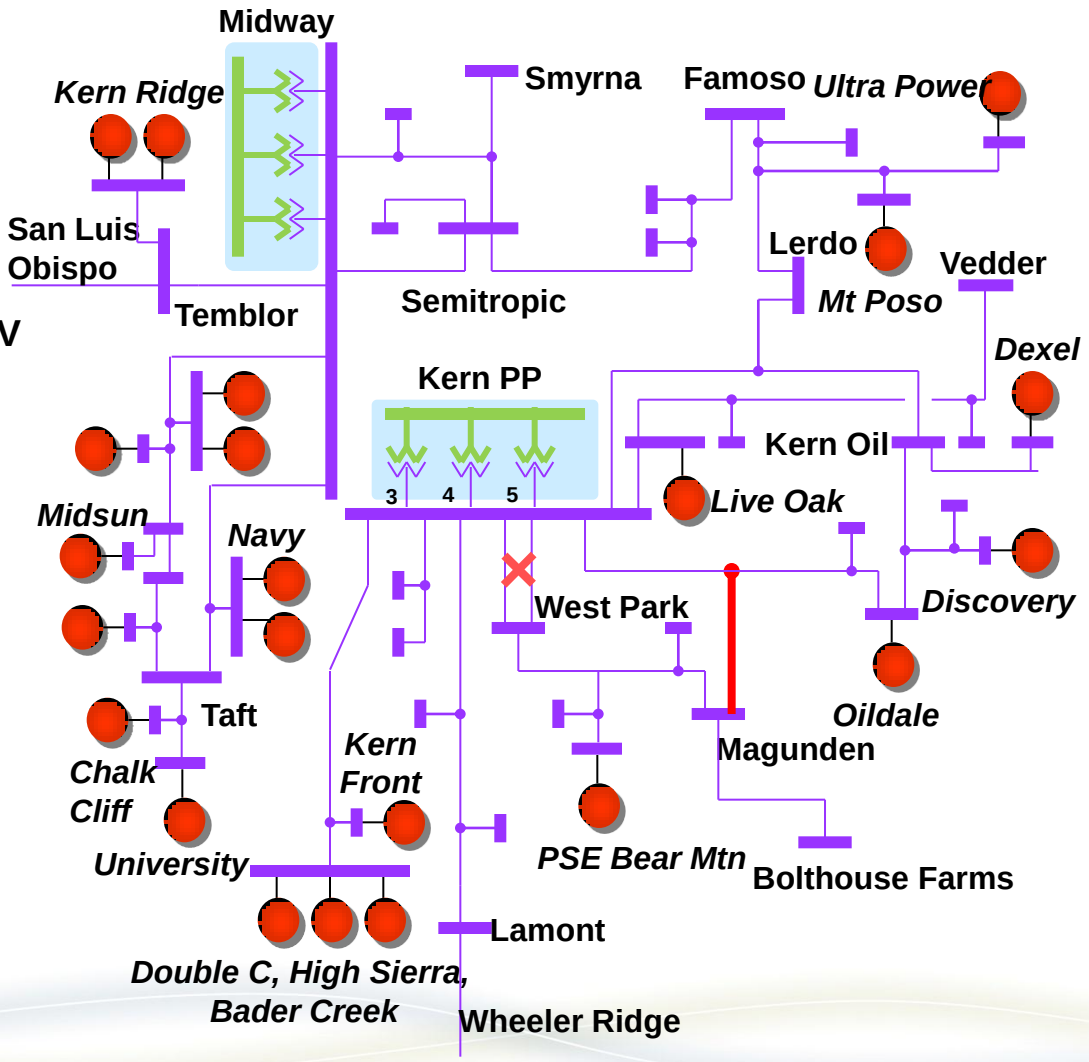
Limiting Contingencies:

Category B:

- **None**

Category C5:

- **L-2: Kern West Park # 1 & #2 115kV**
- **Constraint: Kern-Magunden-Witco 115kV**



LCR Results (MW):

Contingency	Cat. B	Cat. C
LCR	**0**	**76**
Including:		
QF	46	46
Muni	0	0
Deficiency	0	30

Kern Area LCR

2014 Kern PP Sub-Area

Limiting Contingencies:

Category B:

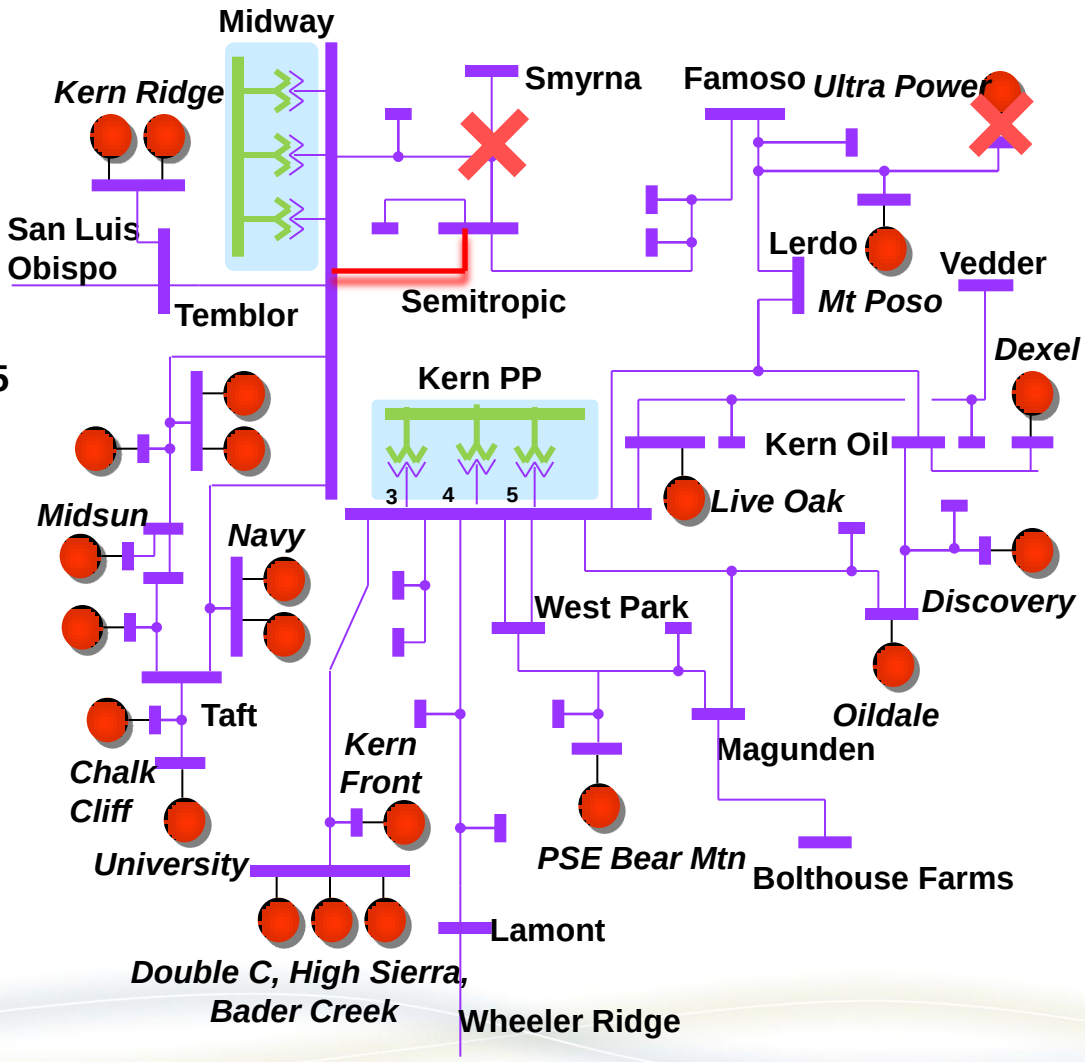
- **G-1/L-1: Ultra Power Poso generation & Smyrna-Semitropic-Midway 115 kV**
- **Constraint: Midway-Semitropic 115 kV**

