2018 & 22 Draft LCR Study Results Greater Bay Area

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Stakeholder Meeting

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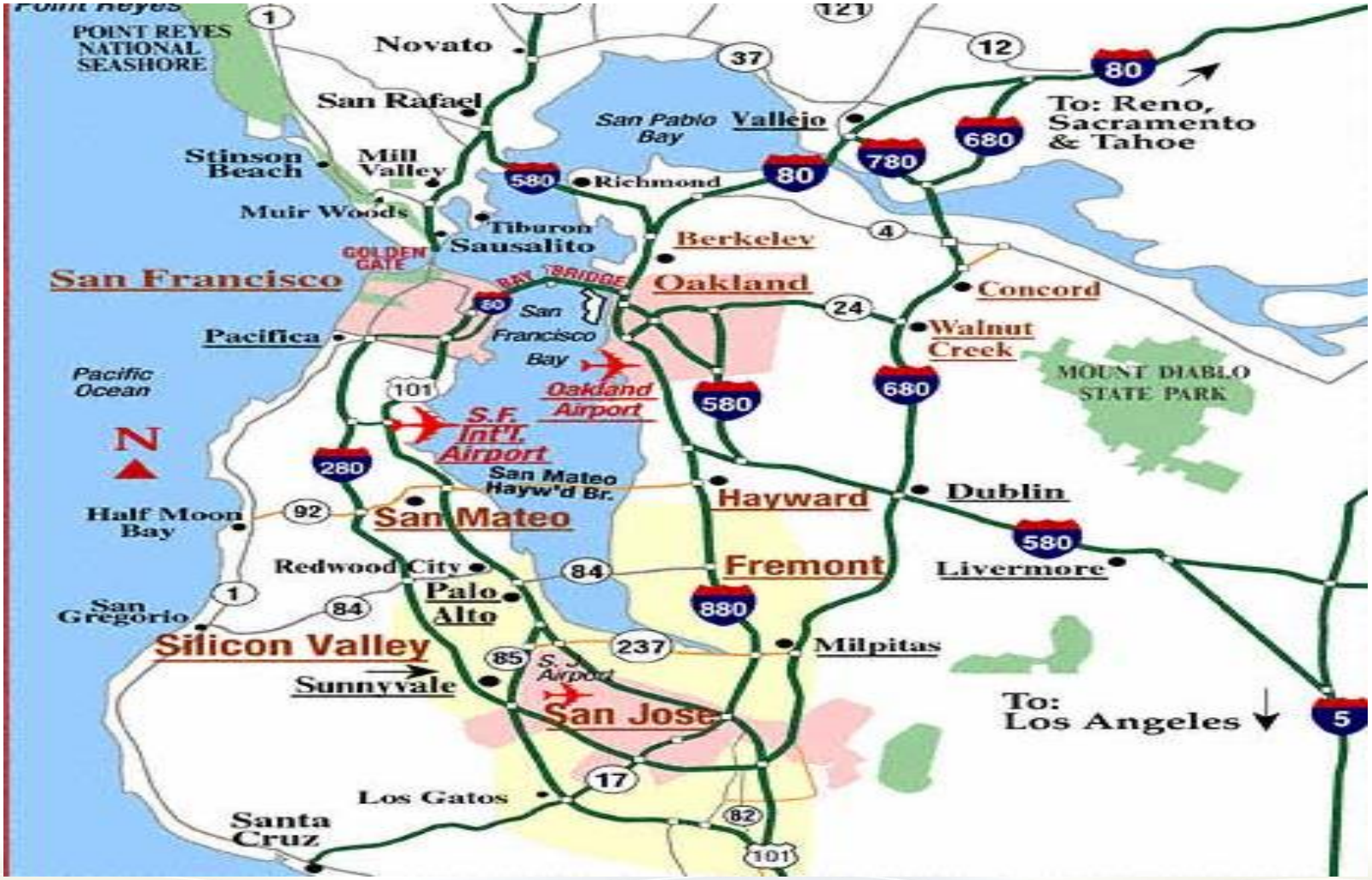
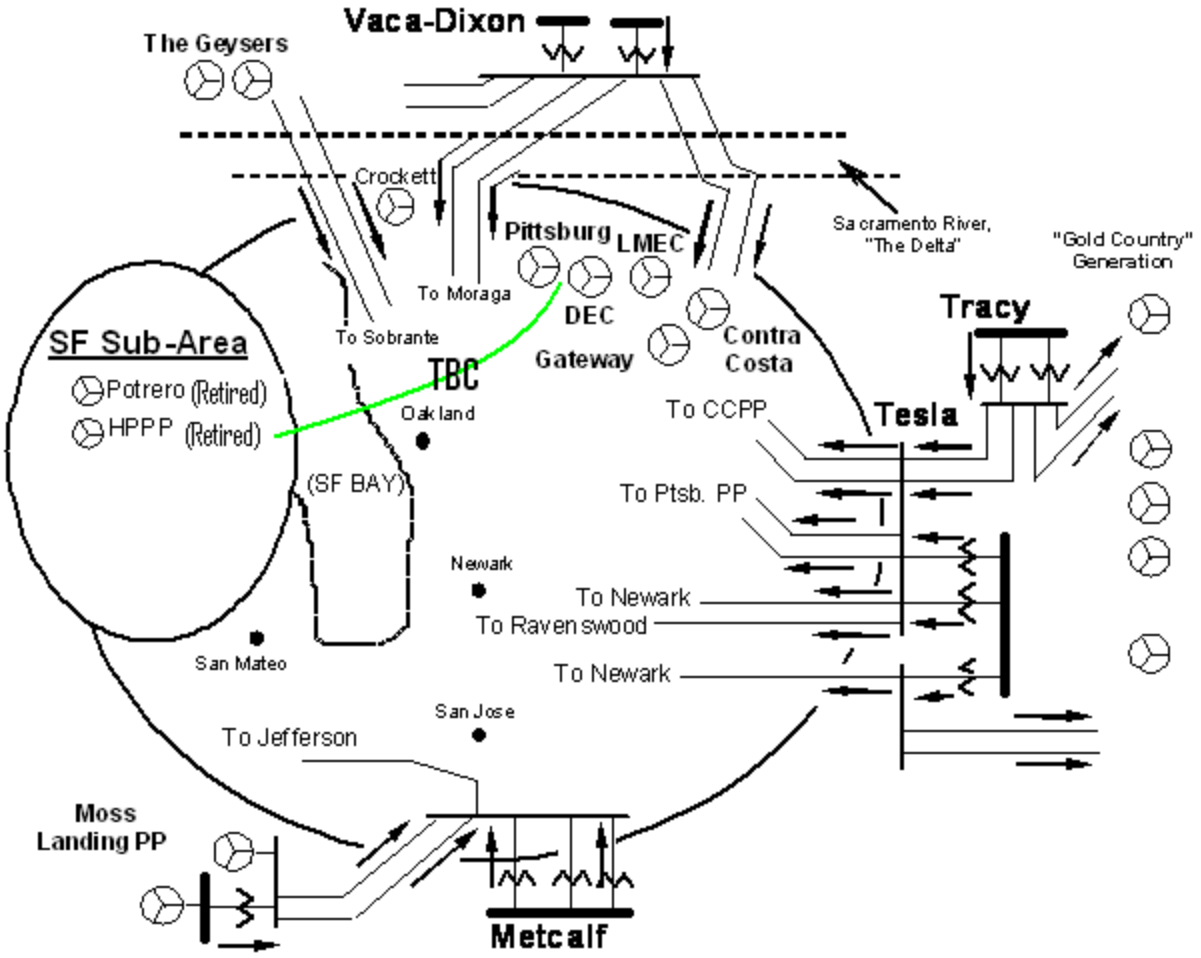
Greater Bay Area Map



