



2020 & 2024 Final LCR Study Results Stockton Area

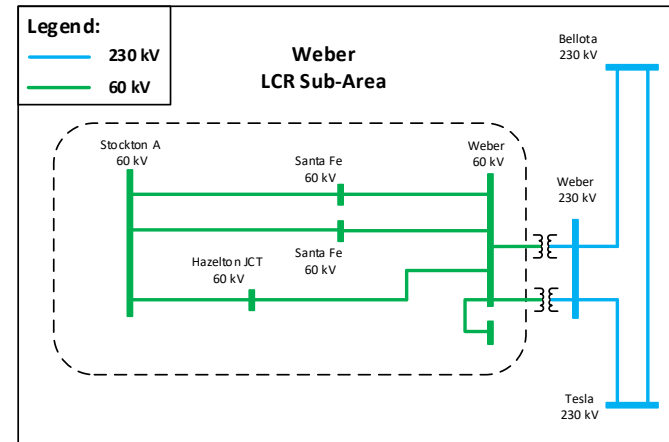
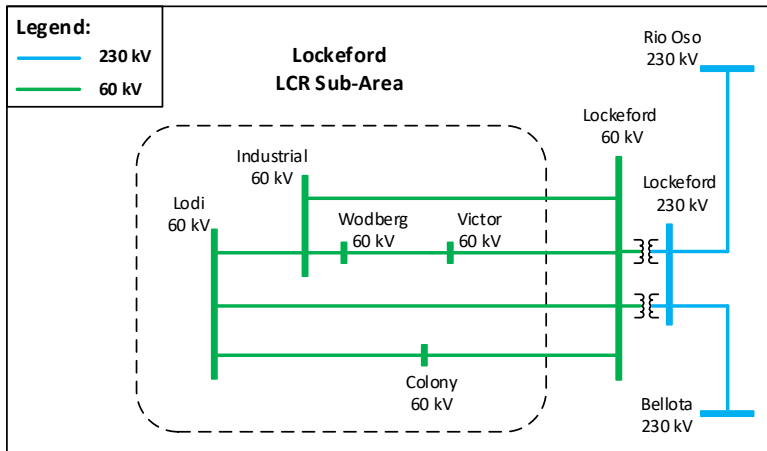
Ebrahim Rahimi

Lead Regional Transmission Engineer

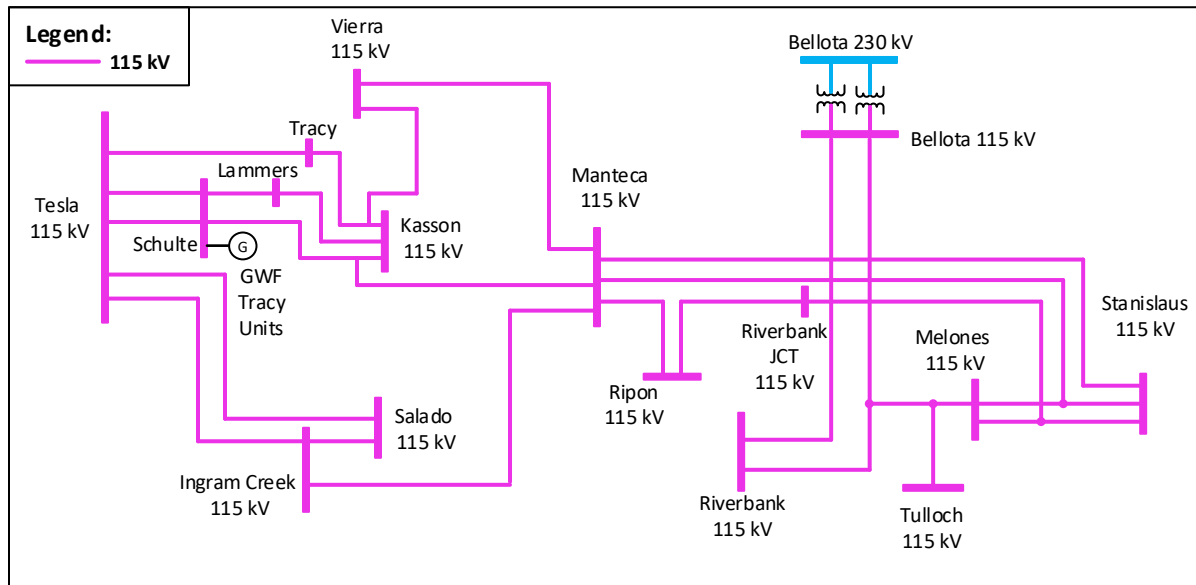
Stakeholder Call

April 10, 2019

Stockton Area Transmission System & LCR Subareas



Tesla-Bellota LCR Sub-Area in 2020



New major transmission projects

Project Name	Expected ISD
Year 2020	
Ripon 115 kV Line	Apr-19
Stockton A – Weber #1 & #2 60 kV lines Reconductor	May-19
Year 2024	
Vierra 115 kV Looping Project	Feb-23

Power plant changes

Additions:

- No new resource addition

Retirements:

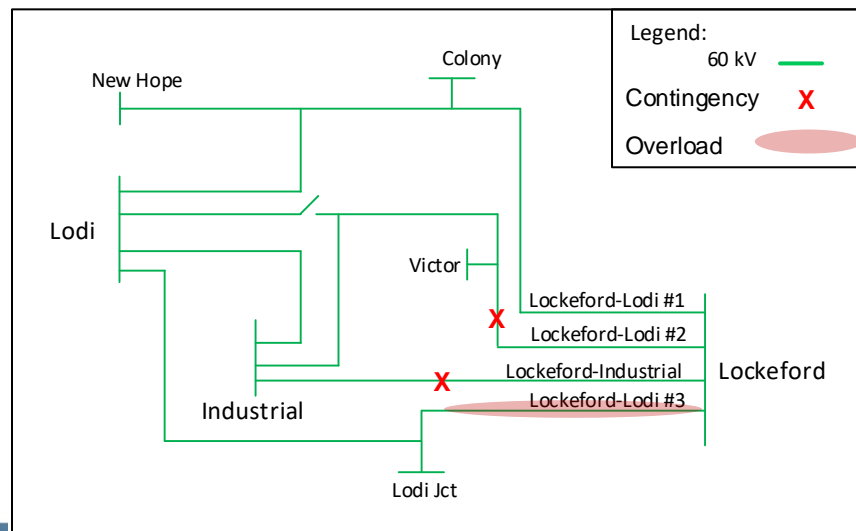
- No new retirements

Stockton Area Overall: Load and Resources

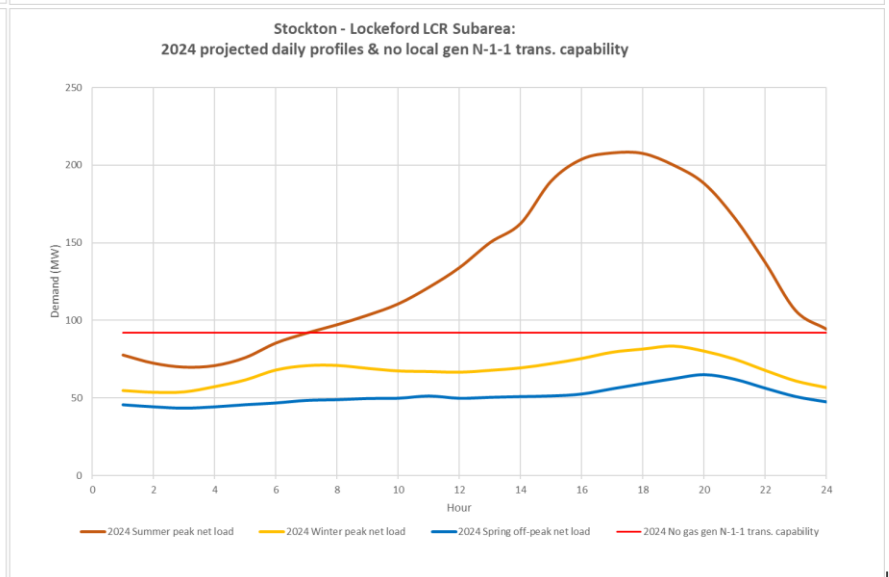
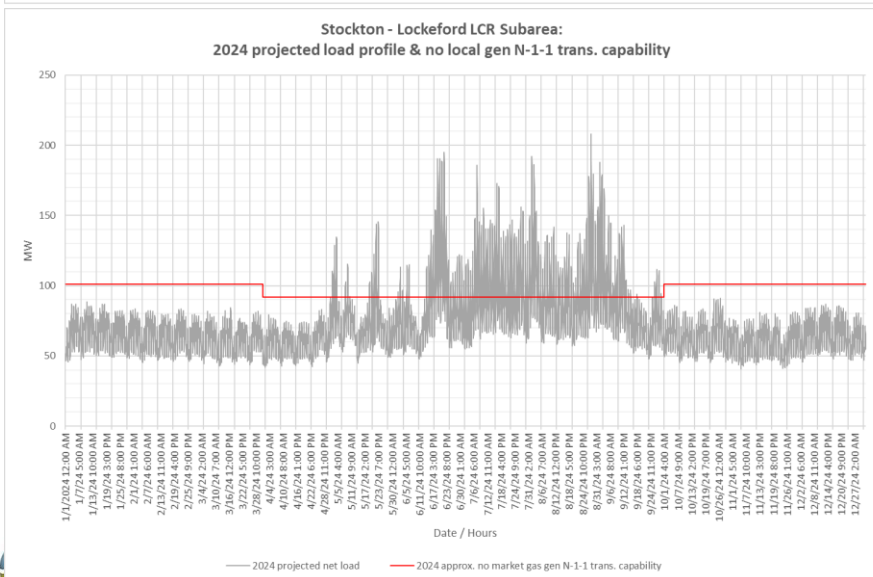
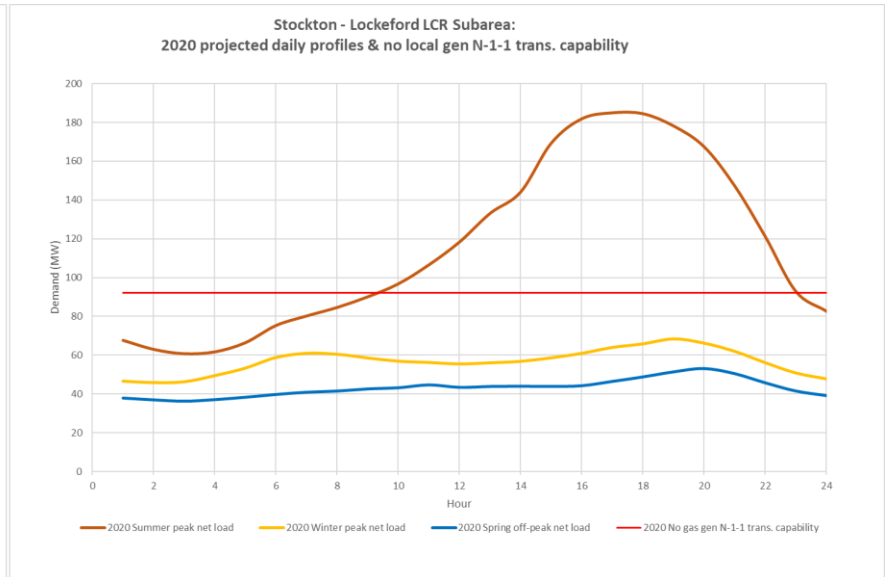
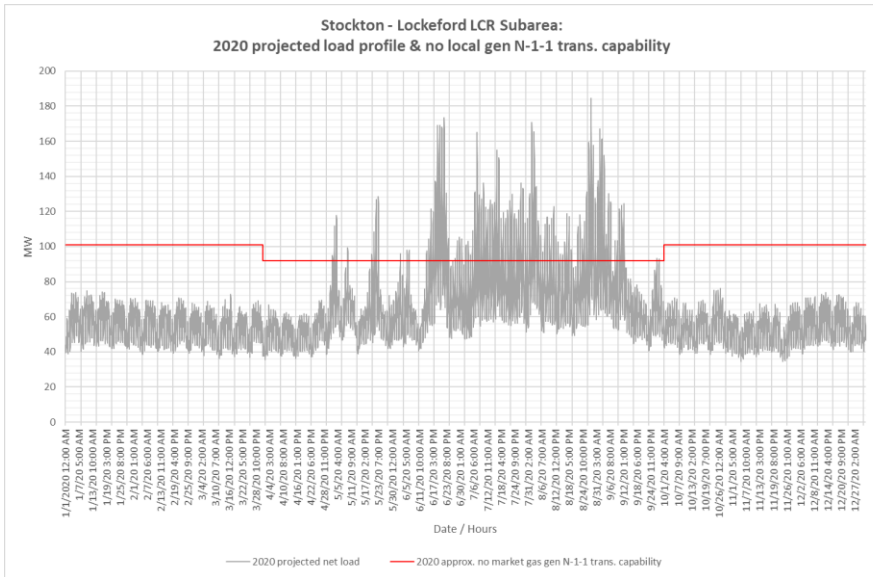
Load (MW)	2020	2024	Generation (MW)	2020	2024
Gross Load	1,270	1,360	Market/ Net Seller/ Battery	497	543
AAEE	-16	-52	Solar	1	1
Behind the meter DG	0	0	Wind	0	0
Net Load	1,254	1,308	Muni	137	137
Transmission Losses	22	21	QF	18	18
Pumps	0	0	Future preferred resource and energy storage	0	0
Load + Losses + Pumps	1,275	1,329	Total Qualifying Capacity	653	699