Category C:

- **L-1/G-1: Smyrna-Semitropic-Midway 115 kV & Ultra Power Poso generation**
- **Constraint: Midway-Semitropic 115 kV**

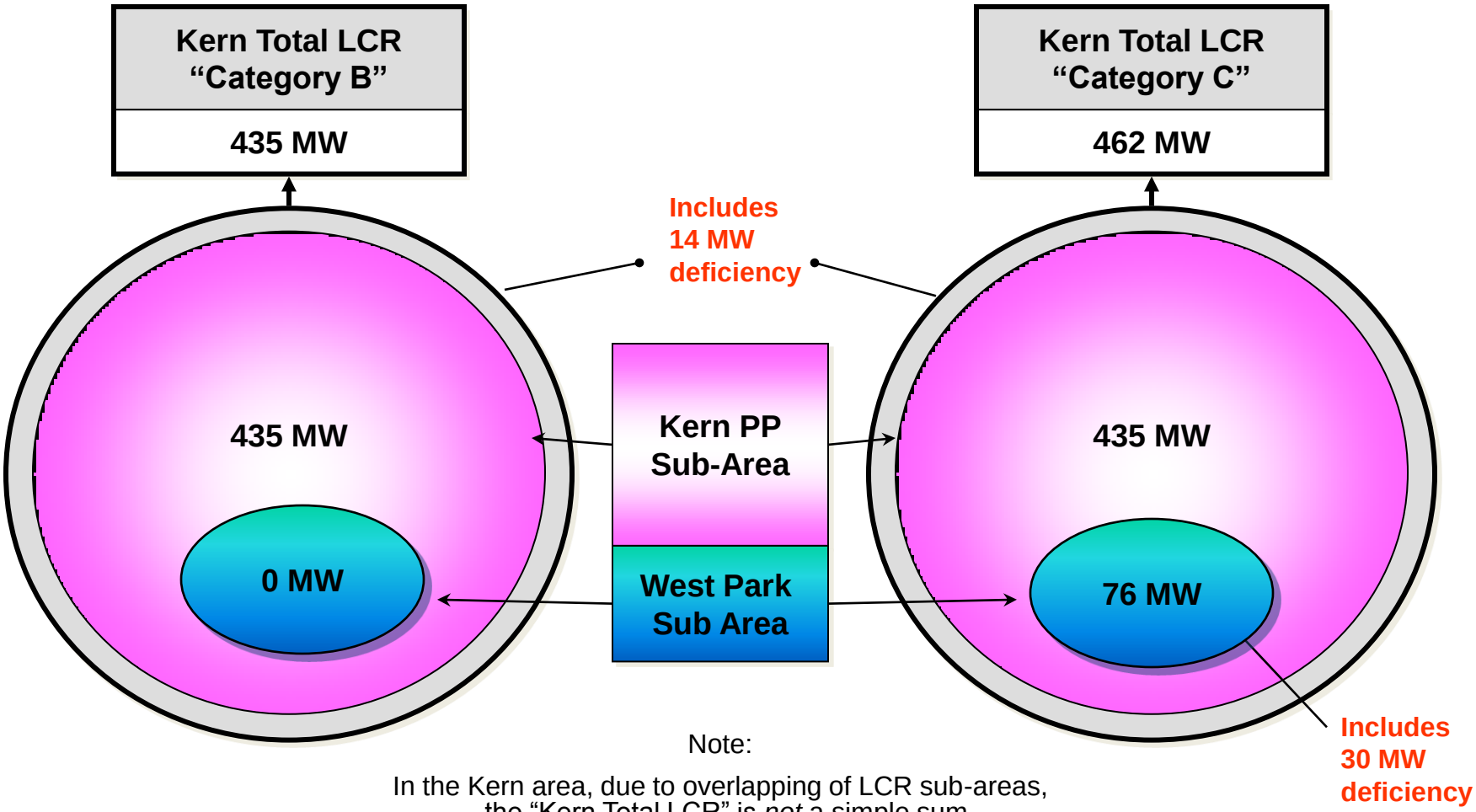
LCR Results (MW):

Contingency	Cat. B	Cat. C
LCR	**435**	**435**
Including:		
QF	421	421
Muni	0	0
Deficiency	14	14



Kern Area LCR

Summary of 2014 LCR



Note:

In the Kern area, due to overlapping of LCR sub-areas, the "Kern Total LCR" is *not* a simple sum, but rather an aggregated sum of LCR in individual sub-areas.

Kern Area LCR

2018 West Park Sub-Area

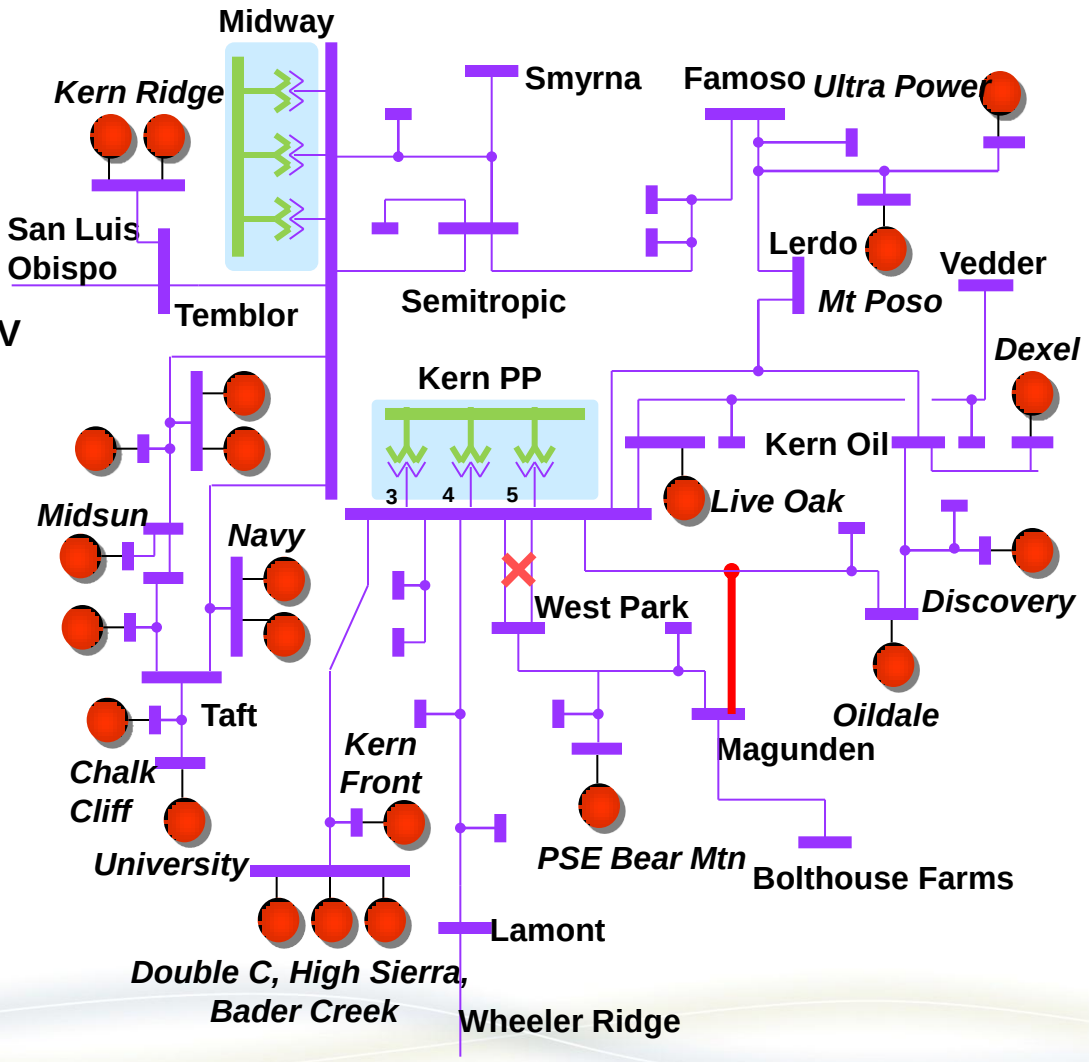
Limiting Contingencies:

Category B:

- **None**

Category C5:

- **L-2: Kern West Park # 1 & #2 115kV**
- **Constraint: Kern-Magunden-Witco 115kV**



LCR Results (MW):

Contingency	Cat. B	Cat. C
LCR	**0**	**76**
Including:		
QF	46	46
Muni	0	0
Deficiency	0	30

Kern Area LCR

2018 Kern PP Sub-Area

Limiting Contingencies:

Category B:

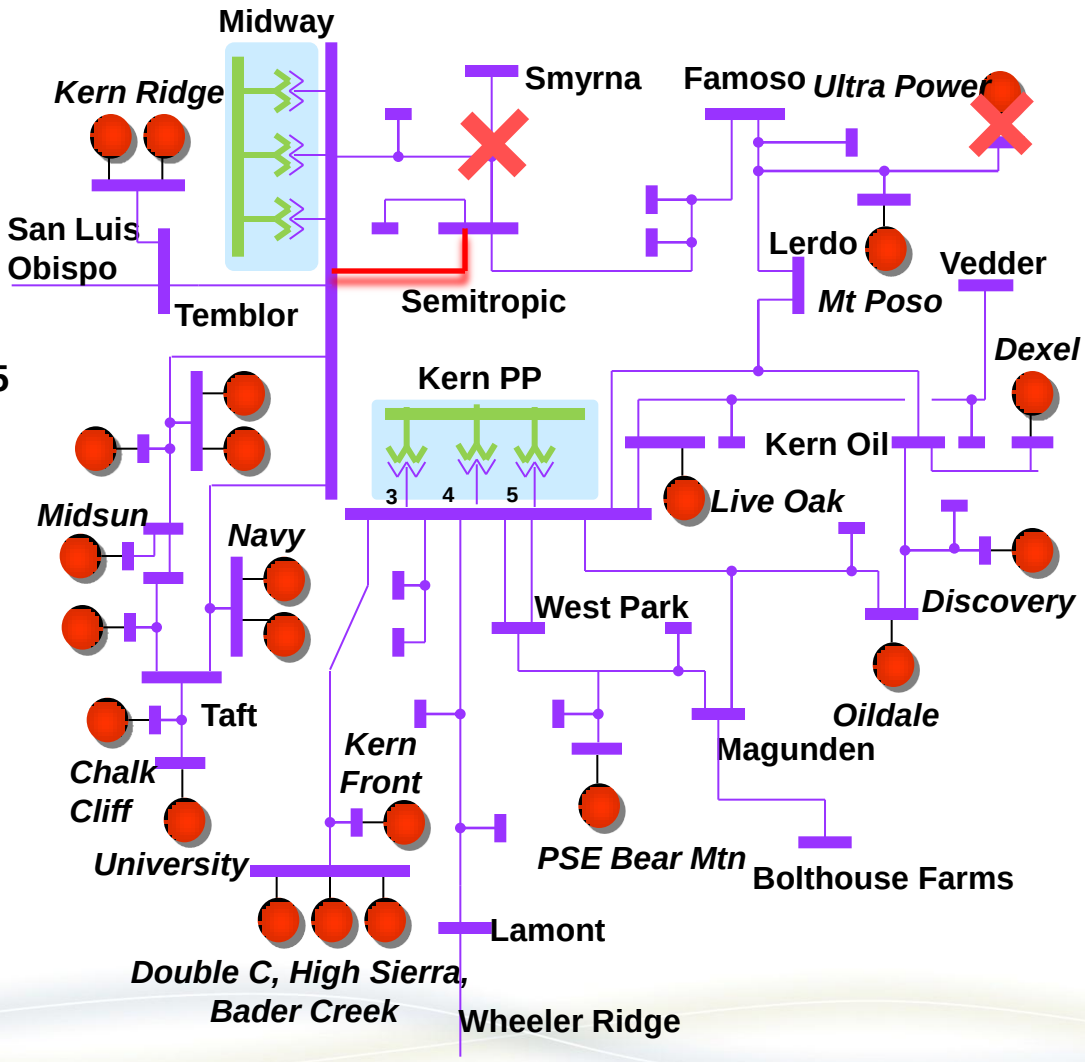
- **G-1/L-1: Ultra Power Poso generation & Smyrna-Semitropic-Midway 115 kV**
- **Constraint: Midway-Semitropic 115 kV**

Category C:

- **L-1/G-1: Smyrna-Semitropic-Midway 115 kV & Ultra Power Poso generation**
- **Constraint: Midway-Semitropic 115 kV**