Greater Bay Area Transmission System



New major transmission projects

2018:

- Tesla-Newark 230 kV Path Upgrade

2022 Additional:

- Morgan Hill Area Reinforcement (New 420MVA Spring 230/115kV Bank#1)
- Metcalf-Evergreen 115 kV Line Reconductoring
- Metcalf-Piercy & Swift and Newark-Dixon Landing 115 kV Upgrade
- East Shore-Oakland J 115 kV Reconductoring Project
- Vaca Dixon-Lakeville 230 kV Reconductoring

Power plant changes

Additions:

- A few small renewable resources

Retirements:

- Pittsburg Power Plant
- Moss Landing Units 6 & 7

Bay Area Load and Resources (MW)

		2018	2022
Gross Load	=	10,309	10,629
AAEE	=	-207	-424
Behind the meter DG	=	-328	-483
Net Load	**=**	**9,774**	**9,722**
Transmission Losses	=	209	194
Pumps	=	264	264
Load + Losses + Pumps	**=**	**10,247**	**10,180**
Market Generation	=	6,435	5,775
Wind Generation	=	278	278
Muni Generation	=	547	547
QF Generation	=	297	297
Total Qualifying Capacity	=	**7,557**	**6,897**

San Jose Sub Area

San Jose Sub-area – Category B

2018 LCR need: No requirement.

2022 LCR need: No requirement.

San Jose Sub-area – Category C

Contingency: Metcalf-Evergreen #2 115kV Line overlapped with Metcalf-El Patio #1 or #2 115 kV Line

Limiting component: Metcalf-Evergreen #1 115kV Line

2018 LCR need: 488 MW (includes 5 MW of QF and 230 MW of generation)

Contingency: Metcalf-El Patio #1 115 kV Line overlapped with Metcalf-Evergreen #2 115kV Line

Limiting component: Metcalf-El Patio #2115 kV Line

2022 LCR need: 111 MW (includes 5 MW of QF and 230 MW of 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
2018 LCR need: 105 MW (includes 0 MW of QF/Muni generation)
2022 LCR need: No requirement.

