

Study Area: **SCE Eastern area**
Thermal Overloads



Overloaded Facility	Contingency (All and Worst P6)	Category	Category Description	Loading % (Baseline Scenarios)								Project & Potential Mitigation Solutions
				2023 Summer Peak	2026 Summer Peak	2031 Summer Peak	2026 Spring Off-Peak	2023 Spring Off-Peak	2026 SP with Forecasted Load Addition	2023 SP Heavy Renewable & Min Gas Gen	2023 OP Heavy Renewable & Min Gas Gen	
DEVERS - REDBLUFF 500 kV #1	DEVERS - REDBLUFF 500 kV #2	P1	N-1	<100	<100	<100	<100	<100	<100	101.12	<100	Congestion management, RAS
	DEVERS - REDBLUFF 500 kV #2 and N.GILA - IMPRLVLY 500 kV #1	P6	N-1-1	112.82	<100	<100	<100	<100	<100	119.77	111.71	Planned RAS to trip 1150MW at Col. River, congestion management, system adjustments
DEVERS - REDBLUFF 500 kV #2	DEVERS - REDBLUFF 500 kV #1 and N.GILA - IMPRLVLY 500 kV #1	P6	N-1-1	110.8	<100	<100	<100	<100	<100	117.63	108.49	Planned RAS to trip 1150MW at Col. River, congestion management, system adjustments
J.HINDS - MIRAGE 230 kV #1	PALOVRDE - COLRIVER #1 500 kV	P1	N-1	<100	<100	<100	<100	103.37	<100	<100	<100	Congestion management, RAS
	DELANEY - COLRIVER 500 kV #1 and PALOVRDE - COLRIVER 500 kV #1	P6	N-1-1	109.68	<100	<100	<100	124.75	<100	<100	<100	Blythe RAS, congestion management, system adjustments
	DEVERS - REDBLUFF 500 kV # 1 and DEVERS - REDBLUFF 500 kV #2	P6	N-1-1	136.43	<100	<100	<100	124.03	<100	<100	<100	Colorado River CRAS, Blythe RAS, congestion management, system adjustments
	COLRIVER - REDBLUFF 500 kV #1 and COLRIVER - REDBLUFF 500 kV #2	P6	N-1-1	120.84	<100	<100	<100	124.12	<100	<100	<100	Colorado River CRAS, Blythe RAS, congestion management, system adjustments
	CV - MIRAGE 230 kV #1 and RAMON - MIRAGE 230 kV #1	P7	DCTL	107.15	<100	<100	<100	113.15	<100	<100	<100	Path 42 RAS
	EAGLE MTN - J.HINDS CB, and J.HINDS SHUNT REACTOR, and EAGLE SHUNT REACTOR (P2 + long lead time equipment loss)	P2	Bus-tie Breaker	136.16	<100	133.4	<100	136.32	<100	<100	<100	Blythe RAS
J.HINDS - EAGLEMTN 230 kV #1	DEVERS - MIRAGE 230 kV #1 and DEVERS - MIRAGE 230 kV #2	P7	DCTL	<100	<100	105.62	<100	101.36	<100	<100	<100	Path 42 RAS
JHINDMWD - J.HINDS 230 kV #1	DEVERS - MIRAGE 230 kV #1 and DEVERS - MIRAGE 230 kV #2	P7	DCTL	109.86	<100	126.86	<100	101.5	<100	<100	<100	Path 42 RAS
REDBLUFF 500/230/13.8 kV #1	REDBLUFF 500/230/13.8 kV #2	P1	N-1	<100	<100	<100	<100	<100	<100	<100	123.03	Colorado River CRAS
REDBLUFF 500/230/13.8 Kv #2	REDBLUFF 500/230/13.8 kV #1	P1	N-1	<100	<100	<100	<100	<100	<100	<100	125.13	Colorado River CRAS
COLRIVER 500/230/13.8 kV #1	COLRIVER 500/230/13.8 kV #2	P1	N-1	<100	<100	<100	<100	<100	<100	102.24	<100	Colorado River CRAS
COLRIVER 500/230/13.8 kV #2	COLRIVER 500/230/13.8 kV #1	P1	N-1	<100	<100	<100	<100	<100	<100	102.24	<100	Colorado River CRAS
EAGLEMTN - IRON MTN 230 kV #1	DEVERS - REDBLUFF 500 kV # 1 and DEVERS - REDBLUFF 500 kV #2	P6	N-1-1	<100	<100	<100	<100	<100	<100	104.07	<100	Colorado River CRAS, congestion management, system adjustments