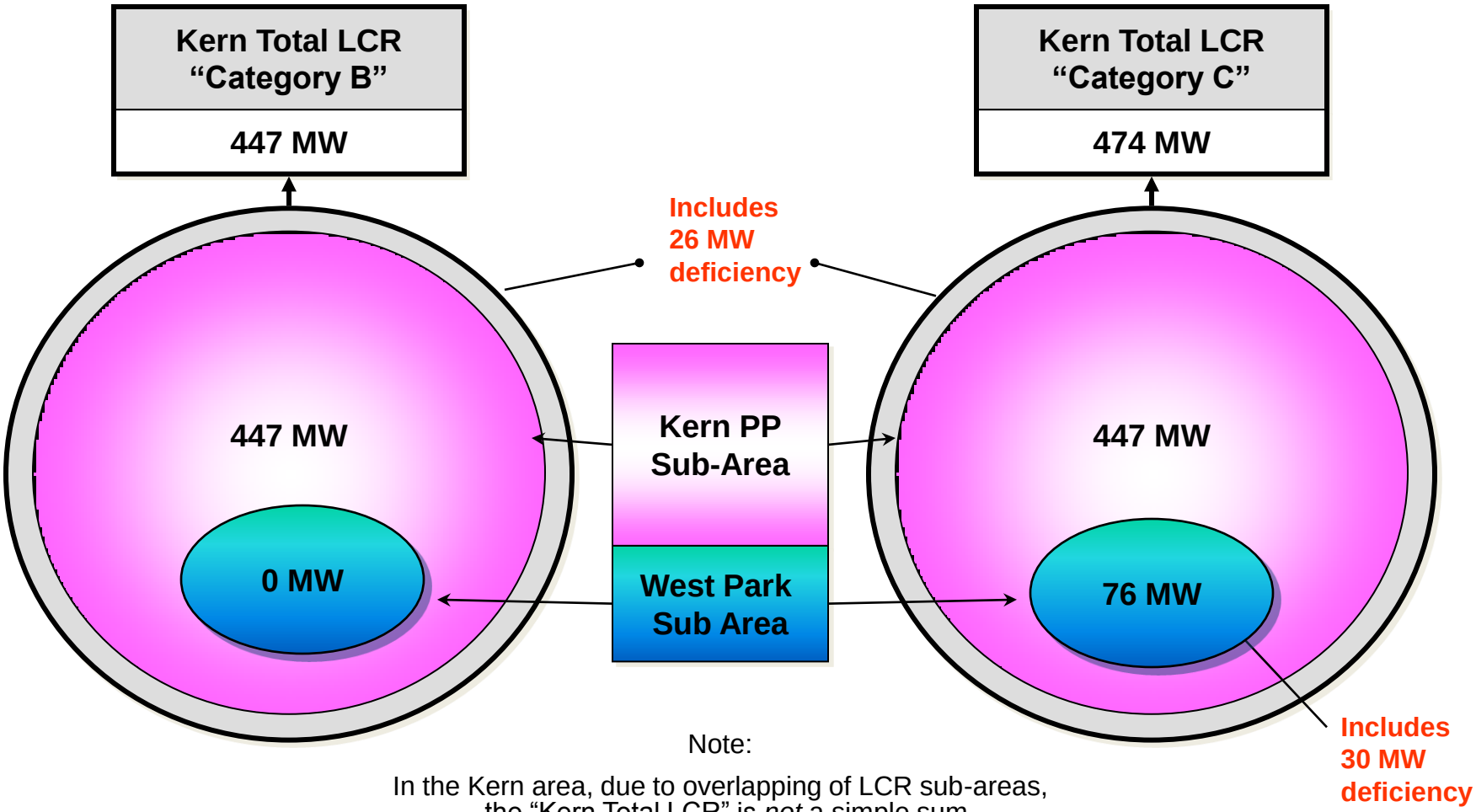
LCR Results (MW):

Contingency	Cat. B	Cat. C
LCR	**447**	**447**
Including:		
QF	421	421
Muni	0	0
Deficiency	26	26



Kern Area LCR

Summary of 2018 LCR



Note:

In the Kern area, due to overlapping of LCR sub-areas, the "Kern Total LCR" is *not* a simple sum, but rather an aggregated sum of LCR in individual sub-areas.

Changes

Since last year:

1) 2014 load forecast decreased by 30 MW vs. 2013
2) Error on Kern PP #4 230/115 model corrected
3) New limiting contingency and element
4) LCR has decreased by 62 MW
5) 2018 load forecast has increased by 17 MW vs. 2017
6) Long-term LCR has increased by 40 MW

Since last stakeholder meeting:

1) Updated NQC
2) Updated LCR results base on new effectiveness factors

Your comments and questions are welcome.

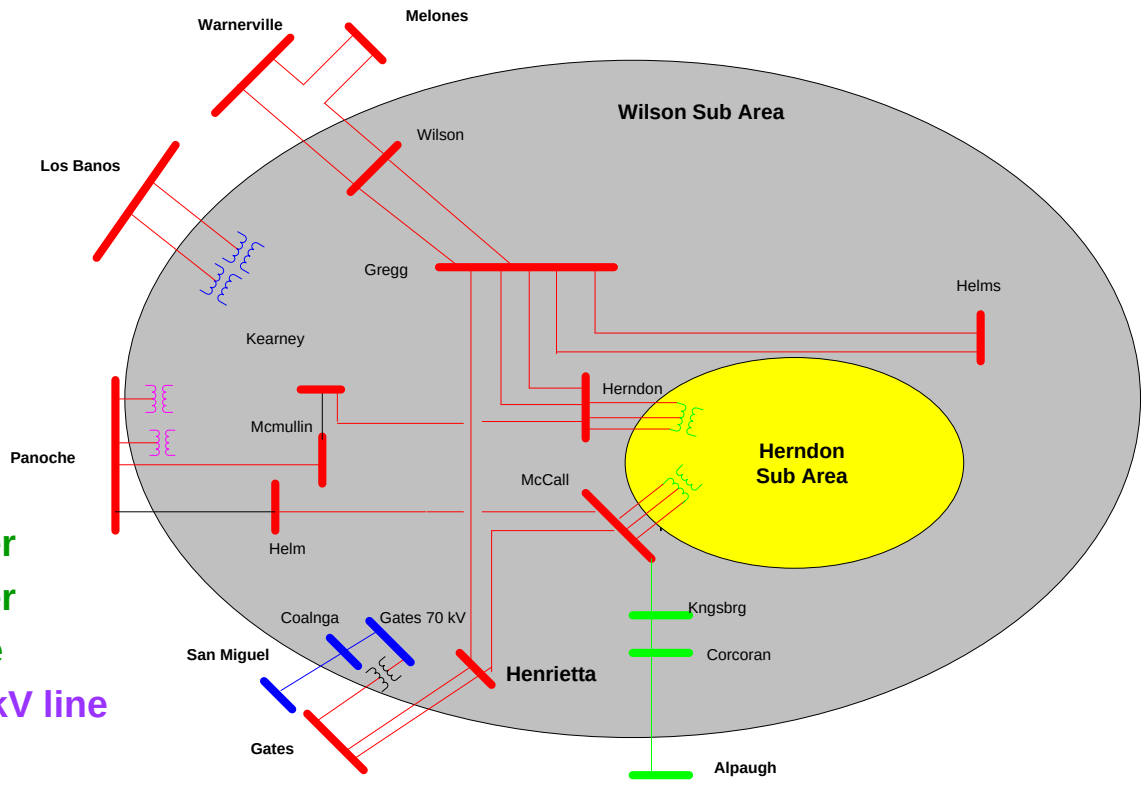
For written comments, please send to: RegionalTransmission@caiso.com

Greater Fresno Area
Electrical Boundaries and LCR Sub-Areas

Electrical Boundaries:

