

Study Area: **SCE East of Lugo**  
 Thermal Overloads

Overloaded Facility	Contingency (All and Worst P6)	Category	Category Description	Loading % (Baseline Scenarios)								Loading % (Sensitivity Scenarios)			Project & Potential Mitigation Solutions
				2025 Summer Peak	2028 Summer Peak	2035 Summer Peak	2028 Summer-Off Peak	2035 Winter Peak	2025 Spring Off-Peak	2028 Spring Off-Peak	2035 Spring Off-Peak	2028 SP High CEC Forecast	2025 SP Heavy Renewable & Min Gas Gen	2025 OP BESS Charging	
Ivanpah 230/115kV Transformer No. 2	Ivanpah 230/115kV Transformer No.1	P1	N-1	< 100	< 100	< 100	< 100	< 100	< 100	< 100	100.69	< 100	Diverge	< 100	Ivanpah RAS
	Ivanpah 230/115kV Transformer No.1 and Ivanpah-Baker-Coolwtare-Dunn siding-Mountain Pass 115kV line	P6	N-1-1	< 100	< 100	< 100	< 100	< 100	< 100	< 100	107.2	< 100	114.2	< 100	Ivanpah RAS
Ivanpah 230/115kV Transformer No.1	Ivanpah 230/115kV Transformer No.2	P1	N-1	< 100	< 100	< 100	< 100	< 100	< 100	< 100	100.69	< 100	Diverge	< 100	Ivanpah RAS
	Ivanpah 230/115kV Transformer No.2 and Ivanpah-Baker-Coolwater-Dunn siding-Mountain Pass 115kV line	P6	N-1-1	< 100	< 100	< 100	< 100	< 100	< 100	< 100	107.2	< 100	114.2	< 100	Ivanpah RAS
Ivanpah-Mountain Pass-Baker-Dunn siding-Coolwater 115kV Line	Ivanpah 230/115kV transformers Nos.1&2	P6	N-1-1	Diverge	Diverge	<100	Diverge	112.14	< 100	Diverge	Diverge	Diverge	Diverge	< 100	Ivanpah RAS
	Eldorado-Ivanpah & Eldorado-Primm 230kV	P7	DCTL	Diverge	Diverge	<100	Diverge	Diverge	Diverge	Diverge	Diverge	Diverge	Diverge	Diverge	Ivanpah RAS
	Eldorado-Ivanpah & Ivanpah-Primm 230kV	P7	DCTL	Diverge	Diverge	<100	Diverge	Diverge	Diverge	Diverge	Diverge	Diverge	Diverge	Diverge	Ivanpah RAS
	Eldorado 500/230kV Transformer No.5 and Eldorado-Sloan Canyon 230kV	P6	N-1-1	Diverge	Diverge	Diverge	Diverge	Diverge	Diverge	Diverge	Diverge	Diverge	Diverge	Diverge	Ivanpah RAS
Lugo-Calcite 230kV No.1 Line	Cima-Eld-Pisgah #2 Stuck CB followed by N1 of Lugo-Pisgah No.2 230kV	P4	Stuck Breaker	< 100	< 100	101.19	< 100	<100	< 100	< 100	104.32	< 100	< 100	< 100	Future Calcite CRAS
	Lugo-Pisgah 230kV No.2 and Eldorado-Lugo 500kV lines	P6	N-1-1	< 100	< 100	106.33	< 100	100.14	< 100	< 100	104.23	< 100	< 100	< 100	Congestion management Future Calcite CRAS
	Lugo-Pisgah 230kV No.2 and Eldorado-Cima-Pisgah 230kV No1 or 2 lines	P6	N-1-1	< 100	< 100	101.25	< 100	<100	< 100	< 100	104.32	< 100	< 100	< 100	Congestion management Future Calcite CRAS
	Lugo-Pisgah 230kV No.2 and Lugo-Victorville 500kV lines	P6	N-1-1	< 100	< 100	109.04	< 100	104.71	< 100	< 100	<100	< 100	< 100	< 100	Congestion management Future Calcite CRAS
Eldorado - McCullough 500kV Line	Eldorado-Lugo & Lugo-Mohave 500kV lines	P6	N-1-1	< 100	< 100	113.49	< 100	101.33	< 100	< 100	113.59	< 100	< 100	< 100	Lugo-Victorville RAS and congestion management
	Eldorado-Lugo and Eldorado-Moenkopi 500kV lines	P6	N-1-1	< 100	< 100	< 100	< 100	< 100	< 100	< 100	104.06	< 100	< 100	< 100	Lugo-Victorville RAS
	Eldorado-Lugo and Eldorado-Mohave 500kV lines	P6	N-1-1	< 100	< 100	< 100	< 100	< 100	< 100	< 100	102.43	< 100	< 100	< 100	Planned Lugo-Victorville RAS expansion will include this contingency

