



2023 and 2027 Final LCR Study Results Greater Fresno Area

Vera Hart

Regional Transmission Engineer Lead

Stakeholder Call

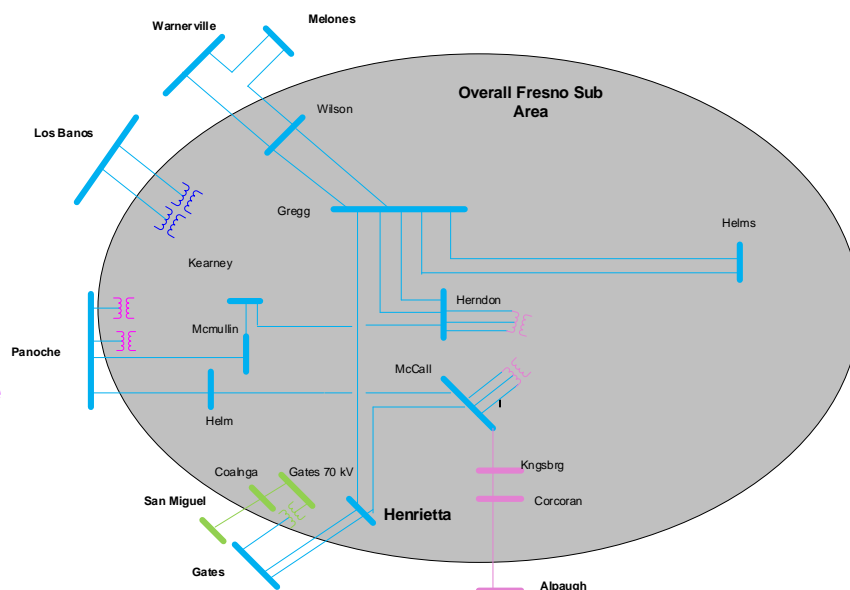
April 12, 2022

Greater Fresno Area

Electrical Boundaries and LCR Sub-Areas

Electrical Boundaries:

- Gates – Mustang #1 230 kV line
- Gates – Mustang #2 230 kV line
- Panoche – Tranquility #1 230 kV line
- Panoche – Tranquility #2 230 kV line
- Warnerville – Wilson 230 kV line
- Melones – Wilson 230 kV line
- Panoche 230/115 kV transformer #1
- Panoche 230/115 kV transformer #2
- Smyrna – Alpaugh – Corcoran 115 kV line
- Los Banos #3 230/70 kV transformer
- Los Banos #4 230/70 kV transformer
- San Miguel – Coalinga #1 70 kV line
- Gates 230/70 kV transformer #5



New major transmission projects

Project Name	Expected ISD
Northern Fresno 115 kV Area Reinforcement (Northern Fresno Reliability)	Completed
Wilson Voltage Support (Wilson 115 kV STATCOM)	Completed
Wilson-Legrand 115 kV Reconductoring	Completed
Kingsburg-Lemoore 70 kV Line Reconductoring	Completed
Herndon - Bullard 115 kV Reconductoring	Apr-24
Panoche-Oro Loma 115 kV Reconductoring	Mar-23
Wilson 115 kV Area Reinforcement	Mar-25
Oro Loma 70 kV Area Reinforcement	Jan-26
Giffen Line Reconductoring	Jan-23
Borden 230/70 kV Transformer Bank #1 Capacity Increase	Jan-27
Wilson-Oro Loma 115 kV Line Reconductoring	Dec-26
Bellota-Warnerville 230kV Reconductoring	Dec-24
Herndon - Bullard Nos. 1 and 2 115 kV Reconductoring	Dec-26
Reedley 70 kV Reinforcement (Renamed to Reedley 70 kV Area Reinforcement Projects Include Battery at Dinuba)	Dec-23

Power plant changes

Resource Additions:

- None

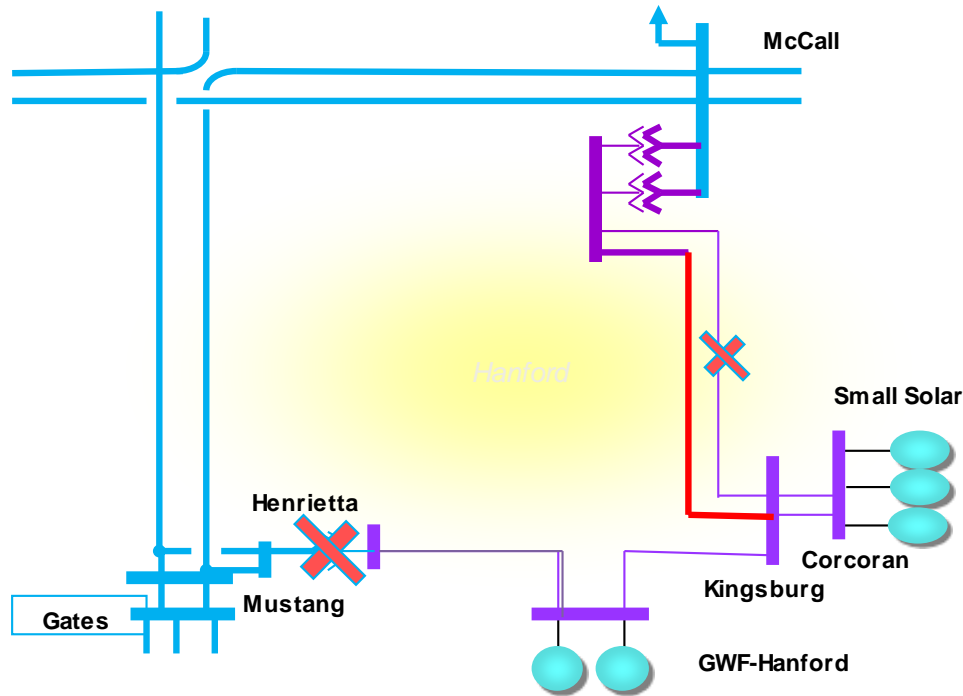
Resource Retirements:

- None

Hanford Sub-area: Load and Resources

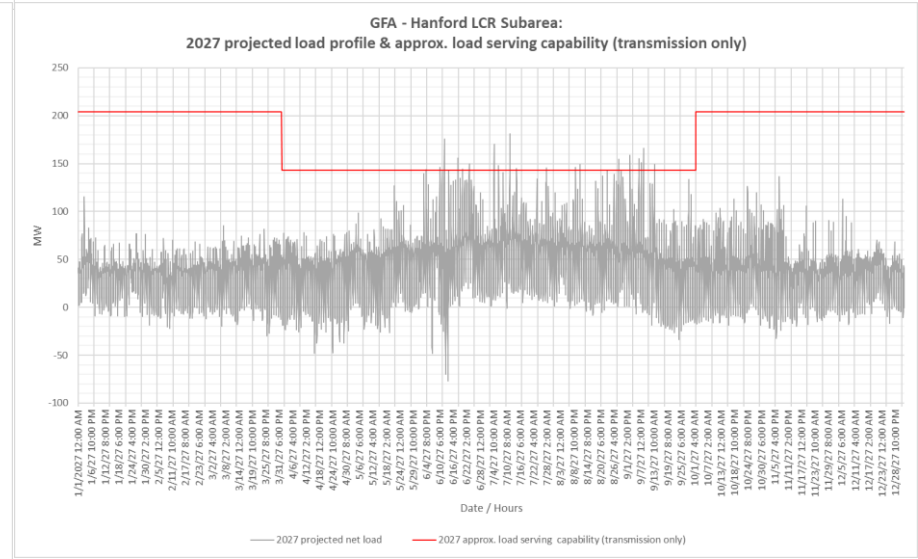
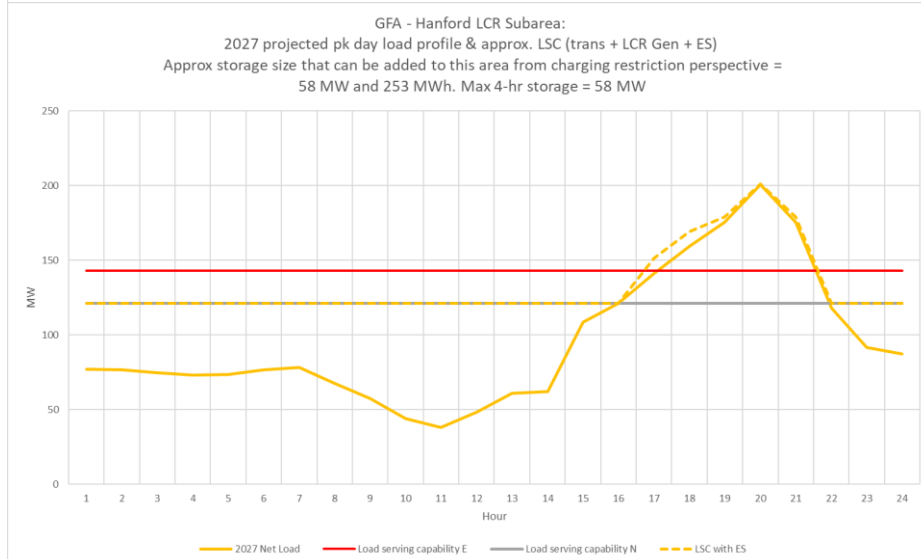
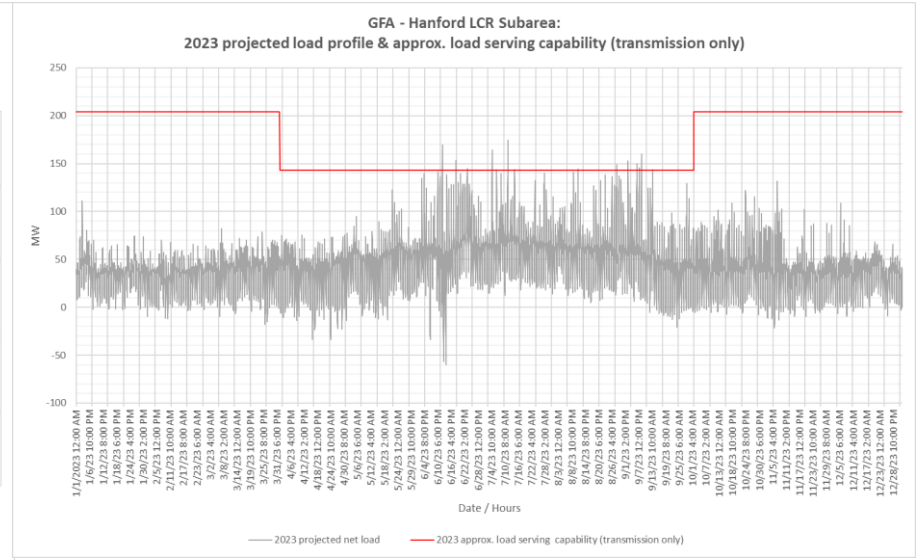
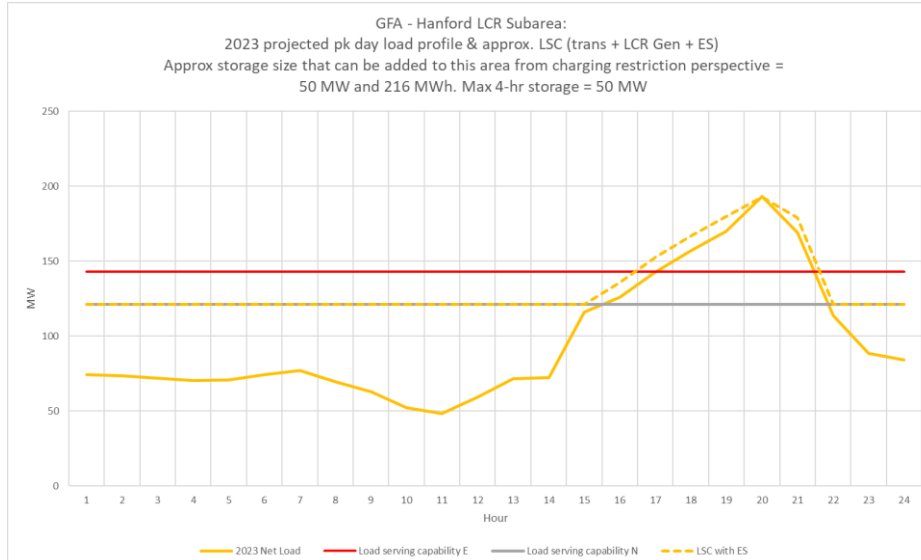
Load (MW)	2023	2027	Generation (MW)	2023	2027
Gross Load	194	201	Market, Net Seller	124	124
AAEE	-1	-2	MUNI	0	0
Behind the meter DG	0	0	QF	0	0
Net Load	193	199	Solar	61	61
Transmission Losses	6	7	Existing 20-minute Demand Response	0	0
Pumps	0	0	Mothballed	0	0
Load + Losses + Pumps	199	206	Total Qualifying Capacity	185	185

Hanford Sub-Area Requirements



Limit	Category	Limiting Facility	Contingency	2023 LCR (MW)	2027 LCR (MW)
First Limit	P6	McCall-Kingsburg #2 115kV Line	McCall-Kingsburg #1 115kV line and Henrietta 230/115kV TB#3	50	58

