



2023 and 2027 Draft LCR Study Results Greater Fresno Area

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Regional Transmission Engineer Lead

Stakeholder Call

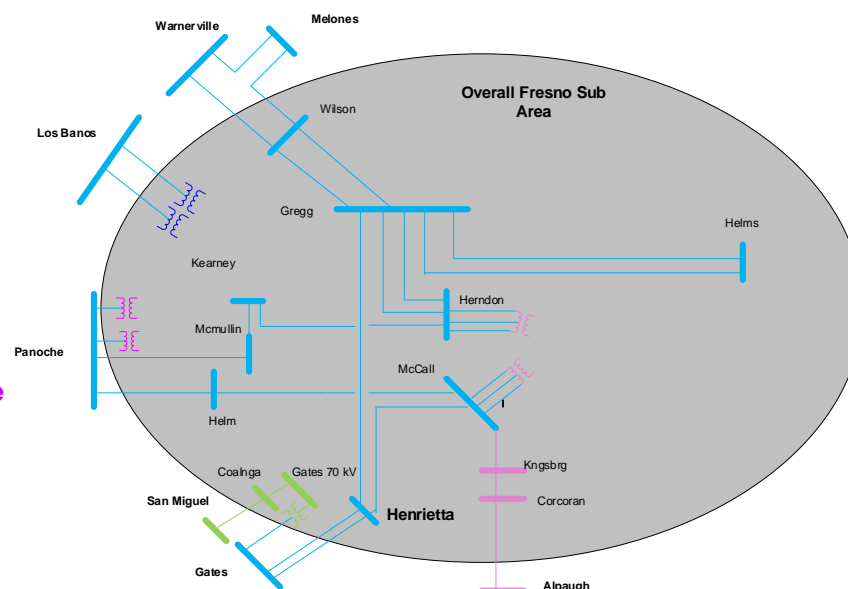
March 9, 2022

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	Mar-22
Herndon - Bullard 115 kV Reconductoring	Apr-24
Panoche-Oro Loma 115 kV Reconductoring	Jul-23
Wilson 115 kV Area Reinforcement	Dec-28
Oro Loma 70 kV Area Reinforcement	Apr-25
Giffen Line Reconductoring	Apr-24
Borden 230/70 kV Transformer Bank #1 Capacity Increase	Jan-26
Wilson-Oro Loma 115 kV Line Reconductoring	Dec-26
Bellota-Warnerville 230kV Reconductoring	Apr-24
Gregg-Herndon #2 230 kV Line Circuit Breaker Upgrade	Jan-20
Reedley 70 kV Reinforcement (Renamed to Reedley 70 kV Area Reinforcement Projects Include Battery at Dinuba)	May-23

Power plant changes

Resource Additions:

- None

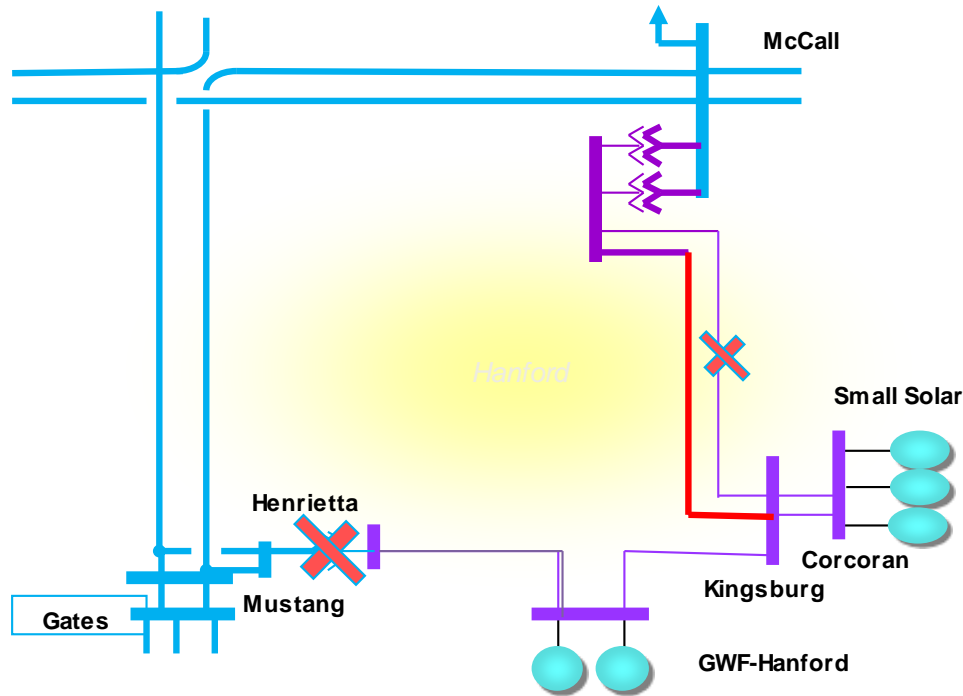
Resource Retirements:

- None

Hanford Sub-area: Load and Resources

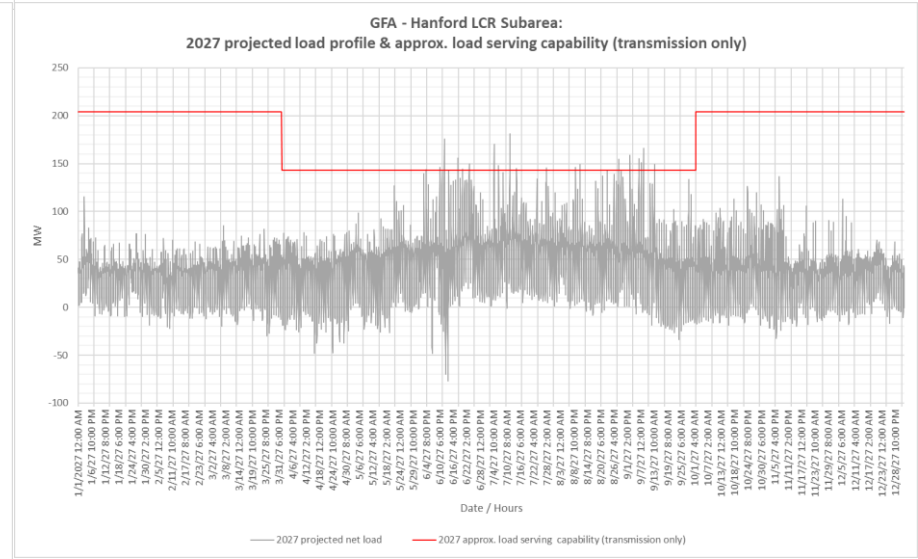
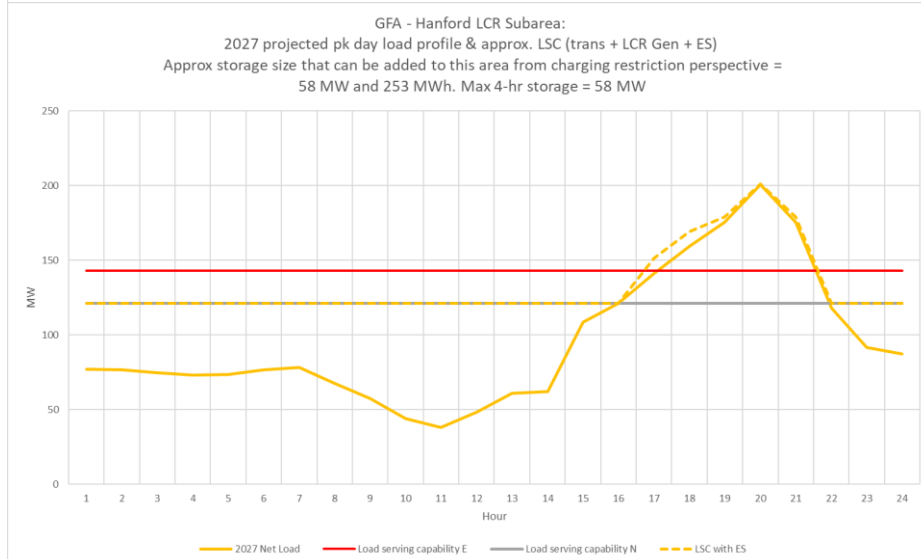
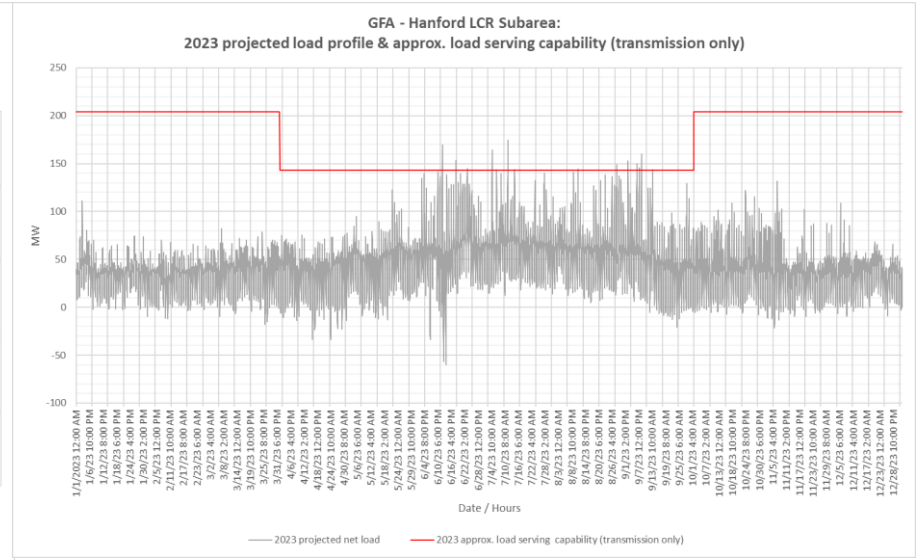
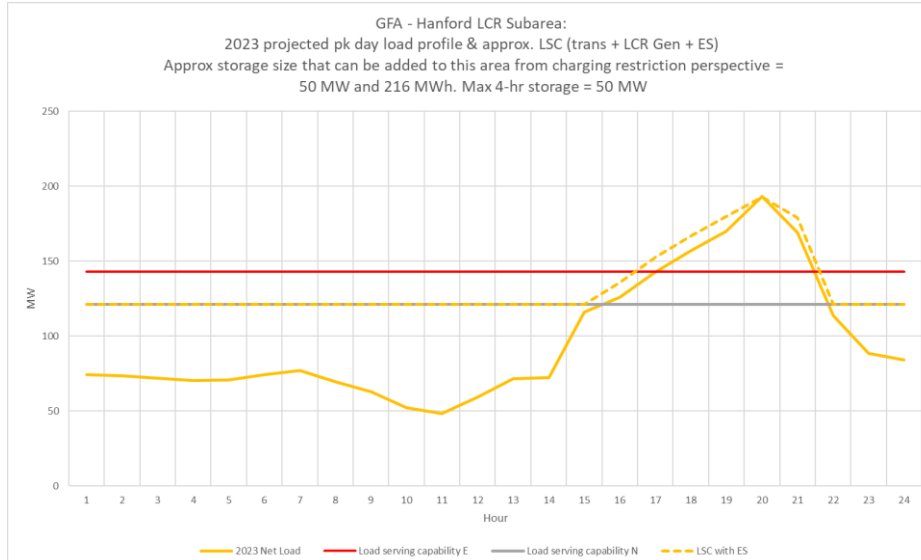
Load (MW)	2023	2027	Generation (MW)	2023	2027
Gross Load	194	201	Market	125	125
AAEE	-1	-2	Solar	58	58
Behind the meter DG	0	0	MUNI	0	0
Net Load	193	199	QF	0	0
Transmission Losses	6	7			
Pumps	0	0	Total Qualifying Capacity	183	183
Load + Losses + Pumps	199	206			

