



2020 & 2024 Draft LCR Study Draft Results Kern Area

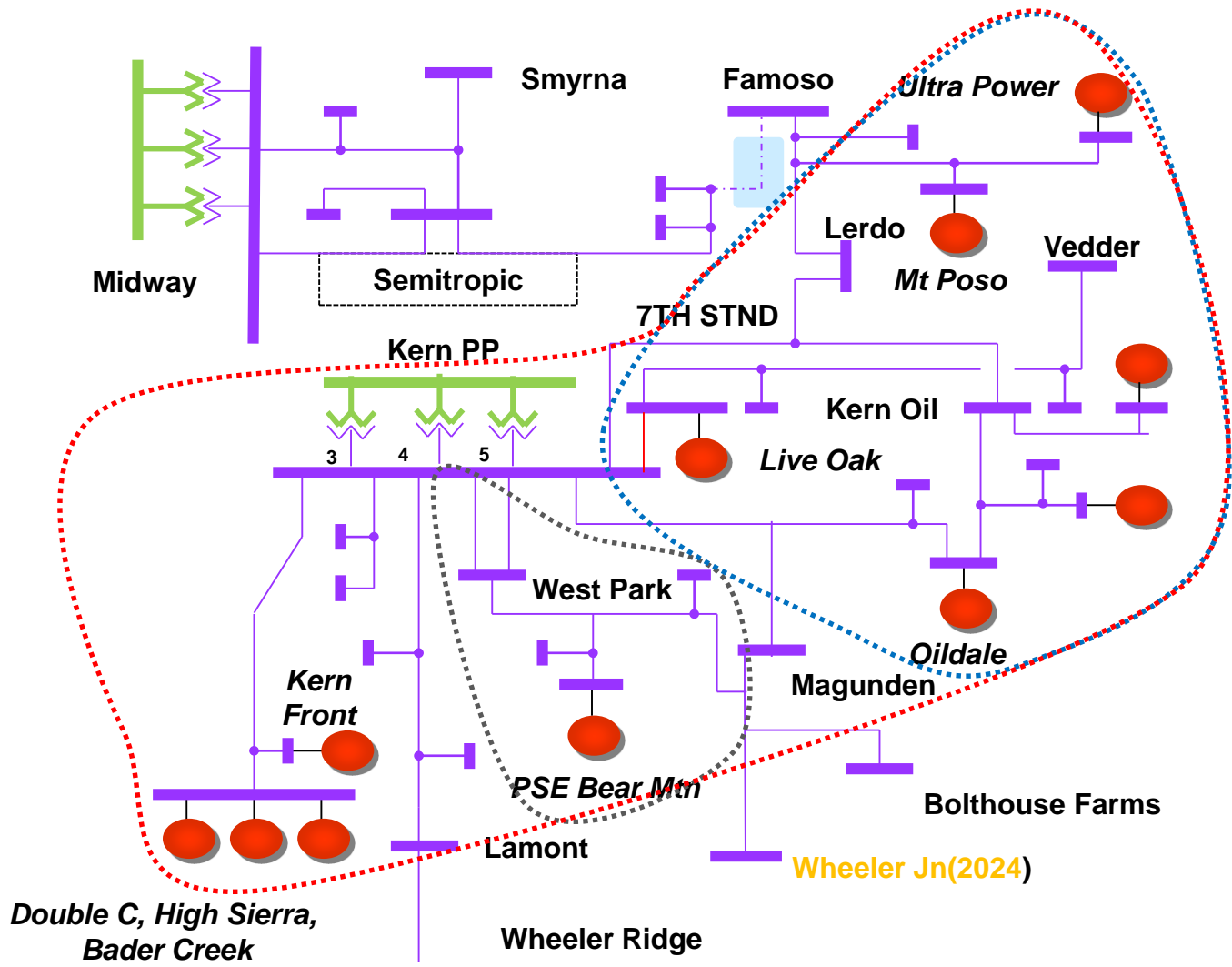
Abhishek Singh

Regional Transmission Engineer Lead

Stakeholder Meeting

March 14, 2019

Kern Area LCR Sub Areas



New Major Projects

Project Name	Expected ISD
Kern PP 230 kV Area Reinforcement	2021
Kern PP 115 kV Area Reinforcement Project	2023
Midway – Kern PP #2 230 kV Line	2023
Wheeler ridge Junction Station Project	2024