Lockeford Sub Area : Requirements

Year	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2020	B	Lockeford – Lodi #2 60 kV	Lockeford-Industrial 60 kV line and Lodi CT	48 (24)
2020	C	Lockeford – Lodi #3 60 kV	Lockeford-Industrial and Lockeford – Lodi #2 60 kV lines	97 (73)
2024	B	Lockeford – Lodi #2 60 kV	Lockeford-Industrial 60 kV line and Lodi CT	53 (29)
2024	C	Lockeford – Lodi #3 60 kV	Lockeford-Industrial and Lockeford – Lodi #2 60 kV lines	102 (78)

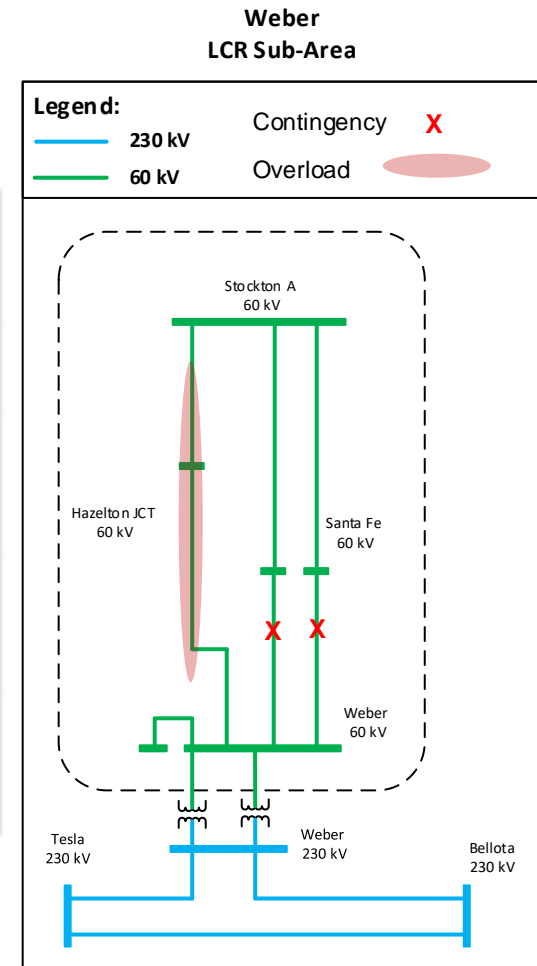


Lockeford Subarea: Load Profiles

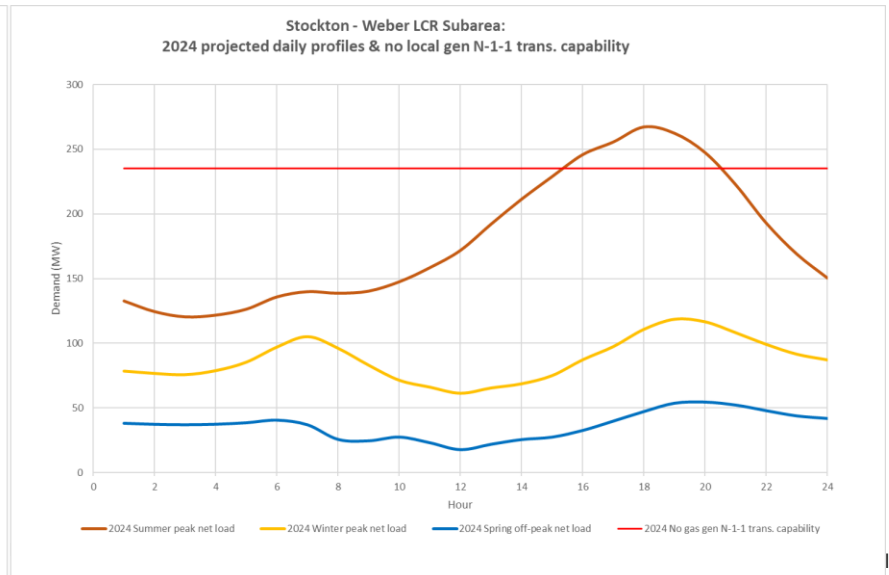
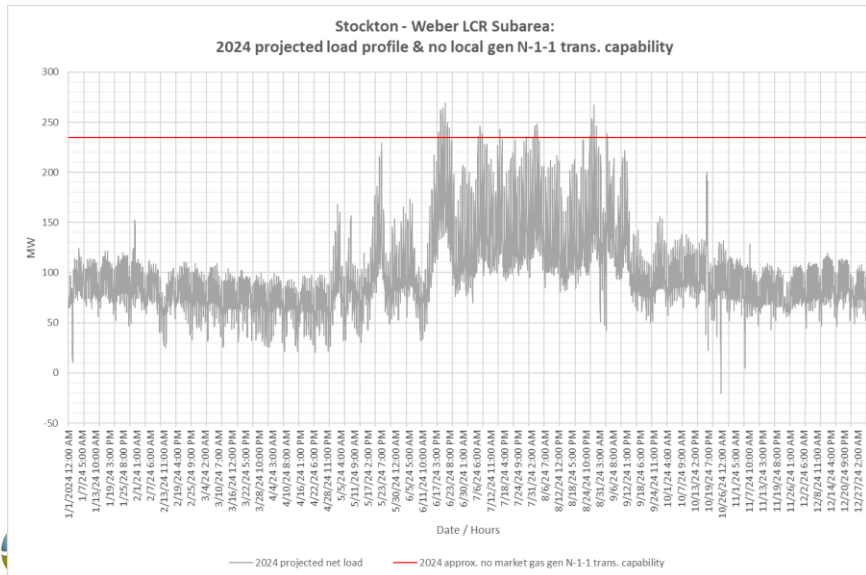
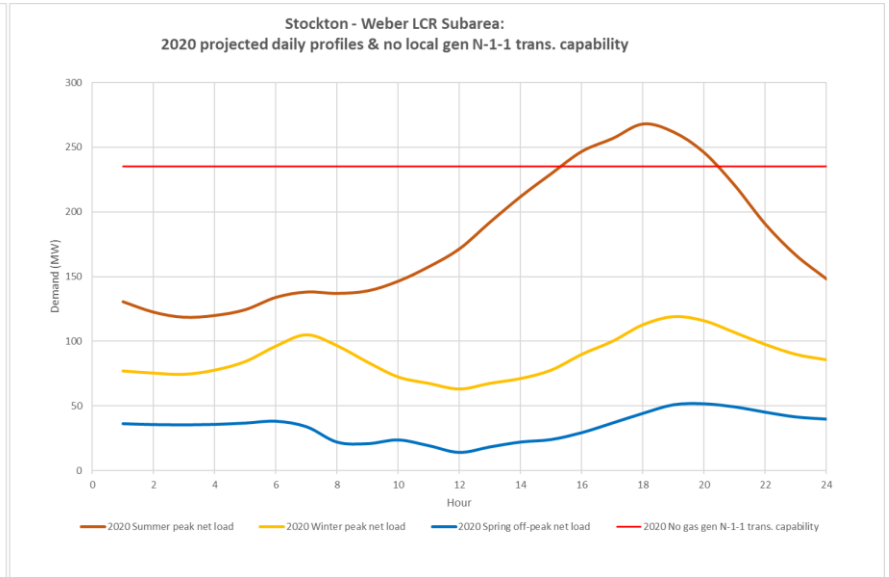
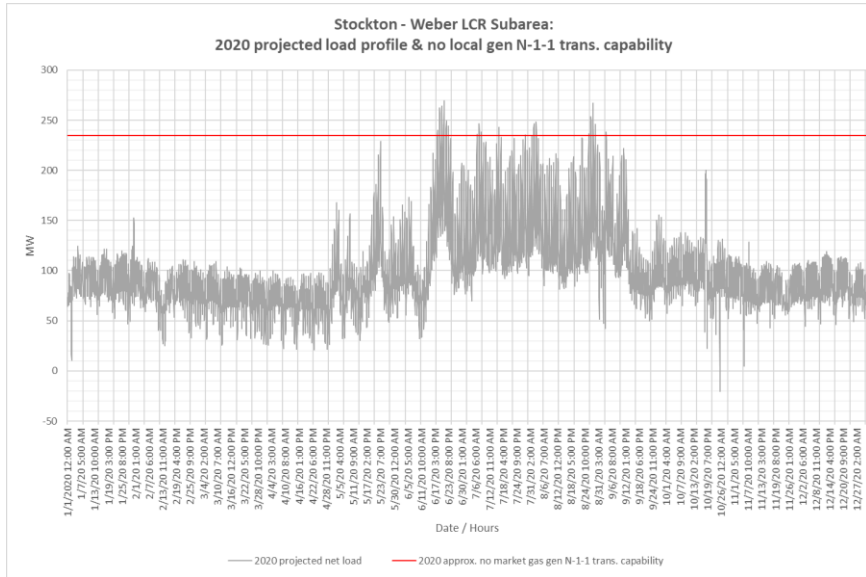