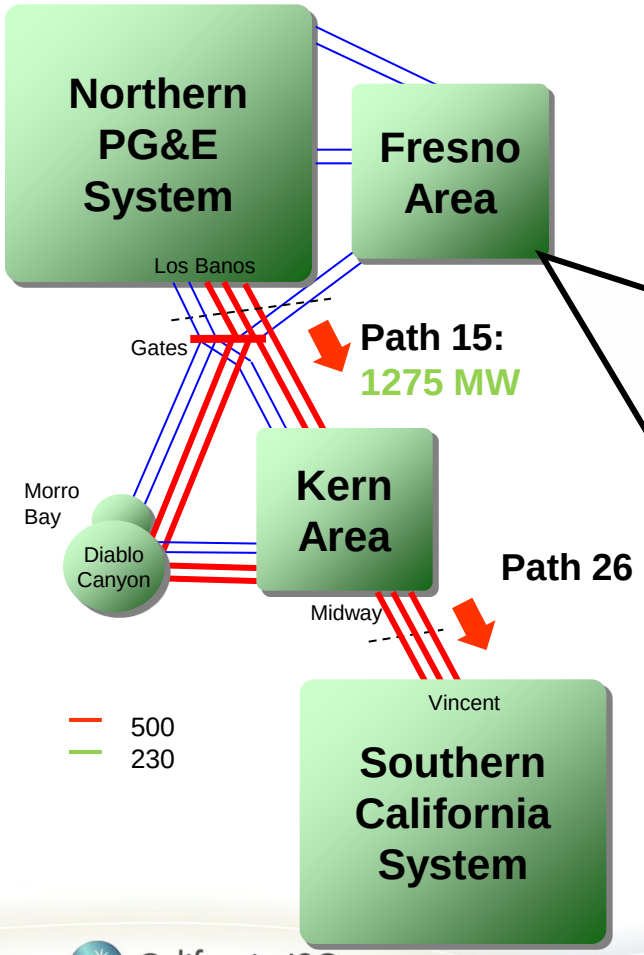
- Gates – McCall 230 kV line
- Gates – Gregg 230 kV line
- Gates 230/70 kV transformer #1
- Panoche 230/115 kV transformer #1
- Panoche 230/115 kV transformer #2
- Panoche – Kearney 230 kV line
- Panoche – Helm 230 kV line
- Warnerville – Wilson 230 kV line
- Melones – Wilson 230 kV line
- Los Banos #3 230/70 kV transformer
- Los Banos #4 230/70 kV transformer
- San Miguel – Coalinga #1 70 kV line
- Smyrna – Alpaugh – Corcoran 115 kV line

LCR Sub-Areas:



Fresno Area Overview

Area Generation, Load, Transmission and Path Flows



Fresno LCR Area

Total Generation and Load:

- **Generation (NQC): 2828 MW**
- **Load (1-in-10 Summer-Peak): 3246 MW (2014)**
- **Load (1-in-10 Summer-Peak): 3401 MW (2018)**

Transmission Upgrades:

- **Wilson Area Reinforcement in 2018 model**
- **Le Grand-Chowchilla 115 kV line reconductored in 2018 model (changes requirements)**

New Generation:

- **None**

Fresno Area LCR

2014 Herndon Sub-Area

Limiting Contingency:

Category B:

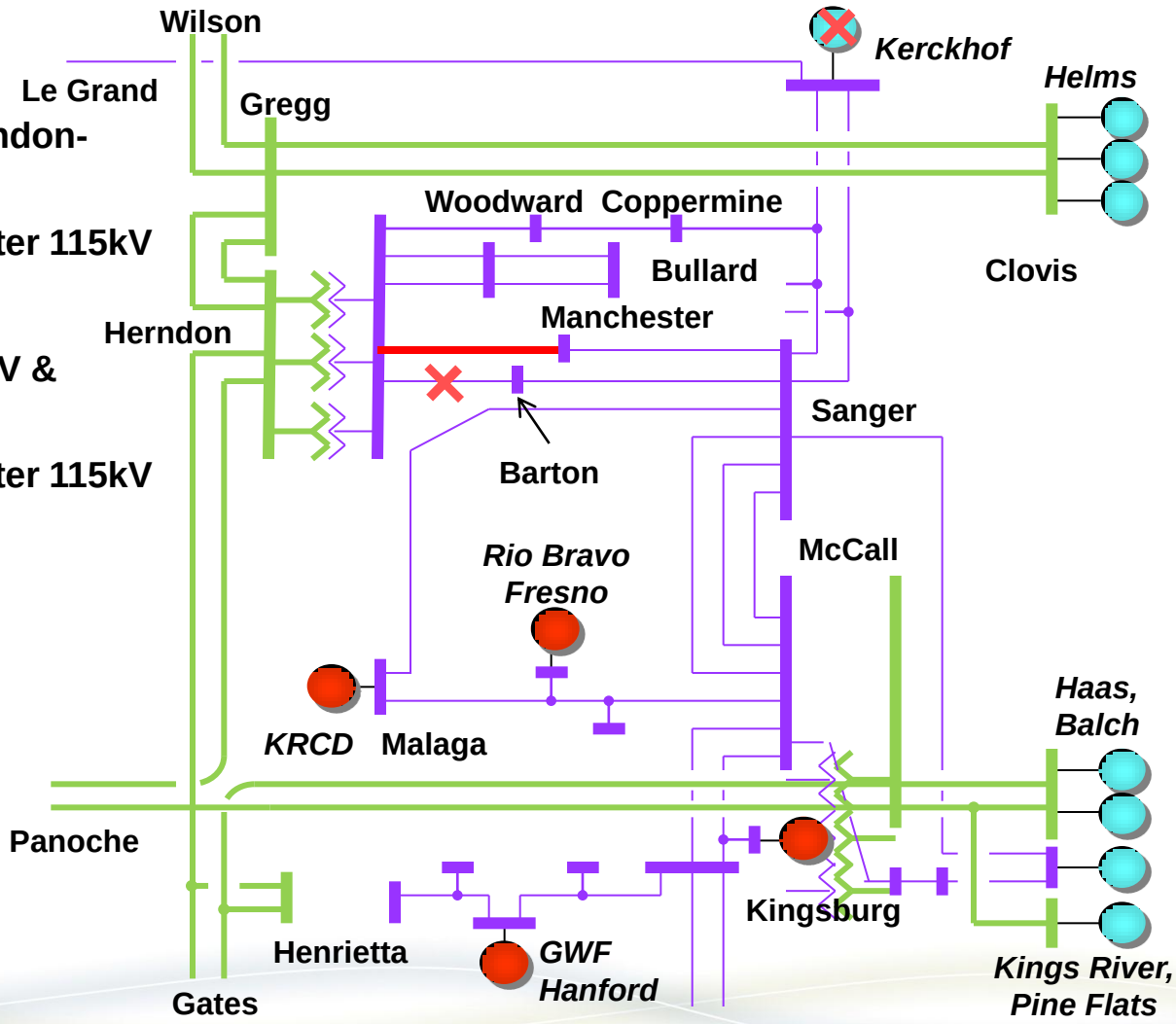
- **G-1/L-1: Kerckhoff 2 PH & Herndon-Barton 115 kV**
- **Constraint: Herndon-Manchester 115kV**

Category C:

- **L-1/G-1: Herndon-Barton 115 kV & Kerckhoff 2 PH**
- **Constraint: Herndon-Manchester 115kV**

LCR Results (MW):

Contingency	Cat. B	Cat. C
LCR	444	444
Including:		
QF	42	42
Muni	83	83
Deficiency	0	0



