



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

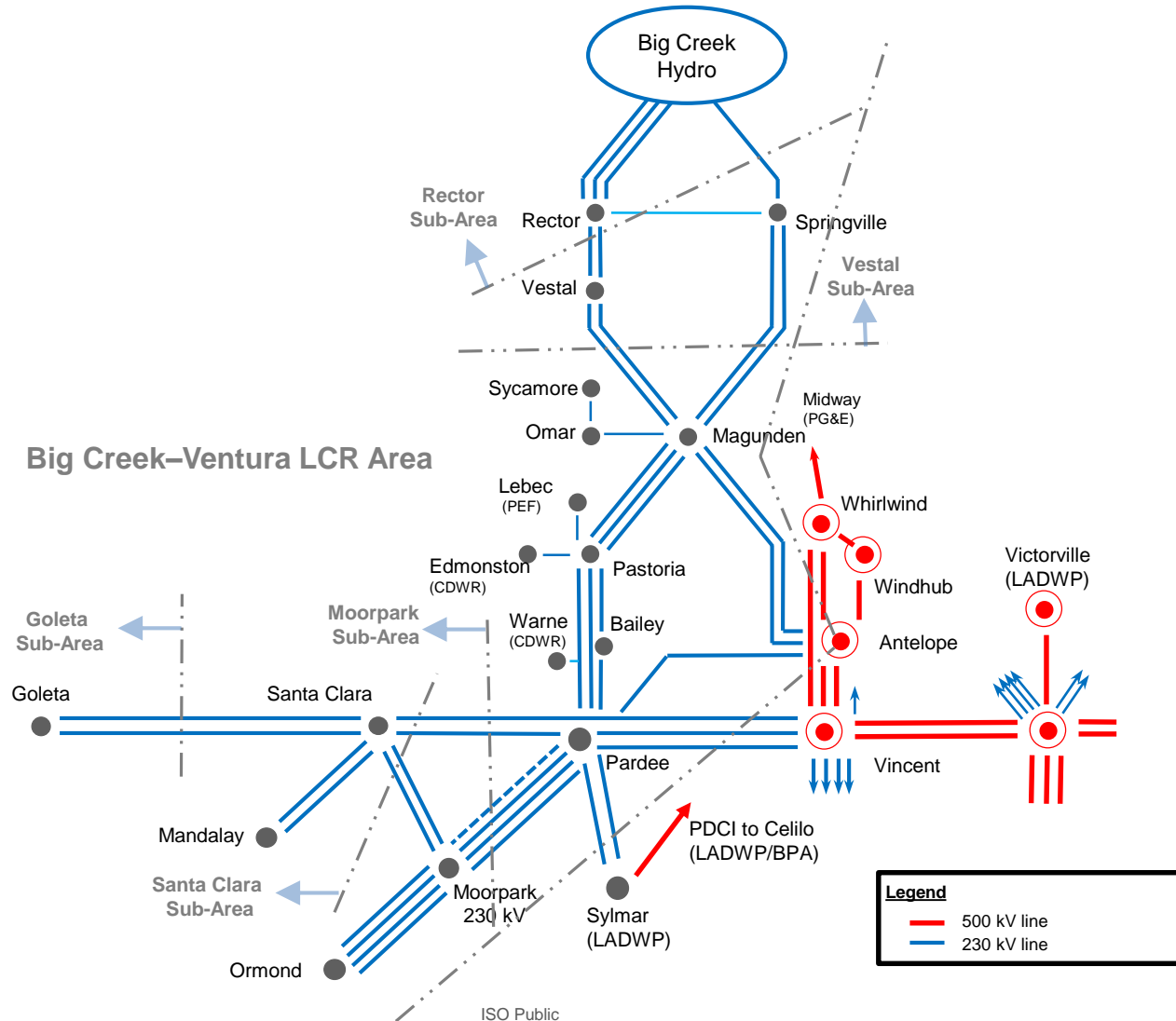
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Regional Transmission Engineer Lead