Weber Sub Area : Requirements

Year	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2020	B	None	None	No requirement
2020	C	Stockton A-Weber #3	Stockton A-Weber #1 and #2 60 kV lines	26
2024	B	None	None	No requirement
2024	C	Stockton A-Weber #3	Stockton A-Weber #1 and #2 60 kV lines	26

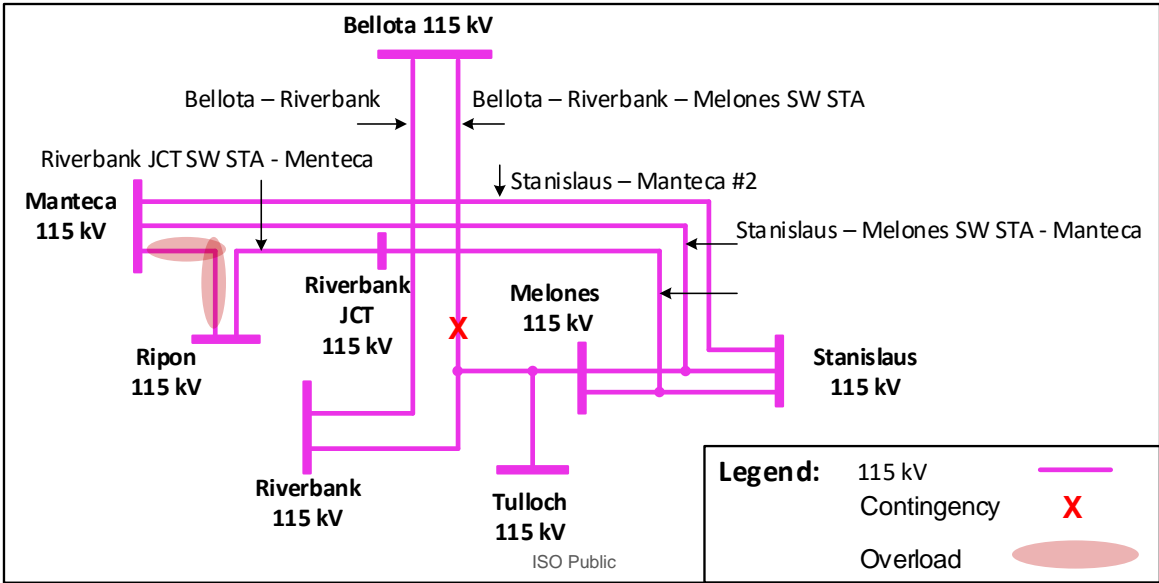


Weber Subarea: Load Profiles

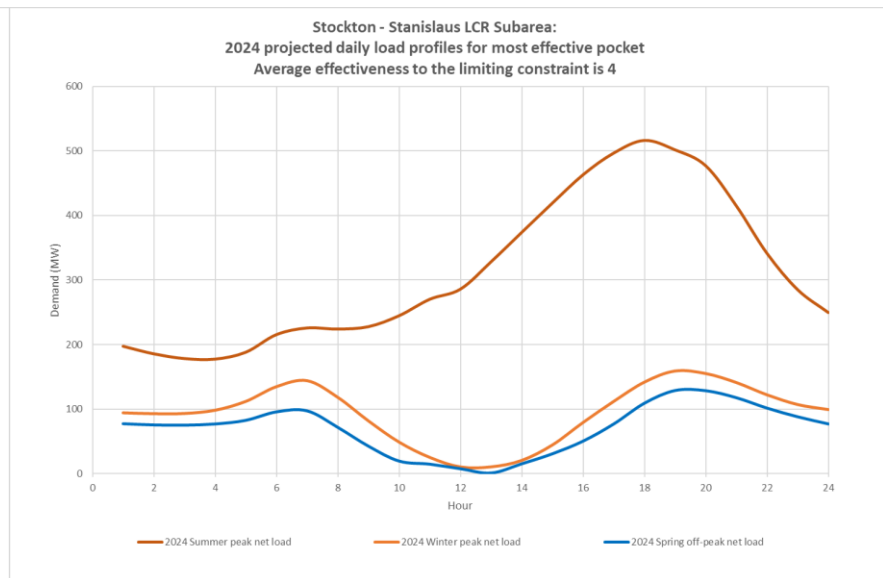
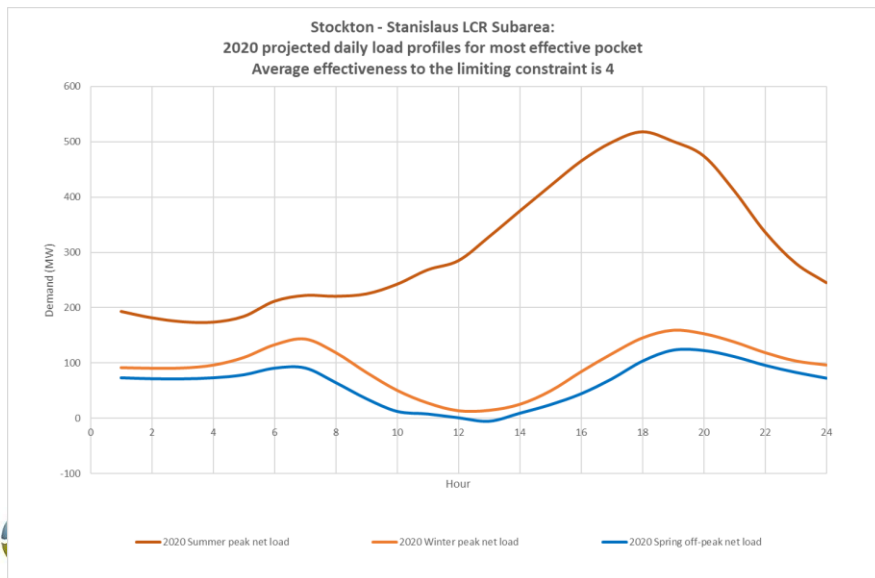