Fresno Area LCR
2014 Wilson Sub-Area

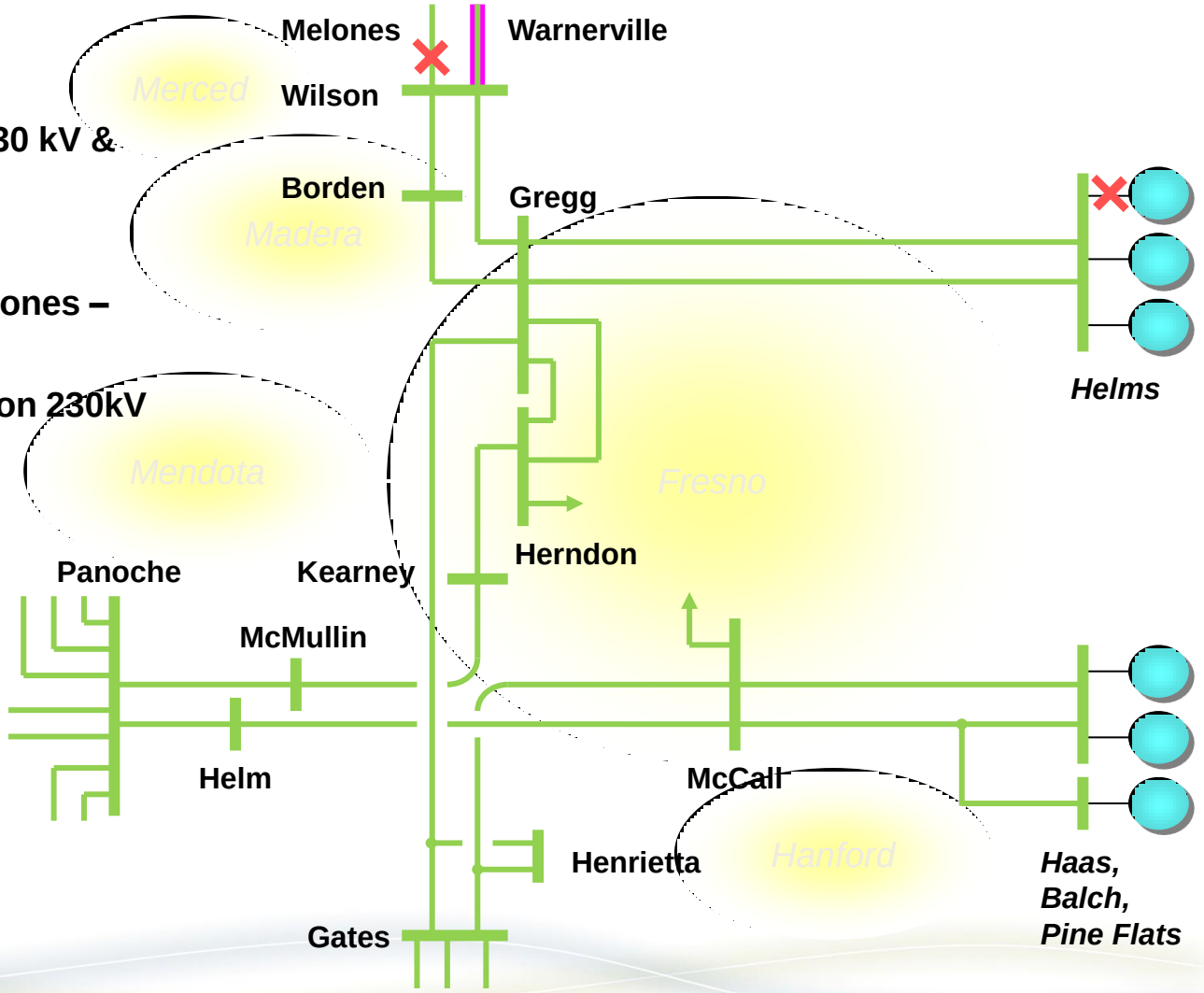
Limiting Contingencies:

Category C:

- **L-1/G-1: Melones – Wilson 230 kV & Helms unit #3**

Category B:

- **G-1/L-1: Helms unit #3 & Melones – Wilson 230 kV**
- **Constraint: Warnerville-Wilson 230kV**

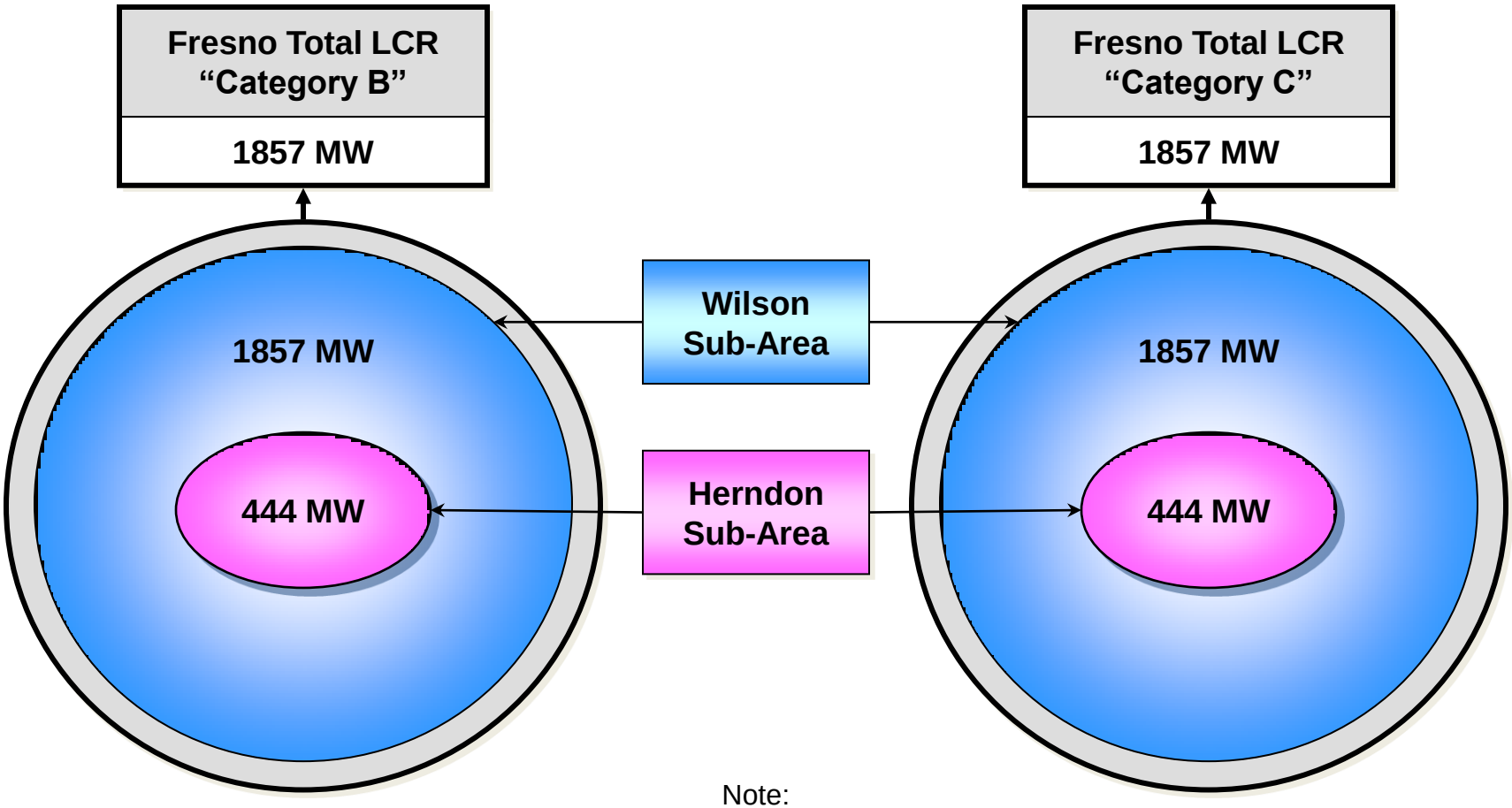


LCR Results (MW):

