



2020 & 2024 LCR Study Draft Results Big Creek/Ventura Area

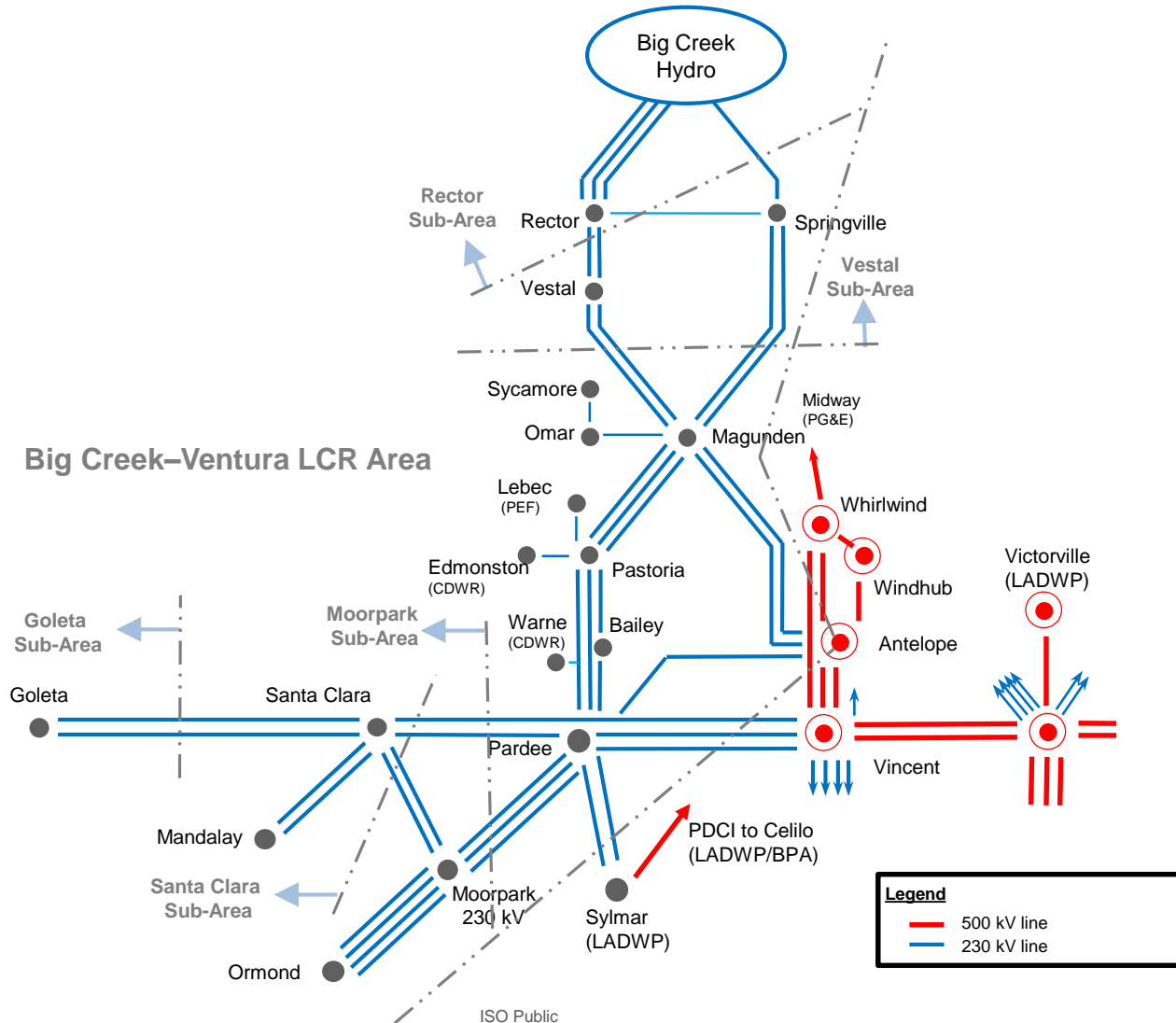
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Regional Transmission Engineer Lead

Stakeholder Meeting

March 14, 2019

Bic Creek - Ventura Area Transmission System



Major transmission projects

- Big Creek Corridor Rating Increase Project (ISD-04/01/2020)
- Pardee-Moorpark No. 4 230 kV Transmission Project (ISD-12/31/2020)

Resource Assumptions

- Mandalay retired
- Ormond Beach will be retired by 12/31/2020
- Ellwood is assumed to be retired beyond 2020 when its current contract expires
- The Las Flores Canyon Cogeneration Facility (EXGEN) has been OOS since 2015 and is assumed to be unavailable.