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

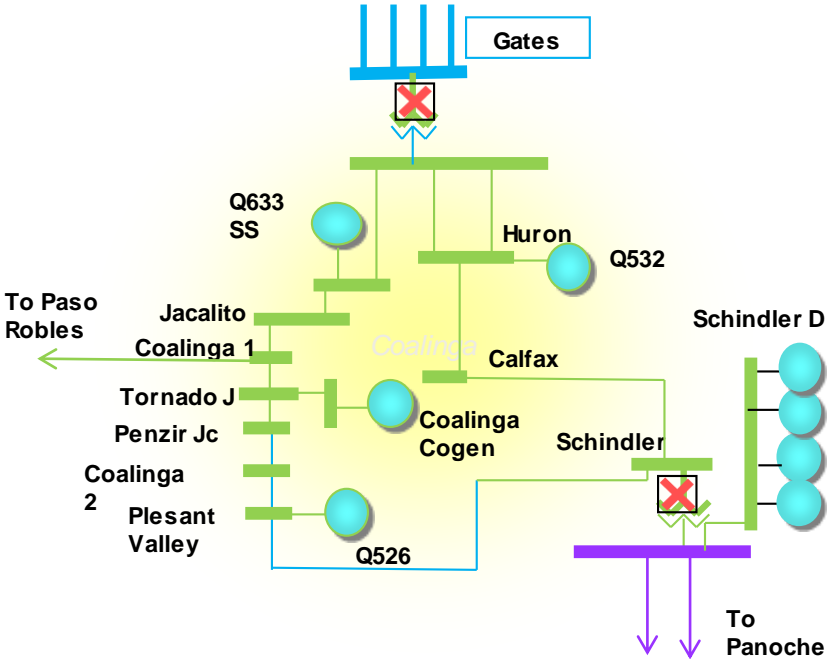
Hanford Sub-area: Load Profiles



Coalinga Sub-area: Load and Resources

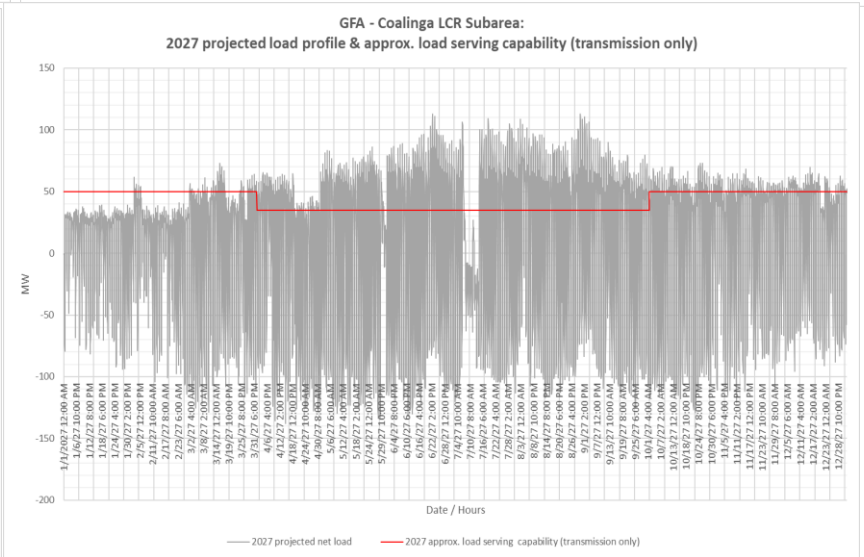
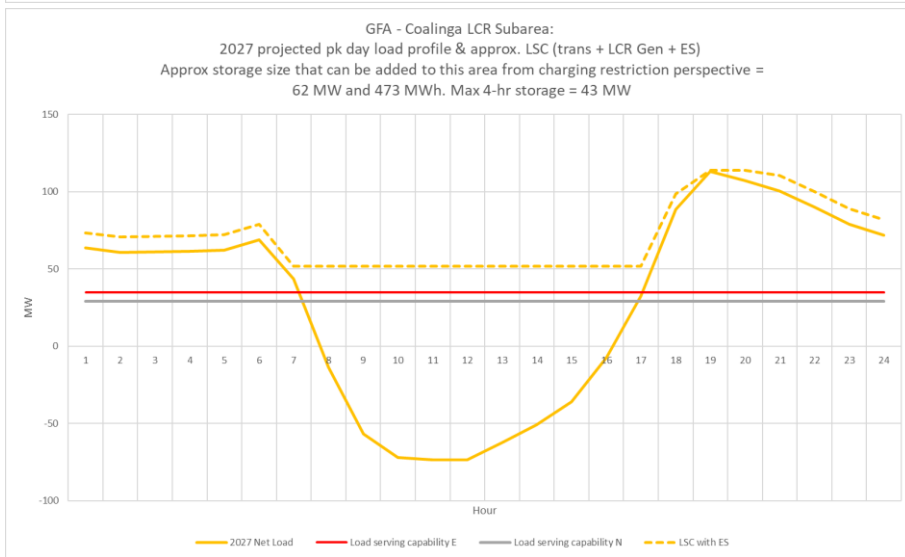
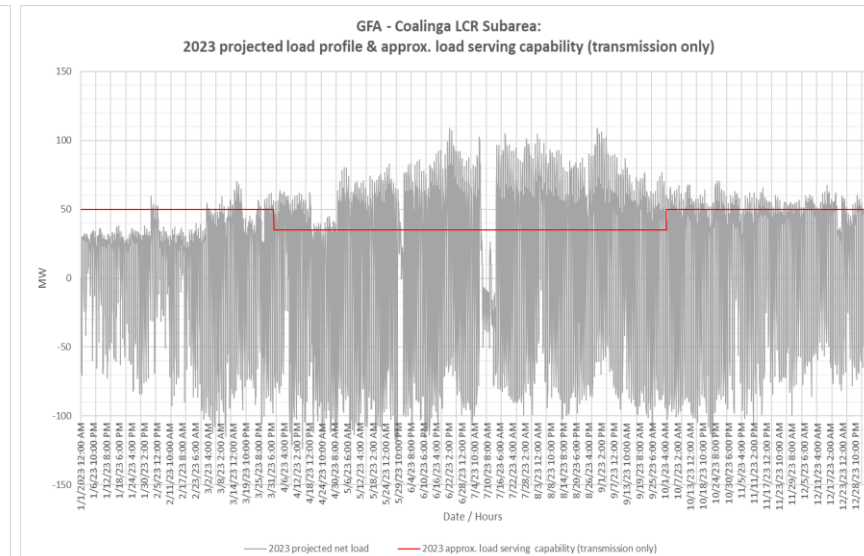
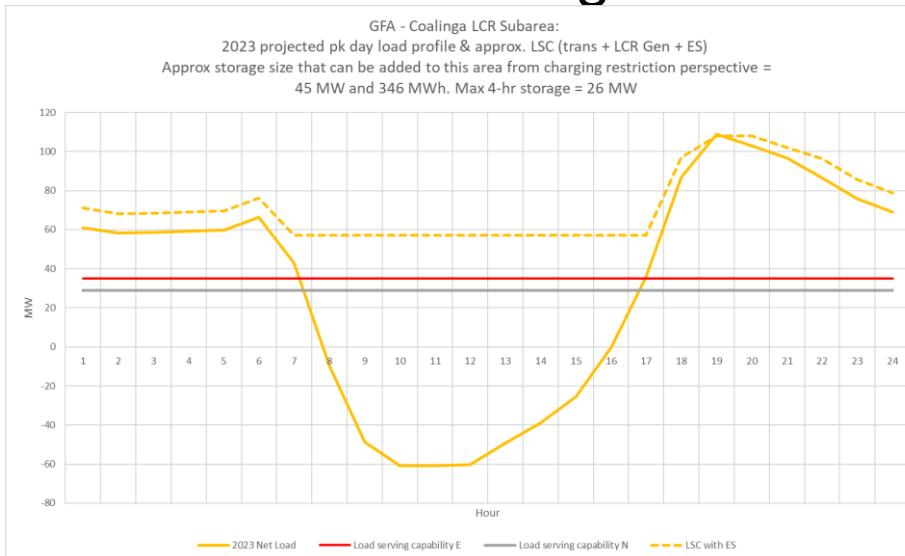
Load (MW)	2023	2027	Generation (MW)	2023	2027
Gross Load	110	115	Market	0	0
AAEE	-1	-2	Solar	17	17
Behind the meter DG	0	0	MUNI	0	0
Net Load	109	113	QF	3	3
Transmission Losses	2	2	Mothballed	0	0
Pumps	0	0	Total Qualifying Capacity	20	20