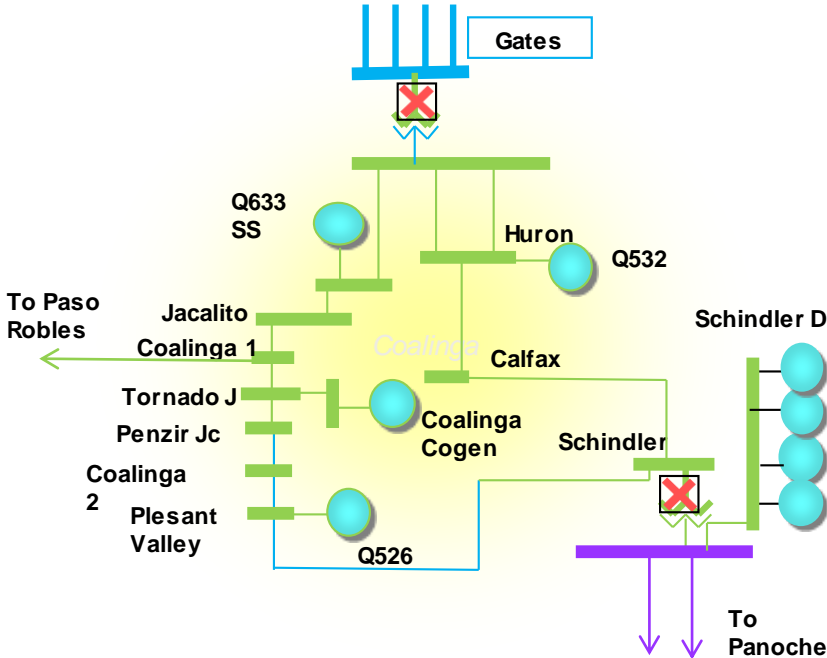
Hanford Sub-area: Load Profiles



Coalinga Sub-area: Load and Resources

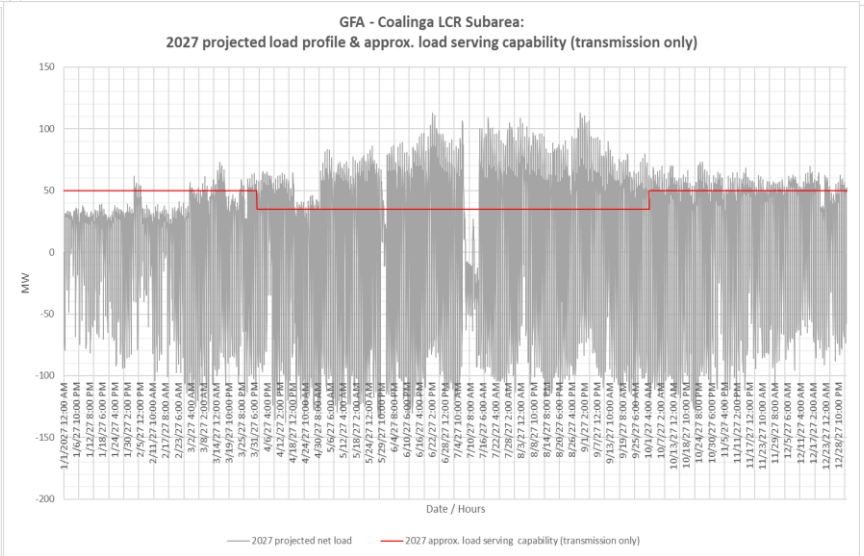
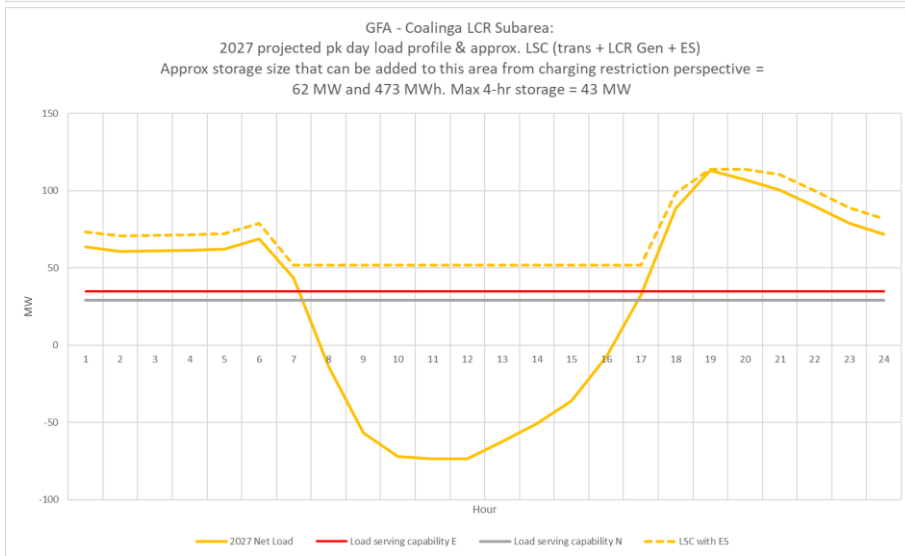
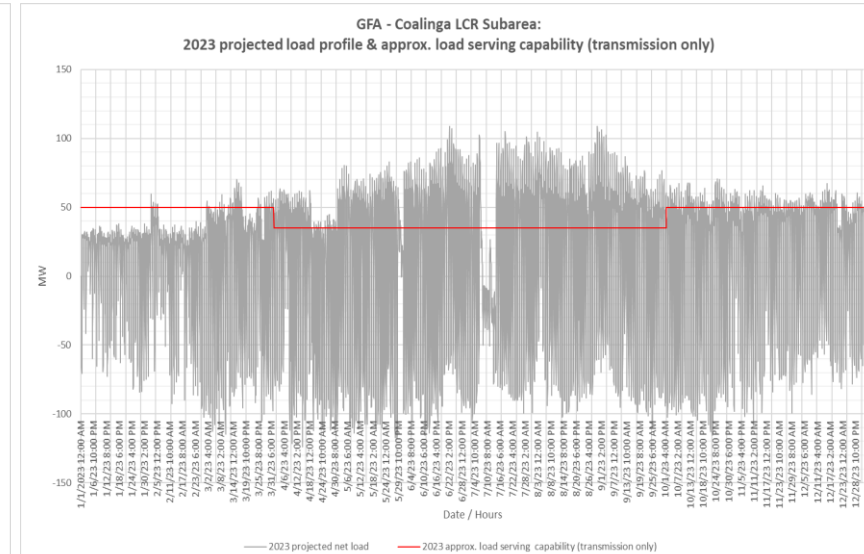
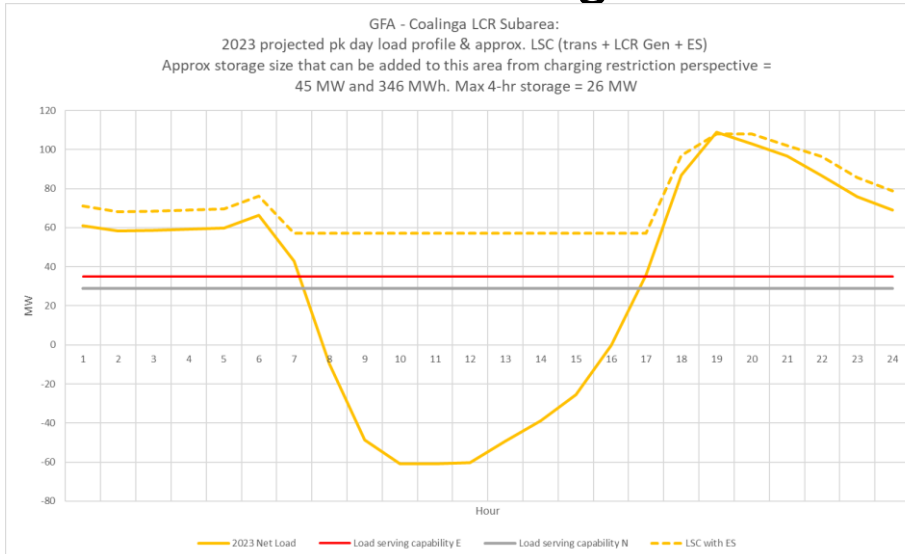
Load (MW)	2023	2027	Generation (MW)	2023	2027
Gross Load	110	115	Market, Net Seller	0	0
AAEE	-1	-2	MUNI	0	0
Behind the meter DG	0	0	QF	3	3
Net Load	109	113	Solar	25	25
Transmission Losses	2	2	Existing 20-minute Demand Response	0	0
Pumps	0	0	Mothballed	0	0
Load + Losses + Pumps	111	115	Total Qualifying Capacity	28	28

Coalinga Sub-Area Requirements



Limit	Category	Limiting Facility	Contingency	2023 LCR (MW)	2027 LCR (MW)
First Limit	P6	Overload on San-Miguel-Coalinga 70kV Line and Voltage Instability	T-1/T-1: Gates 230/70kV TB #5 and Schindler 115/70 kV TB#1	73 (70 Peak; 45 NQC)	77 (74 Peak, 49 NQC)

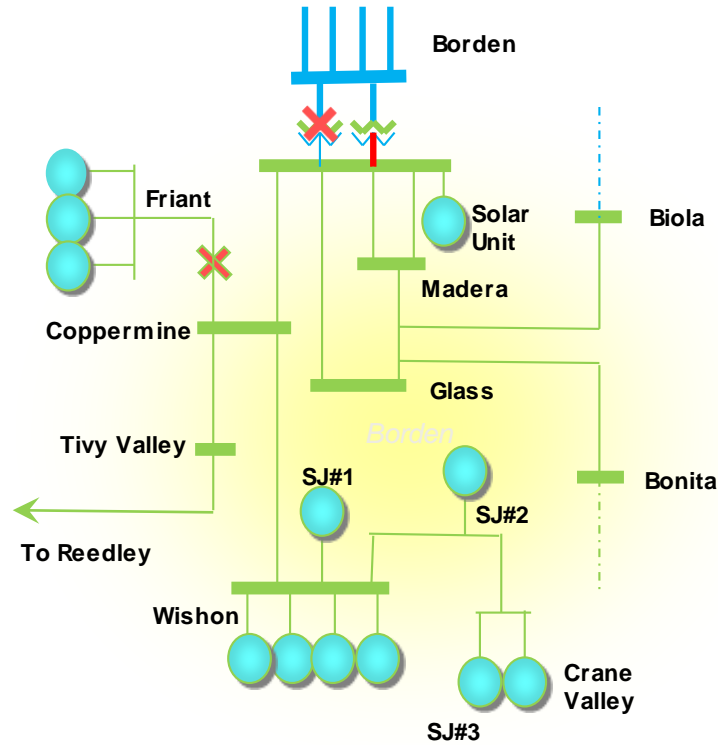
Coalinga Sub-area: Load Profiles



Borden Sub-area: Load and Resources

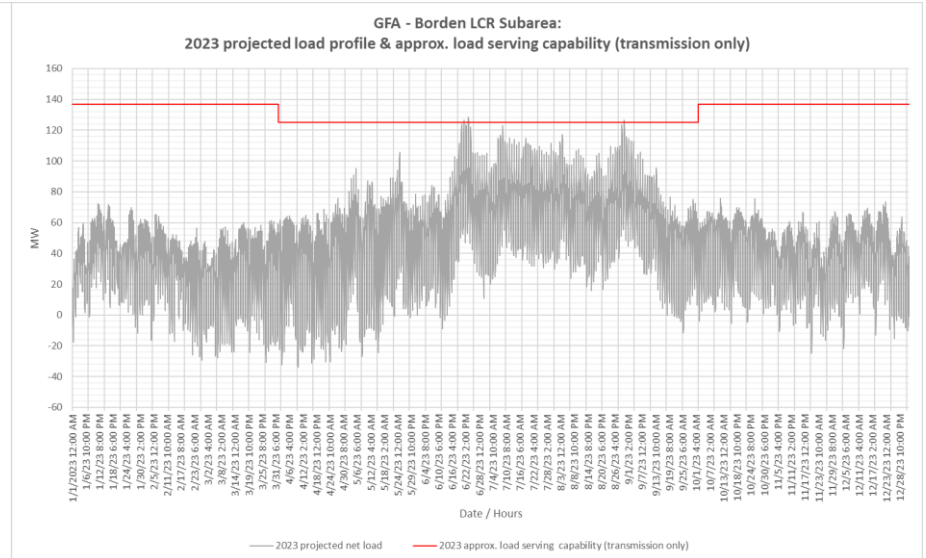
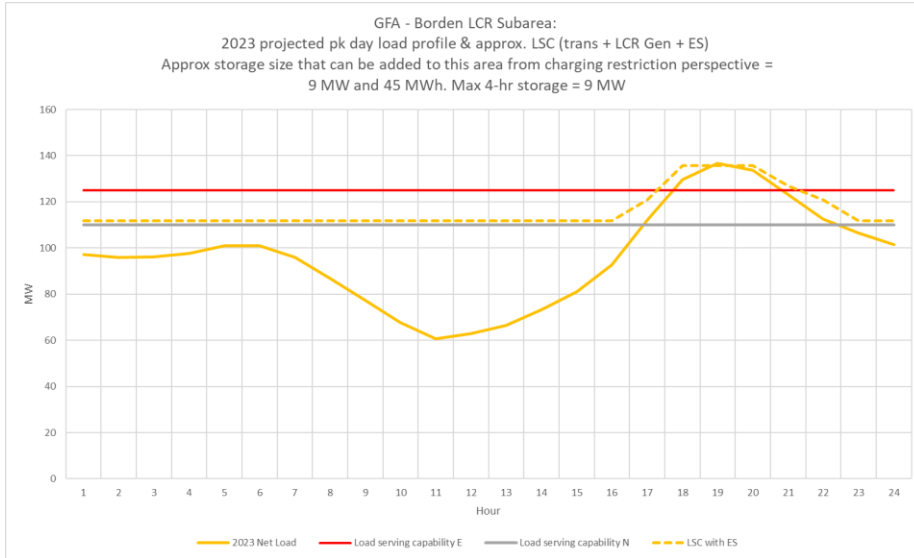
Load (MW)	2023	Generation (MW)	2023
Gross Load	142	Market, Net Seller	13
AAEE	-2	MUNI	0
Behind the meter DG	0	QF	0
Net Load	140	Solar	14
Transmission Losses	3	Existing 20-minute Demand Response	0
Pumps	0	Mothballed	0
Load + Losses + Pumps	143	Total Qualifying Capacity	27