Load and Resources

Load (MW)			Generation NQC (MW)		
	2020	2024		2020	2024
Gross Load	4,866	5,161	Market/Net Seller	4,290	2,720
AAEE*	-47	-158	Solar	270	270
Behind the meter PV*	-323	-493	Muni	342	342
Net Load	4,496	4,510	QF	63	63
Transmission Losses	77	68	Pref. Res & ES	112	112
Pumps	369	369			
Load+Losses+Pumps	4,942	4,947	Total Qualifying Capacity	5,077	3,507

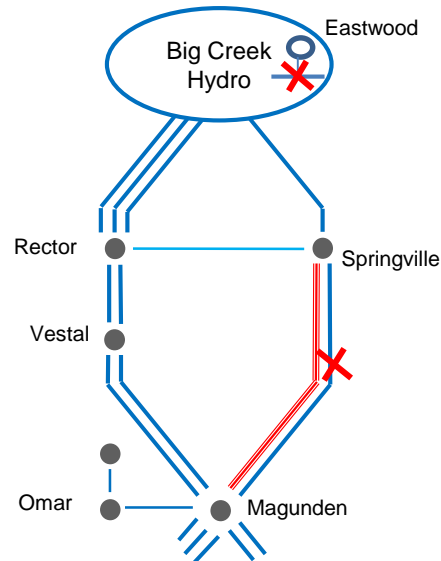
* The AAEE and BTM PV values shown may not include amounts associated with the Saugus Substation as the CEC's definition of the Big Creek Ventura Area does not include the substation

Rector Sub-Area Requirements

Category	Limiting Facility	Contingency	LCR (MW)	
			2020	2024
B/C	LCR for Rector is satisfied by the LCR of the larger Vestal sub-area		0	0

Vestal Sub-Area Requirements

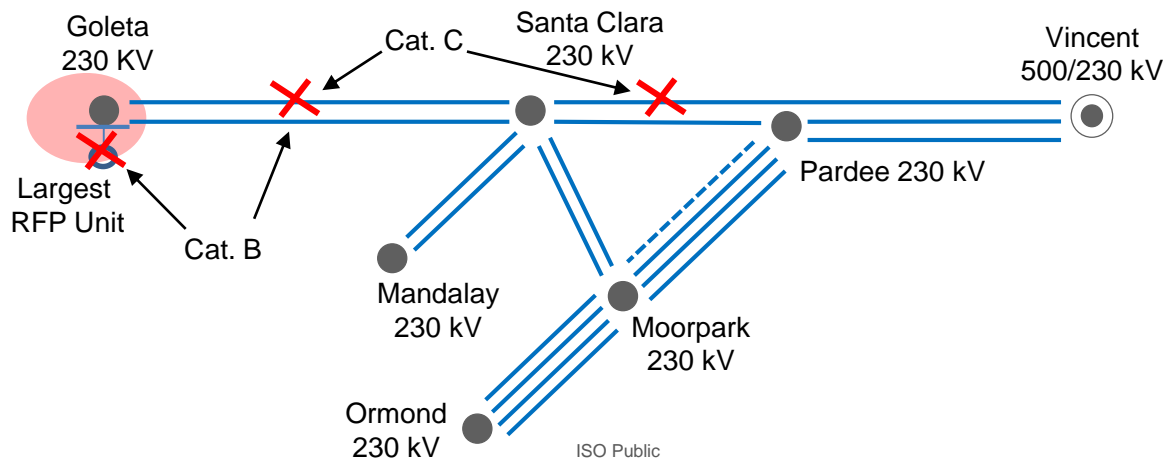
Category	Limiting Facility	Contingency	LCR (MW)	
			2020	2024
B/C	Magunden–Springville #2 230 kV line	Magunden–Springville #1 230 kV line with Eastwood out of service	467	450



