



California ISO
Shaping a Renewed Future

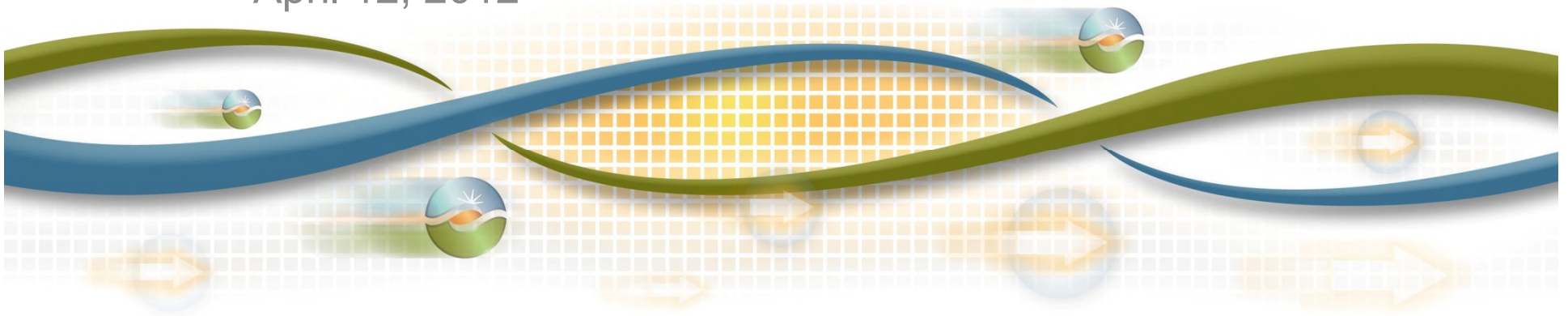
2013 Final LCR Study Results Greater Bay Area

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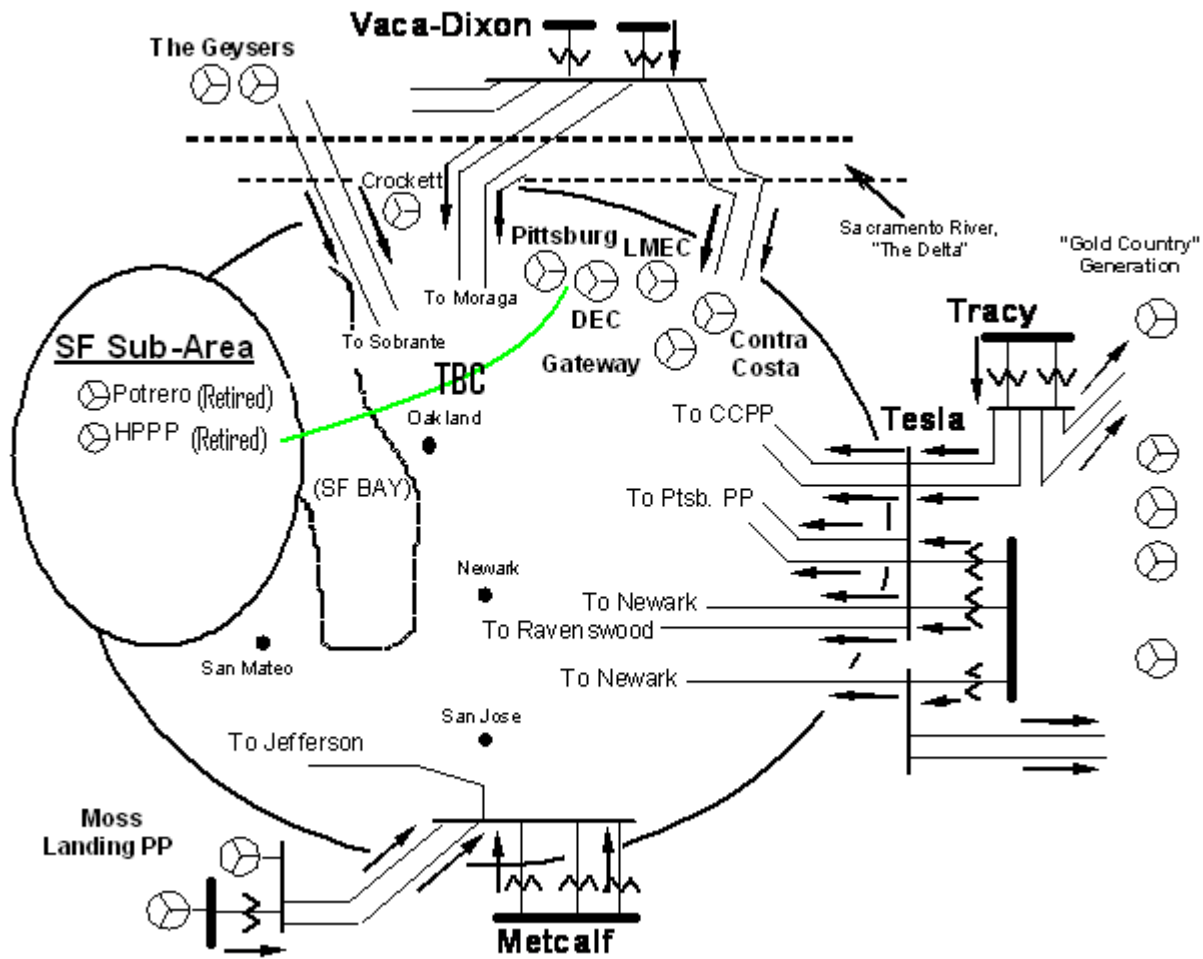
Senior Regional Transmission Engineer