Borden Sub-Area Requirements



Limit	Category	Limiting Facility	Contingency	2023 LCR (MW)	2027 LCR (MW)
First Limit	P6	Borden 230/70 kV TB # 1	Friant - Coppermine 70 kV Line and Borden 230/70 kV TB # 4	9	Eliminated due to Project

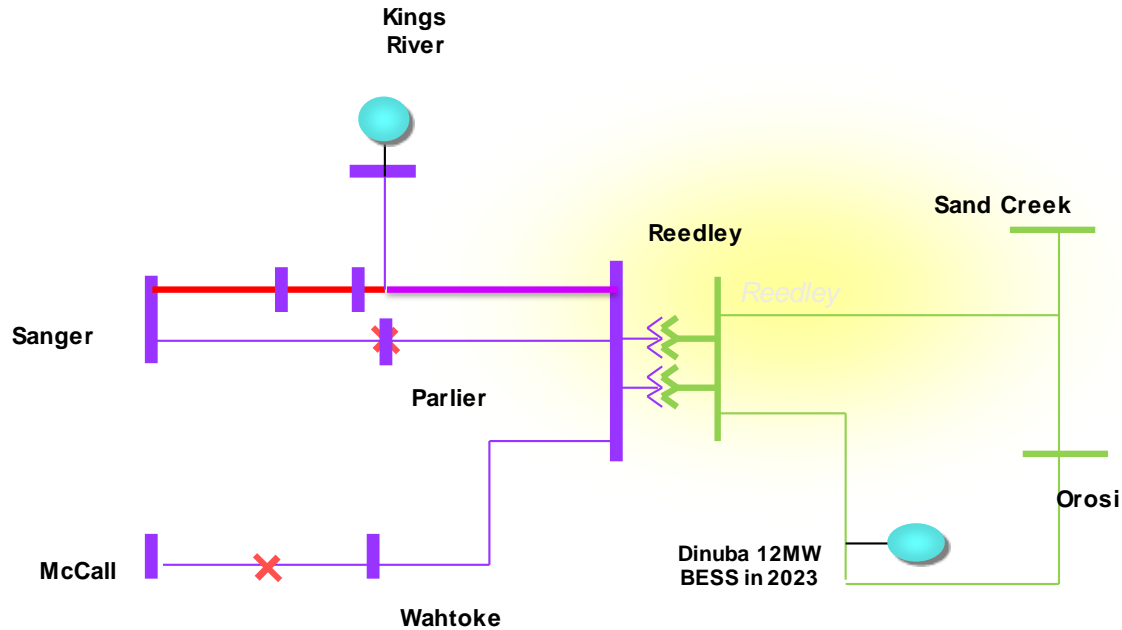
Borden Sub-area: Load Profiles



Reedley Sub-area: Load and Resources

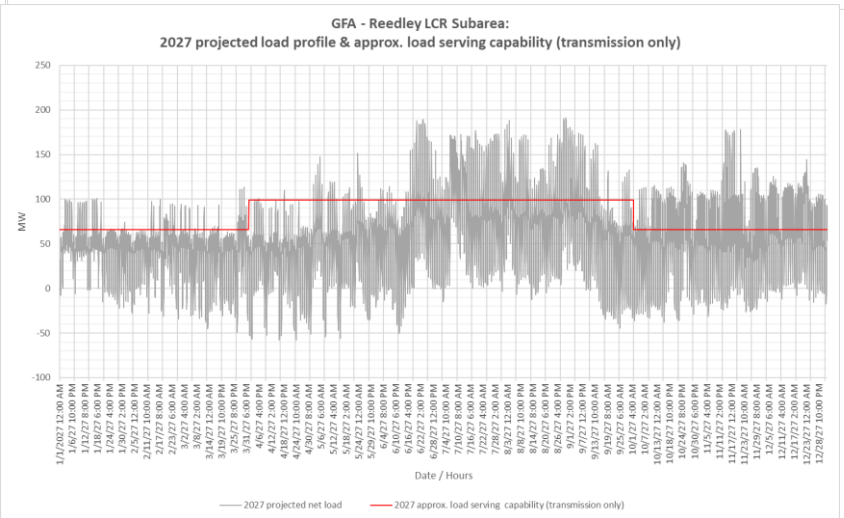
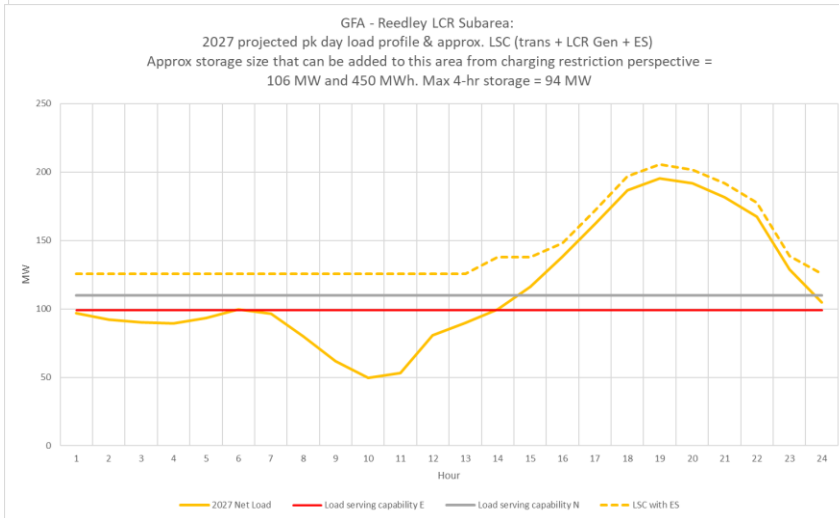
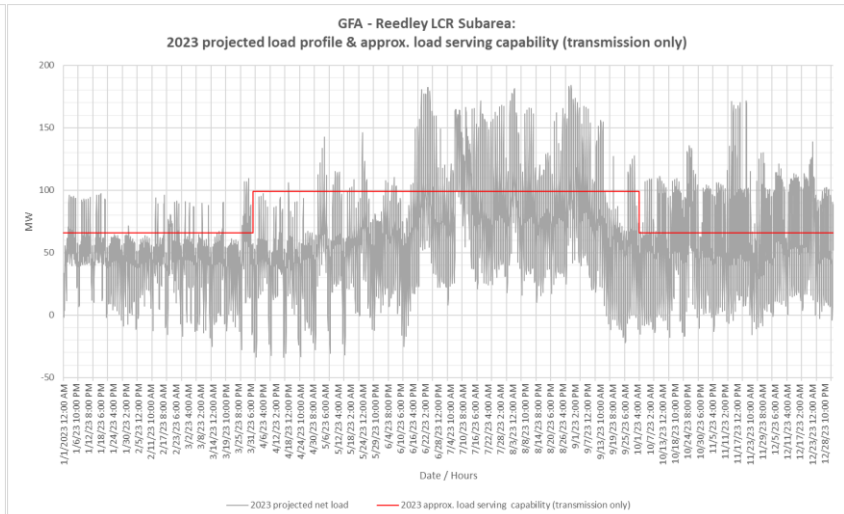
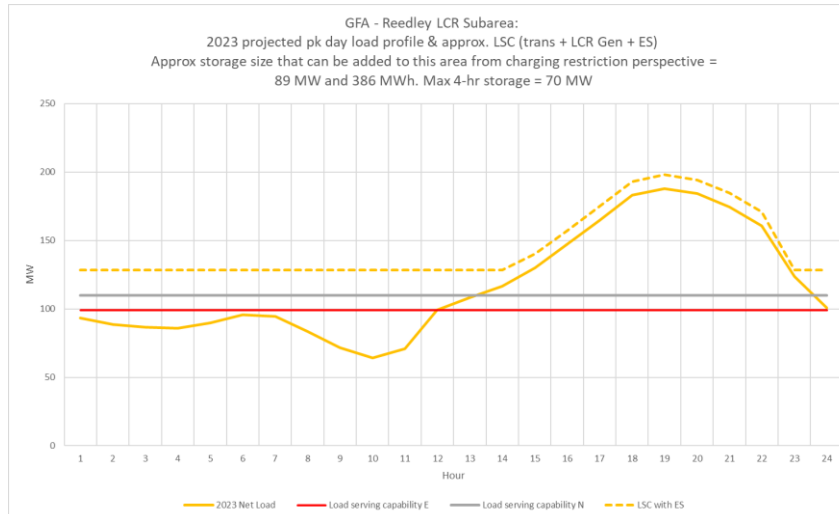
Load (MW)	2023	2027	Generation (MW)	2023	2027
Gross Load	208	217	Market, Net Seller	37	37
AAEE	-2	-3	MUNI	0	0
Behind the meter DG	0	0	QF	0	0
Net Load	206	214	LTPP Preferred Resources	0	0
Transmission Losses	11	34	Existing 20-minute Demand Response	0	0
Pumps	0	0	Mothballed	0	0
Load + Losses + Pumps	217	248	Total Qualifying Capacity	37	37