Load + Losses + Pumps	111	115			

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 (62 Peak; 53 NQC)	77 (66 Peak, 57 NQC)

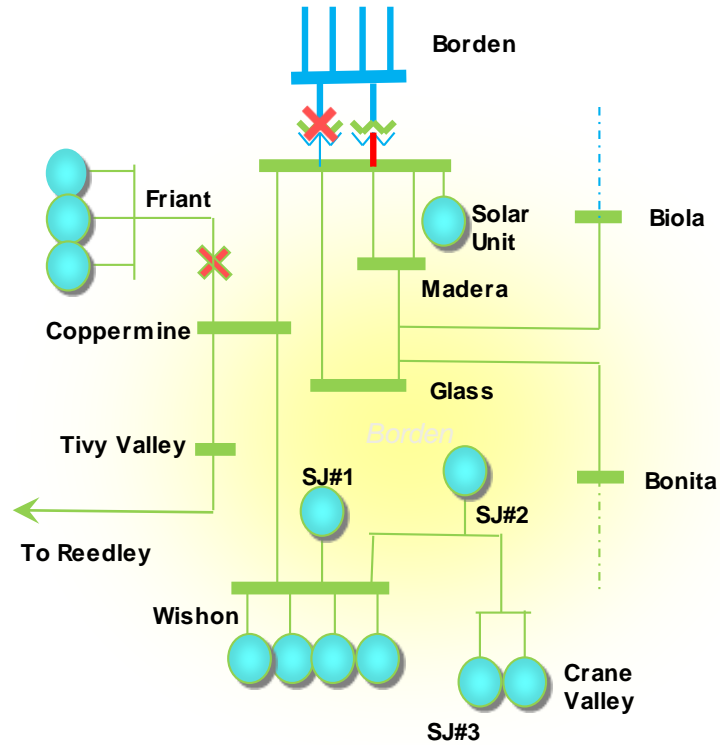
Coalinga Sub-area: Load Profiles



Borden Sub-area: Load and Resources

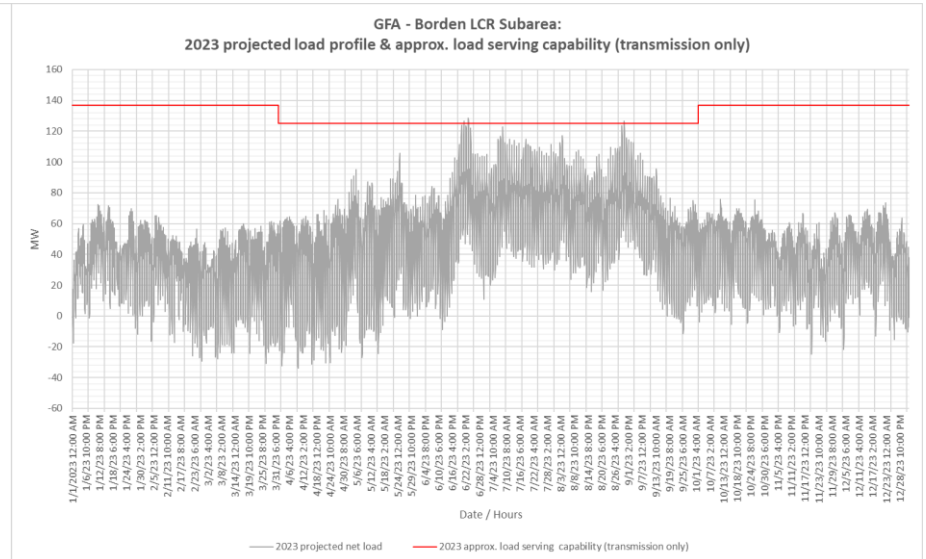
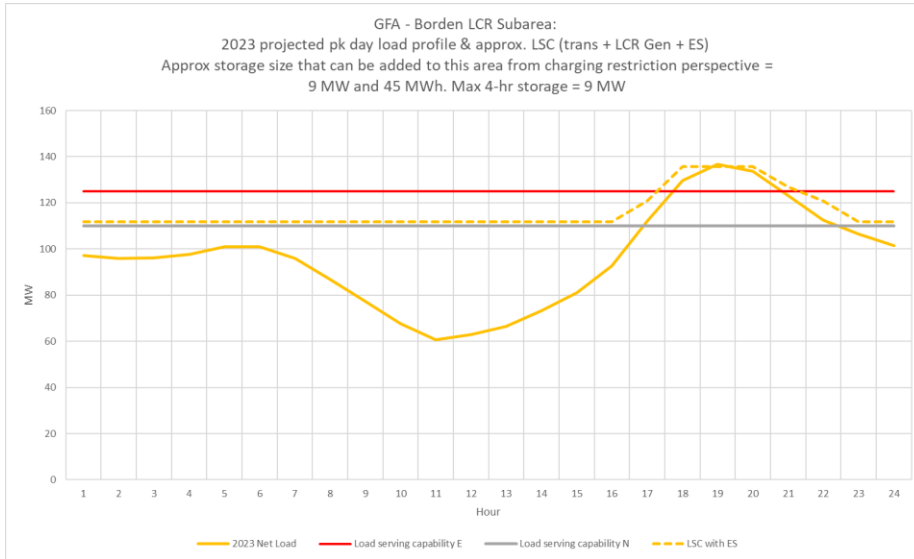
Load (MW)	2023	Generation (MW)	2023
Gross Load	142	Market, Net Seller	38
AAEE	-2	Solar	14
Behind the meter DG	0	MUNI	0
Net Load	140	QF	0
Transmission Losses	3	Mothballed	0
Pumps	0	Total Qualifying Capacity	52
Load + Losses + Pumps	143		