Stakeholder Call

April 10, 2019

Big 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	4,882	5,170	Market/Net Seller	4,290	2,720
AAEE*	-47	-158	Solar	304	304
Behind the meter PV*	-323	-493	Muni	342	342
Net Load	4,512	4,519	QF	63	60
Transmission Losses	75	70	LTPP Pref. Res & ES	0	2
Pumps	369	369	Existing 20-minute Demand Response	100	100
Load+Losses+Pumps	4,956	4,958	Total Qualifying Capacity	5,099	3,528

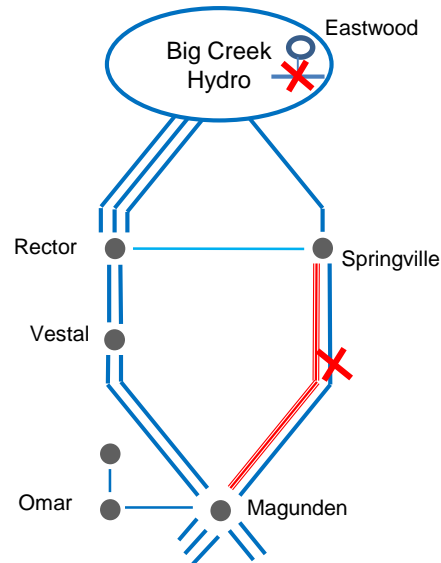
* The AAEE and BTM PV values shown may not include amounts associated with the Saugus Substation as the CEC's definition of the Big Creek Ventura Area does not include the substation

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

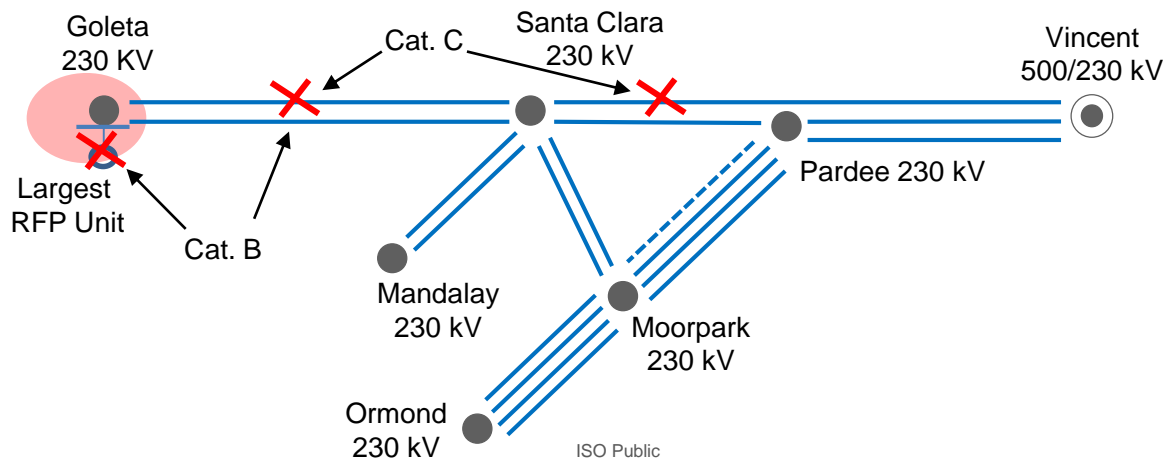
Category	Limiting Facility	Contingency	LCR (MW)	
			2020	2024
B/C	Magunden–Springville #2 230 kV line	Magunden–Springville #1 230 kV line with Eastwood out of service	425	461



