



# 2019 & 23 Final LCR Study Results Sierra and Stockton Areas

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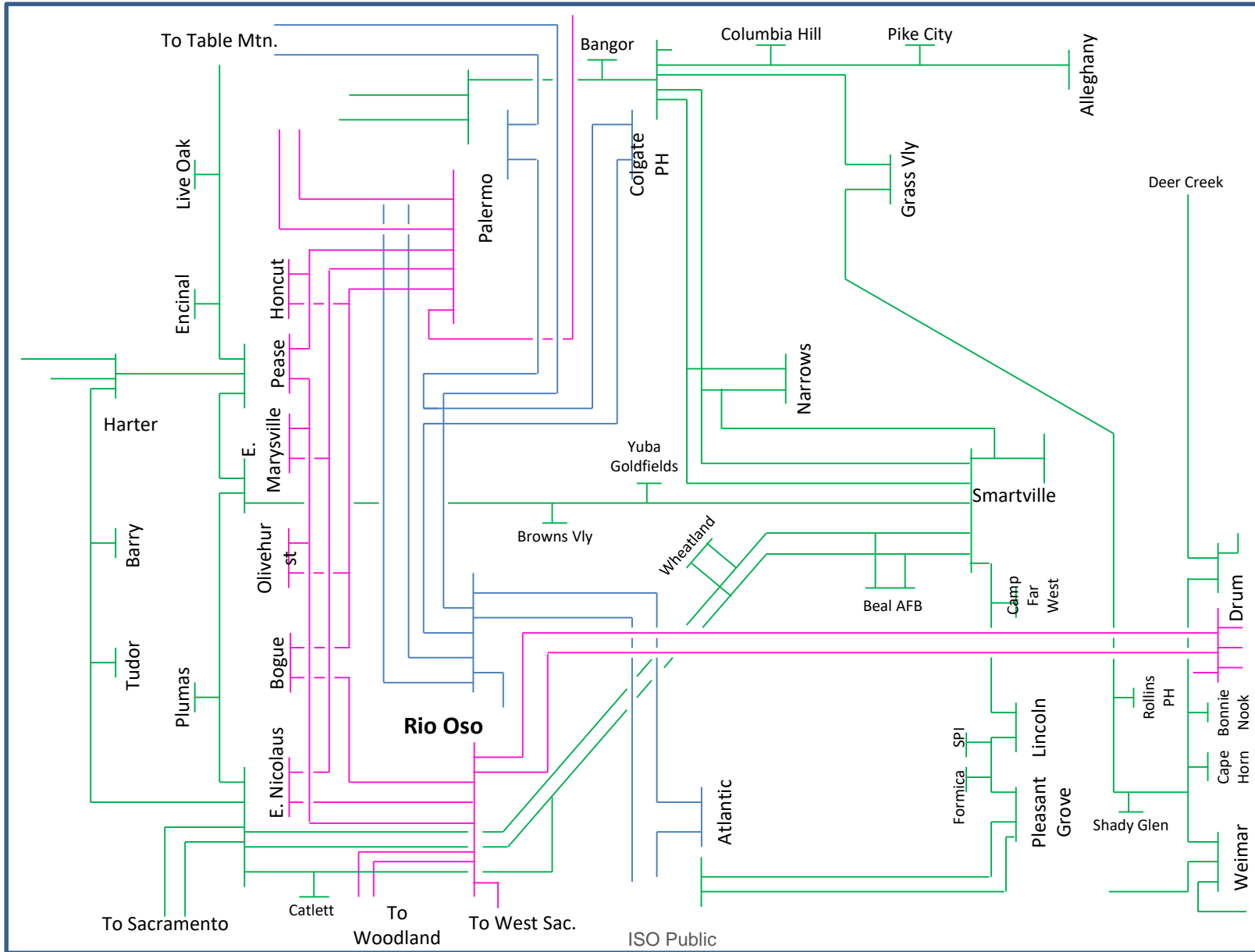
Stakeholder Call