Goleta Sub-Area Requirements

Category	Limiting Facility	Contingency	LCR (MW)	
			2020	2024
B	Goleta 230 kV bus (Low voltage)	Santa Clara–Goleta 230 kV line with largest resource at Goleta out of service	0	17 MW plus largest resource at Goleta ⁽¹⁾
C	Goleta 230 kV bus (Low voltage)	Overlapping outage of Santa Clara–Goleta and Moorpark–Santa Clara (2020) or Vincent–Santa Clara 230 kV lines (2024) ⁽²⁾	8	32 MW ⁽¹⁾

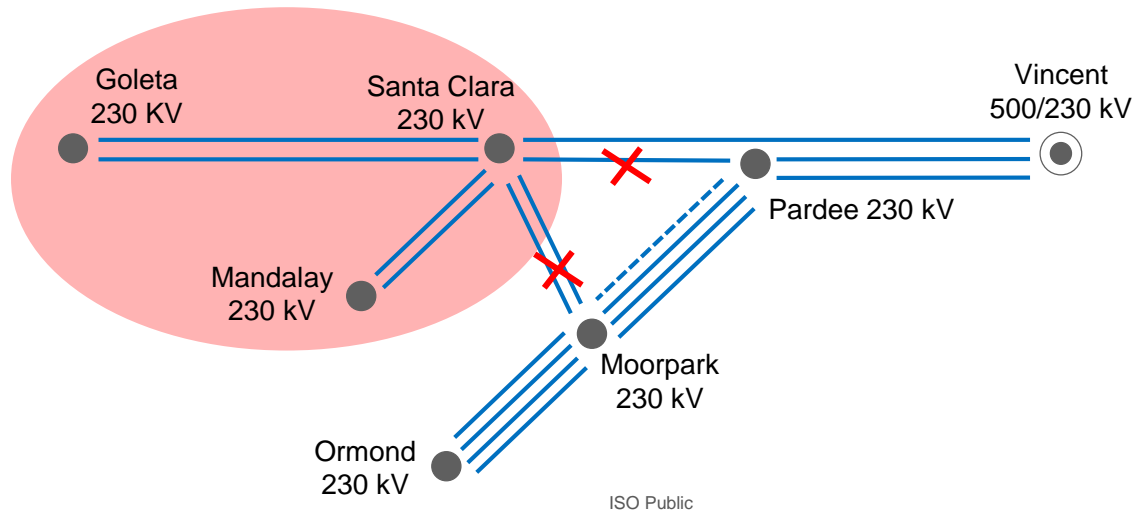
- (1) Generic distributed resources delivered at Goleta are assumed to meet the local capacity deficiency.
- (2) The worst TPL 001-4 (Category P6) contingency is overlapping outage of Santa Clara shunt capacitor and the Santa Clara–Goleta 230 kV line. This would require 52 MW of local capacity. However, this contingency is not a current LCR criteria contingency.