Kern Area Overall: Load and Resources

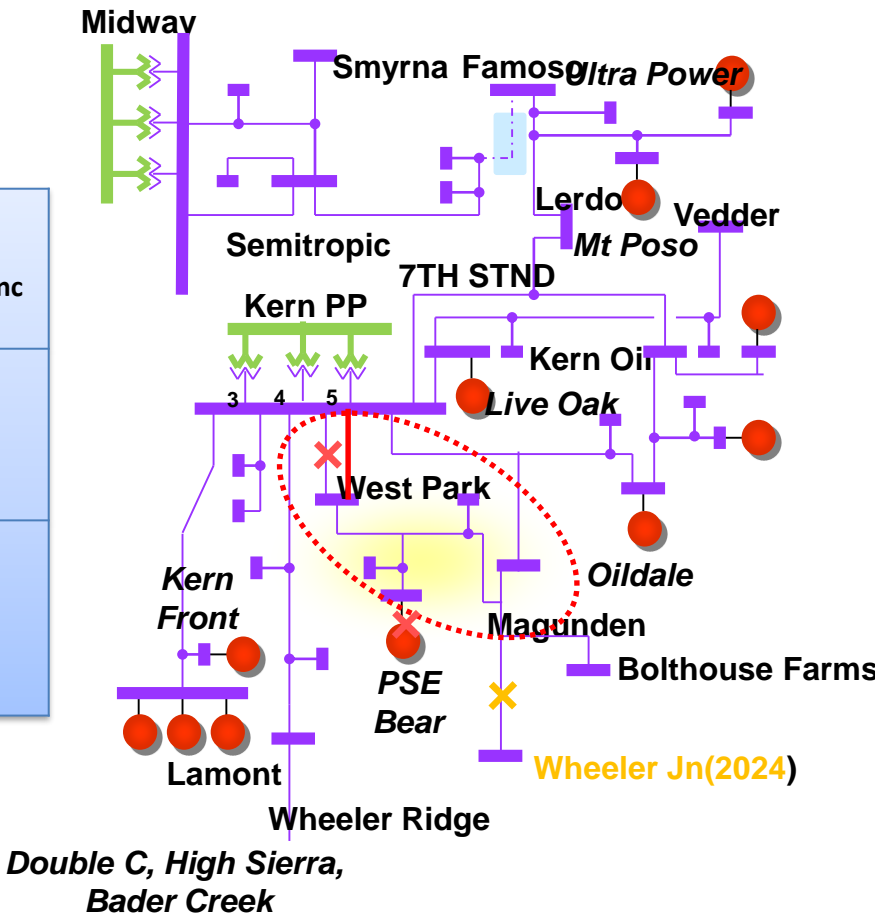
Load (MW)	2020	2024	Generation (MW)	2020	2024
Gross Load	1,169	926*	Market/ Net Seller/ Battery	354	354
AAEE	-15	-34	Solar	103	103
Behind the meter DG	0	0	Wind	0	0
Net Load	1,155	892	Muni	0	0
Transmission Losses	14	11	QF	8	8
Pumps	0	0	Future preferred resource and energy storage	0	0
Load + Losses + Pumps	1,169	903	Total Qualifying Capacity	465	465

*Kern Area LCR definition has changed due to modeling of approved transmission upgrades