Study Area: SCE Eastern area

High/Low Voltages



Substation	Contingency (All and Worst P6)	Category	Category Description	Voltage PU (Baseline Scenarios)					Voltage PU (Sensitivity Scenarios)			Project & Potential Mitigation Solutions
				2023 Summer Peak	2026 Summer Peak	2031 Summer Peak	2023 Spring Off-Peak	2026 Spring Off-Peak	2026 SP High CEC Forecast	2023 SP Heavy Renewable & Min Gas Gen	2023 OP Heavy Renewable & Min Gas Gen	
BLYTHE 161 kV	Open CB372-WALC. Line BLYTHE 161 kV Bus Tie (WALC - SCE), Jh Shunt Reactor	P2/P4	Bus-Tie-Breaker	<1.05	<1.05	<1.05	<1.05	>1.10	<1.05	<1.05	<1.05	Investigate reactive device switching
	Open CB372-WALC. Line BLYTHE 161 kV Bus Tie (WALC - SCE), Eagle Shunt Reactor	P2/P4	Bus-Tie-Breaker	<1.05	<1.05	<1.05	<1.05	>1.10	<1.05	<1.05	<1.05	Investigate reactive device switching
EAGLE Mtn 161 kV	DEVERS - RED BLUFF 500 kV #1 and DEVERS - RED BLUFF 500 kV #2	P6	N-1-1	>0.9	>0.9	>0.9	>0.9	>0.9	>0.9	<0.9	>0.9	Colorado River CRAS, Blythe RAS, congestion management, system adjustments

Study Area: SCE Eastern area

Voltage Deviation



Substation	Contingency (All and Worst P6)	Category	Category Description	Post Cont. Voltage Deviation % (Baseline Scenarios)					Project & Potential Mitigation Solutions
				2023 Summer Peak	2031 Summer Peak	2023 Spring Off-Peak	2023 SP Heavy Renewable & Min Gas Gen	2023 OP Heavy Renewable & Min Gas Gen	
None									