Santa Clara Sub-Area Requirements

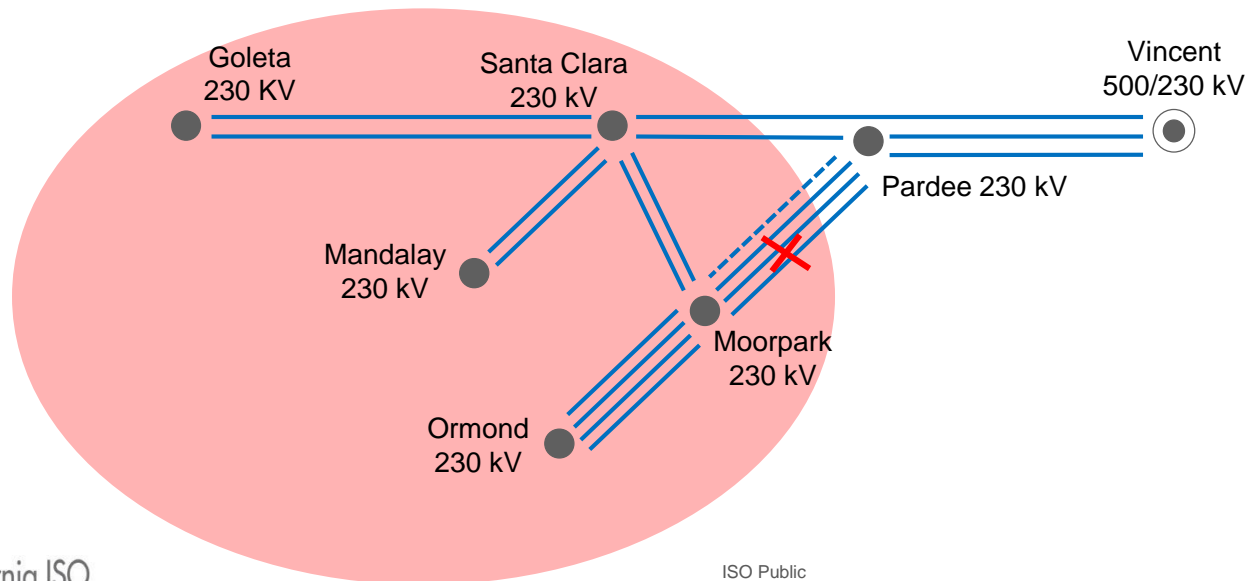
Category	Limiting Facility	Contingency	LCR (MW)	
			2020	2024
B	None	None	0	0
D	Voltage Collapse	Pardee–Santa Clara 230 kV line followed by Moorpark–Santa Clara #1 and #2 230 kV DCTL	234	313-351 ⁽¹⁾

- (1) The low and high ends of the LCR range are determined by assuming generic resources are located at Goleta (117 