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

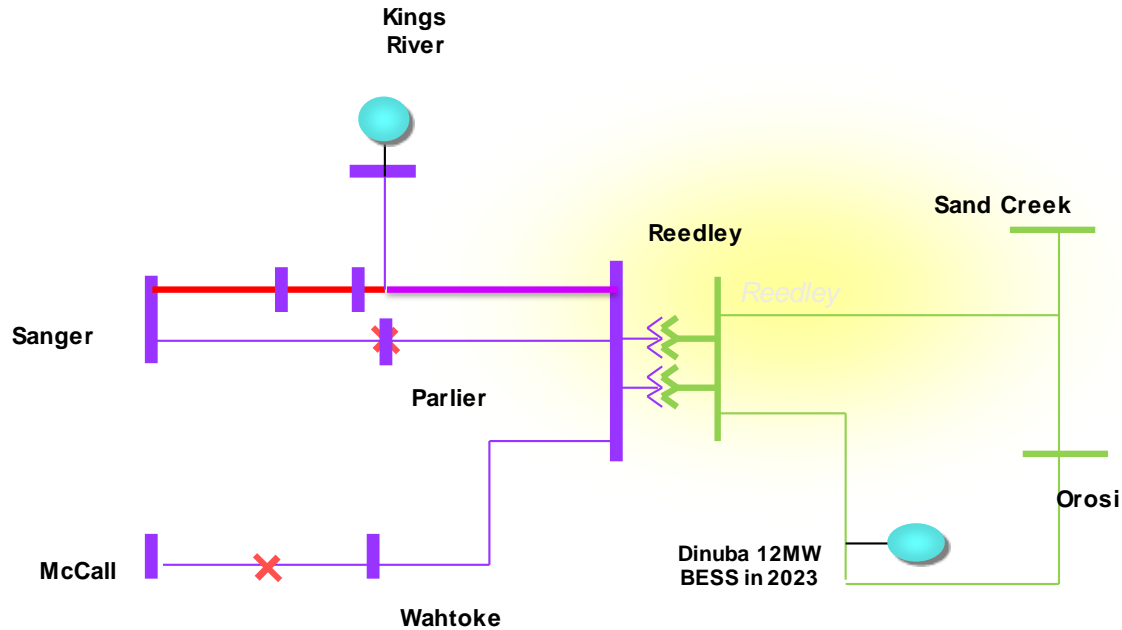
Borden Sub-area: Load Profiles



Reedley Sub-area: Load and Resources

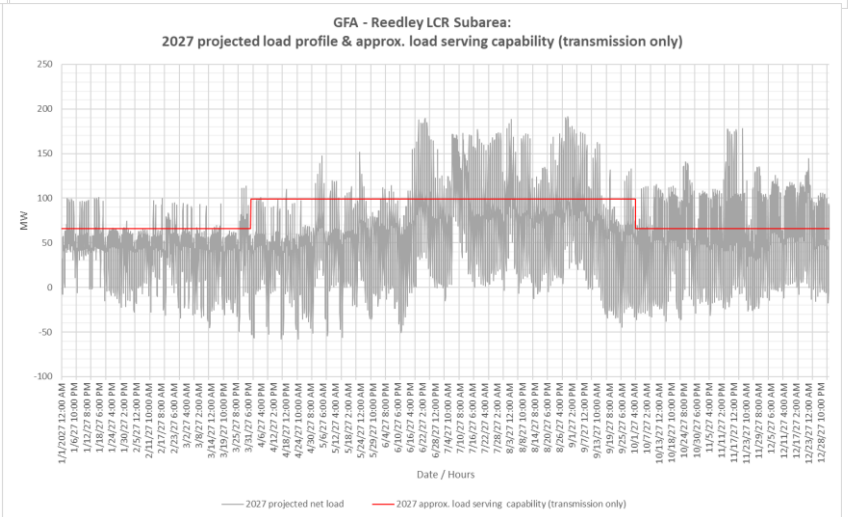
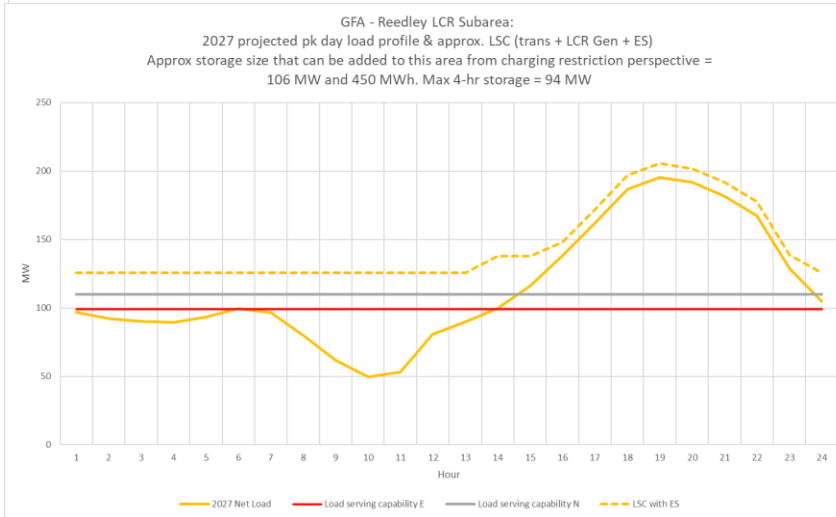
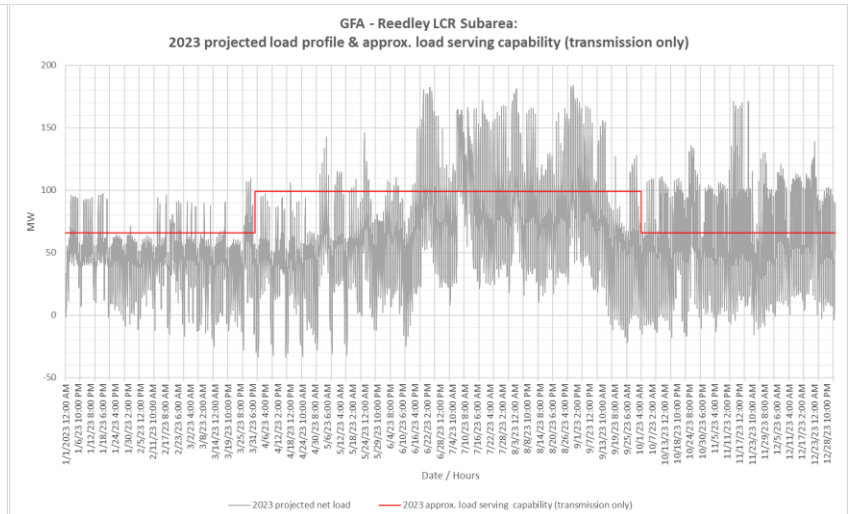
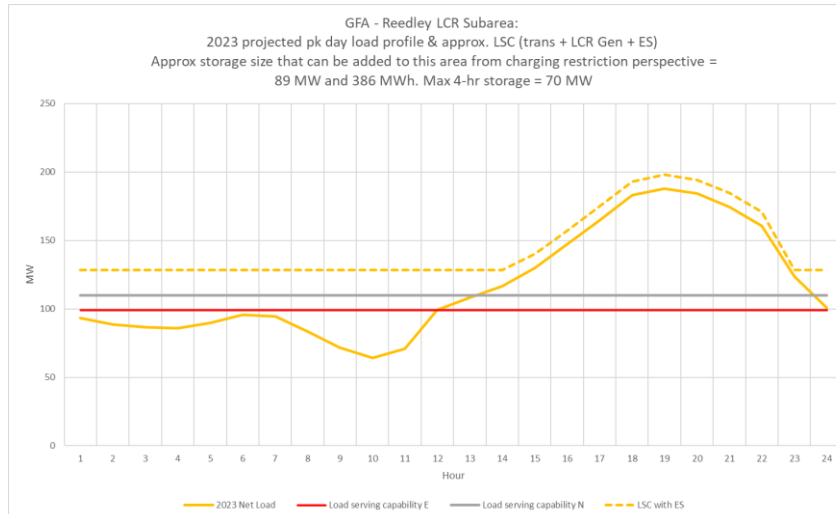
Load (MW)	2023	2027	Generation (MW)	2023	2027
Gross Load	208	217	Market	51	51
AAEE	-2	-3	Solar	0	0
Behind the meter DG	0	0	MUNI	0	0
Net Load	206	214	QF	0	0
Transmission Losses	11	34			
Pumps	0	0	Total Qualifying Capacity	51	51
Load + Losses + Pumps	217	248			