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⁾	0	27 MW ⁽¹⁾

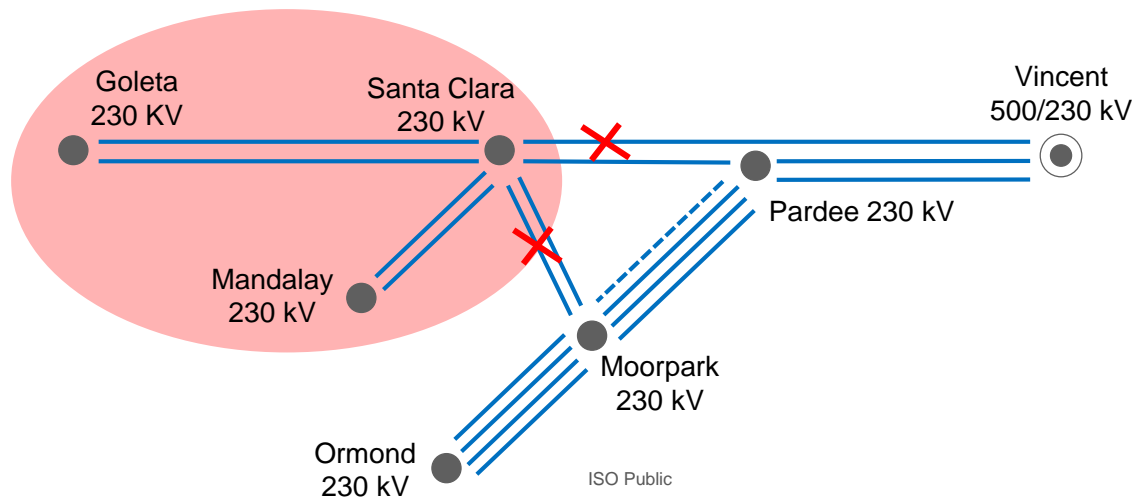
- (1) Generic distributed resources delivered at Goleta are assumed to meet the local capacity deficiency.
- (2) The worst TPL 001-4 (Category P6) contingency is overlapping outage of Santa Clara shunt capacitor and the Santa Clara–Goleta 230 kV line. This would require 52 MW of local capacity. However,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



Santa Clara Sub-Area Requirements

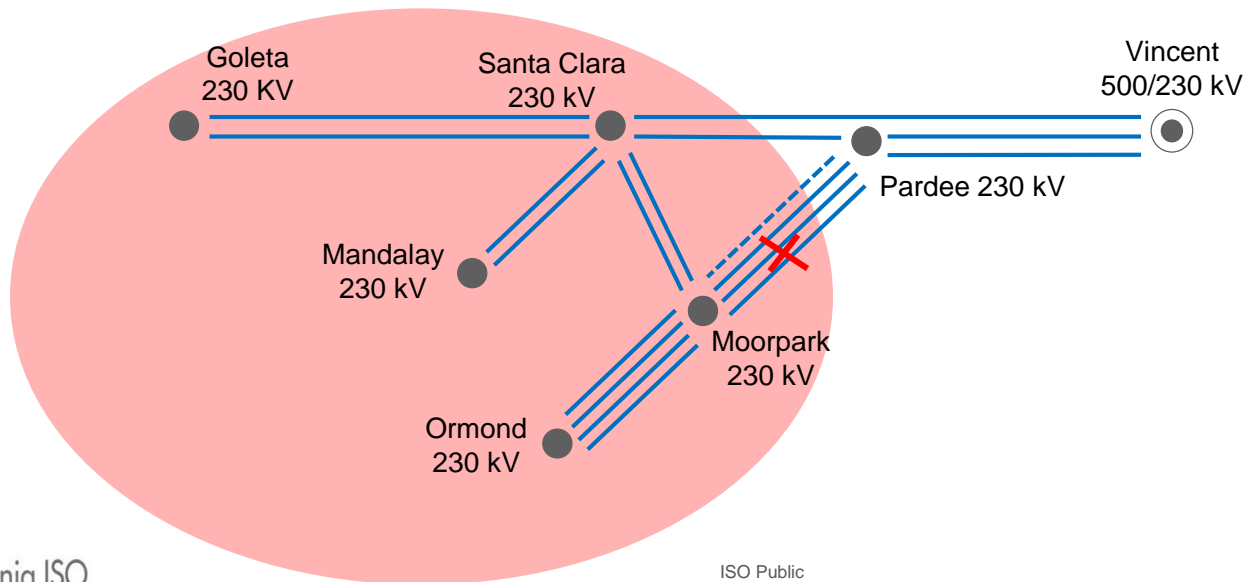
Category	Limiting Facility	Contingency	LCR (MW)	
			2020	2024
B	None	None	0	0
D	Voltage Collapse	Pardee–Santa Clara 230 kV line followed by Moorpark–Santa Clara #1 and #2 230 kV DCTL	288-298 ⁽¹⁾	309-348 ⁽²⁾