Contingency	Cat. B	Cat. C
LCR	**1857**	**1857**
Including:		
QF	174	174
Muni	144	144
Deficiency	0	0

Fresno Area LCR

Summary of 2014 LCR



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but rather an aggregated sum of LCR in individual sub-areas.

Fresno Area LCR

2018 Herndon Sub-Area

Limiting Contingency:

Category B:

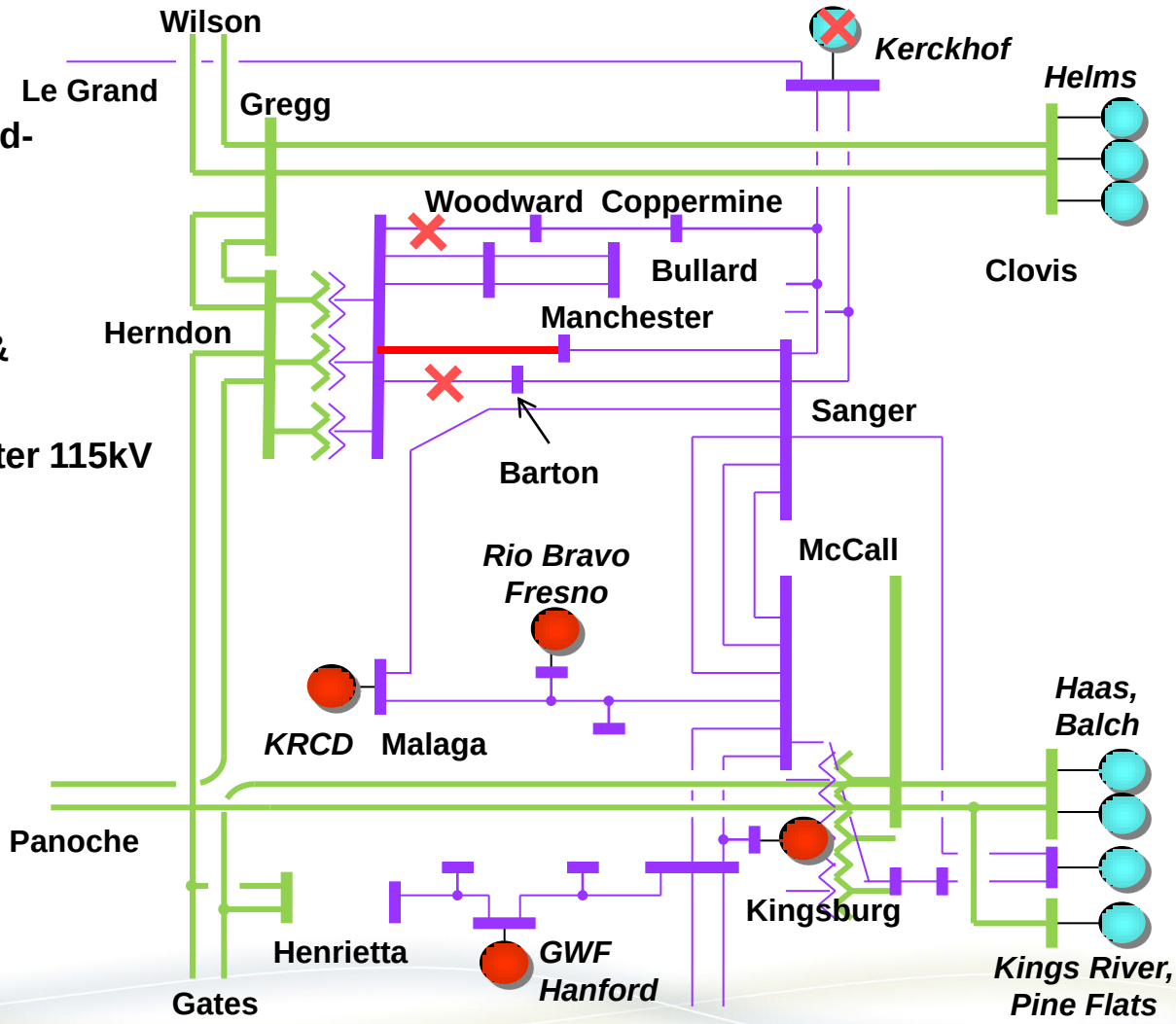
- **None. Reconductor of Le Grand-Chowchilla 115 kV eliminates requirement**

Category C:

- **L-1-1: Herndon-Barton 115kV & Herndon-Woodward 115kV**
- **Constraint: Herndon-Manchester 115kV**

LCR Results (MW):

Contingency	Cat. B	Cat. C
LCR	0	370
Including:		
QF	42	42
Muni	83	83
Deficiency	0	0