Reedley Sub-Area Requirements



Limit	Category	Limiting Facility	Contingency	2023 LCR (MW)	2027 LCR (MW)
First Limit	P6	Kings River-Sanger-Reedley 115kV line with Wahtoke load online	McCall-Reedley 115kV Line & Sanger-Reedley 115kV line	118 (81)	134 (97)

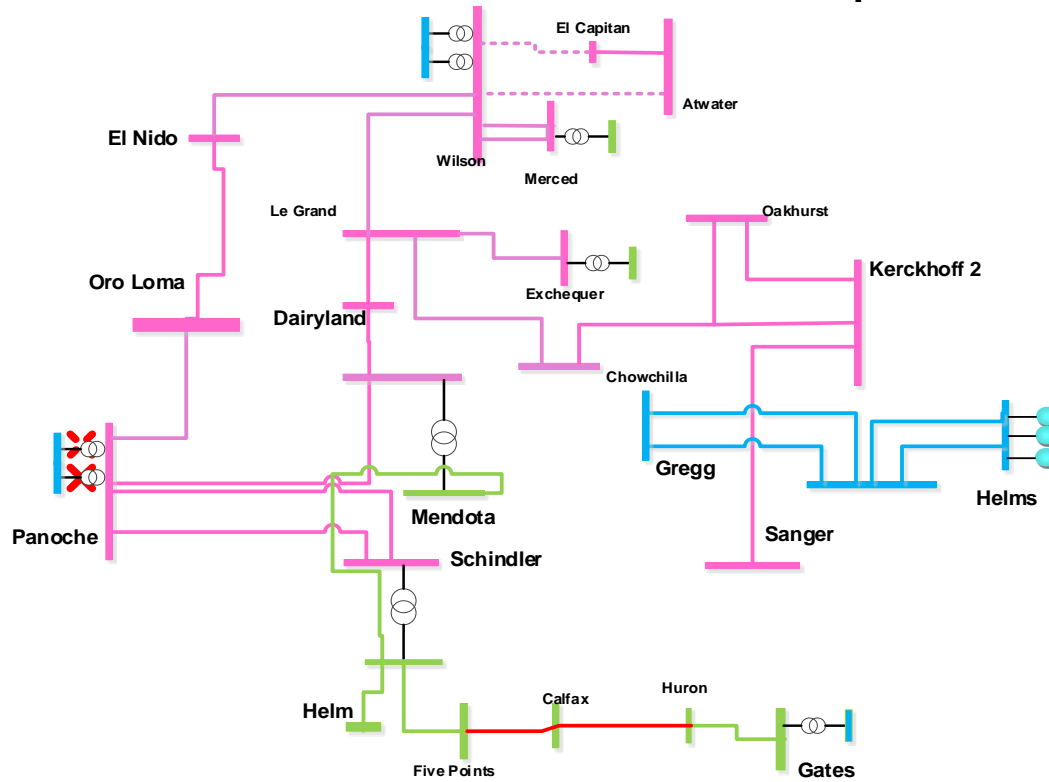
Reedley Sub-area: Load Profiles



Panoche Sub-area: Load and Resources

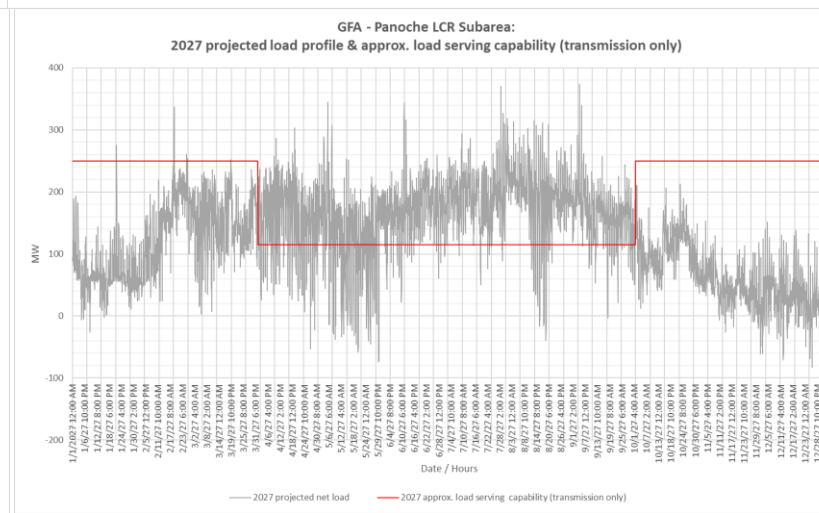
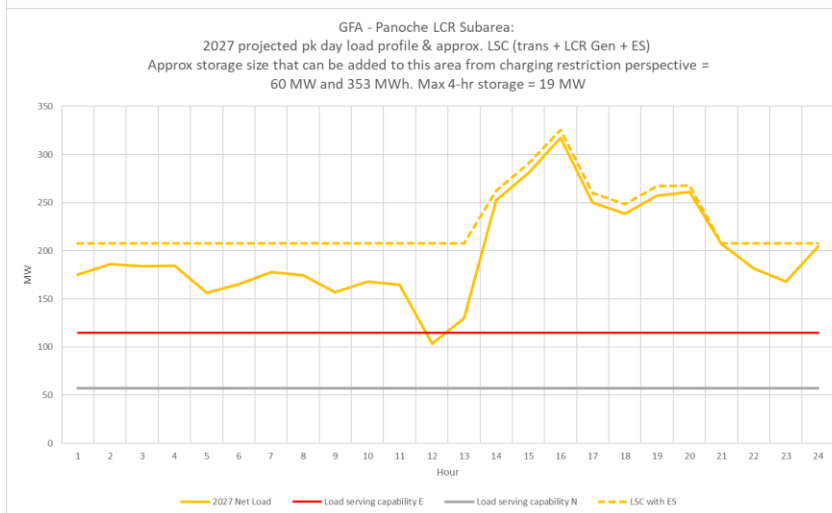
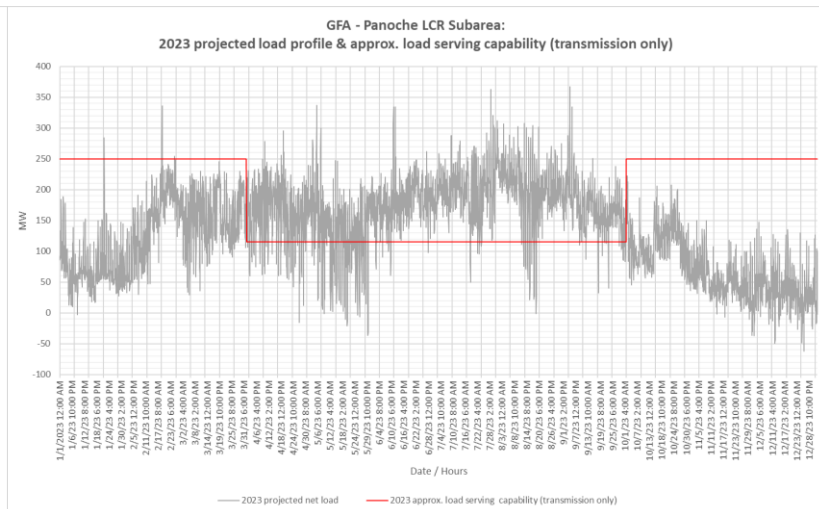
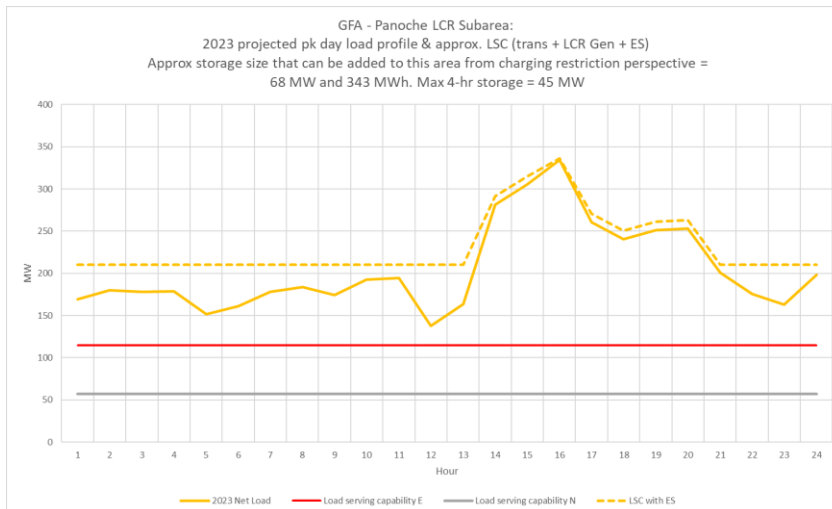
Load (MW)	2023	2027	Generation (MW)	2023	2027
Gross Load	455	469	Market, Net Seller	282	282
AAEE	-3	-6	MUNI	100	100
Behind the meter DG	-1	0	QF	3	3
Net Load	451	463	Solar	95	95
Transmission Losses	12	16	Existing 20-minute Demand Response	0	0
Pumps	0	0	Mothballed	0	0
Load + Losses + Pumps	463	479	Total Qualifying Capacity	480	480