- (1) The low and high ends of the LCR range are determined by assuming generic resources are located at Goleta (38 MW) or Santa Clara (48 MW), respectively to meet the local capacity deficiency.
- (2) The low and high ends of the LCR range are determined by assuming generic resources are located at Goleta (112 MW) or Santa Clara (151 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	514	0



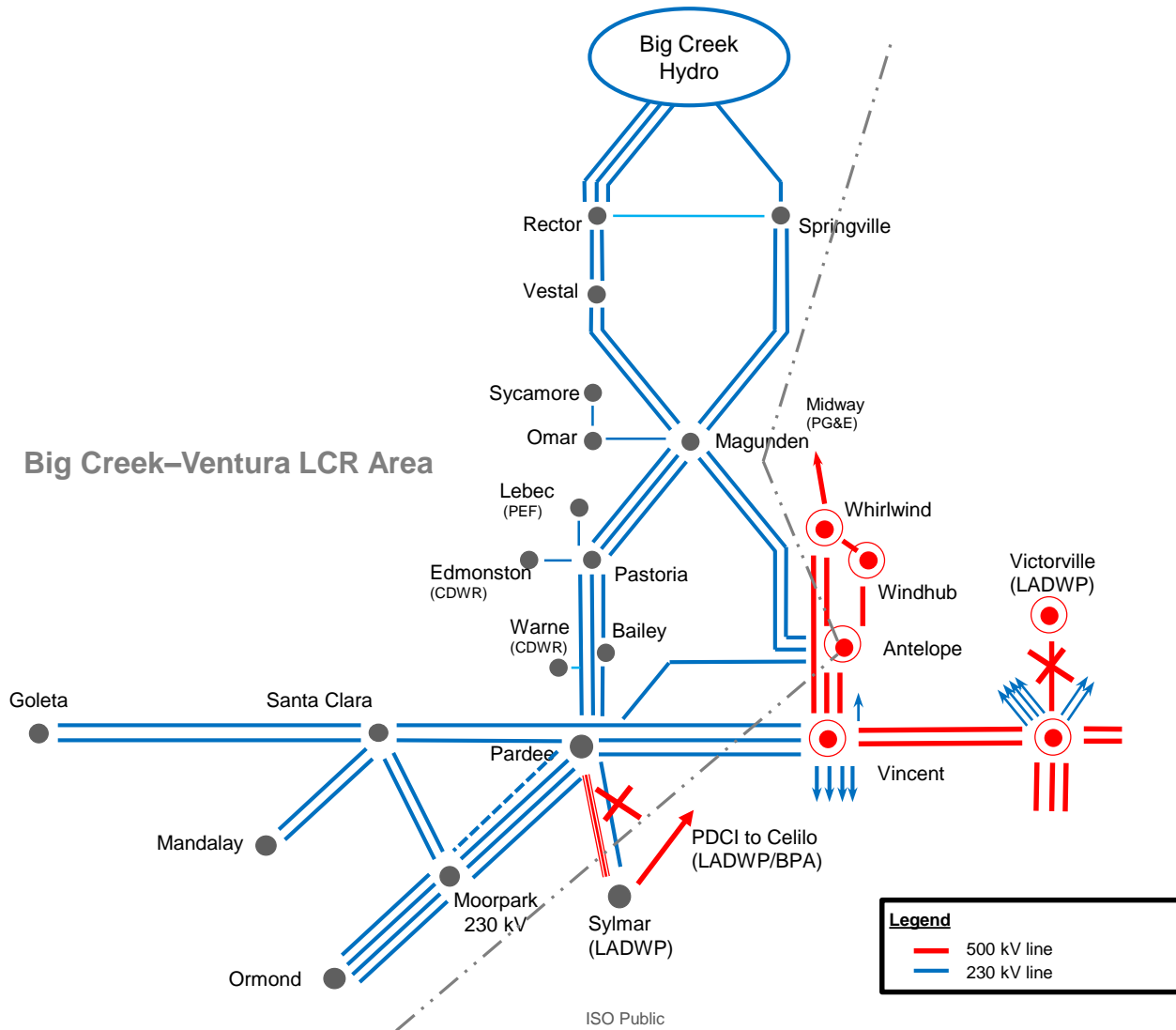
Overall Big Creek-Ventura Area Requirements