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 (67)	134 (83)

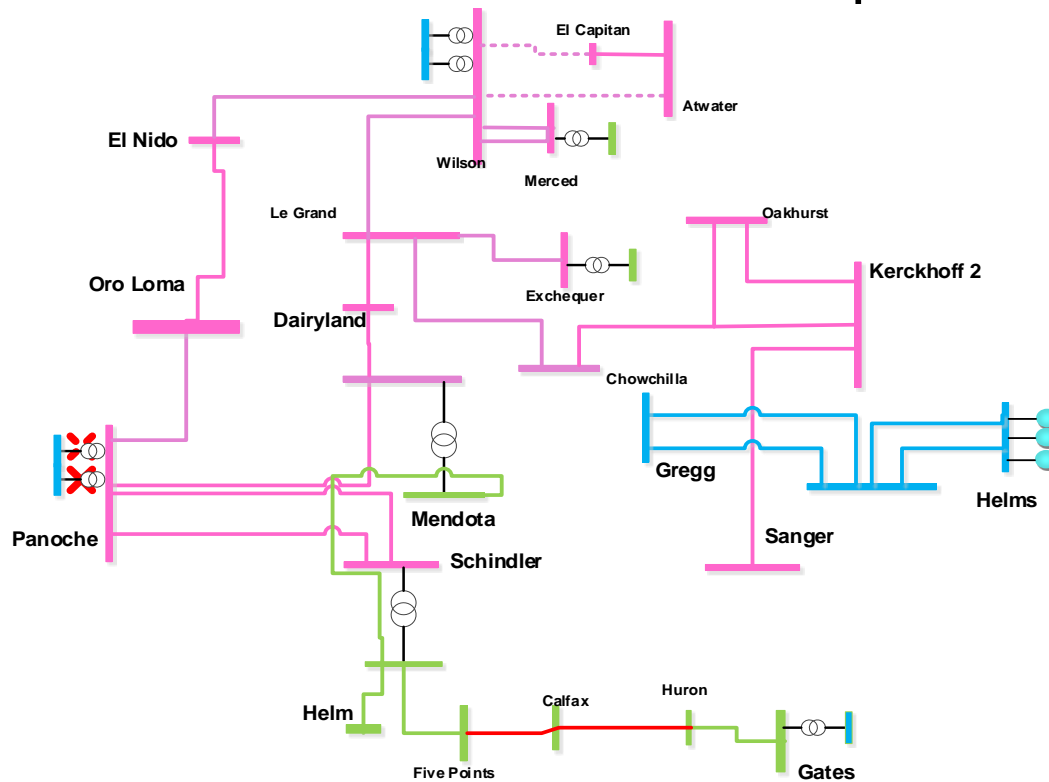
Reedley Sub-area: Load Profiles



Panoche Sub-area: Load and Resources

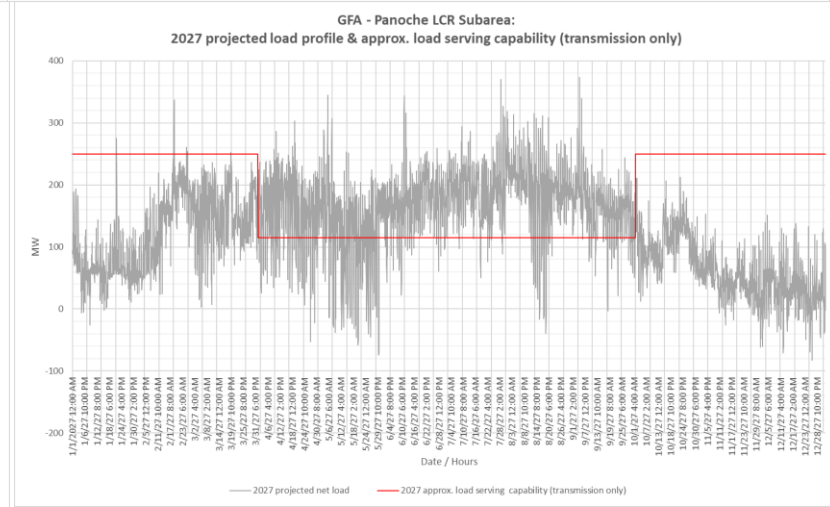
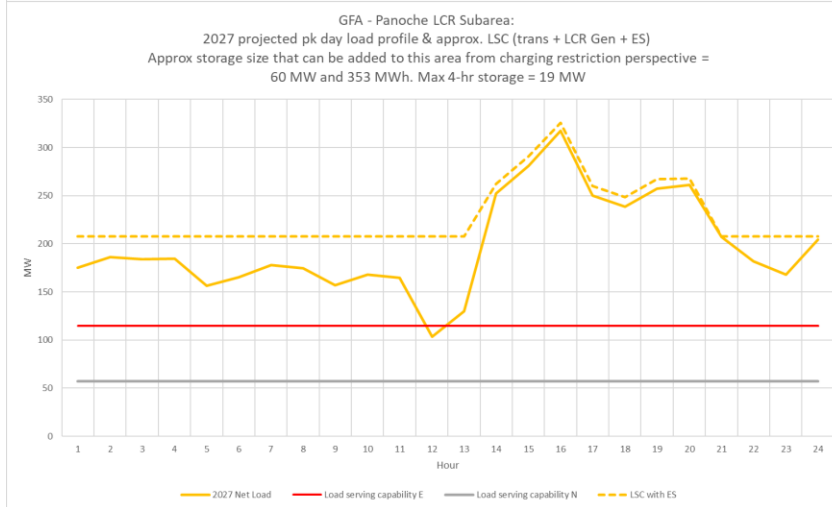
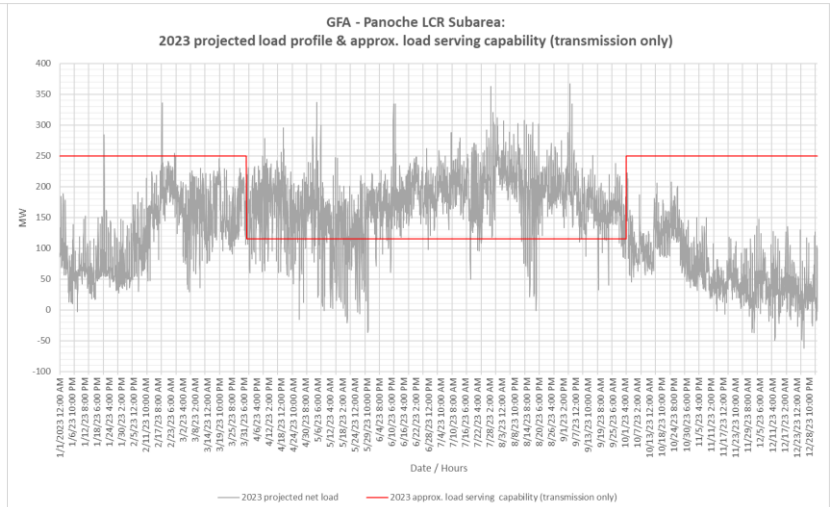
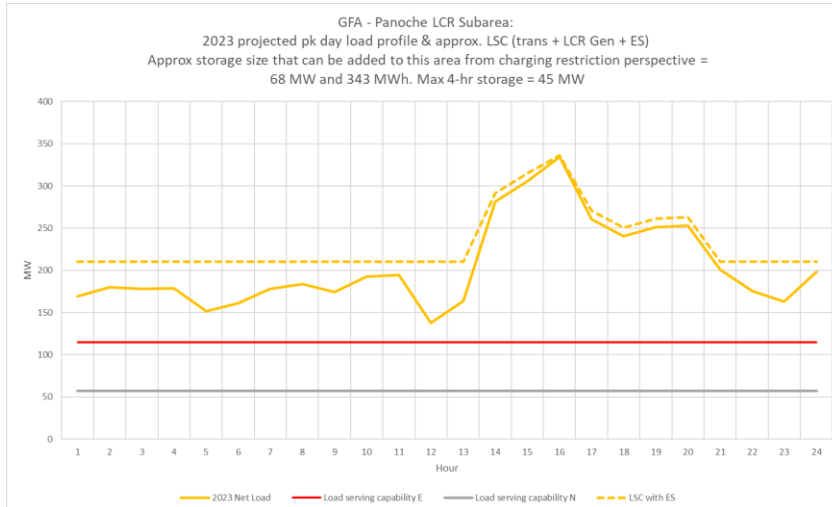
Load (MW)	2023	2027	Generation (MW)	2023	2027
Gross Load	455	469	Market/Net Seller	282	282
AAEE	-3	-6	Solar	95	95
Behind the meter DG	-1	0	MUNI	85	85
Net Load	451	463	QF	3	3
Transmission Losses	12	16			
Pumps	0	0	Total Qualifying Capacity	465	465
Load + Losses + Pumps	463	479			