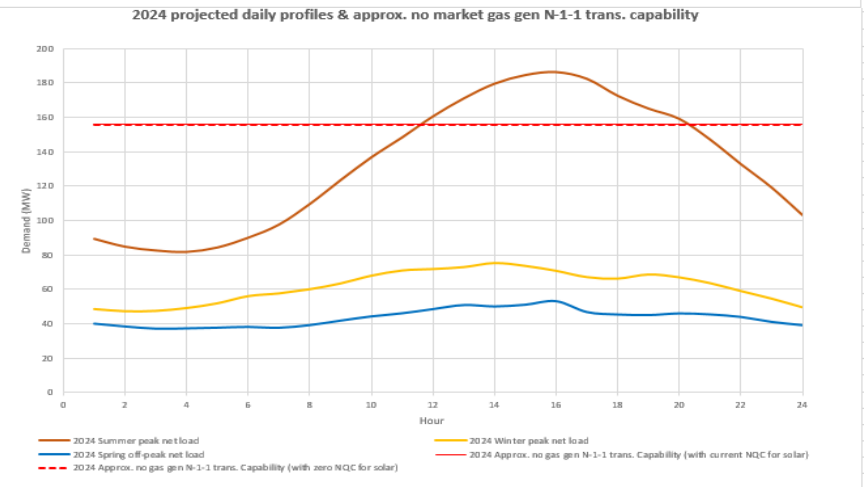
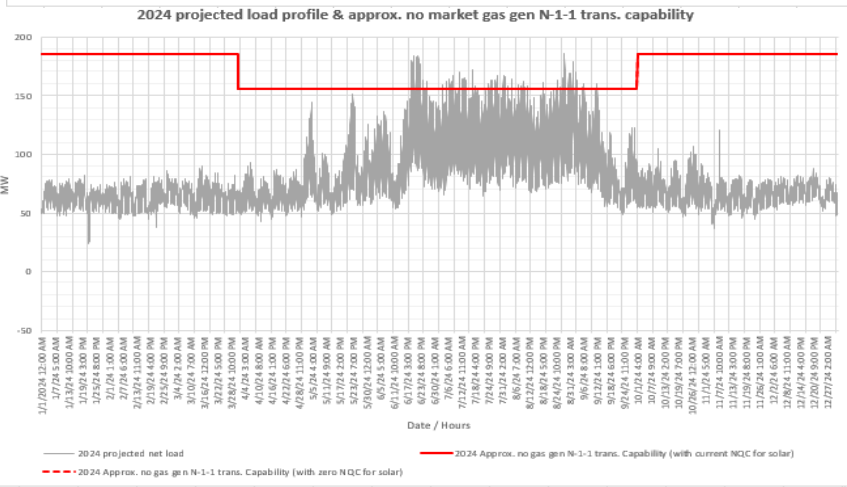
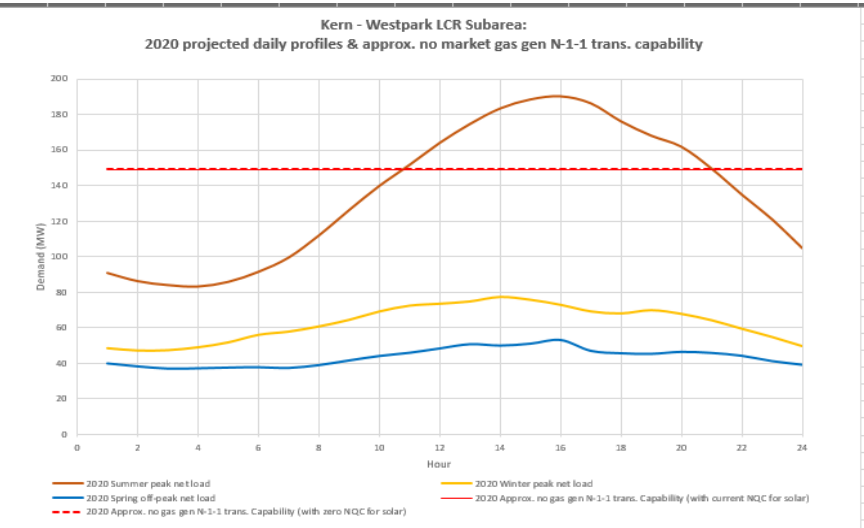
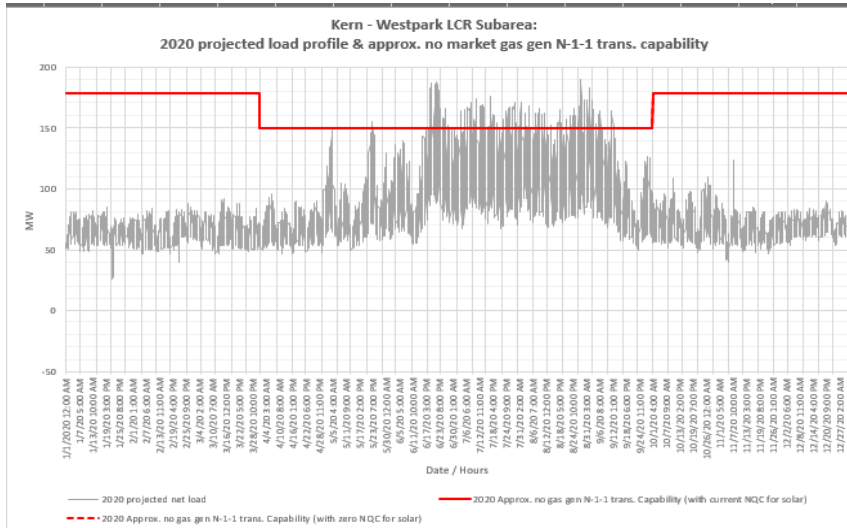
Kern Area LCR Westpark Sub-Area

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2020	First Limit	B/C	Kern-West Park #2 115 kV	Kern-West Park #1 115 kV and PSE-Bear Generation	60 (14)
2024	First Limit	C	Kern-West Park #2 or # 1 115 kV	Kern-West Park #1 or # 2 115 kV and Magunden-Wheeler J # 115 kV line	14