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.	2,154	2,083
C	Sylmar-Pardee #1 or #2 230 kV line	Overlapping outage of Lugo–Victorville 500 kV line and one Sylmar–Pardee 230 kV line	2,410	2,577

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	3,500	N/A

Overall Big Creek-Ventura Area Constraints

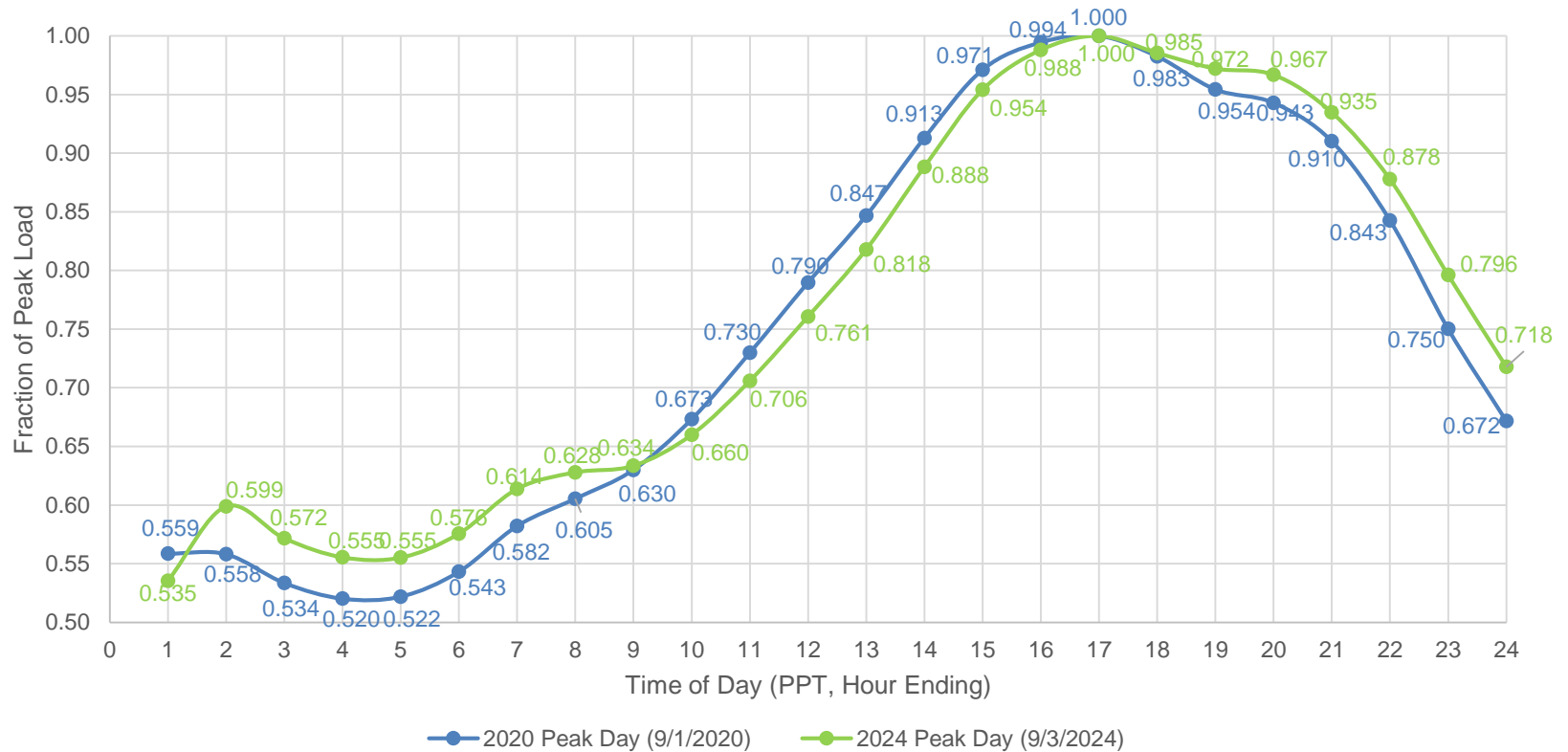


Big Creek Area Total LCR Need

2020 LCR Need	Existing Generation Capacity Needed (MW)	Deficiency (MW)	Total MW Need
Category B (Single)	2,154	0	2,139
Category C (Multiple)	2,410	≥38	2,448

2024 LCR Need	Existing Generation Capacity Needed (MW)	Deficiency (MW)	Total MW Need
Category B (Single)	2,083	≥17	2,100
Category C (Multiple)	2,577	≥112	2,689

SCE Area Load Profile (CEC)



Peak LCA and Sub-Area Load, MW (excludes losses)						
Year	Rector	Vestal	Goleta	Santa Clara	Moorpark	BCV
2020	810	1315	320	898	1780	4881
2024	810	1307	316	891	1767	4888

Changes Compared to Last year's LCR Results - 2020

Sub-Area	2019		2020		Reason for LCR Change
	Load (MW)	LCR (MW)	Load (MW)	LCR (MW)	
Rector	900	-	810	-	Not binding
Vestal	1,520	621	1,315	425	Load decreased
Goleta	360	N/A	320	0	New sub-area
Santa Clara	864	237	898	288-298	Load increased
Moorpark	1,722	433	1,780	514	Load increased
Overall Big Creek Ventura*	5,162	2,614	4,956	2,410	Load decreased

* Load values include losses

Changes Compared to Last Year's LCR Results - 2024