Panoche Sub-Area Requirements



Limit	Category	Limiting Facility	Contingency	2023 LCR (MW)	2027 LCR (MW)
First Limit	P6	Five Points-Huron-Gates 70kV line	Panoche 230/115kV TB #2 and Panoche 230/115kV TB #4	295	383

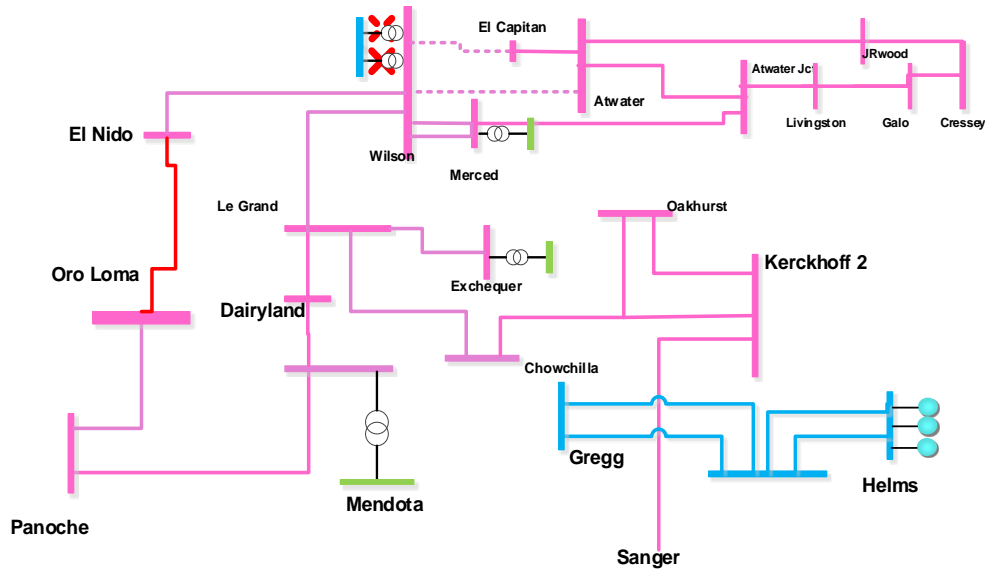
Panoche Sub-area: Load Profiles



Wilson Sub-area: Load and Resources

Load (MW)	2023		2027		Generation (MW)	2023	2027
Gross Load	NA – Flow through area.				Market and Net Seller	156	156
AAEE					MUNI	100	100
Behind the meter DG					QF	0	0
Net Load					Solar	59	59
Transmission Losses					Existing 20-minute Demand Response	0	0
Pumps					Mothballed	0	0
Load + Losses + Pumps					Total Qualifying Capacity	315	315

Wilson Sub-Area Requirements

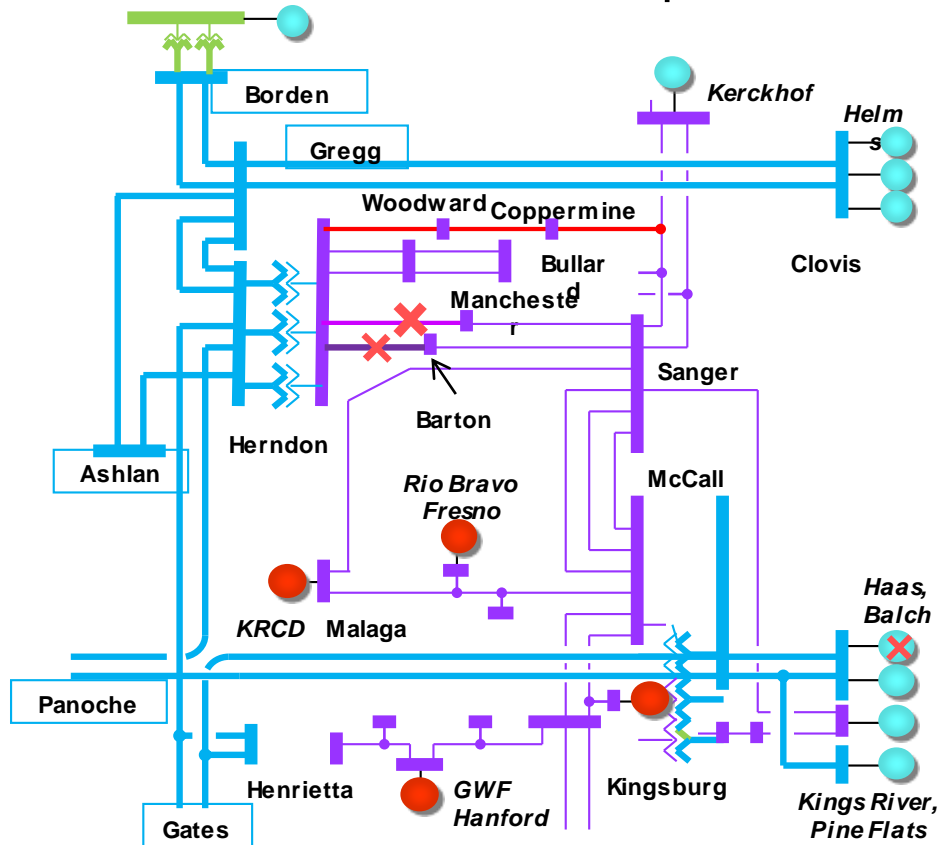


Limit	Category	Limiting Facility	Contingency	2023 LCR (MW)	2027 LCR (MW)
First Limit	P6	El Nido – Oro Loma 115 kV Line	Wilson 230/115kV TB #1 and Wilson 230/115kV TB #2	422 (107 NQC) (165 Peak)	500 (186 NQC) (244 Peak)