Llagas Sub-area – Category C

2018 LCR need: Same as Category B

Contingency: Metcalf D-Morgan Hill 115 kV overlapped with outage of Spring 230/115kV Bank#1
Limiting component: Morgan Hill-Llagas 115 kV Line
2022 LCR need: 24 MW (includes 0 MW of QF/Muni generation)

South Bay-Moss Landing Sub Area

South Bay-Moss Landing Sub-area – Category B

2018 LCR need: No requirement.

2022 LCR need: No requirement.

South Bay-Moss Landing Sub-area – Category C

Contingency: Tesla-Metcalf 500 kV and Moss Landing-Los Banos 500 kV

Limiting component: Thermal overload of Las Aguillas-Moss Landing 230 kV

2018 LCR need: 2221 MW (includes 5 MW of QF and 230 MW of Muni generation)

2022 LCR need: 2346 MW (includes 5 MW of QF and 230 MW of Muni generation as well as 107 MW of deficiency)

Resources in San Jose and Llagas sub-areas are also included in this sub-area.

Oakland Sub Area

Oakland Sub-area – Category B

2018 LCR need: No requirement

2022 LCR need: No requirement

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.

2018 LCR need: 56 MW (includes 49 MW of QF/Muni generation)

2022 LCR need: 50 MW (includes 49 MW of QF/Muni generation)

2015-2016 real-time operational data shows a need of at least 98 MW for a 1-in-3 heat wave.

Ames/Pittsburg Sub-Area

NCNB Sub-area – Category B

Contingency: Vaca Dixon-Tulucay 230 kV line with Delta Energy Center power plant out of service

Limiting component: Thermal overload on the Vaca Dixon-Lakeville 230 kV line

Ames/Pittsburg Sub-area – Category C

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

Limiting component: Thermal overload on the Newark-Ames #2 115 kV line

2018 LCR need:

NCNB: 634 MW (includes 14 MW of QF and 115 MW Muni generation)

Ames: 596 MW (includes 0 MW of QF and Muni generation)

Pittsburg: 1182 MW (includes 200 MW of QF and Muni generation)

Ames/Pittsburg Sub-Area

NCNB Sub-area – Category B

Contingency: Vaca Dixon-Tulucay 230 kV line with Delta Energy Center power plant out of service

Limiting component: Thermal overload on the Vaca Dixon-Lakeville 230 kV line

Ames/Pittsburg Sub-area – Category C

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

Limiting component: Thermal overload on the Newark-Ames #2 115 kV line

<u>2022 LCR need – Vaca Dixon-Lakeville 230 kV lines not reconductored</u>:

NCNB: 628 MW (includes 14 MW of QF and 115 MW Muni generation)

Ames: 596 MW (includes 0 MW of QF and Muni generation)

Pittsburg: 1162 MW (includes 200 MW of QF and Muni generation)

Ames/Pittsburg Sub-Area

NCNB Sub-area – Category C

Contingency: Vaca Dixon-Tulucay and Vaca Dixon-Lakeville 230 kV line

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

Ames/Pittsburg Sub-area – Category C

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

Limiting component: Thermal overload on the Newark-Ames #2 115 kV line

2022 LCR need – Vaca Dixon-Lakeville 230 kV lines reconductored:

NCNB:	440 MW (includes 14 MW of QF and 115 MW Muni generation)
Ames:	596 MW (includes 0 MW of QF and Muni generation)
Pittsburg:	1232 MW (includes 200 MW of QF and Muni generation)

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
2018 LCR need: 1063 MW (includes 275 MW of Wind generation and 264 MW of MUNI pumps)
2022 LCR need: 1043 MW (includes 275 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

2018 LCR need: 3910 MW (includes 232 MW of QF, 547 MW of MUNI and 291 MW of wind generation)

2022 LCR need: 4257 MW (includes 232 MW of QF, 547 MW of MUNI and 291 MW of wind generation)

Bay Area Overall – Category C

2018 LCR need: Sum of Category C from sub-area needs: 5160 MW (includes 232 MW of QF, 547 MW of MUNI and 291 MW of wind generation)

2022 LCR need: Sum of Category C from sub-area needs: 5315 MW (includes 232 MW of QF, 547 MW of MUNI and 291 MW of wind generation as well as 107 MW of deficiency)

Greater Bay Area

Available Generation

Year	QF (MW)	Muni (MW)	Wind (MW)	Market (MW)	Max. Qualifying Capacity (MW)
2018	297	547	278	6435	7557
2022	297	547	278	5775	6897

Total LCR need

	Existing Generation Capacity Needed (MW)		Deficiency (MW)		Total MW Need	
	2018	2022	2018	2022	2018	2022
Category B (Single)	3910	4257	0	0	3910	4257
Category C (Multiple)	5160	5208	0	107	5160	5315

Changes

Since last year:

1) 2018 load forecast is lower by 230 MW vs. 2017
2) LCR need has decreased by 457 MW vs. 2017 – due to load forecast decrease and new transmission projects
3) 2022 load forecast is higher by 536 MW vs. 2021
4) LCR need has increased by 121 MW vs. 2021 – due to load forecast decrease

Your comments and questions are welcome.

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