MW) or Santa Clara (155 MW), respectively to meet the local capacity deficiency.



Moorpark Sub-Area Requirements

Category	Limiting Facility	Contingency	LCR (MW)	
			2020	2024
B	None	None	0	0
D	Voltage Collapse	Pardee–Moorpark #1 230 kV line followed by Pardee–Moorpark #1 and #2 230 kV DCTL	499	0



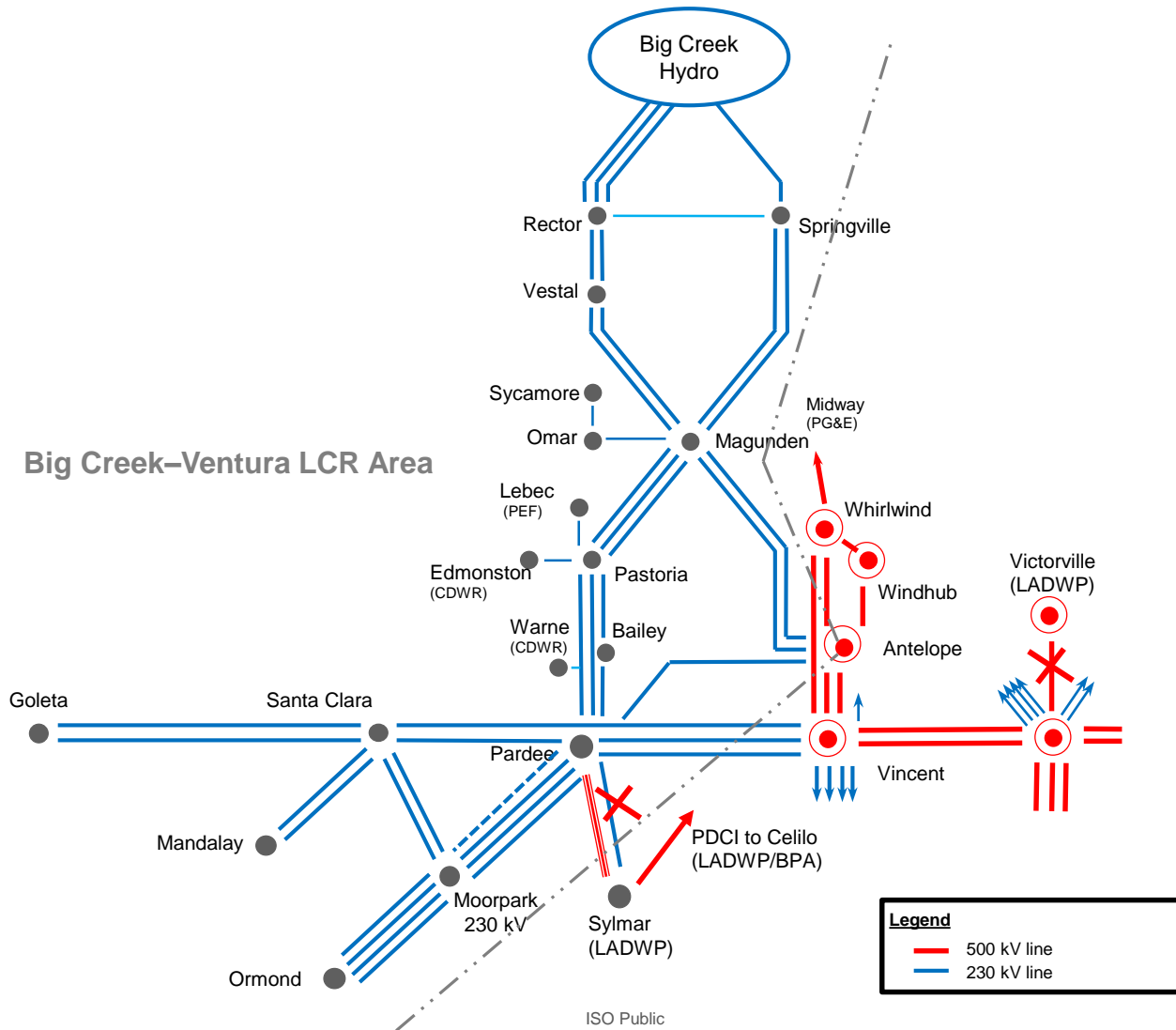
Overall Big Creek-Ventura Area Requirements