Stakeholder Meeting

April 12, 2012



Greater Bay Area Transmission System



New major transmission projects

- **Pittsburg-Tesla 230 kV #1 & 2 Lines Reconductoring – 05/30/2013 (removed)**
- Replace Moraga 230/115kV Bank #1 with larger unit - 12/30 2012
- Eastshore - San Mateo 230 kV Line Reconductor – 12/01/2011
- Eastshore - Dumbarton 115 kV Line Reconductor - 06/01/2012

Power plant changes

Additions:

- Four Wind farms connected to Birds Landing (~ 340 MW P max)
- Russell City Energy Center (~ 606 MW P max) - 06/01/2013
- Marsh Landing Generating Station (~ 774 MW P max) - 12/01/2012
- Los Esteros Critical Energy Facility (LECEF) capacity increase by 120 MW (total 295 MW) - 05/01/2013 (modeled)

Greater Bay Area Load

2013 1-in-10 Year Load Representation

Total Load = 9770* MW

Transmission Losses = 199* MW

Pumps = 264 MW

Total Load + Losses + Pumps = 10,233* MW

* Slight change from the draft version is due to incorporating LECEF Generation Expansion Model

San Jose Sub Area

San Jose Sub-area – Category B

- Contingency: Metcalf-Evergreen #1 115 kV with Duane PP out of service
- LCR need: 354 MW (includes 255 MW of QF/Muni generation)
- Limiting component: Thermal overload of NRS–SRS 115 kV

San Jose Sub-area – Category C

- Contingency: Metcalf El Patio #1 or #2 overlapped with the outage of Metcalf-Evergreen #1 115 kV
- LCR need: 565 MW (includes 255 MW of QF/Muni generation)
- Limiting component: Thermal overload of Evergreen–San Jose B 115 kV

Llagas Sub Area

Llagas Sub-area – Category B

- Contingency: Metcalf D-Morgan Hill 115 kV with one of the Gilroy peakers off line
- LCR need: 100 MW (includes 0 MW of QF/Muni generation)
- Limiting component: Thermal overload on the Metcalf-Llagas 115 kV as well as 5% voltage drop at the Morgan Hill substation

Llagas Sub-area – Category C

- Same as Category B

Oakland Sub Area

Oakland Sub-area – Category B

- No LCR needs

Oakland Sub-area – Category C

- Contingency: overlapping C-X #2 and C-X #3 115 kV Cables
- LCR need: 68 MW (includes 49 MW of QF/Muni generation)
- Limiting component: Thermal overload on the D-L 115kV line

**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
- LCR need: 1966 MW (includes 466 MW of QF/Muni generation)
- Limiting component: Thermal overload on Moraga #1 230/115 kV Bank

Pittsburg/Oakland Sub-area – Category C

- Contingency: Moraga #3 230/115 kV Bank and Delta Energy Center
- LCR need: 2379 MW (includes 466 MW of QF/Muni generation)
- Limiting component: Thermal overload on Moraga #1 230/115 kV Bank
- 400 MW of Trans Bay Cable run back has been used

Contra Costa Sub Area

Contra Costa Sub-area – Category B

- Contingency: Kelso-Tesla 230 kV with the Gateway off line
- LCR need: 1052 MW (includes 345 MW of QF/Muni generation and 264 MW of Muni pump load)
- Limiting component: Thermal overload on the Delta Switching Yard-Tesla 230 kV Line

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
- LCR need: 3479 MW (includes 1368 MW of QF/Muni/Wind generation)
- Limiting component: Reactive margin within the Bay Area

Bay Area Overall – Category C

- Contingency: overlapping Tesla-Metcalf 500 kV line and Tesla-Newark #1 230 kV line
- LCR need: 4502 MW (includes 1368 MW of QF/Muni/Wind generation)
- Limiting component: Thermal overload on the Tesla-Ravenswood 230 kV line

Greater Bay Area Total LCR

2013	Wind (MW)	QF/Selfgen (MW)	Muni (MW)	Market (MW)	Max. Qualifying Capacity (MW)
Available generation	300	549	519	6296	7664

2013	Existing Generation Capacity Needed (MW)	Deficiency (MW)	Total MW LCR
Category B (Single)	3479	0	3479
Category C (Multiple)	4502	0	4502

Changes

Since last year:

- 1) Load forecast is higher by 279 MW
- 2) LCR need has increased by 224 MW from last year
- 3) Sum of sub-area LCR needs is NOT enough to satisfy the overall Bay Area requirement (57 MW are common for Pittsburg and Contra Costa sub-areas)
- 4) Added Generation Profile: Kelso, Russell City, Marsh Landing, LECEF Expansion and four wind resources

Since last stakeholder meeting:

- 1) Updated NQC
- 2) Added LECEF Expansion
- 3) Removed Tesla-Pittsburg #1 and #2 230 kV reconductoring

Your comments and questions are welcome.

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