Herndon Sub-area: Load and Resources

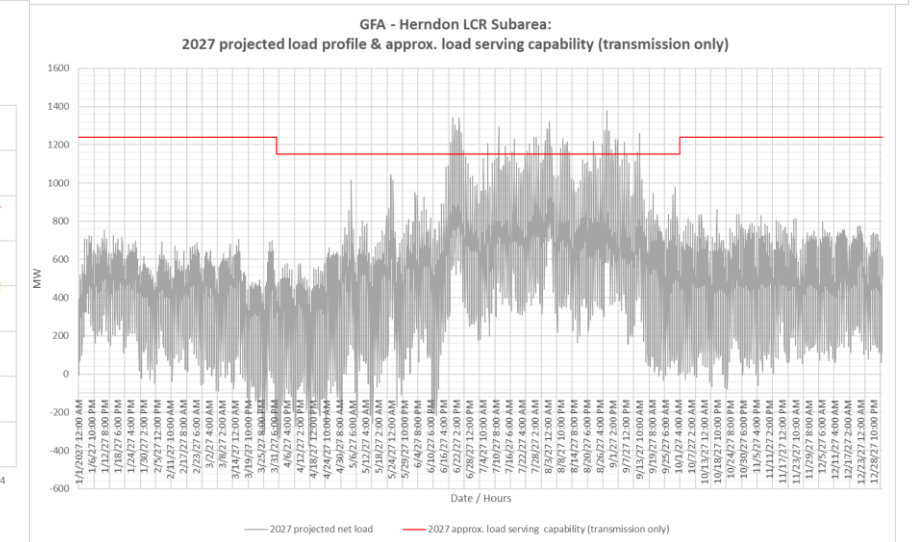
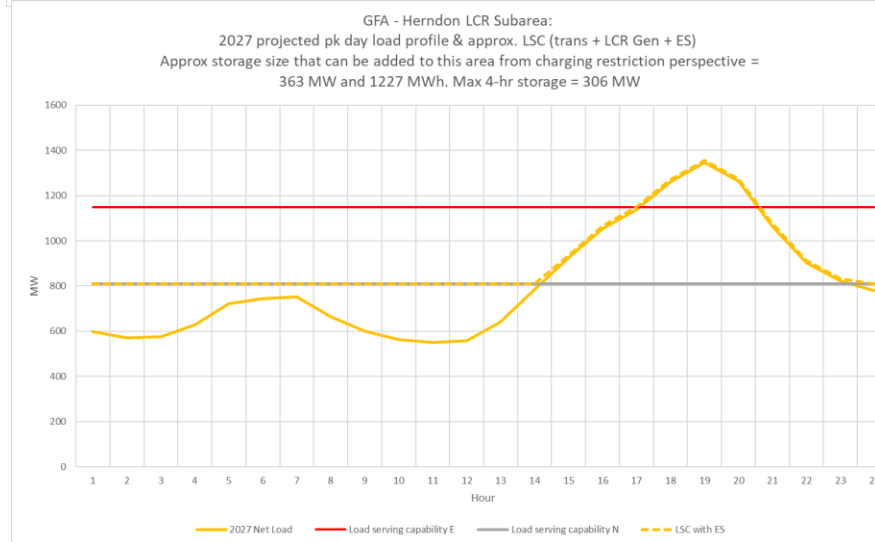
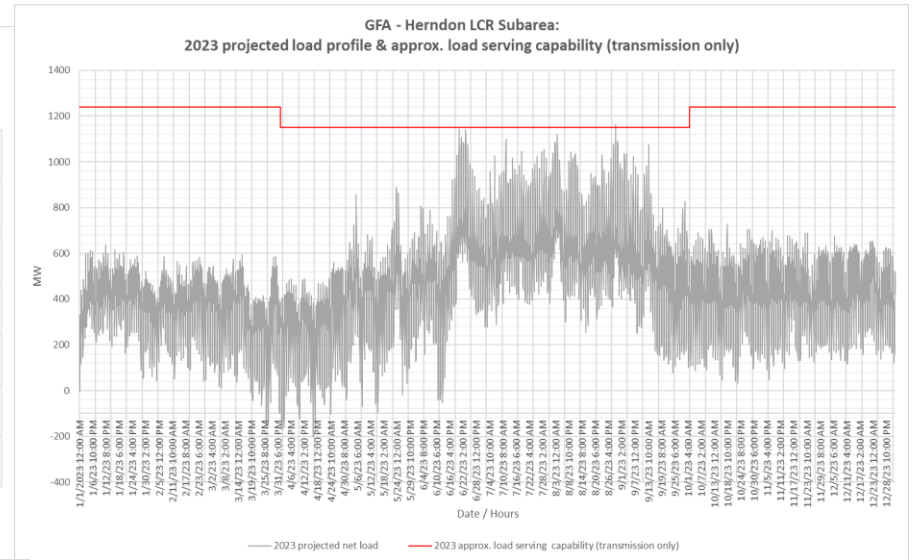
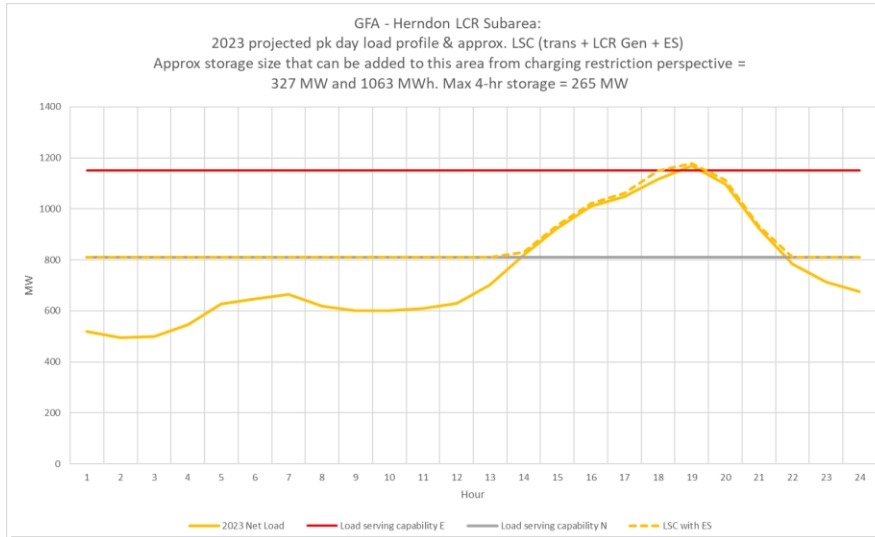
Load (MW)	2023	2027	Generation (MW)	2023	2027
Gross Load	1473	1542	Market, Net Seller	873	873
AAEE	-8	-13	MUNI	110	110
Behind the meter DG	0	0	QF	1	1
Net Load	1465	1529	Solar	63	63
Transmission Losses	35	29	Existing 20-minute Demand Response	0	0
Pumps	0	0	Mothballed	0	0
Load + Losses + Pumps	1494	1557	Total Qualifying Capacity	1047	1047

Herndon Sub-Area Requirements



Limit	Category	Limiting Facility	Contingency	2023 LCR (MW)	2027 LCR (MW)
First limit	P6	Herndon-Woodward 115 kV line	Herndon- Manchester 115 kV line and Herndon-Barton 115 kV line	327	363

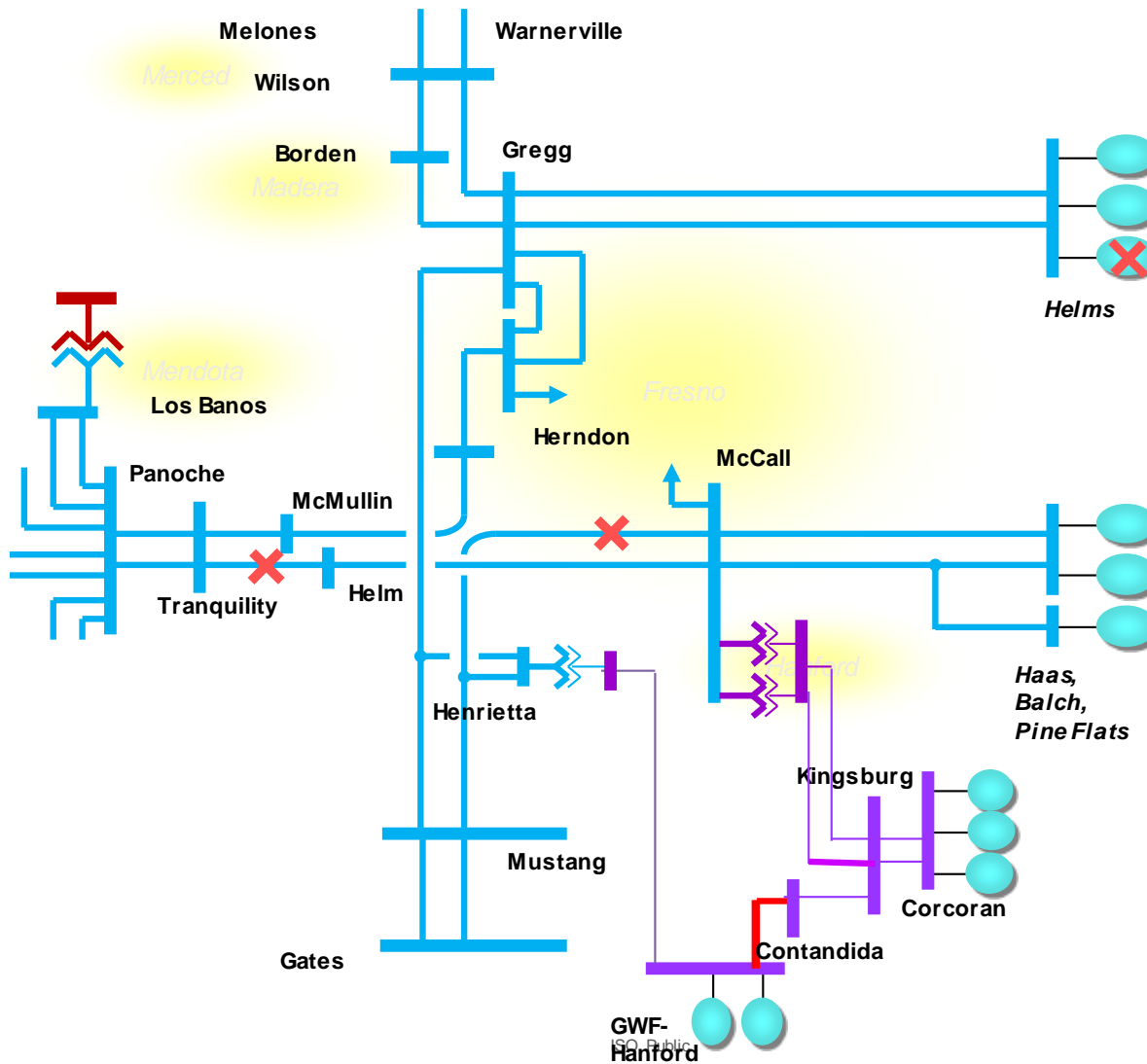
Herndon Sub-area: Load Profiles



Overall Load and Resources

Load (MW)	2023	2027	Generation (MW)	2023	2027
Gross Load	3164	3295	Market/Net Seller, BESS	2759	2759
AAEE	-21	-33	Solar	436	436
Behind the meter DG	0	0	MUNI	212	212
Net Load	3143	3262	QF	4	4
Transmission Losses	145	130	Existing 20-minute Demand Response	0	0
Pumps	0	0	Mothballed	0	0
Load + Losses + Pumps	3288	3392	Total Qualifying Capacity	3411	3411