Sub-Area	2023		2024		Reason for LCR Change
	Load (MW)	LCR (MW)	Load (MW)	LCR (MW)	
Rector	887	-	810	-	Not binding
Vestal	1,481	621	1,307	461	Load decreased
Goleta	346	N/A	316	≥ 27(20)**	New sub-area
Santa Clara	927	316-358 (122-164)**	891	309-348 (112-151)**	Load decreased
Moorpark	1,768	0	1767	0	No change
Overall Big Creek Ventura*	5,169	2,690	4,958	2,577	Load decreased

* Load values include losses

** Values in parenthesis show deficiency

Changes Compared to Draft LCR Results - 2020

Sub-Area	Preliminary		Final		Reason for LCR Change
	Load (MW)	LCR (MW)	Load (MW)	LCR (MW)	
Rector	835	-	810	-	No change
Vestal	1,355	467	1,315	425	Load decreased
Goleta	332	8	320	0	Load decreased
Santa Clara	833	234 (0) **	898	288-298 (38-48)**	Load increased
Moorpark	1,740	499	1,780	514	Load increased
Overall Big Creek Ventura*	4,942	2,390	4,956	2,410	Load increased

* Load values include losses

** Values in parenthesis show deficiency

Changes Compared to Draft LCR Results - 2024

Sub-Area	Preliminary		Final		Reason for LCR Change
	Load (MW)	LCR (MW)	Load (MW)	LCR (MW)	
Rector	807	-	810	-	Minor changes in load and LCR
Vestal	1,303	450	1,307	461	
Goleta	318	≥ 32 (25)**	316	≥ 27 (20)**	
Santa Clara	895	313-351 (117-155)**	891	309-348 (112-151)**	
Moorpark	1768	0	1767	0	
Overall Big Creek Ventura*	4,947	2,567	4,958	2,577	

* Load values include losses

** Values in parenthesis show deficiency