



California ISO
Shaping a Renewed Future

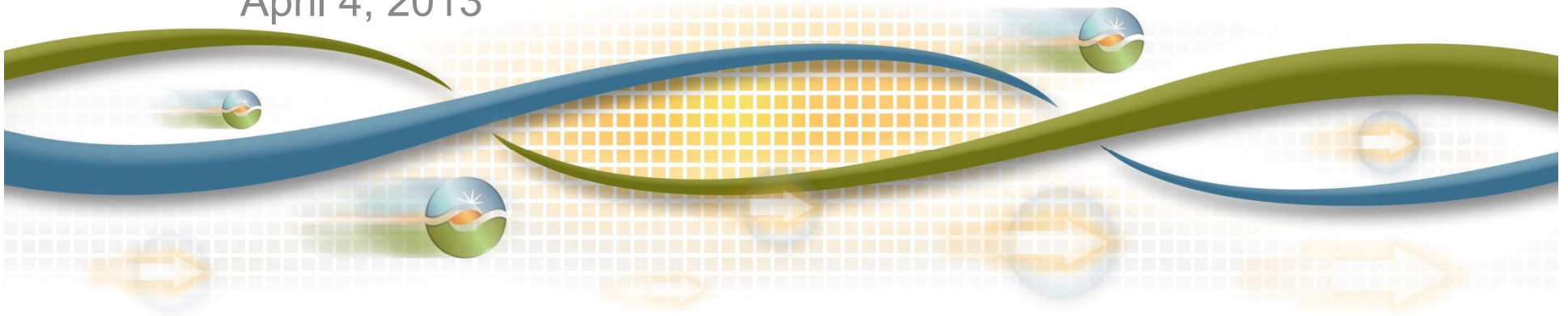
2014 and 2018 Final LCR Study Results - Greater Bay Area