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 (13 Peak)

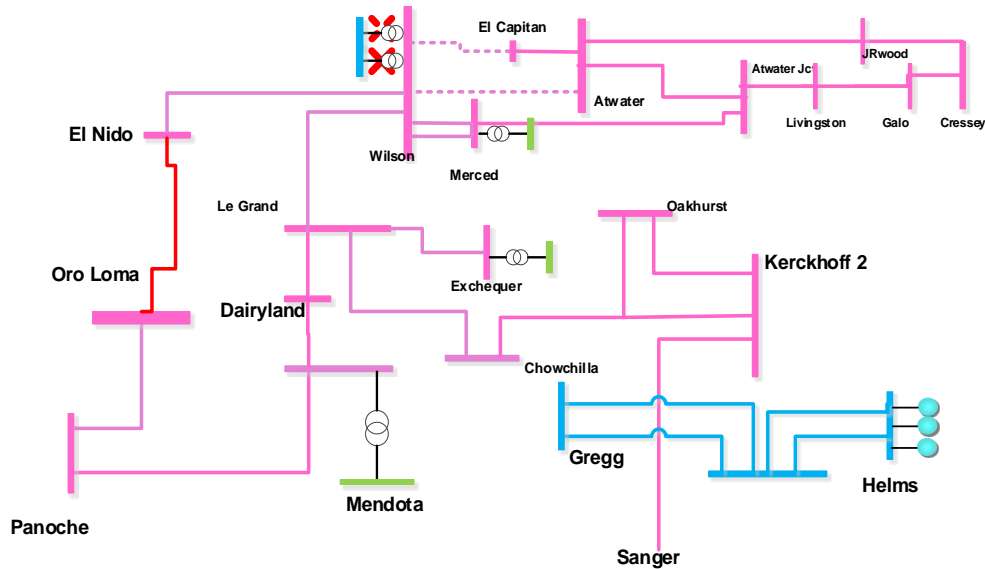
Panoche Sub-area: Load Profiles



Wilson Sub-area: Load and Resources

Load (MW)	2023	2027	Generation (MW)	2023	2027
Gross Load	NA – Flow through area.		Market/ Net Seller / Battery	260	260
AAEE			Solar	85	85
Behind the meter DG			Wind	0	0
Net Load			Muni	60	60
Transmission Losses			QF	0	0
Pumps			Future preferred resource and energy storage	0	0
Load + Losses + Pumps			Total Qualifying Capacity	405	405

Wilson Sub-Area Requirements

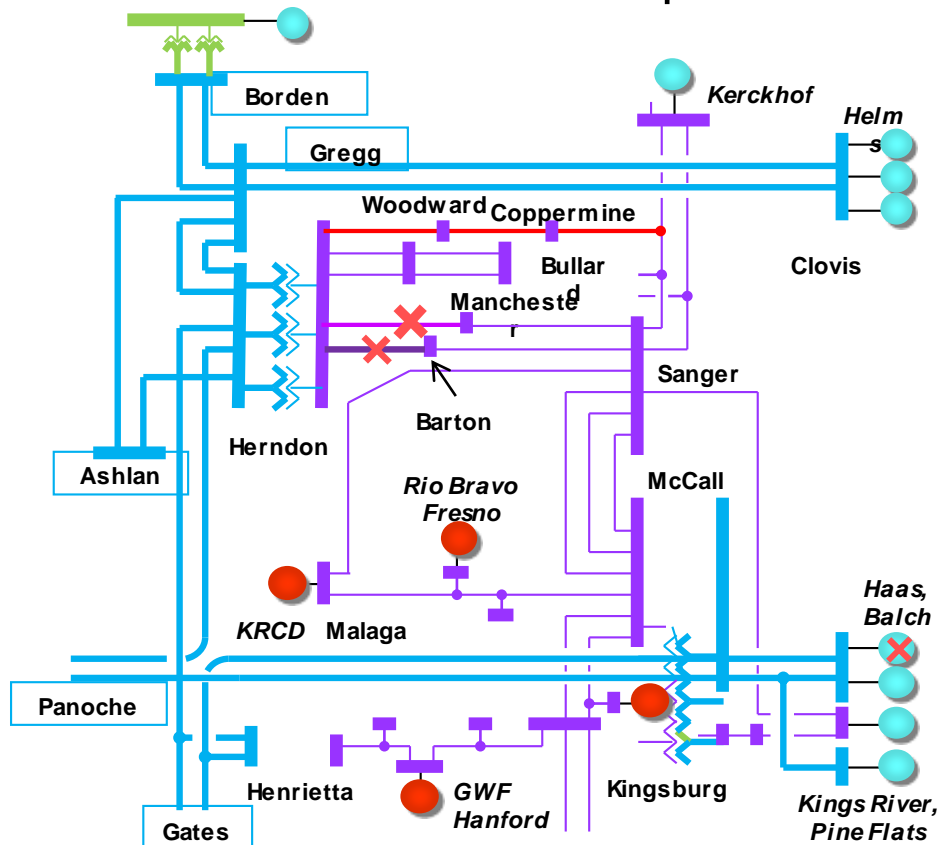


Limit	Category	2023 Limiting Facility	2027 Limiting Facility	Contingency	2023 LCR (MW)	2027 LCR (MW)
First Limit	P6	Panoche - Oro Loma 115 kV Line (Panoche - Hammonds 115 kV)	El Nido - Oro Loma 115 kV Line	Wilson 230/115kV TB #1 and Wilson 230/115kV TB #2	422 (17 NQC) (64 Peak)	500 (95 NQC) (142 Peak)