May 1, 2018

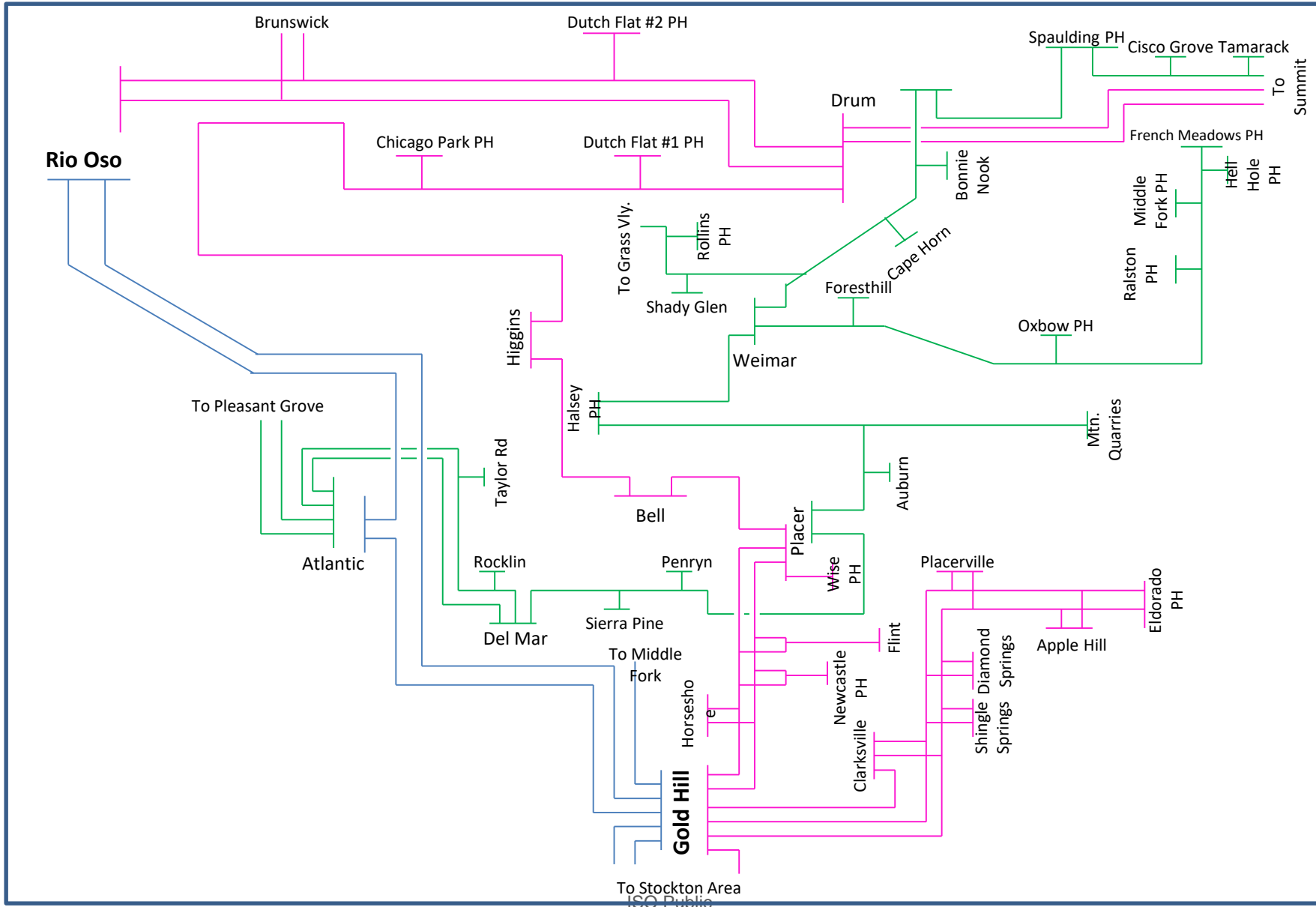
# Sierra Area Load and Resources (MW)

		<b>2019</b>	<b>2023</b>
Load	=	1,768	1,819
AAEE	=	-19	-66
BTM-PV	=	-78	-18
Transmission Losses	=	87	87
<b>Total Load</b>	=	<b>1,758</b>	<b>1,822</b>
Market Generation	=	1,004	1,004
Muni Generation	=	1,108	1,108
QF Generation	=	38	38
<b>Total Qualifying Capacity</b>	=	<b>2,150</b>	<b>2,150</b>

# Northern Sierra



# Southern Sierra



## New transmission projects modeled:

2019

1. Gold Hill-Missouri Flat #1 and #2 115 kV line reconductoring

2023

1. Rio Oso #1 and #2 230/115 kV transformer replacement
2. Pease 115/60 kV transformer addition
3. South of Palermo 115 kV Reinforcement

# Pease Sub-Area

## **Pease Sub-area – Category C**

Contingency: 2019: Pease 115/60 kV Tx and Yuba City Unit.