Bryan Fong

Senior Regional Transmission Engineer

Stakeholder Conference Call

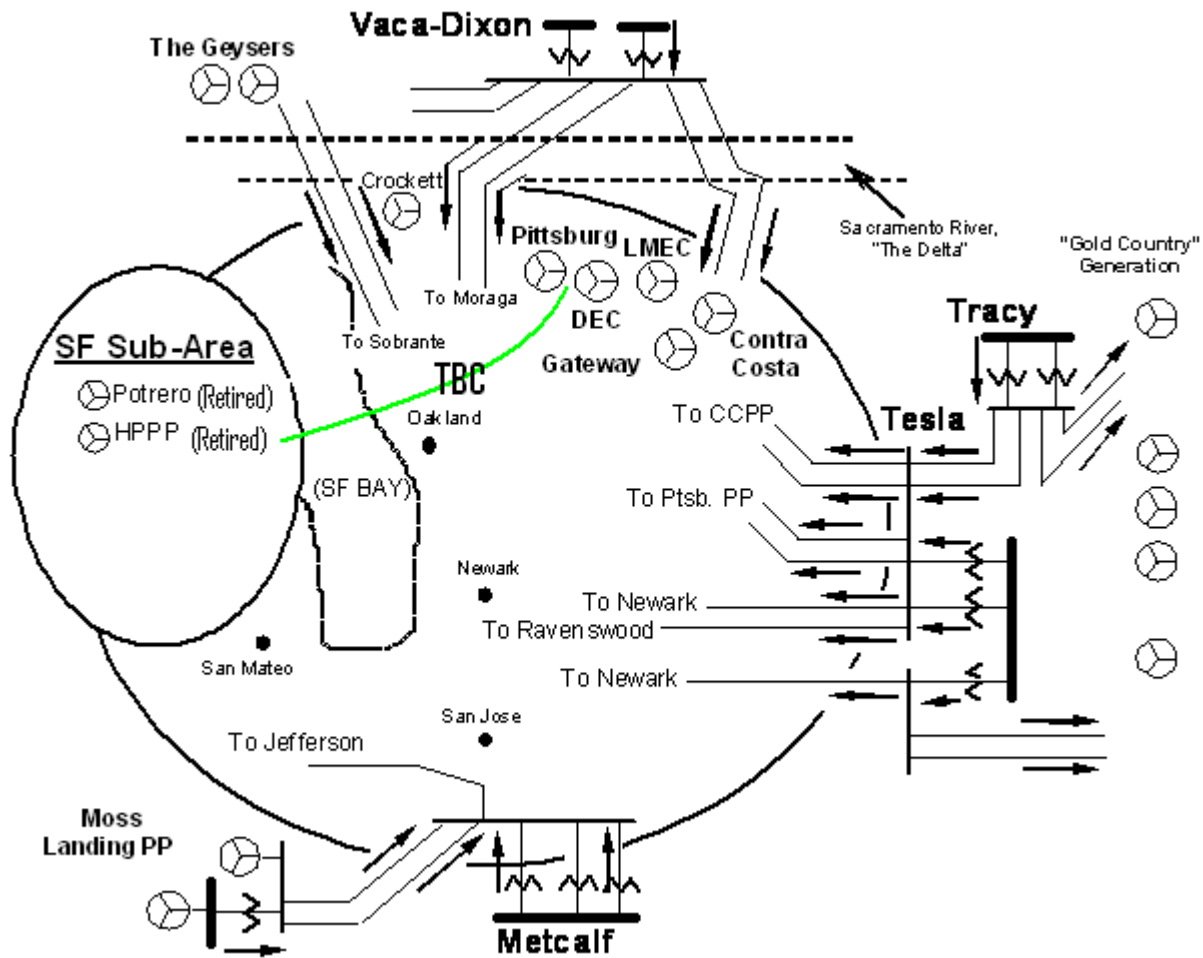
April 4, 2013



Greater Bay Area Map



Greater Bay Area Transmission System



New major transmission projects 2018 only

- Moraga #2 230/115 kV transformer replacement
- Tesla-Pittsburg 230 kV Reconductoring
- Vaca Dixon-Birds Landing 230 kV Reinforcement
- Contra Costa-Las Positas 230 kV Reconductoring
- Newark-Ravenswood 230 kV Reconductoring
- Contra Costa-Moraga 230 kV Line #1 & #2 Reconductoring
- Vaca Dixon-Lakeville 230 kV line Reconductoring
- Tesla-Ravenswood 230kV Line Reconductoring
- East Shore-Oakland J 115 kV Reconductoring Project
- Evergreen-Mabury Conversion to 115 kV
- Metcalf-Evergreen 115 kV Line Reconductoring
- Metcalf-Piercy & Swift and Newark-Dixon Landing 115 kV Upgrade

Resource changes

Additions:

- Marsh Landing Generating Station
- Los Esteros Critical Energy Facility (LECEF) capacity increase
- Russel City
- Two wind resources in Solano area
- Oakley (2018 only)
- Three wind resources in Solano area (2018 only)

Retirements:

- Contra Costa #6 and #7

Greater Bay Area Load

2014 1-in-10 Year Load Representation

Total Load = 9983 MW

Transmission Losses = 202 MW

Pumps = 234 MW

Total Load + Losses + Pumps = 10,419 MW

2018 1-in-10 Year Load Representation

Total Load = 10,473 MW

Transmission Losses = 229 MW

Pumps = 234 MW

Total Load + Losses + Pumps = 10,936 MW

San Jose Sub Area

San Jose Sub-area – Category B

Contingency: Metcalf-Evergreen #2 115 kV Line with Duane PP out of service

Limiting component: Thermal overload of Metcalf-Evergreen #1 115 kV Line (2014) / Metcalf-Piercy 115 kV Line (2018)

2014 LCR need: 452 MW (includes 261 MW of QF/Muni generation)

2018 LCR need: 402 MW (includes 261 MW of QF/Muni generation)

San Jose Sub-area – Category C

Contingency: Metcalf El Patio #1 or #2 overlapped with the outage of Metcalf-Evergreen #2 115 kV

Limiting component: Thermal overload of Metcalf-Evergreen #1 115 kV Line (2014) / Metcalf-Piercy 115 kV Line (2018)

2014 LCR need: 782 MW (includes 261 MW of QF/Muni generation as well as 215 MW of deficiency)

2018 LCR need: 575 MW (includes 261 MW of QF/Muni generation as well as 8 MW of deficiency)

Llagas Sub Area

Llagas Sub-area – Category B

Contingency: Metcalf D-Morgan Hill 115 kV with one of the Gilroy peakers off line