Herndon Sub-area: Load and Resources

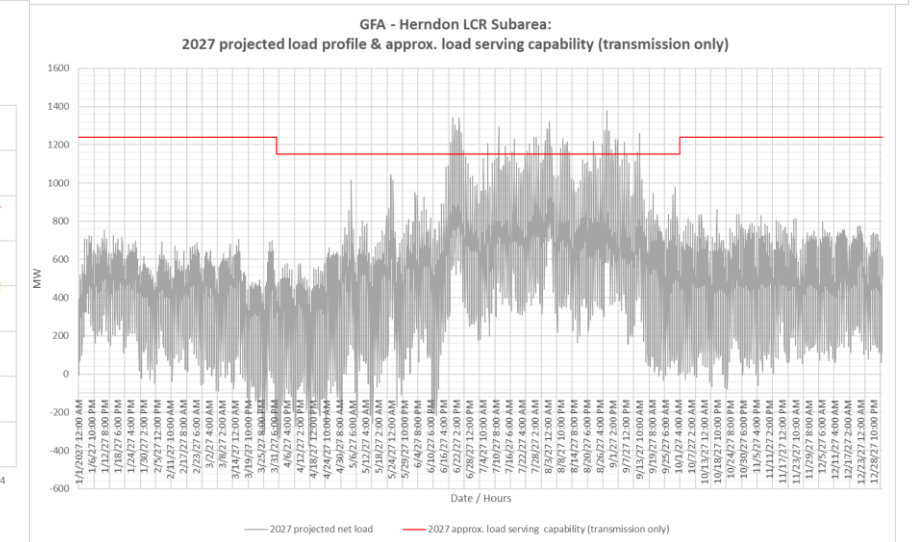
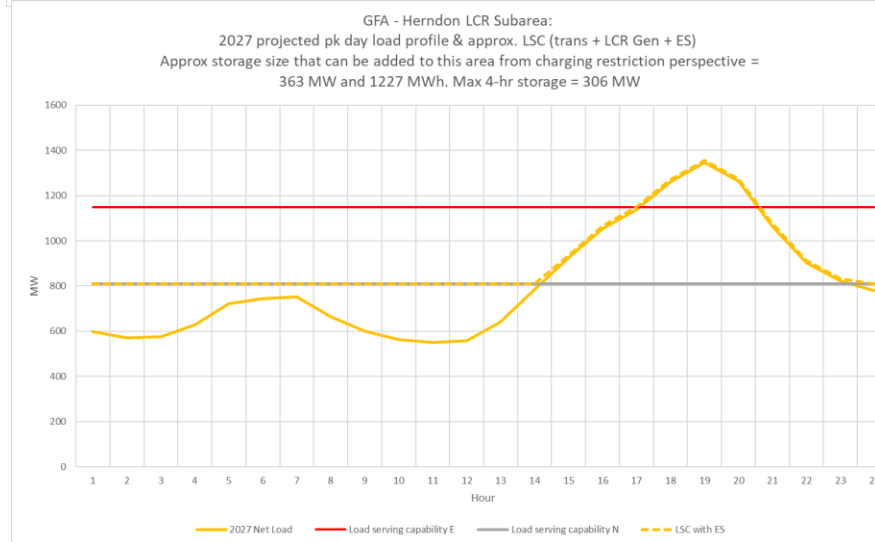
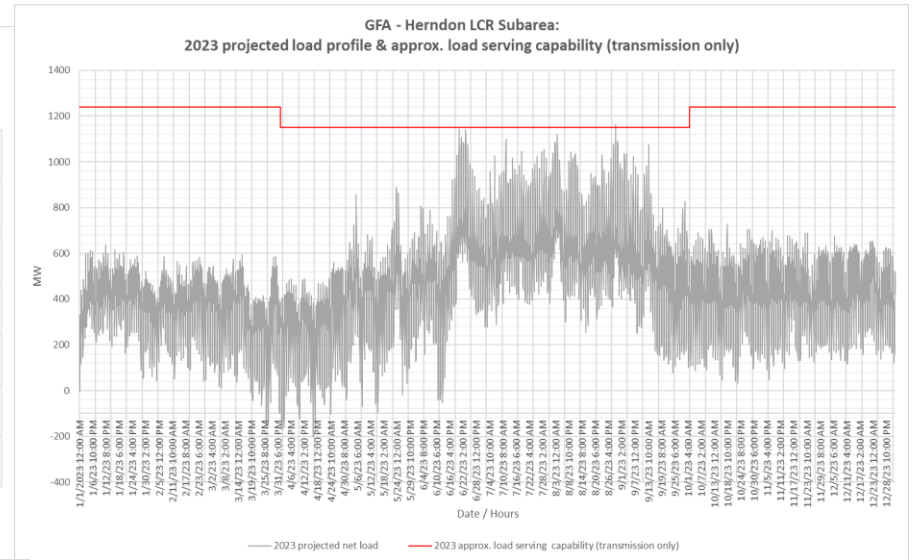
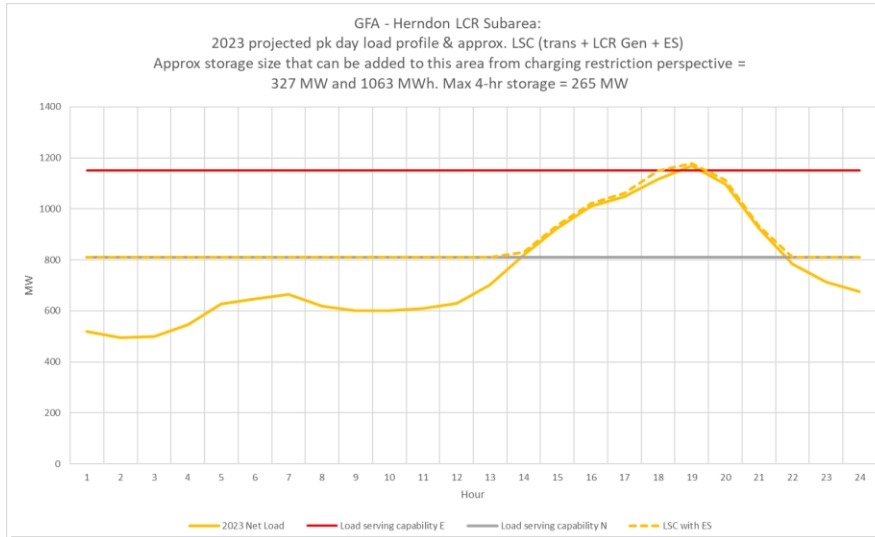
Load (MW)	2023	2027	Generation (MW)	2022	2026
Gross Load	1473	1542	Market	996	996
AAEE	-8	-13	Solar	63	63
Behind the meter DG	0	0	MUNI	98	98
Net Load	1465	1529	QF	1	1
Transmission Losses	35	29			
Pumps	0	0	Total Qualifying Capacity	1158	1158
Load + Losses + Pumps	1494	1557			