Category B requirement gets eliminated in 2024

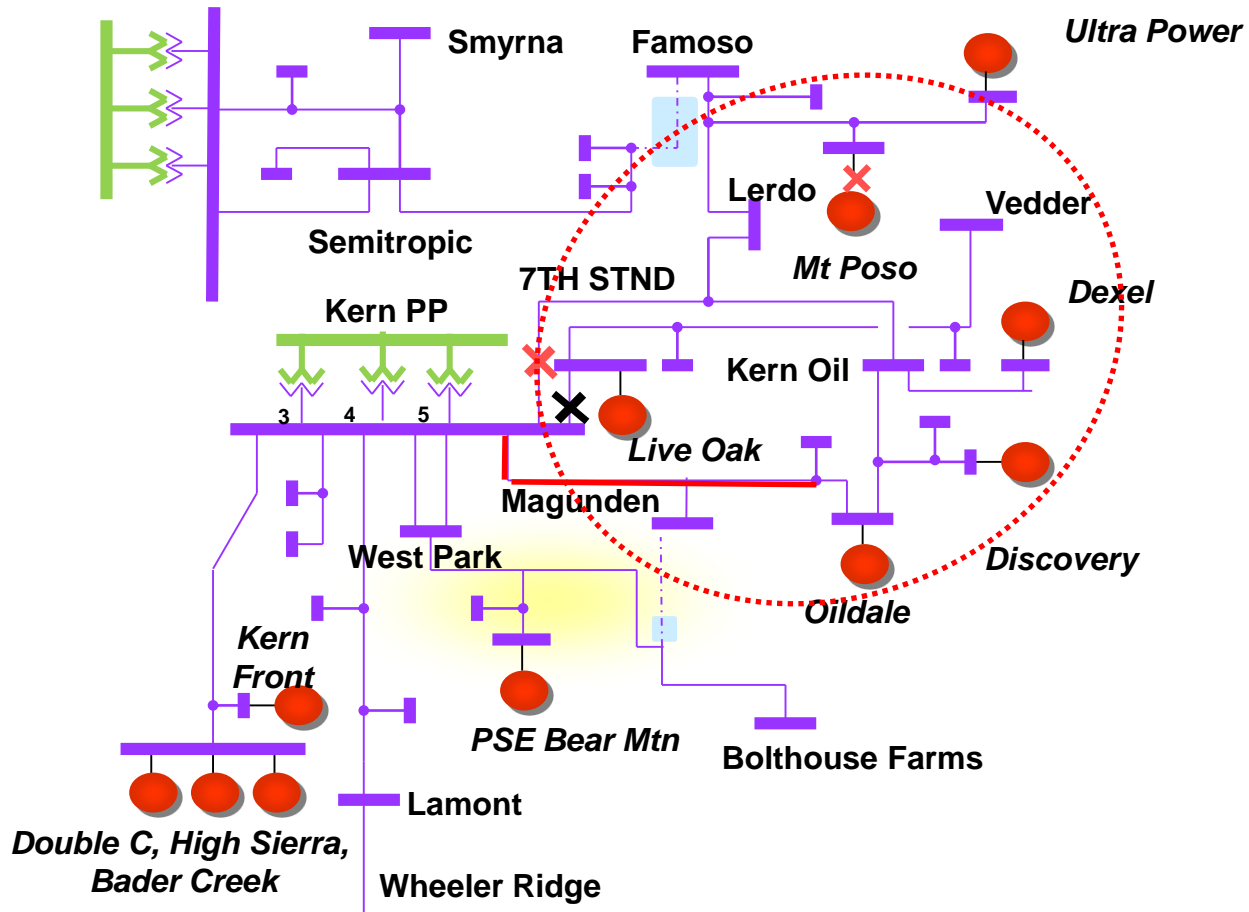


West Park Subarea: Load Profiles



Kern Area LCR

Kern Oil Sub-Area-Contingencies



Kern Area LCR

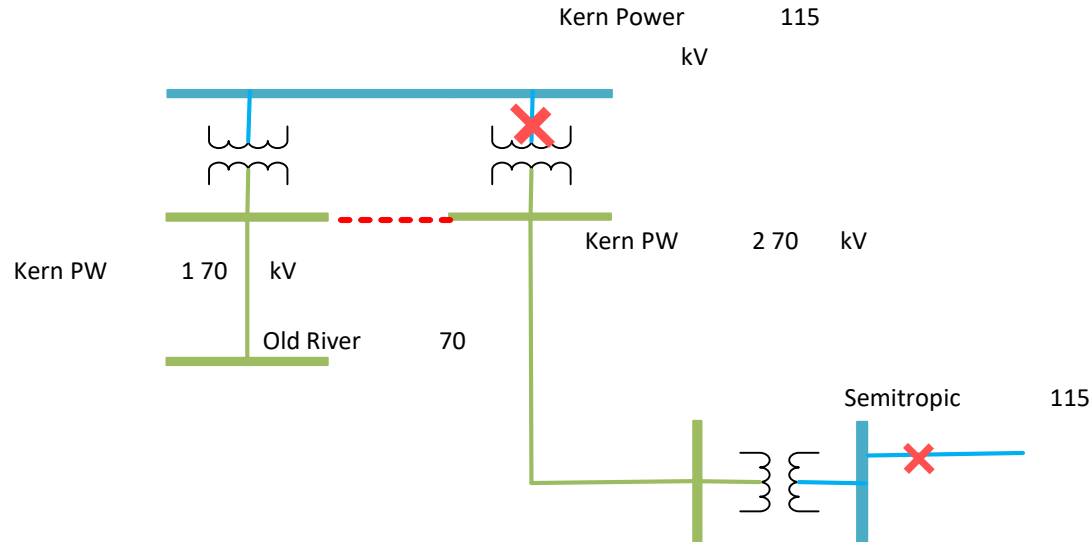
Kern Oil Sub-Area

Year	Limit	Cat	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2020	First limit	B	Kern PP-Magunden-Witco 115 kV Line (Kern PP-Kern Water section)	Kern PP-7th Standard 115 kV lines & Mount Poso Offline	131 (20*)
2020	First limit	C	Kern PP-Magunden-Witco 115 kV Line (Kern PP-Kern Water section)	Kern PP-7th Standard 115 kV lines & Kern PP-Live Oak 115 kV Line	131 (20*)

* NQC deficiency is 9 MW.