2023:Palermo-Pease 115 kV line and Rio Oso-Pease 115 kV line

Limiting component: Thermal overload on Table Mountain-Pease 60 kV line

2019 LCR need: 92 MW

2023 LCR need: 75 MW

## **Pease Sub-area – Category B**

Contingency: Palermo-East Nicolaus 115 kV line and Yuba City unit

Limiting component: Thermal overload on the Palermo-Pease 115 kV line

2019 LCR need: 79 MW

2023 LCR need: No requirement

# Placer Sub-Area

## **Placer Sub-area – Category C**

Contingency: Gold Hill-Placer #1 and #2 115 kV lines

Limiting component: Thermal overload on the Drum-Higgins 115 kV line

2019 LCR need: 77 MW

2023 LCR need: 82 MW

## **Placer Sub-area – Category B**

Contingency: Gold Hill-Placer #1 115 kV line and Chicago Park unit

Limiting component: Thermal overload on the Drum-Higgins 115 kV line

2019 LCR need: 64 MW

2023 LCR need: 89 MW

# Placerville Sub-Area

## **Placerville Sub-area – Category C**

2019 and 2023 LCR need: No requirements

## **Placerville Sub-area – Category B**

2019 and 2023 LCR need: No requirements



# Drum-Rio Oso Sub-Area

## **Drum-Rio Oso Sub-area – Category C**

Contingency: Rio Oso #2 230/115 kV Tx. and Rio Oso-Brighton 230 kV line

Limiting component: Thermal overload on the Rio Oso #1 230/115 kV Tx.

2019 LCR need: 506 MW

## **Drum-Rio Oso Sub-area – Category B**

Contingency: Palermo #2 230/115 kV transformer

Limiting component: Thermal overload on the Rio Oso #1 230/115 kV Tx.

2019 LCR need: 378 MW

2023 LCR need: No requirements.

# South of Rio Oso Sub-Area

## **South of Rio Oso Sub-area – Category C**

Contingency: Rio Oso-Gold Hill and Rio Oso-Atlantic 230 kV lines for 2019 and Rio Oso-Gold Hill and Rio Oso-Brighton 230 kV lines for 2023

Limiting component: Thermal overload on the Rio Oso-Brighton 230 kV line for 2019 and Rio Oso-Atlantic 230 kV line for 2023

2019 LCR need: 831 MW (includes 104 MW of deficiency)

2023 LCR need: 554 MW

## **South of Rio Oso Sub-area – Category B**

Contingency: Rio Oso-Gold Hill 230 kV line and Ralston unit

Limiting component: Thermal overload on the Rio Oso-Atlantic 230 kV line

2019 LCR need: 507 MW

2023 LCR need: 416 MW

# South of Palermo Sub-Area

## **South of Palermo Sub-area – Category C**

Contingency: DCTL Table Mountain-Rio Oso and Colgate-Rio Oso 230 kV lines

Limiting component: Thermal overload on the Pease-Rio Oso 115 kV line

2019 LCR need: 1,702 MW (includes 283 MW of deficiency)

## **South of Palermo Sub-area – Category B**

Contingency: Colgate-Rio Oso 230 kV line with Belden unit out of service

Limiting component: Thermal overload on the Pease-Rio Oso 115 kV line

2019 LCR need: 1,283 MW

2023 LCR need: No additional requirements. Units needed for Pease and South of Rio Oso sub-areas, satisfy Category B and C requirements for this area.

# Overall Sierra

## **South of Table Mountain Sub-area – Category C**

Contingency: DCTL outage Table Mountain-Rio Oso 230 kV and Table Mountain-Palermo 230 kV

Limiting component: Thermal overload on the Caribou-Palermo 115 kV line

2019 LCR need: 1,964 MW

2023 LCR need: 1,924 MW

## **South of Table Mountain Sub-area – Category B**

2019 LCR need: No additional category B requirement. Units required for South of Palermo satisfy the category B requirement for this sub-area.

Contingency: Table Mountain-Rio Oso 230 kV line with Belden Unit out

Limiting component: Table Mountain-Pease 60 kV line

2023 LCR need: 1,268 MW

# Sierra Area LCR: Aggregate

Available generation	Market (MW)	Muni (MW)	QF (MW)	Max. Qualifying Capacity (MW)
2019	1,004	1,108	38	2,150
2023	1,004	1,108	38	2,150

	2019			2023		
Contingency	Existing Generation Capacity Needed (MW)	Deficiency (MW)	Total MW Need	Existing Generation Capacity Needed (MW)	Deficiency (MW)	Total MW Need
Category B (Single)	1,362	0	1,362	1,268	0	1,268
Category C (Multiple)	1,964	283	2,247	1,924	0	1,924

Each unit is only counted once, regardless in how many sub-areas it is needed.

