2016 and 2020 Draft LCR Study Results - Greater Bay Area

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Stakeholder Meeting

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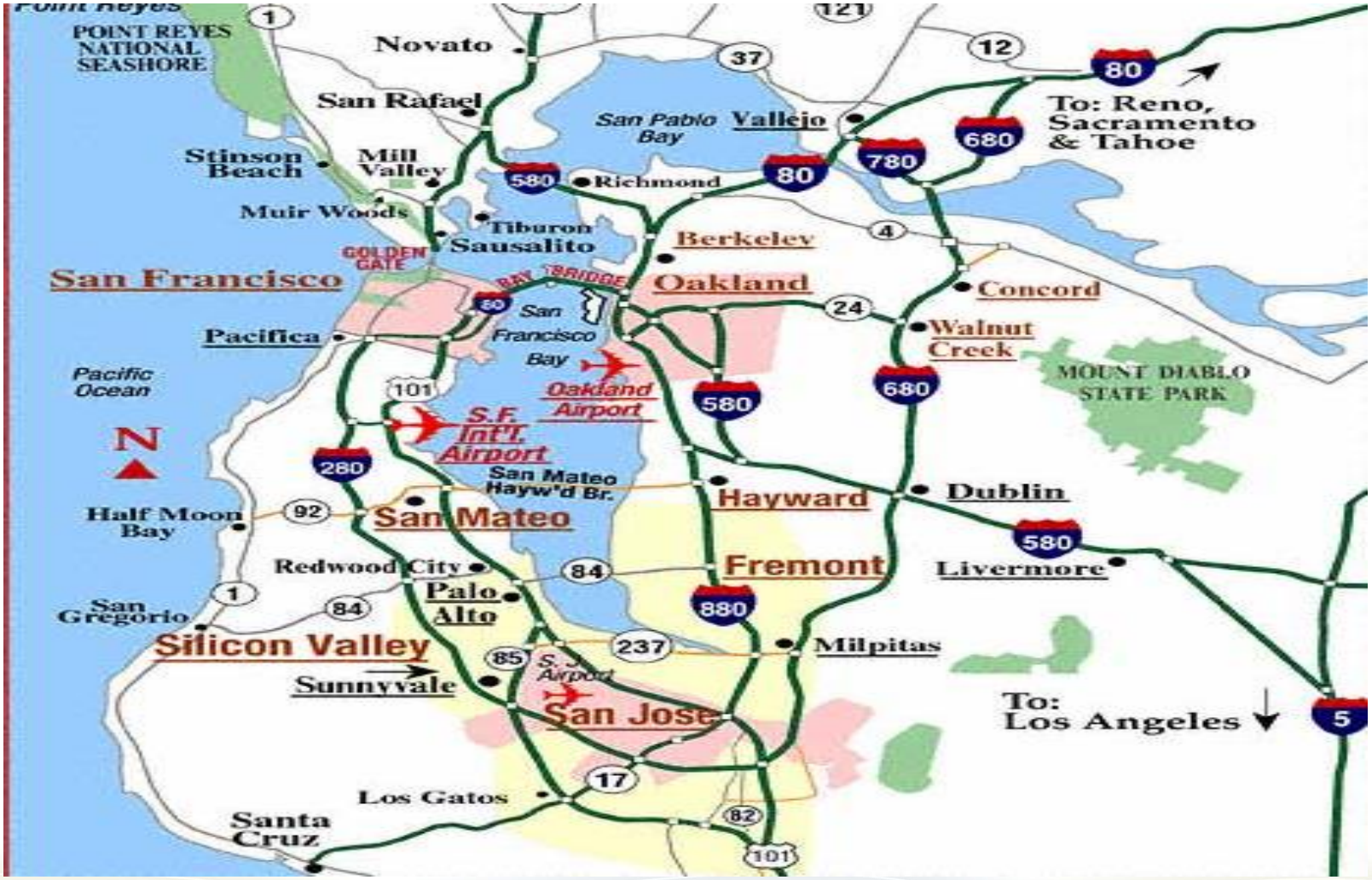
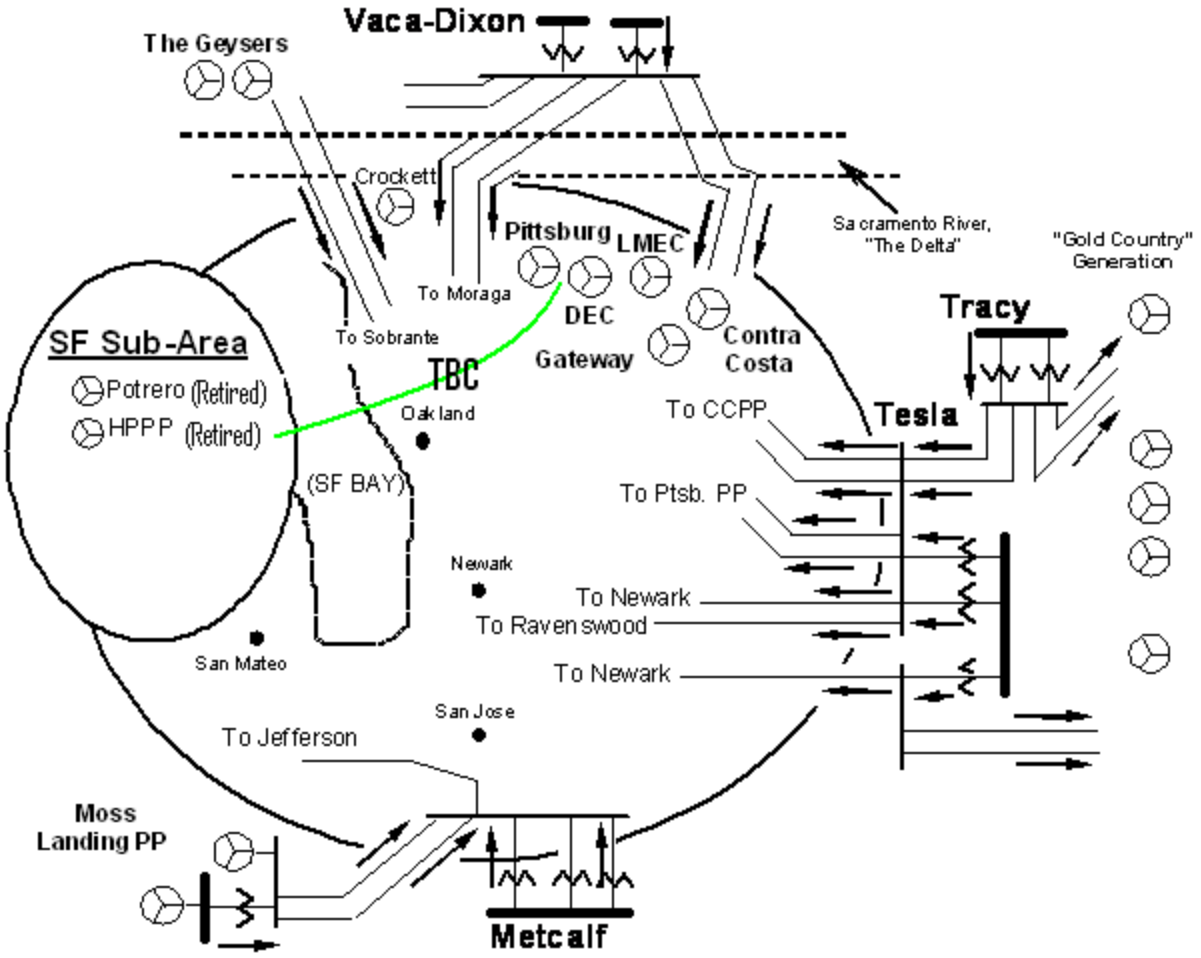
Greater Bay Area Map