Year	Limit	Cat	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2024	First limit	B	Not Applicable		
2024	First limit	C	Kern Oil Jn to Golden Bear 115 kV line section	Kern PP-7th Standard 115 kV lines & Kern PP-Live Oak 115 kV Line	65

Kern PP 70 kV Sub Area : Requirements



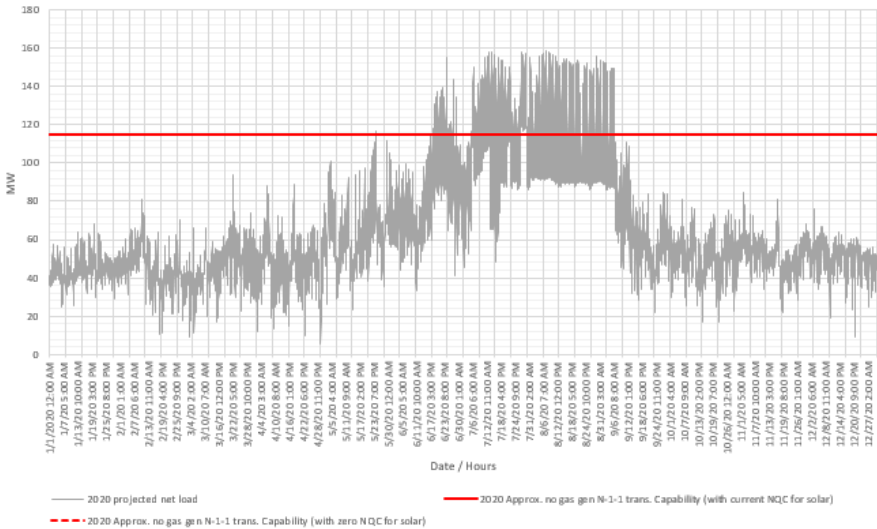
Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2020	First Limit	C	Kern PW2 to Kern PW1 70 kV Bus Tie	Kern PW2 115/70 T/F # 1 & Midway-Smyrna Semi tropic 115 kV line	65 (61*)
2024	First Limit	C	Kern PW2 to Kern PW1 70 kV Bus Tie	Kern PW2 115/70 T/F # 1 & Midway-Smyrna Semi tropic 115 kV line	73 (69**)

* NQC deficiency is 41 MW.

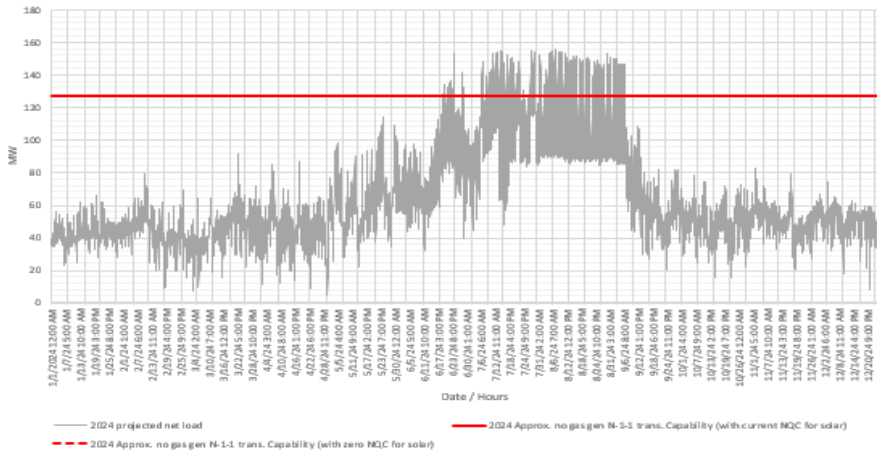
** NQC deficiency is 49 MW.