[illegible]



Substation	Contingency (All and Worst P6)	Category	Category Description	Post Cont. Voltage Deviation % (Baseline Scenarios)								Post Cont. Voltage Deviation % (Sensitivity Scenarios)			Project & Potential Mitigation Solutions
				2025 Summer Peak	2028 Summer Peak	2035 Summer Peak	2028 Summer-Off Peak	2035 Winter Peak	2025 Spring Off-Peak	2028 Spring Off-Peak	2035 Spring Off-Peak	2028 SP High CEC Forecast	2025 SP Heavy Renewable & Min Gas Gen	2025 OP BESS Charging	

No P1 or P3 contingencies resulted in voltage deviation greater than 8%

Contingency	Category	Category Description	Transient Stability Performance					Potential Mitigation Solutions
			Baseline Scenarios			Sensitivity Scenarios		
			2028 Summer Peak	2035 Summer Peak	2025 Spring Off-Peak	2028 SP High CEC Forecast	2025 OP BESS Charging	
Lugo-Victorville 500kV Line (fault at Lugo)	P1	Normal clearing	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	
Eldorado-Merchant #1 230kV Line (fault at Eldorado)	P1	Normal clearing	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	
Eldorado-Merchant #2 230kV Line (fault at Eldorado)	P1	Normal clearing	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	
Lugo-Mohave 500kV Line (fault at Lugo)	P1	Normal clearing	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	
Eldorado-Mohave 500kV Line (fault at Eldorado)	P1	Normal clearing	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	
Eldorado-McCullough 500kV Line (fault at Eldorado)	P1	Normal clearing	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	
Eldorado-Moenkopi 500kV Line (fault at Eldorado)	P1	Normal clearing	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	
Eldorado-Ivanpah 230kV Line (fault at Eldorado)	P1	Normal clearing	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	
Eldorado-Primm 230kV Line (fault at Eldorado)	P1	Normal clearing	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	
Ivanpah-Primm 230kV Line (fault at Ivanpah)	P1	Normal clearing	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	
Sloan Canyon-Eldorado 230kV Line	P1	Normal clearing	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	
Eldorado-Harry Allen 500kV Line (fault at Eldorado)	P1	Normal clearing	Stable/WECC criteria met	N/A	N/A	N/A		
Sloan Canyon-Harry Allen 500kV Line (fault at Sloan Canyon)	P1	Normal clearing	N/A	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	N/A	
Ivanpah 230/115kV A Bank	P1	Normal clearing	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	
Eldorado 500/230kV 5AA Bank (fault at Eldorado 500kV)	P1	Normal clearing	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	
Eldorado 500/230kV 3AA Bank (fault at Eldorado 230kV)	P1	Normal clearing	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	
Eldorado 500/230kV 4AA Bank (fault at Eldorado 230kV)	P1	Normal clearing	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	
Eldorado-Lugo 500kV Line (fault at Eldorado)	P1	Normal clearing	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	
Sloan Canyon-Mead 230kV Line (fault at Mead)	P1	Normal clearing	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	
Eldorado-Cima-Pisgah 230kV Line (fault at Eldorado)	P1	Normal clearing	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	
Eldorado-Cima-Pisgah 230kV Line (fault at Pisgah)	P1	Normal clearing	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	