Limiting component: Thermal overload on the Morgan Hill-Llagas 115 kV Line as well as 5% voltage drop at the Morgan Hill substation

2014 LCR need: 123 MW (includes 0 MW of QF/Muni generation)

2018 LCR need: 136 MW (includes 0 MW of QF/Muni generation)

Llagas Sub-area – Category C

Same as Category B

Oakland Sub Area

Oakland Sub-area – Category B

Contingency: Moraga – Clamant #1 or #2 115 kV line

Limiting component: Remaining Moraga – Clamant 115 kV line

2014 LCR need: No requirement

2018 LCR need: 204 MW (includes 49 MW of QF/Muni generation)

Oakland Sub-area – Category C

Contingency: overlapping C-X #2 and C-X #3 115 kV cables

Limiting component: Thermal overload on the Moraga – Clamant #1 or #2 230kV Line.

2014 LCR need: 96 MW (includes 49 MW of QF/Muni generation)

2018 LCR need: 183 MW (includes 49 MW of QF/Muni generation)

**This requirement does not include the need for the Pittsburg/
Oakland sub-area**

Pittsburg/Oakland Sub Area

Pittsburg/Oakland Sub-area – Category B

Contingency: Moraga #3 230/115 kV Bank

Limiting component: Thermal overload on Moraga #1 230/115 kV Bank

2014 LCR need: 1917 MW (includes 487 MW of QF/Muni generation)

2018 LCR need: No requirement.

Pittsburg/Oakland Sub-area – Category C

Contingency: Moraga #3 230/115 kV Bank and Delta Energy Center

Limiting component: Thermal overload on Moraga #1 230/115 kV Bank
(400 MW of Trans Bay Cable run back has been used)

2014 LCR need: 2461 MW (includes 487 MW of QF/Muni generation)

2018 LCR need: No requirement.

Contra Costa Sub Area

Contra Costa Sub-area – Category B

Contingency: Kelso-Tesla 230 kV with the Gateway off line

Limiting component: Thermal overload on the Delta Switching Yard-
Tesla 230 kV Line

2014 LCR need: 1217 MW (includes 318 MW of QF/Muni generation
and 234 MW of Muni pump load)

2018 LCR need: 1409 MW (includes 408 MW of QF/Muni generation
and 234 MW of Muni pump load)

Contra Costa Sub-area – Category C

Same as Category B

Greater Bay Area Overall

Bay Area Overall – Category B

Contingency: Tesla-Metcalf 500 kV line with Delta Energy Center out of service

Limiting component: Reactive margin within the Bay Area

2014 LCR need: 3747 MW (includes 1336 MW of QF/Muni/Wind generation)

2018 LCR need: 3860 MW (includes 1426 MW of QF/Muni/Wind generation)

Bay Area Overall – Category C

Contingency: overlapping Tesla-Metcalf 500 kV line and Tesla-Newark #1 230 kV line

Limiting component: Thermal overload on the Tesla-Contra Costa 230 kV line

2014 LCR need: 4423 MW (includes 1336 MW of QF/Muni/Wind generation)

2018 LCR need: 4478 MW (includes 1426 MW of QF/Muni/Wind generation)

Greater Bay Area

Available Generation

Year	QF (MW)	Muni (MW)	Wind (MW)	Market (MW)	Max. Qualifying Capacity (MW)
2014	578	489	269	6280	7616
2018	578	489	359	6932	8358

Total LCR need

	Existing Generation Capacity Needed (MW)		Deficiency (MW)		Total MW Need	
	2014	2018	2014	2018	2014	2018
Category B (Single)	3747	3860	0	0	3747	3860
Category C (Multiple)	4423	4478	215	8	4638	4486

Changes

Since last year:

- 1) 2014 load forecast is higher by 186 MW vs. 2013
- 2) LCR need has increased by 138 vs. 2013
- 3) Sum of sub-area LCR needs is NOT enough to satisfy the overall Bay Area requirement
- 4) 2018 load forecast is higher by 439 MW vs. 2017
- 5) Long-term LCR need has increased by 205 vs. 2017

Since last stakeholder meeting:

- 1) Updated NQC

Your comments and questions are welcome.

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