Kern PP 70 kV Subarea: Load Profiles

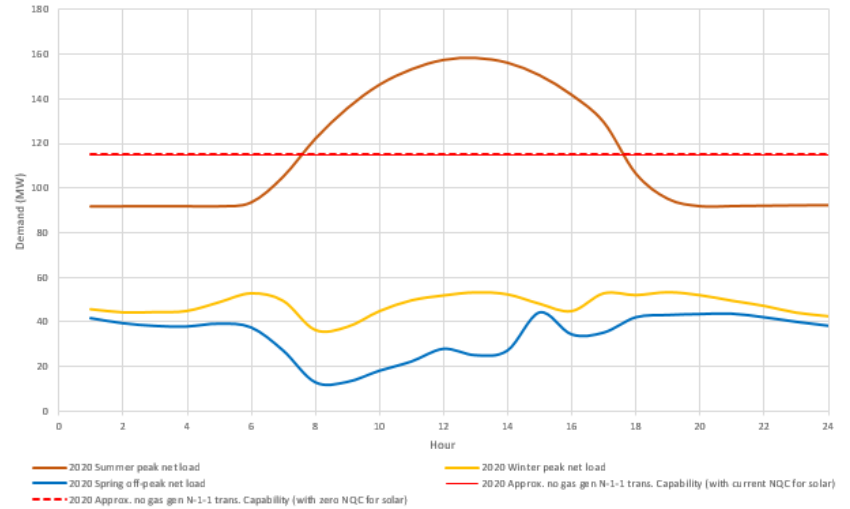
**Kern-Kern PWR 70 kV subarea:
2020 projected load profile & approx. no market gas gen N-1-1 trans. capability**



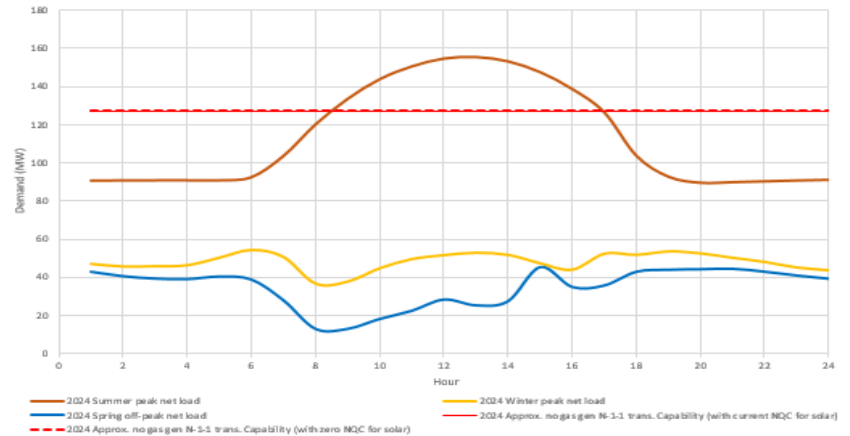
**Kern-Kern PWR 70 kV subarea:
2024 projected load profile & approx. no market gas gen N-1-1 trans. capability**