Eldorado-Pisgah 230kV Line (fault at Eldorado)	P1	Normal clearing	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	
Eldorado-Pisgah 230kV Line (fault at Pisgah)	P1	Normal clearing	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	
Ivanpah-Baker-Coolwater-Dunnsgiving-Mountain Pass 115kV (fault at Ivanpah)	P1	Normal clearing	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	
Eldorado-Ivanpah 230kV line stuck CB followed by Ivanpah A Bank	P4	Stuck breaker	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	
Eldorado-NSO 230kV line stuck CB followed by Eldorado-Magnolia 230kV line	P4	Stuck breaker	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	
Eldorado-Mead 230kV No.1 stuck CB followed by Eldorado-Cima-Pisgah 230kV line	P4	Stuck breaker	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	
Eldorado-Mead 230kV No.2 stuck CB followed by Eldorado-Pisgah 230kV line	P4	Stuck breaker	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	
Eldorado-Cima-Pisgah 230kV line stuck CB followed by Calcite-Pisgah 230kV line	P4	Stuck breaker	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	
Eldorado-Pisgah 230kV line stuck CB followed by Lugo-Pisgah 230kV line	P4	Stuck breaker	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	
Eldorado-Lugo and Eldorado-Moenkopi 500kV lines	P6	Normal clearing	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	
McCullough-Victorville 500kV Nos. 1&2 lines (fault at Victorville)	P6	Normal clearing	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	
Eldorado-Cima-Pisgah 230kV Nos. 1&2 lines (fault at Eldorado)	P6	Normal clearing	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	
Eldorado-Mohave and Eldorado-Moenkopi 500kV lines	P6	Normal clearing	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	
Eldorado-Ivanpah and Eldorado-Primm 230kV lines (fault at Eldorado)	P7	Normal clearing	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	
Eldorado-Ivanpah and Eldorado-Primm 230kV lines (fault at Ivanpah)	P7	Normal clearing	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	
Eldorado-Merchant 230kV Nos.1&2 lines (fault at Eldorado)	P7	Normal clearing	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	
Harry Allen-Mead and Harry Allen-Eldorado 500kV lines (fault at Harry Allen)	P7	Normal clearing	N/A	Stable/WECC criteria met	Stable/WECC criteria met	N/A	Stable/WECC criteria met	
Harry Allen-Mead and Harry Allen-Sloan Canyon 500kV lines (fault at Harry Allen)	P7	Normal clearing	Stable/WECC criteria met	Stable/WECC criteria met	N/A	Stable/WECC criteria met	N/A	

Single Contingency Load Drop

Worst Contingency	Category	Category Description	Amount of Load Drop (MW)											Potential Mitigation Solutions
			2025 Summer Peak	2028 Summer Peak	2035 Summer Peak	2028 Summer-Off Peak	2035 Winter Peak	2025 Spring Off-Peak	2028 Spring Off-Peak	2035 Spring Off-Peak	2028 SP High CEC Forecast	2025 SP Heavy Renewable & Min Gas Gen	2025 OP BESS Charging	

No single contingency resulted in total load drop of more than 250 MW

Study Area: **SCE East of Lugo**  
Single Source Substation with more than 100 MW Load



Substation	Load Served (MW)											Potential Mitigation Solutions
	2025 Summer Peak	2028 Summer Peak	2035 Summer Peak	2028 Summer-Off Peak	2035 Winter Peak	2025 Spring Off-Peak	2028 Spring Off-Peak	2035 Spring Off-Peak	2028 SP High CEC Forecast	2025 SP Heavy Renewable & Min Gas Gen	2025 OP BESS Charging	

No single source substation with more than 100 MW