Category	Limiting Facility	Contingency	LCR (MW)	
			2020	2024
B	Sylmar–Pardee #1 or #2 230 kV line	One Sylmar–Pardee 230 kV line with Ormond Beach (2020) or Pastoria combined cycle module (2024) out of service.	2,139	2,077
C	Sylmar-Pardee #1 or #2 230 kV line	Overlapping outage of Lugo–Victorville 500 kV line and one Sylmar–Pardee 230 kV line	2,390	2,567

Eldorado–Lugo 500 kV Planned Outage Sensitivity Assessment

Category	Limiting Facility	Contingency	LCR (MW)	
			2020	2024
C	Sylmar-Pardee #1 or #2 230 kV line	Overlapping outage of Lugo–Victorville 500 kV line and one Sylmar–Pardee 230 kV line	3,490	N/A

Overall Big Creek-Ventura Area Constraints

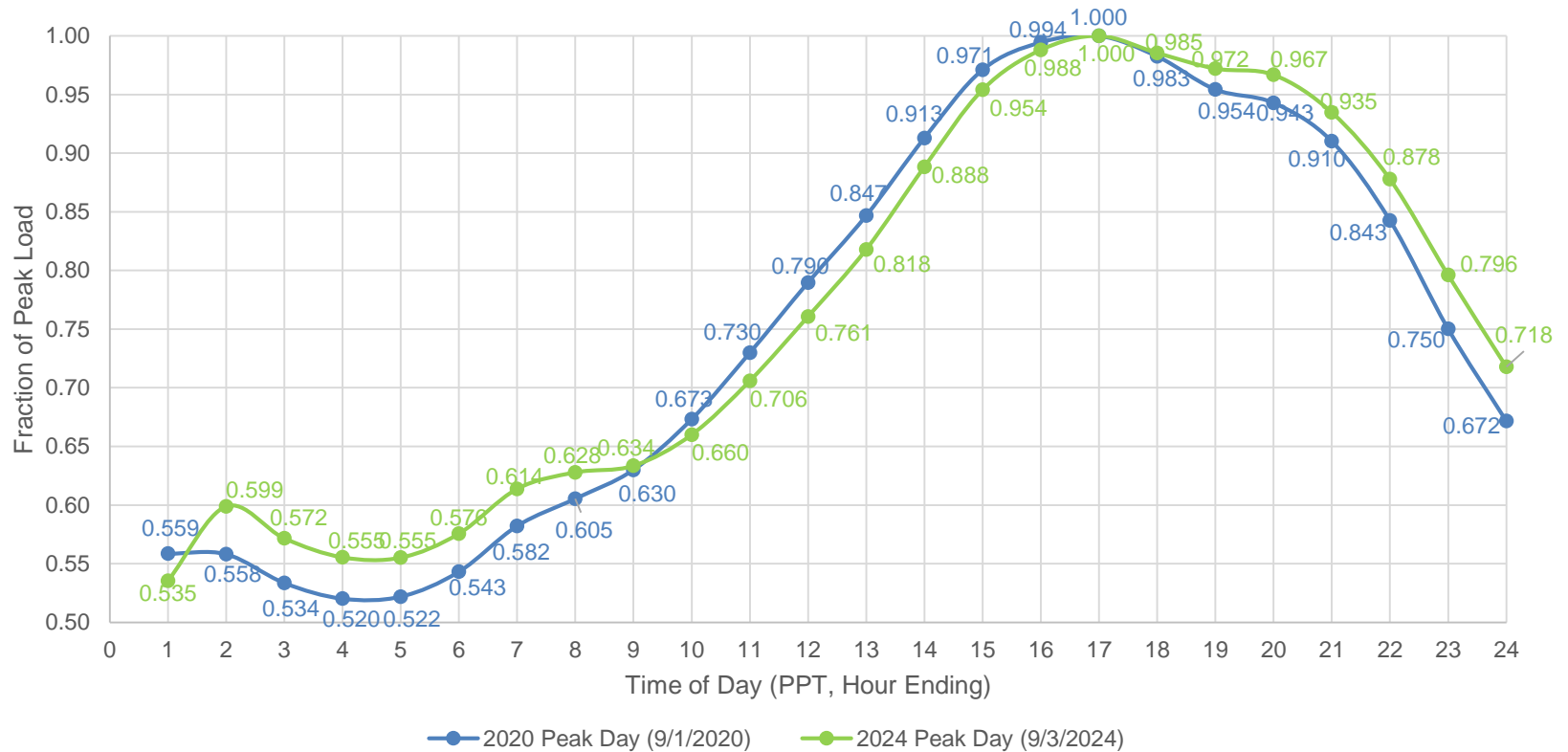


Big Creek Area Total LCR Need

2020 LCR Need	Existing Generation Capacity Needed (MW)	Deficiency (MW)	Total MW Need
Category B (Single)	2,139	0	2,139
Category C (Multiple)	2,390	0	2,390

2024 LCR Need	Existing Generation Capacity Needed (MW)	Deficiency (MW)	Total MW Need
Category B (Single)	2,077	≥17	2,094
Category C (Multiple)	2,567	≥117	2,684

SCE Area Load Profile (CEC)



Peak LCA and Sub-Area Load, MW (excludes losses)						
Year	Rector	Vestal	Goleta	Santa Clara	Moorpark	BCV
2020	835	1355	332	833	1740	4862
2024	807	1303	318	895	1768	4879

Changes Compared to Previous LCR Results

Sub-Area	2019		2020		Reason for LCR Change
	Load (MW)	LCR (MW)	Load (MW)	LCR (MW)	
Rector	900	-	835	-	Not binding
Vestal	1,520	621	1,355	467	Load decreased
Goleta	360	N/A	332	8	New sub-area
Santa Clara	864	237	833	234	Load decreased, changes in load/DG reactive power
Moorpark	1,722	433	1,740	499	Load increased
Overall Big Creek Ventura	5,162	2,614	4,942	2,390	Load decreased

Changes Compared to Previous LCR Results

Sub-Area	2023		2024		Reason for LCR Change
	Load (MW)	LCR (MW)	Load (MW)	LCR (MW)	
Rector	887	-	807	-	Not binding
Vestal	1,481	621	1,303	450	Load decreased
Goleta	346	N/A	318	≥ 32	New sub-area
Santa Clara	927	316-358	895	313-351	Load decreased, changes in load/DG reactive power
Moorpark	1,768	0	1768	0	N/A
Overall Big Creek Ventura	5,169	2,690	4,947	2,567	Load decreased