In order to come up with an aggregate deficiency, where applicable the deficiencies in each smaller sub-area has been accounted for (based on their effectiveness factors) toward the deficiency of a much larger sub-area.

# Changes

## **Since last year:**

- 1) Updated NQC
- 2) 2019 load forecast went down by 60 MW vs. 2018.
- 3) Overall LCR need has increased by 134 MW due to load and generation distribution.
- 4) 2023 load forecast went up by 8 MW vs. 2022.
- 5) Overall LCR need has decreased by 43 MW as transmission development addressed deficient area

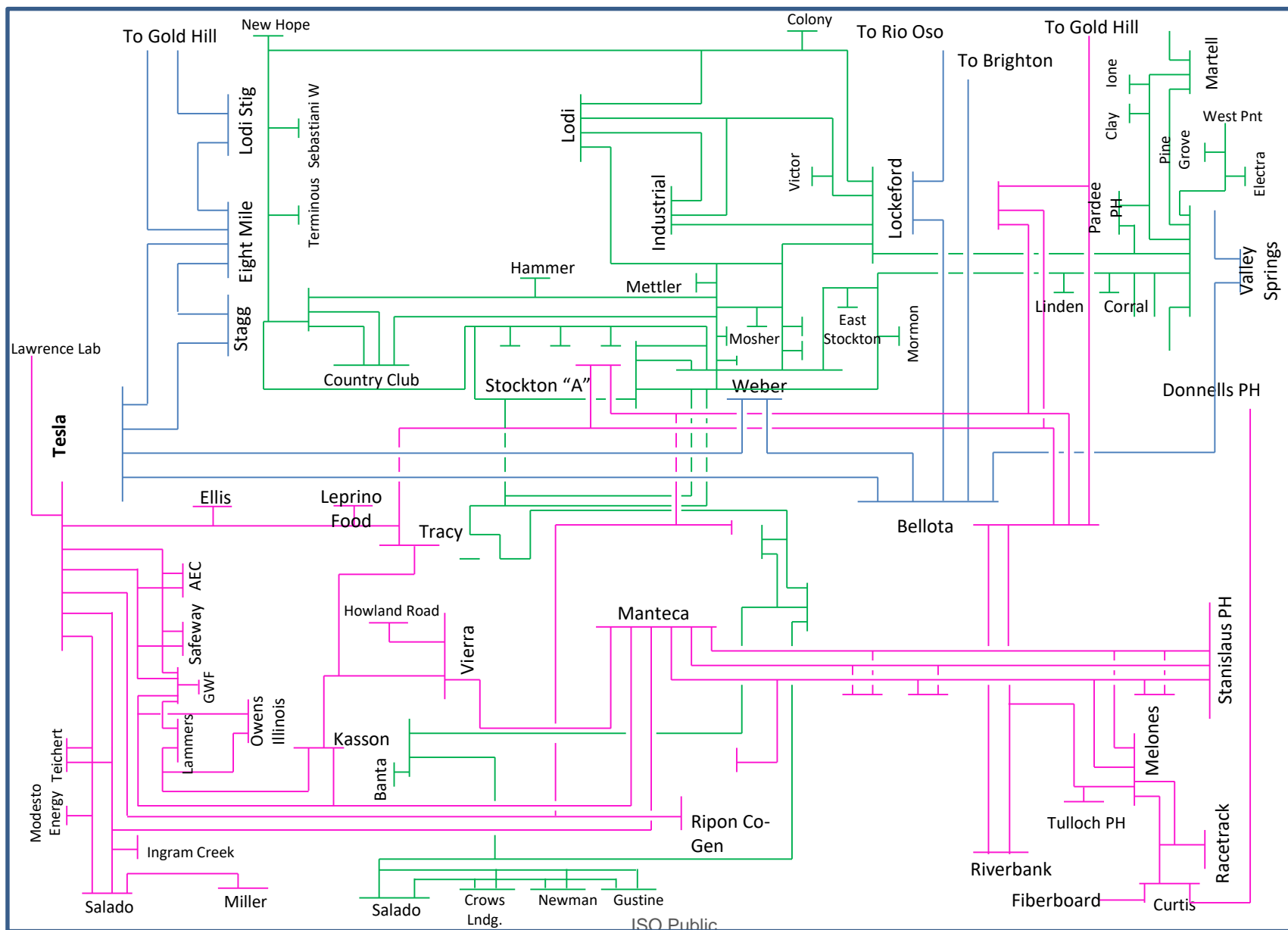
## **Since last stakeholder meeting:**

- 1) Updated NQC
- 2) Change in deficiency due to change in available NQC

## Stockton Area Load and Resources (MW)

		<b>2019</b>	<b>2023</b>
Load	=	1,204	1,278
AAEE	=	-18	-63
BTM-PV	=	-32	-8
Transmission Losses	=	20	20
Total Load	=	<b>1,174</b>	<b>1,227</b>
QF Generation	=	18	18
Muni Generation	=	126	126
Market Generation	=	492	543
Total Qualifying Capacity	=	<b>636</b>	<b>687</b>