Greater Bay Area Transmission System



New major transmission projects

- Contra Costa – Moraga 230 kV Line Reconductoring – 06/16
- East Shore-Oakland J 115 kV Reconductoring Project – 07/18
- Embarcadero-Potrero 230 kV Transmission Project – 04/16
- Evergreen-Mabury Conversion to 115 kV - 12/17
- Metcalf-Evergreen 115 kV Line Reconductoring – 05/19
- Metcalf-Piercy & Swift and Newark-Dixon Landing 115 kV Upgrade – 05/19
- Moraga Transformers Capacity Increase – 10/16
- Pittsburg – Tesla 230 kV Reconductoring – 10/15
- Tesla-Newark 230 kV Path Upgrade – 12/17
- Vaca Dixon-Lakeville 230 kV Reconductoring – 07/17

Power plant changes

Additions:

- Marsh Landing Generating Station
- Los Esteros Critical Energy Facility (LECEF) capacity increase
- Russel City
- Oakley (2020 only)

Retirements:

- Contra Costa units #6 and #7
- GWF #1-5

Bay Area Load and Resources (MW)

		2016	2020
Load	=	9,790	10,048
AAEE	=	-144	-369
Transmission Losses	=	173	188
Pumps	=	264	264
Total Load	=	**10,083**	**10,131**
Market Generation	=	6,243	6,900
Wind Generation	=	285	285
Muni Generation	=	519	519
QF Generation	=	485	485
Total Qualifying Capacity	=	**7,505**	**8,162**

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

2016 LCR need: 265 MW (includes 61 MW of QF and 202 MW of generation)

2020 LCR need: no LCR need

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-Piercy 115 kV Line

2016 LCR need: 687 MW (includes 61 MW of QF and 202 MW of generation as well as 135 MW of deficiency)

2020 LCR need: 522 MW (includes 263 MW of QF/Muni generation)

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: 5% voltage drop at the Morgan Hill substation
2016 LCR need: 135 MW (includes 0 MW of QF/Muni generation)
2020 LCR need: 158 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 – Claremont #1 or #2 230 kV line with one Oakland CT off-line

Limiting component: Remaining Moraga – Claremont 230 kV line

2016 LCR need: No requirement

2020 LCR need: 161 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 – Claremont #1 or #2 230 kV Line.

2016 LCR need: 92 MW (includes 49 MW of QF/Muni generation)

2020 LCR need: Not binding = Same as Category B

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

2016 LCR need: 1188 MW (includes 369 MW of QF and 49 MW of Muni generation)

2020 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)

2016 LCR need: 2001 MW (includes 369 MW of QF and 49 MW of Muni generation)

2020 LCR need: No requirement.

Pittsburg Sub Area

Pittsburg Sub-area – Category B

2016 LCR need: Yes - Part of Pittsburg/Oakland sub-area

2020 LCR need: No requirement.

Pittsburg Sub-area – Category C

2016 LCR need: Yes - Part of Pittsburg/Oakland sub-area

Contingency: Vaca-Dixon Lakeville & Vaca-Dixon Tulucay 230 kV lines

Limiting component: Thermal overload on Moraga-Sobrante 115 kV line

2020 LCR need: 1471 MW (includes 369 MW of QF generation)

Ames Sub Area

Ames Sub-area – Category B

2016 LCR need: No requirement.

2020 LCR need: No requirement.

Ames Sub-area – Category C

Contingency: Newark-Ravenswood & Tesla-Ravenswood 230 kV lines

Limiting component: Overload of Newark-Ames #1, #2, #3 and Newark-Ames Distribution 115 kV lines

2016 LCR need: 586 MW (beyond Pittsburg/Oakland sub-area) (includes 0 MW of QF generation)

2020 LCR need: No requirements due to South of San Mateo Capacity Increase transmission project

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
2016 LCR need: 930 MW (includes 256 MW of Wind generation and 264 MW of MUNI pumps)
2020 LCR need: 1354 MW (includes 256 MW of Wind generation and 264 MW of MUNI pumps)

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

2016 LCR need: 3790 MW (includes 485 MW of QF, 519 MW of MUNI and 258 MW of wind generation)

2020 LCR need: 3820 MW (includes 485 MW of QF, 519 MW of MUNI and 258 MW of wind generation)

Greater Bay Area Overall

Bay Area Overall – Category C

2016 LCR need: Sum of Category C sub area requirements at 4339 MW (includes 485 MW of QF, 519 MW of MUNI and 258 MW of wind generation as well as 135 MW of deficiency)

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

Limiting component: Tesla-Delta Switching Yard 230 kV line

2020 LCR need: 4191 MW (includes 485 MW of QF, 519 MW of MUNI and 258 MW of wind generation)

Greater Bay Area

Available Generation

Year	QF (MW)	Muni (MW)	Wind (MW)	Market (MW)	Max. Qualifying Capacity (MW)
2016	485	519	258	6243	7505
2020	485	519	258	6900	8162

Total LCR need

	Existing Generation Capacity Needed (MW)		Deficiency (MW)		Total MW Need	
	2016	2020	2016	2020	2016	2020
Category B (Single)	3790	3820	0	0	3790	3820
Category C (Multiple)	4204	4191	135	0	4339	4191

Changes

Since last year:

1) 2016 load forecast is lower by 135 MW vs. 2015
2) Sum of sub-area LCR needs drive the Bay Area total requirement in 2016
3) LCR need has decreased by 28 MW vs. 2015 – due to a combination of load and new Ames sub-area requirements.
4) 2020 load forecast is lower by 189 MW vs. 2019
5) Added Generation: Oakley (2020 only)
6) Long-term LCR need has decreased by 33 MW vs. 2019

Your comments and questions are welcome.

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