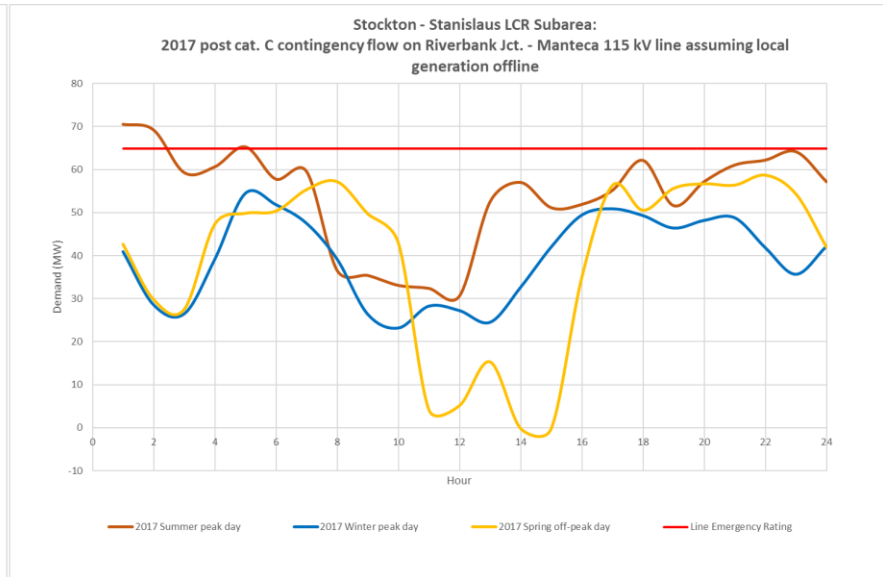
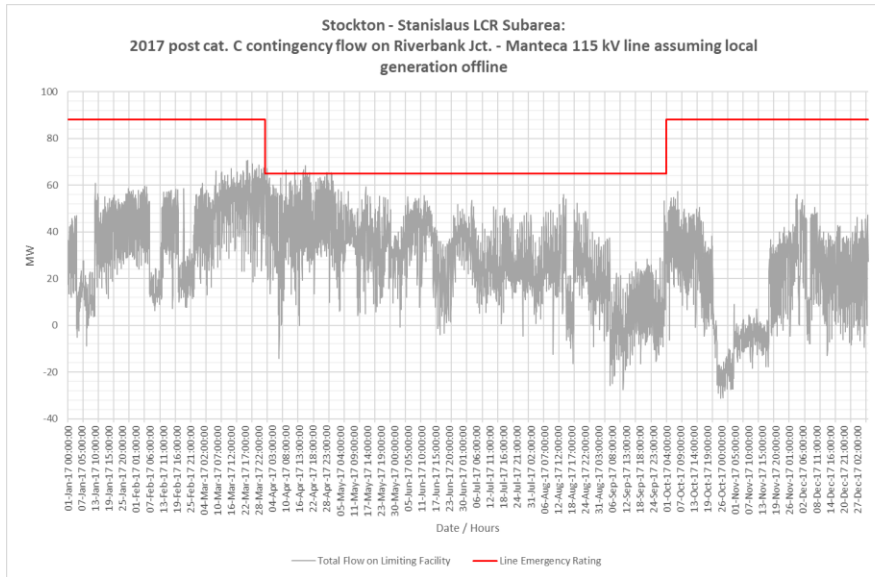


Stanislaus Sub Area : Requirements

Year	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)	
2020	B	Manteca - Ripon 115 kV Line	Bellota-Riverbank-Melones 115 kV line and Stanislaus PH unit	179	
2020	C	Same as Category B			
2024	B	Manteca - Ripon 115 kV Line	Bellota-Riverbank-Melones 115 kV line and Stanislaus PH unit	185	
2024	C	Same as Category B			