# Stockton Area





# New transmission projects modeled:

2019

1. Weber-Stockton A #1 & #2 60 kV lines Reconductor
2. Ripon 115 kV Line

2023

3. Vierra 115 kV Looping Project

## Weber Sub-Area

### **Weber Sub-area – Category C**

Contingency: Stockton A-Weber #1 and #2 60 kV lines

Limiting component: Stockton A-Weber #3 60 kV

2019 LCR need: 21 MW

2023 LCR need: 17 MW

### **Weber Sub-area – Category B**

2019 and 2023 LCR need: No requirement

# Lockeford Sub-Area

## **Lockeford Sub-area – Category C**

Contingency: Lockeford-Industrial and Lockeford-Lodi #2 60 kV lines

Limiting component: Thermal overload on the Lockeford-Lodi #3 60 kV line

2019 LCR need: 83 MW (includes 59 MW of deficiency)

2023 LCR need: 103 MW (includes 79 MW of deficiency)

## **Lockeford Sub-area – Category B**

Contingency: Lockeford-Industrial Line and Lodi CT Unit

Limiting component: Thermal overload on the Lockeford-Lodi #2 60 kV line

2019 LCR need: 29 MW (includes 5 MW of deficiency)

2023 LCR need: 44 MW (includes 20 MW of deficiency)

# Stanislaus Sub-Area

## **Stanislaus Sub-area – Category C**

2019 and 2023 LCR need: Same as Category B.

## **Stanislaus Sub-area – Category B**

Contingency: Bellota-Riverbank-Melones 115 kV line and Stanislaus PH

Limiting component: Thermal overload on the River Bank Jct.-Manteca 115 kV line

2019 LCR need: 152 MW

2023 LCR need: 147 MW

# Tesla-Bellota Sub-Area

## Tesla-Bellota Sub-area – Category C

Contingency 1: Schulte-Lammers and Schulte-Kasson-Manteca 115 kV lines.

Limiting component 1: Thermal overload on the Tesla-Tracy 115 kV line.

2019 Need: 532 MW (includes 291 MW of deficiency).

2023 Need: 319 MW (includes 27 MW of deficiency).

Contingency 2: Tesla-Tracy 115 kV line and Tesla-Schulte #1 115 kV line.

Limiting component 2: Thermal overload on the Tesla-Schulte #2 115 kV line.

2019 Need: 382 MW

2023 Need: 201 MW

2019 LCR need: 673 MW (includes 291 MW of deficiency)

2023 LCR need: 319 MW (includes 27 MW of deficiency)

## Tesla-Bellota Sub-area – Category B

Contingency: Tesla-Schulte #2 115 kV line and the loss of GWF Tracy #3.

Limiting component: Thermal overload on the Tesla-Schulte #1 115 kV line.

2019 LCR Need: 381 MW

2023 LCR Need: 201 MW

# Stockton Area LCR: Aggregate

Available generation	Market (MW)	Muni (MW)	QF (MW)	Max. Qualifying Capacity (MW)
2019	489	126	18	633
2023	540	126	18	684

	2019			2023		
Contingency	Existing Generation Capacity Needed (MW)	Deficiency (MW)	Total MW Need	Existing Generation Capacity Needed (MW)	Deficiency (MW)	Total MW Need
Category B (Single)	405	5	410	225	20	245
Category C (Multiple)	427	350	777	333	106	439

Each unit is only counted once, regardless in how many sub-areas it is needed.

In order to come up with an aggregate deficiency, where applicable the deficiencies in each smaller sub-area has been accounted for (based on their effectiveness factors) toward the deficiency of a much larger sub-area.

# Changes

## **Since last year:**

- 1) Updated NQC.
- 2) 2019 load forecast went up by 5 MW vs. 2018.
- 3) Overall LCR need has increased by 58 MW mostly due to increase in deficiency.
- 4) 2023 load forecast went up by 192 MW vs. 2022
- 5) Overall LCR need has decreased by 263 MW due to new transmission projects.

## **Since last stakeholder meeting:**

- 1) Updated NQC
- 2) Change in deficiency due to change in available NQC

# THANK YOU

Your comments and questions are welcome.

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

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