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

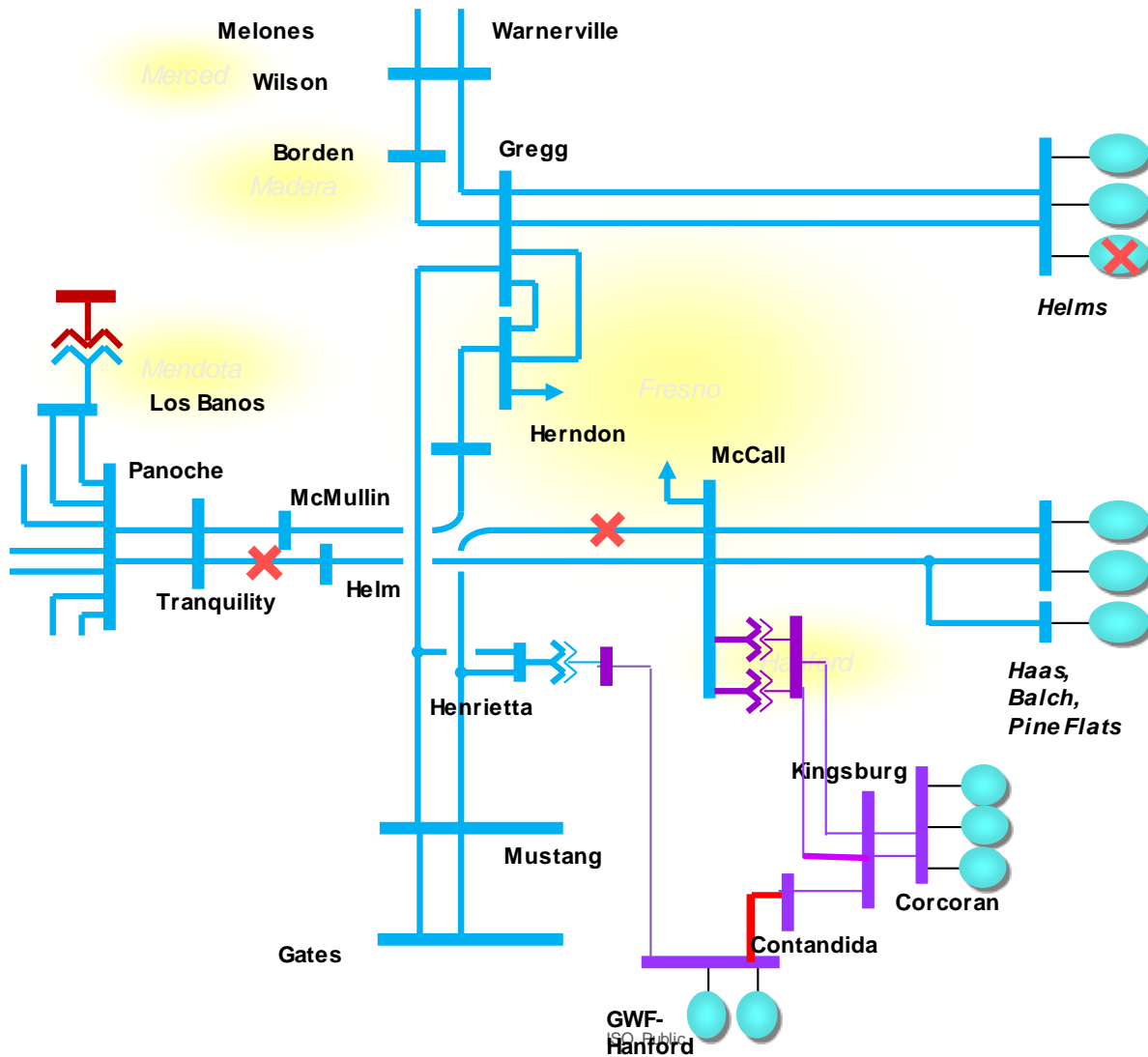
Herndon Sub-area: Load Profiles



Overall Load and Resources

Load (MW)	2023	2027	Generation (MW)	2023	2027
Gross Load	3164	3295	Market/Net Seller	2519	2519
AAEE	-21	-33	Solar	357	357
Behind the meter DG	0	0	MUNI	190	190
Net Load	3143	3262	QF	4	4
Transmission Losses	145	130	Battery	300	300
Pumps	0	0			
Load + Losses + Pumps	3288	3392	Total Qualifying Capacity	3370	3370

Overall Sub-Area Requirements

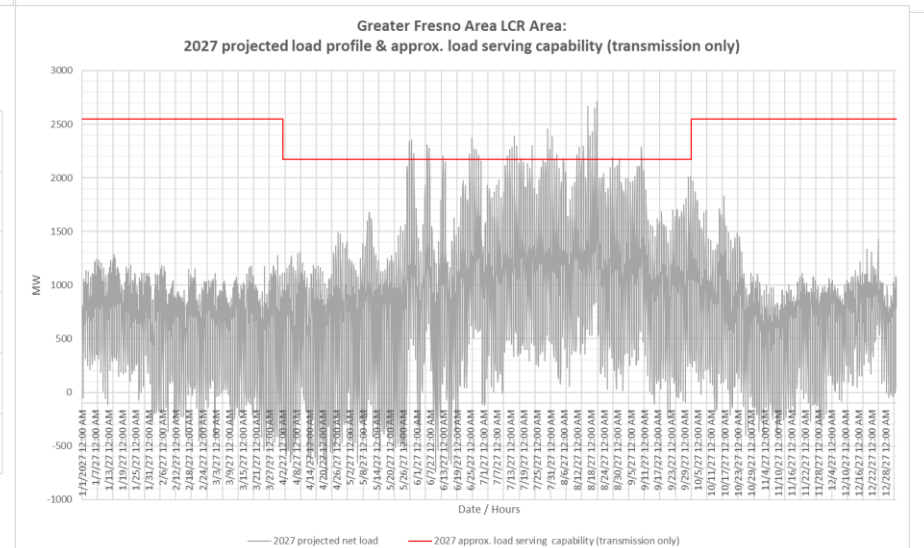
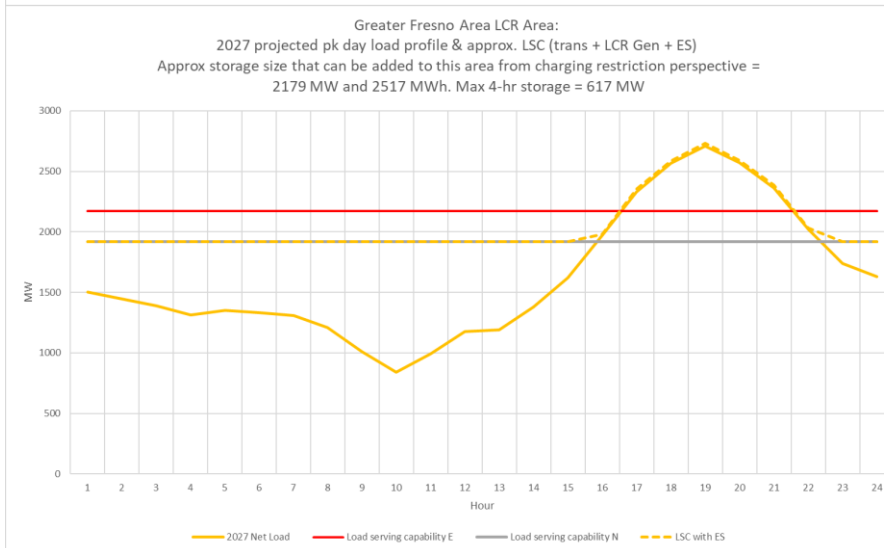
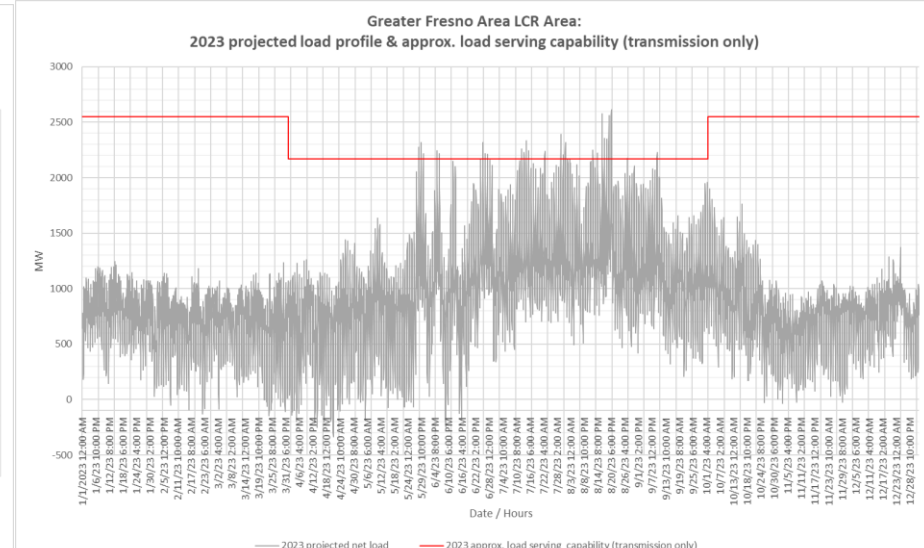
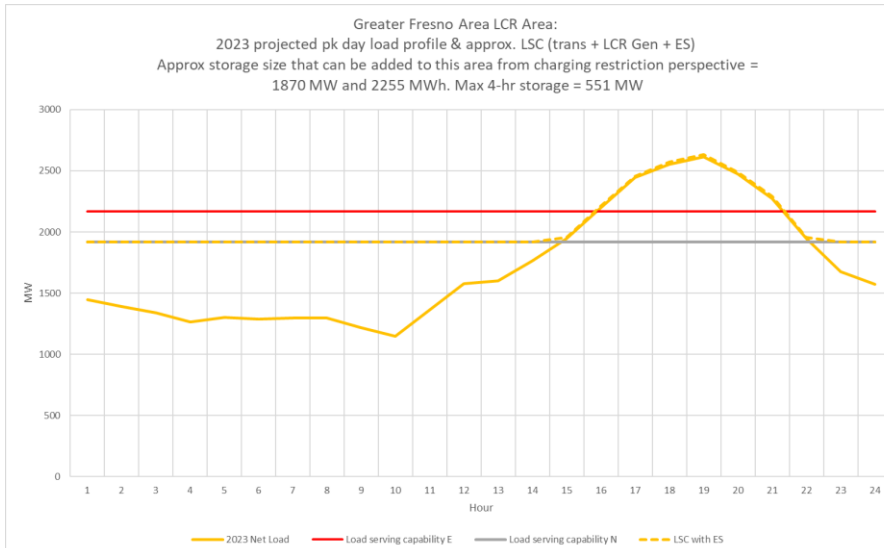


Overall Fresno Area : Requirements

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	137	2007
2027	2179	235	2414

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 (62 Peak; 53 NQC)	121	96 (85 Peak; 76 NQC)	115	77 (66 Peak; 57 NQC)
Borden	149	35	143	9	154	38	Eliminated due to Project	
Reedley	233	144 (93)	217	118 (67)	252	154 (103)	248	134 (83)
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 (64 Peak; 17 NQC)	Flow-Through	403 (31 Peak)	Flow-Through	500 (142 Peak; 95 NQC)
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