Overall Sub-Area Requirements

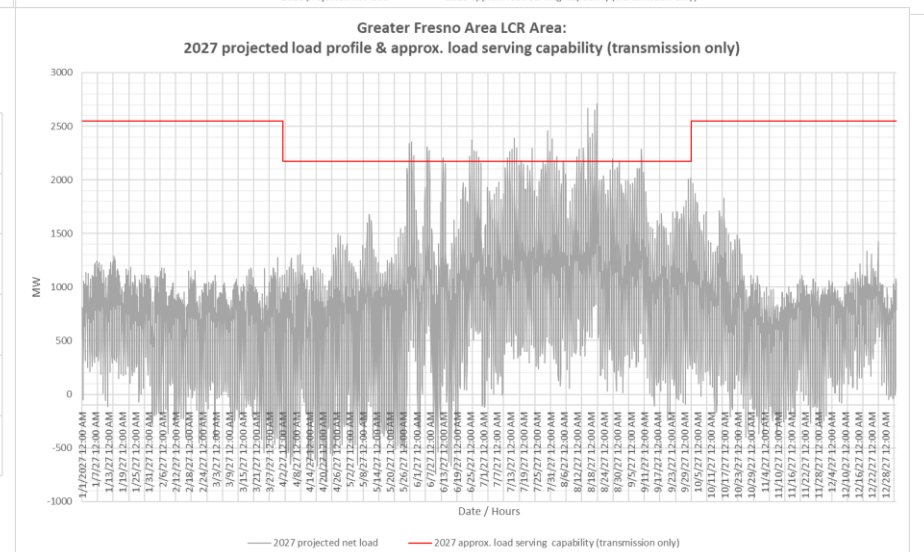
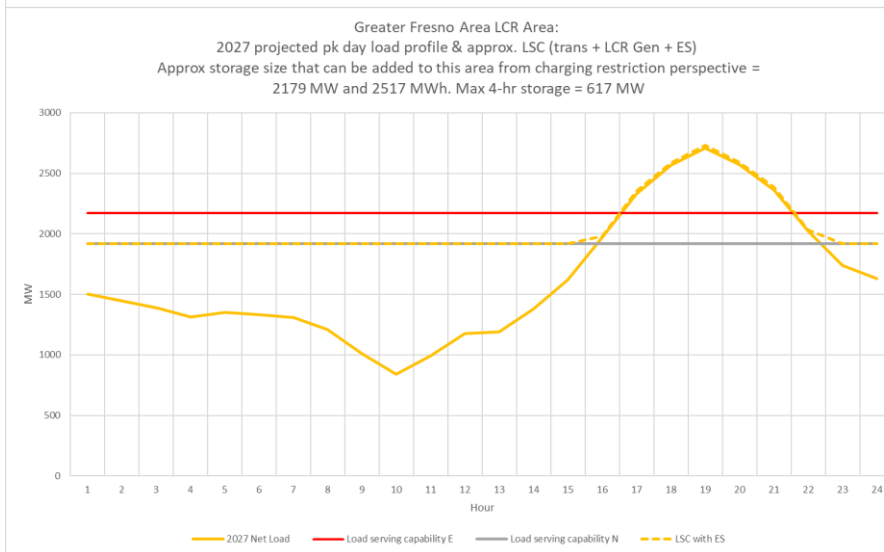
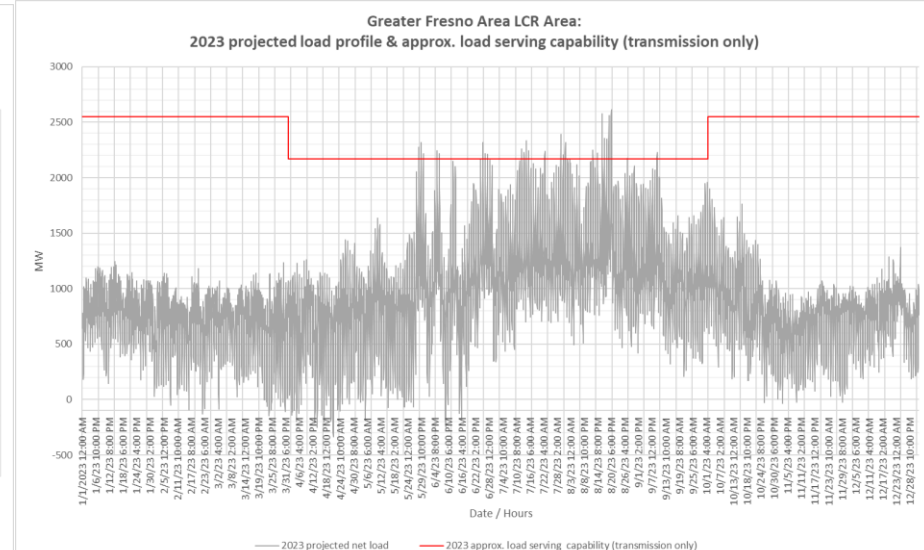
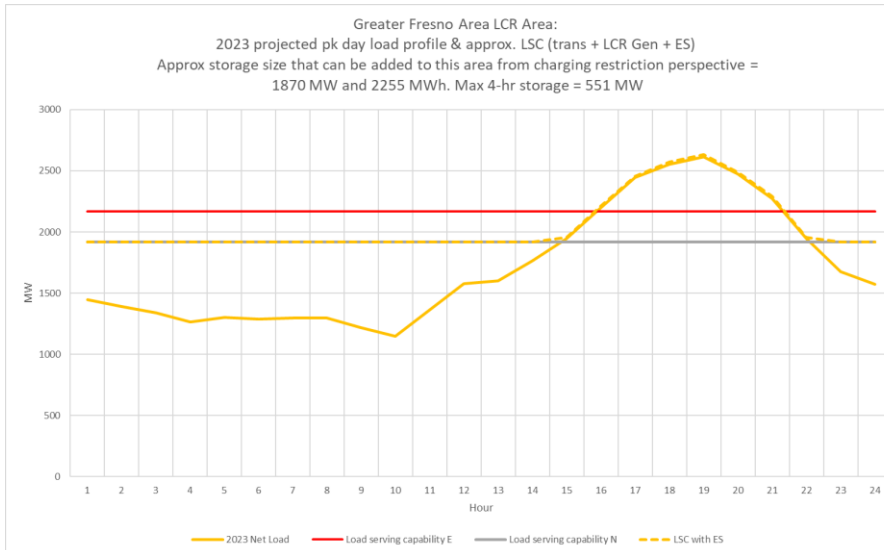


Overall Fresno Area : Requirements

Limit	Category	Limiting Facility	Contingency	2023 LCR (MW)	2027 LCR (MW)
First limit	P6	GWF-Contandida 115kV Line	Panoche-Helm 230kV Line and Gates-McCall 230kV line	1870	2179

Study Year	Existing Generation Capacity Needed (MW)	NQC Deficiency (MW)	Total MW Need
2023	1870	233	2103
2027	2179	332	2511

Overall Sub-area: Load Profiles



Changes Compared to Previous LCR Requirements

Sub-area	2022		2023		2026		2027	
	Load	LCR	Load	LCR	Load	LCR	Load	LCR
Hanford	209	70	199	50	214	76	206	58
Coalinga	119	95 (84 Peak; 75 NQC)	110	73 (70 Peak; 45 NQC)	121	96 (85 Peak; 76 NQC)	115	77 (74 Peak, 49 NQC)
Borden	149	35	143	9	154	38	Eliminated due to Project	
Reedley	233	144 (93)	217	118 (81)	252	154 (103)	248	134 (97)
Panoche 115 kV	475	320	463	295	491	378	479	383
Wilson 115/70 kV	Flow-Through	620 (248 Peak; 215 NQC)	Flow-Through	422* (107 NQC) (165 Peak)	Flow-Through	403 (31 Peak)	Flow-Through	500 (186 NQC) (244 Peak)
Herndon	1600	522	1494	327	1669	526	1557	363
Overall	3435	1987	3288	1870	3571	2314	3292	2179

LCR decreased due to load forecast decrease



* LCR decreased due to new limiting element (Panoche-Oro Loma 115 kV reconductoring is modeled in 2023).

ISO Public