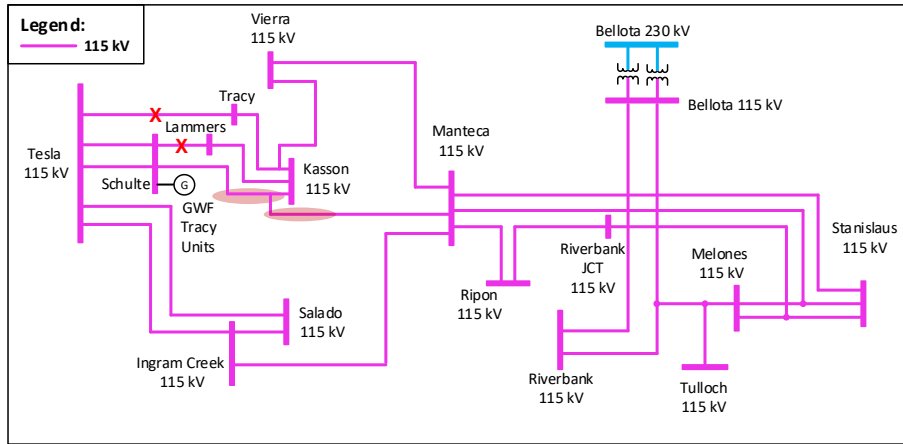


Stanislaus Subarea: Flow Profiles

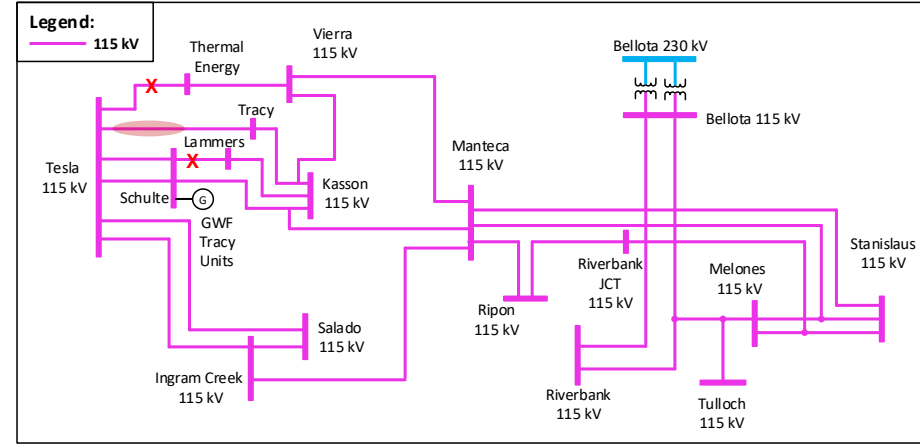


Tesla - Bellota Sub Area : Requirements

Tesla-Bellota LCR Sub-Area in 2020