**Kern-Kern PWR 70 kV subarea:
2020 projected daily profiles & approx. no market gas gen N-1-1 trans. capability**

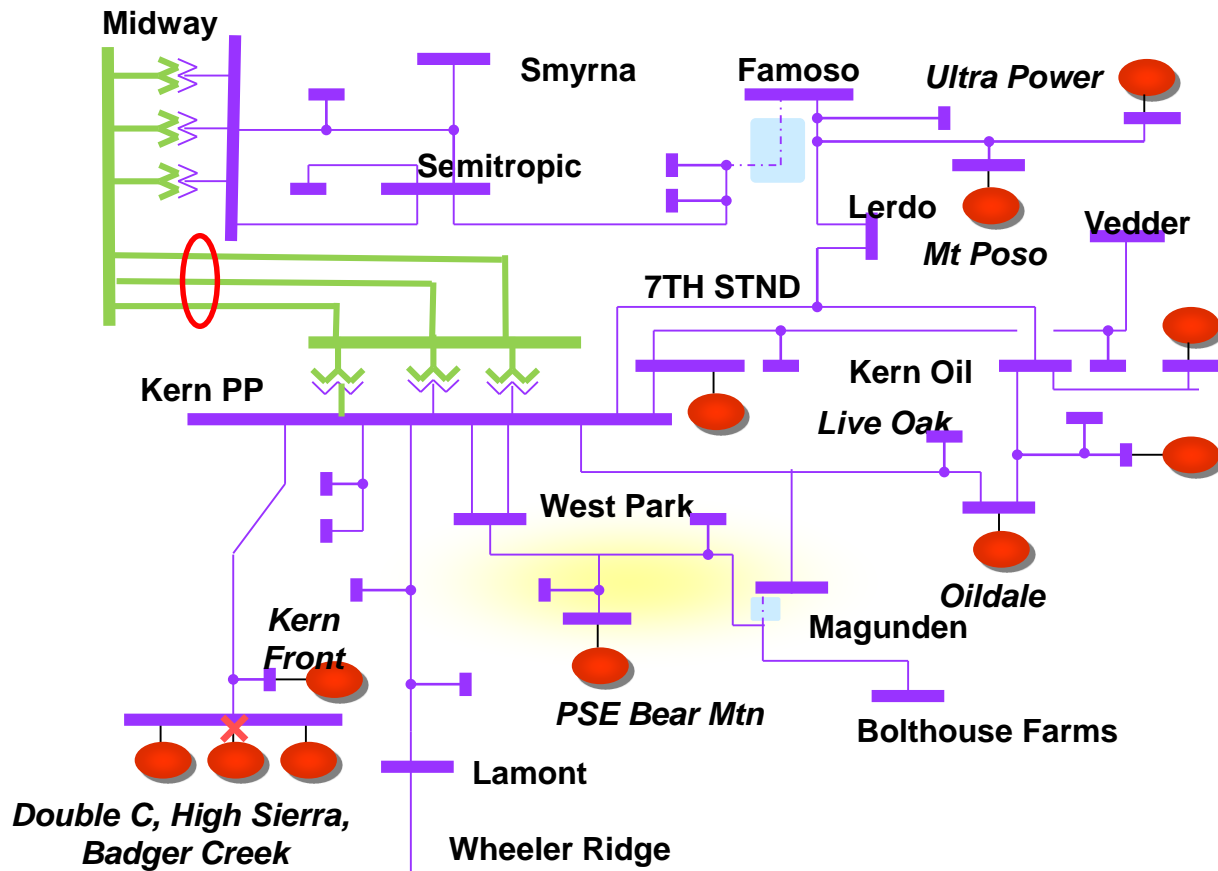


**Kern-Kern PWR 70 kV subarea:
2024 projected daily profiles & approx. no market gas gen N-1-1 trans. capability**



Kern Area LCR

South Kern PP Sub-Area



Kern Area LCR

South Kern PP Sub-Area

Year	Limit	Cat	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2020	First limit	B	Midway-Kern PP 230 kV # 2 230 kV line (Kern PP-Bkrsfield J2)	Midway-Kern PP # 3 230 kV line & High Sierra Generation	136
2020	First limit	C	Midway-Kern PP 230 kV # 4 230 kV line (Midway-Stockdale J1)	Midway-Kern PP # 2 & # 3 230 kV lines	592 (230*)

* NQC deficiency is 125 MW

Year	Limit	Cat	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2024					
2024			No requirement due to modeling of approved transmission projects.		

Kern Total LCR Need

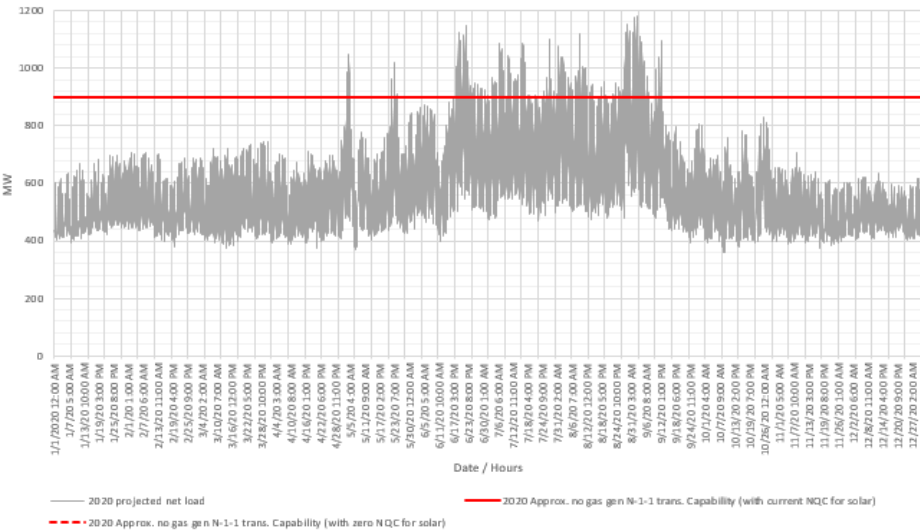
2020 LCR Need	Existing Generation Capacity Needed (MW)	NQC Deficiency (MW)	Total MW Need
Category B (Single)	181	9	190
Category C (Multiple)	467	125	592

2024 LCR Need	Existing Generation Capacity Needed (MW)	NQC Deficiency (MW)	Total MW Need
Category B (Single)	None	None	None
Category C (Multiple)	103	49	152