Fresno Area LCR

2018 Wilson Sub-Area

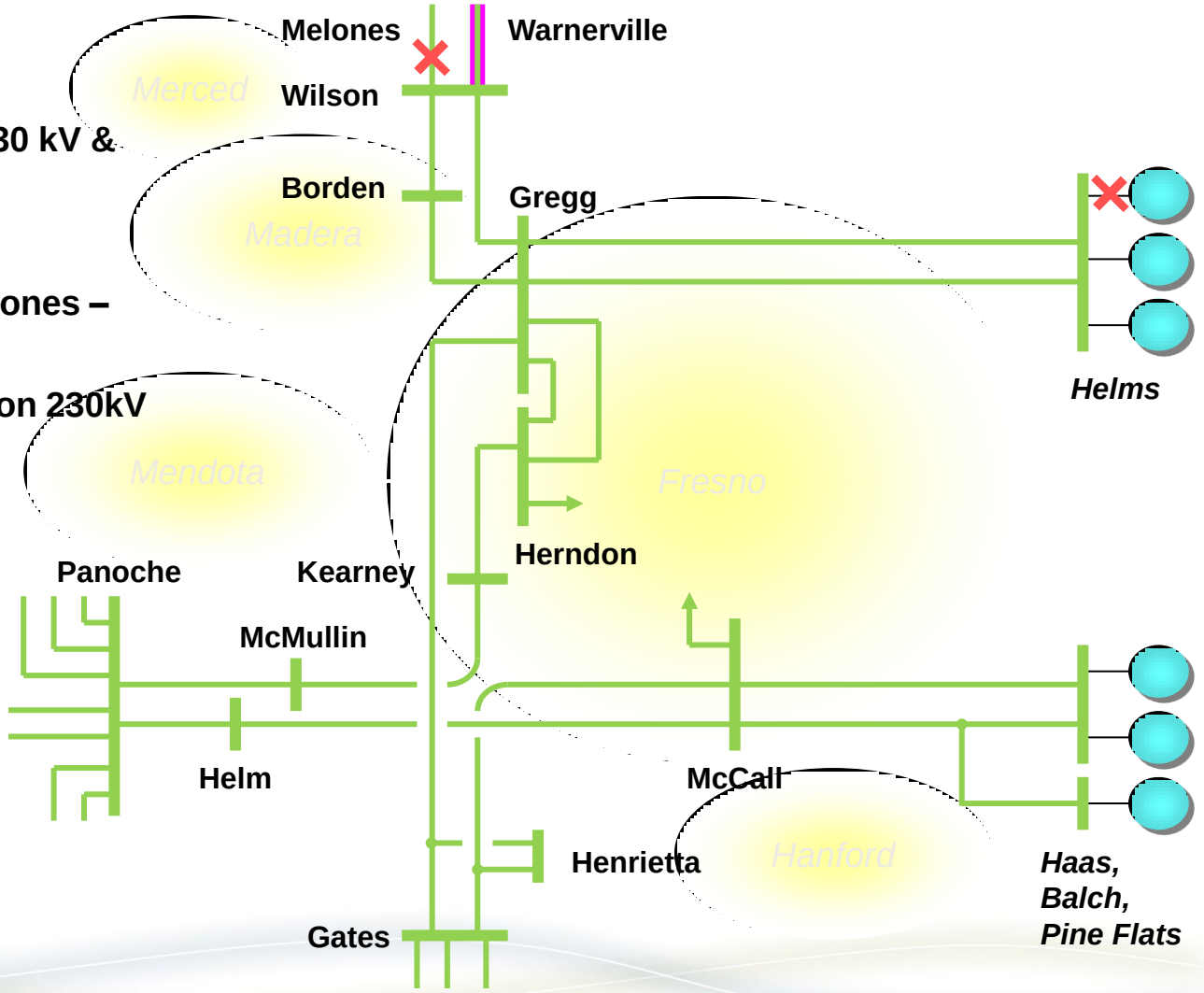
Limiting Contingencies:

Category C:

- **L-1/G-1: Melones – Wilson 230 kV & Helms unit #3**

Category B:

- **G-1/L-1: Helms unit #3 & Melones – Wilson 230 kV**
- **Constraint: Warnerville-Wilson 230kV**

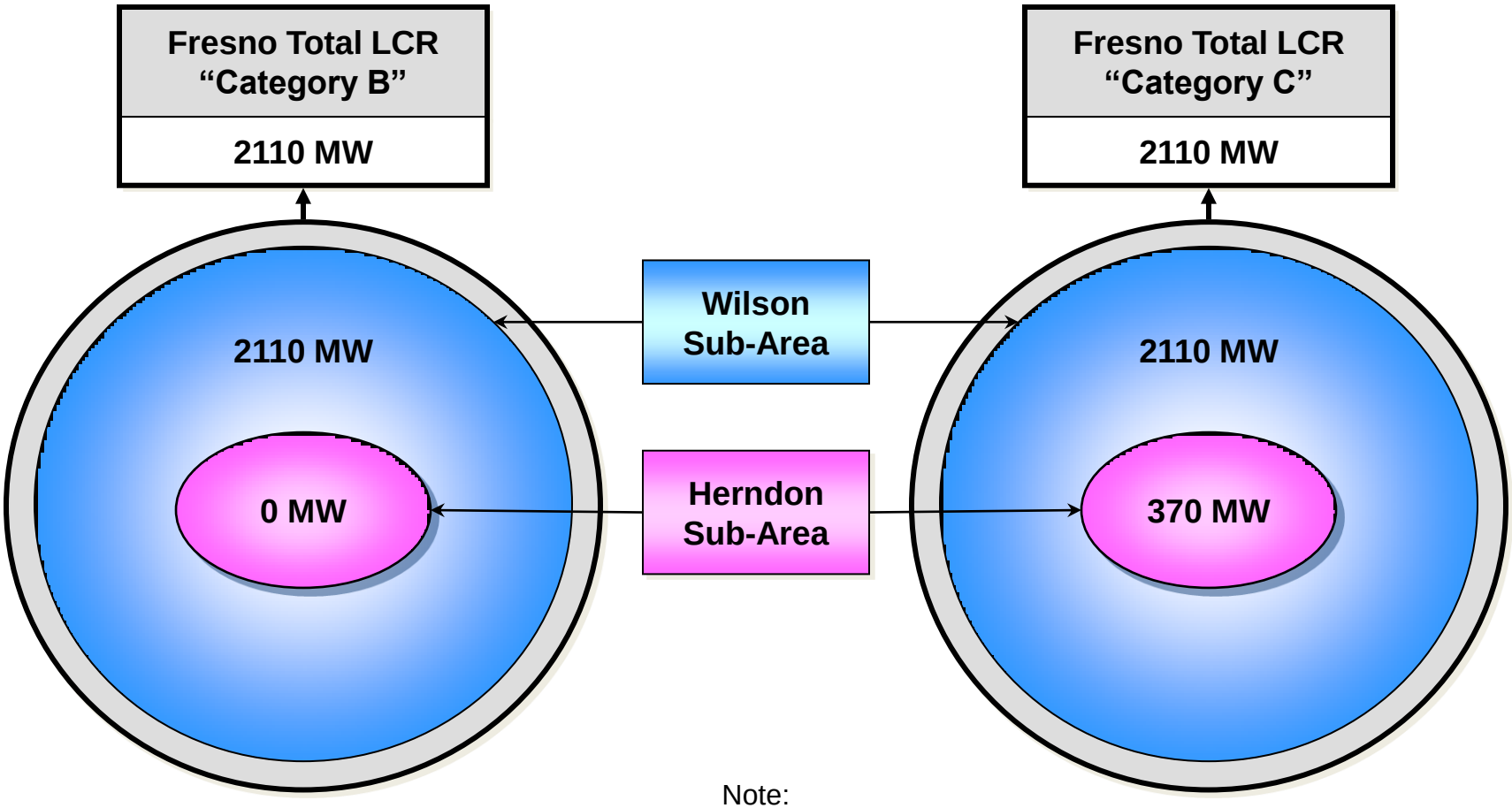


LCR Results (MW):

Contingency	Cat. B	Cat. C
LCR	**2110**	**2110**
Including:		
QF	174	174
Muni	144	144
Deficiency	0	0

Fresno Area LCR

Summary of 2018 LCR



Note:

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the “Fresno Total LCR” is *not* a simple sum,
but rather an aggregated sum of LCR in individual sub-areas.

Changes

Since last year:

1) 2014 load forecast increased by 133 MW vs. 2013

2) LCR has increased by 71 MW

3) 2018 load forecast has increased by 37 MW vs. 2017

4) Long-term LCR has stayed the same

5) Le Grand-Chowchilla 115 kV reconductor affects generation, lowering Herndon Category C LCR and eliminates Category B LCR

Since last stakeholder meeting:

1) Updated NQC

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