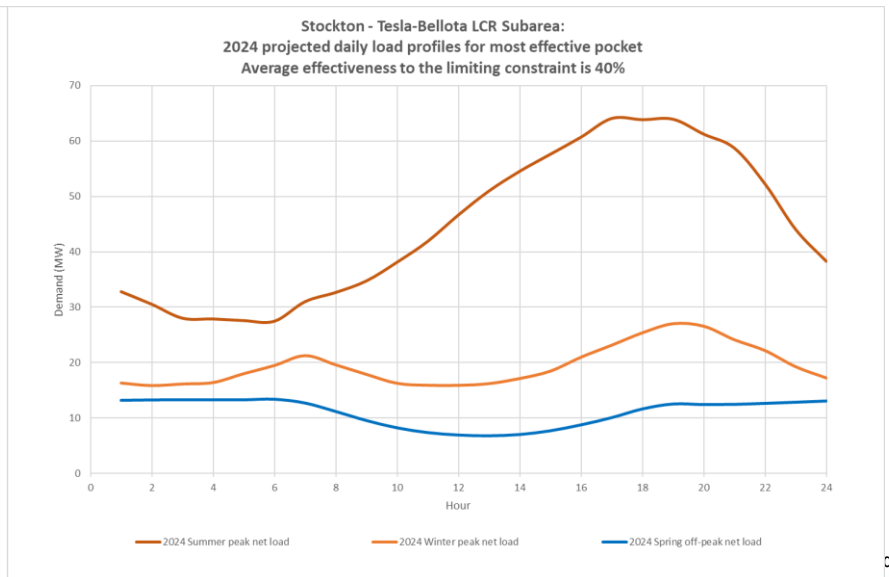
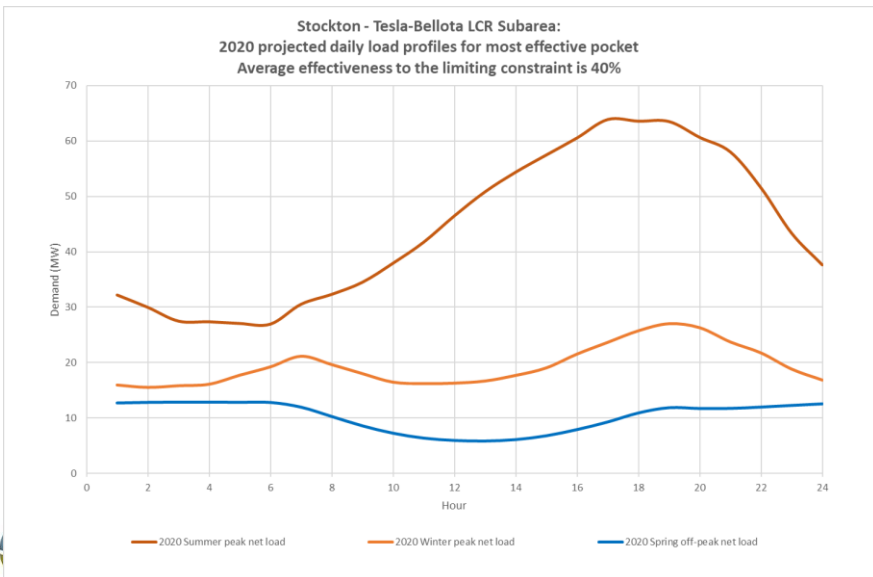
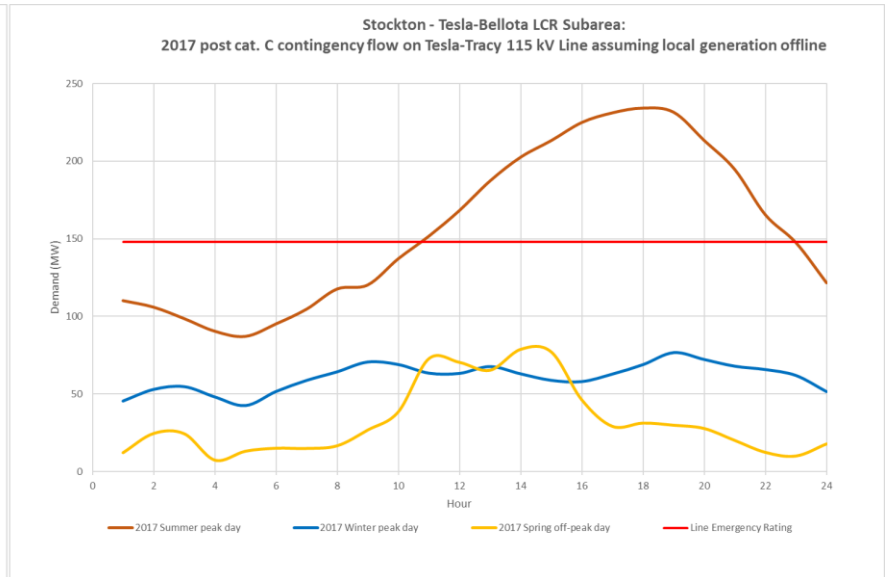
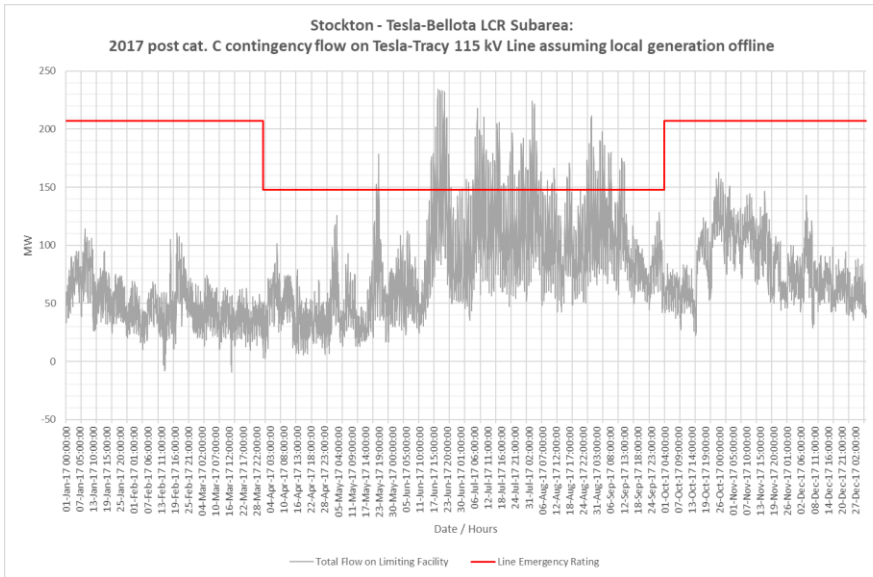