Kern Overall Load Profile

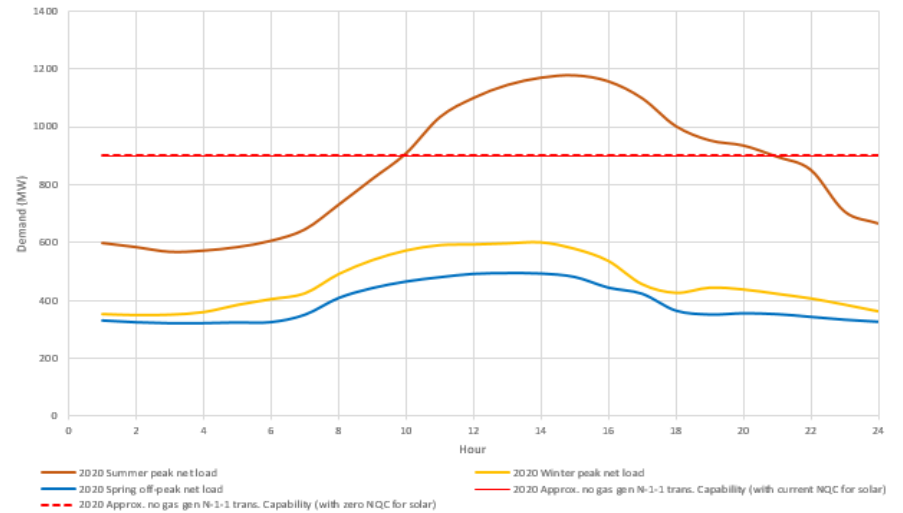
Kern LCR Area:

2020 projected load profile & approx. no market gas gen N-1-1 trans. capability



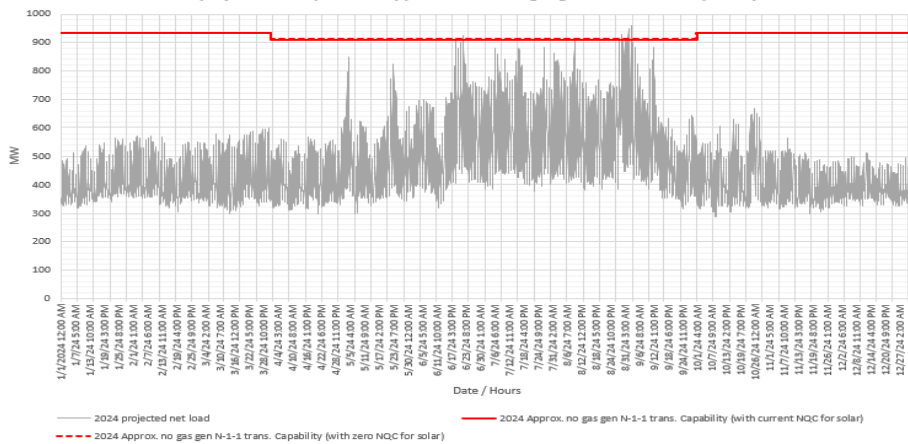
Kern LCR Area:

2020 projected daily profiles & approx. no market gas gen N-1-1 trans. capability



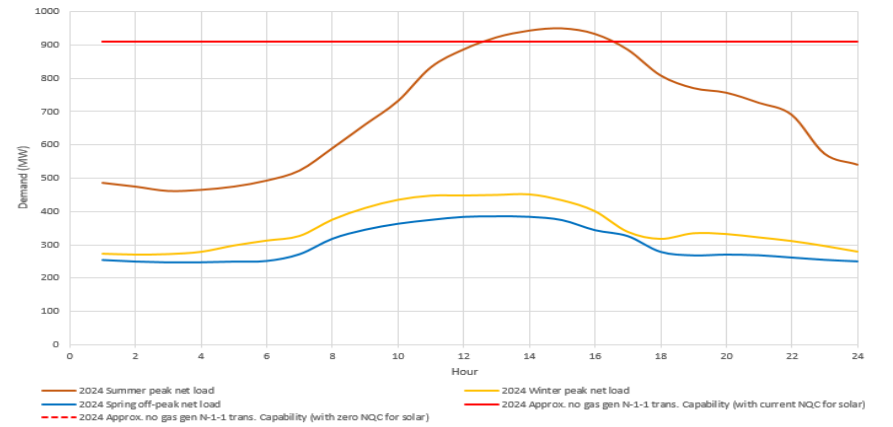
Kern LCR Area:

2024 projected load profile & approx. no market gas gen N-1-1 trans. capability



Kern LCR Area:

2024 projected daily profiles & approx. no market gas gen N-1-1 trans. capability



Changes Compared to Previous LCR Requirements

Subarea	2019		2020		2023		2024	
	Load	LCR	Load	LCR	Load	LCR	Load	LCR
Kern PP 70 kV	NA	NA	147	65*	NA	NA	154	73*
West Park	151	51*	165	59*	149	51*	164	14
Kern Oil**	720	116	745	131*	745	131*	749	65
South Kern	1088	472	1155	592*	1140	<131	NA	NA
Kern Overall	1088	478*	1155	592*	1140	182*	903	152*

Load is Net Load+Losses

*Includes Deficiency

** Kern Oil Load includes West Park Load

- Updated NQC
- Kern PP 70 kV is the new pocket due to change of summer setup in Kern area
- 2020 area load has increased by 81 MW. The LCR requirement increases proportionally to the load growth.
- 2024 area load has decreased by 237 MW due to modeling of approved transmission projects. This resulted in smaller area definition.