Tesla-Bellota LCR Sub-Area in 2024



Year	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2020	B	Tesla – Tracy 115 kV line	Schulte – Lammers 115 kV and GWF Tracy #3 unit	639 (60 NQC/ 61 Peak)
2020	C	Schulte-Kasson-Manteca 115 kV lines	Schulte – Lammers and Tesla – Tracy 115 kV lines	1,117 (538 NQC/ 539 Peak)
2024	B	Tesla – Vierra 115 kV line	Tesla – Tracy 115 kV and GWF Tracy #3 unit	364
2024	C (1)	Tesla – Tracy 115 kV line	Schulte – Lammers and Tesla – Vierra 115 kV lines	756 (131 NQC/ 132 Peak)
2024	C (2)	Tesla – Vierra 115 kV line	Schulte – Lammers and Schulte-Kasson-Manteca 115 kV lines	552 (256 NQC/ 257 Peak)
2024	C (total)	N/A	N/A	881 (256 NQC/ 257 Peak)

Tesla-Bellota Subarea: Flow Profiles



Changes from 2019 to 2020

Subarea	2019		2020	
	Load	LCR	Load	LCR
Lockeford	184	83 (59)	190	97 (73)
Weber	229	21	238	26
Stanislaus	N/A	152	N/A	179
Tesla - Bellota	761	673 (291)	848	1,117 (538 NQC/ 539 Peak)
Total	1,174	777 (350)	1,275	1,241 (612 NQC/ 613 Peak)

LCR increases is mostly due to load increase. The load has a much higher effectiveness factor than the most effective resource.

N/A=Flow-through area. No defined load pocket.

Changes from 2023 to 2024

Subarea	2023		2024	
	Load	LCR	Load	LCR
Lockeford	198	103 (79)	193	102 (78)
Weber	219	21	238	26
Stanislaus	N/A	147	N/A	185
Tesla - Bellota	809	319 (78)	899	881 (256 NQC/ 257 Peak)
Total	1,226	439 (157)	1,330	1,009 (334 NQC/ 335 Peak)

LCR increases is mostly due to load increase. The load has a much higher effectiveness factor than the most effective resource.

N/A=Flow-through area. No defined load pocket.

Stockton Area Total LCR Need

2020 LCR Need	Existing Generation Capacity Needed (MW)	Deficiency (MW)	Total MW Need
Category B (Single)	603	(84 NQC/ 85 Peak)	687
Category C (Multiple)	629	(612 NQC/ 613 Peak)	1,241

2024 LCR Need	Existing Generation Capacity Needed (MW)	Deficiency (MW)	Total MW Need
Category B (Single)	414	29	443
Category C (Multiple)	675	(334 NQC/ 335 Peak)	1,009