Study Area: SCE Eastern area

Transient Stability



Contingency	Category	Category Description	Transient Stability Performance					Potential Mitigation Solutions
			Baseline Scenarios			Sensitivity Scenarios		
			2026 Summer Peak	2031 Summer Peak	2023 Spring Off-Peak	2026 SP High CEC Forecast	2023 OP Heavy Renewable & Min Gas Gen	
10-Second No-Fault Run	P0	Base Case	No Issues	No Issues	No Issues	No Issues	No Issues	No violation
EagleMTN-BlytheSCE 161 kV	P1	N-1	No Issues	No Issues	No Issues	No Issues	No Issues	No violation
EagleMTN-BlytheSCE 161 kV & Blythe 1CT	P1	N-1	No Issues	No Issues	No Issues	No Issues	No Issues	No violation
EagleMTN-IronMTN 230 kV	P1	N-1	No Issues	No Issues	No Issues	No Issues	No Issues	No violation
Julian Hinds-EagleMTN 230 kV	P1	N-1	No Issues	No Issues	No Issues	No Issues	No Issues	No violation
Julian Hinds-EagleMTN 230 kV & Blythe 1CT trip (RAS)	P1	N-1	No Issues	No Issues	No Issues	No Issues	No Issues	No violation
Julian Hinds-Mirage 230 kV	P1	N-1	No Issues	No Issues	WECC criteria not met	No Issues	Diverge	Under review
Julian Hinds-Mirage 230 kV & Blythe 1CT trip (RAS)	P1	N-1	No Issues	No Issues	No Issues	No Issues	No Issues	No violation
Colorado River-Palo Verde 500 kV	P1	N-1	No Issues	No Issues	No Issues	No Issues	No Issues	No violation
Colorado River-Palo Verde 500 kV, no Devers SVC	P1	N-1	No Issues	No Issues	No Issues	No Issues	No Issues	No violation
Colorado River - Red Bluff 500 kV #1	P1	N-1	No Issues	No Issues	No Issues	No Issues	No Issues	No violation
Colorado River - Red Bluff 500 kV #1, no Devers SVC	P1	N-1	No Issues	No Issues	No Issues	No Issues	No Issues	No violation
Devers - Red Bluff 500 kV #1	P1	N-1	No Issues	No Issues	No Issues	No Issues	No Issues	No violation
Devers - Red Bluff 500 kV #1 , no Devers SVC	P1	N-1	No Issues	No Issues	No Issues	No Issues	No Issues	No violation
Devers-Valley 500 kV #1	P1	N-1	No Issues	No Issues	No Issues	No Issues	No Issues	No violation
Devers-Valley 500 kV #1, no Devers SVC	P1	N-1	No Issues	No Issues	No Issues	No Issues	No Issues	No violation
Valley-Serrano/Alberhill 500 kV	P1	N-1	No Issues	No Issues	No Issues	No Issues	No Issues	No violation
Valley-Serrano/Alberhill 500 kV, no Devers SVC	P1	N-1	No Issues	No Issues	No Issues	No Issues	No Issues	No violation
Devers 500/230 AA #2	P1	N-1	No Issues	No Issues	No Issues	No Issues	No Issues	No violation
Devers 500/230 AA #2 , no Devers SVC	P1	N-1	No Issues	No Issues	No Issues	No Issues	No Issues	No violation
Julian Hinds Bus tie CB fault, loss Julian Hinds	P2.4	N-1	No Issues	No Issues	No Issues	No Issues	No Issues	No violation
BlytheSCE-EagleMTN 161 kV, CB 872 stuck at BlytheSCE	P4.2	Breaker Failure	No Issues	No Issues	No Issues	No Issues	WECC criteria not met	Under review
BlytheSCE-EagleMTN 161 kV, CB 872 stuck at BlytheSCE & Blythe 1CT trip (RAS)	P4.2	Breaker Failure	No Issues	No Issues	No Issues	No Issues	WECC criteria not met	Under review
BlytheSCE-EagleMTN 161 kV, CB 70 stuck at EagleMTN	P4.2	Breaker Failure	No Issues	No Issues	No Issues	No Issues	No Issues	No violation
BlytheSCE-EagleMTN 161 kV, CB 70 stuck at EagleMTN & Blythe 1CT trip (RAS)	P4.2	Breaker Failure	No Issues	No Issues	No Issues	No Issues	No Issues	No violation
EagleMTN-IronMTN 230 kV, CB 407 stuck at EagleMTN	P4.2	Breaker Failure	No Issues	No Issues	No Issues	No Issues	WECC criteria not met	Under review
EagleMTN-IronMTN 230 kV, CB 407 stuck at EagleMTN & Blythe 1CT trip (RAS)	P4.2	Breaker Failure	No Issues	No Issues	No Issues	No Issues	WECC criteria not met	Under review
EagleMTN-IronMTN 230 kV, CB 307 stuck (close to Iron)	P4.2	Breaker Failure	No Issues	No Issues	No Issues	No Issues	WECC criteria not met	Under review
Julian Hinds-EagleMTN 230 kV, CB 405 stuck at EagleMTN	P4.2	Breaker Failure	No Issues	No Issues	No Issues	No Issues	WECC criteria not met	Under review
Julian Hinds-EagleMTN 230 kV, CB 405 stuck at EagleMTN & Blythe 1CT trip (RAS)	P4.2	Breaker Failure	No Issues	No Issues	No Issues	No Issues	WECC criteria not met	Under review
Julian Hinds-Mirage 230 kV, Stuck CB 509 at J.Hinds	P4.2	Breaker Failure	No Issues	No Issues	No Issues	No Issues	No Issues	No violation
EagleMTN 230/161 kV Transformer #5, Stuck CB432 at EagleMTN	P4.3	Breaker Failure	No Issues	No Issues	No Issues	No Issues	WECC criteria not met	Under review
EagleMTN 230/161 kV Transformer #5, Stuck CB432 at EagleMTN & Blythe 1CT trip (RAS)	P4.3	Breaker Failure	No Issues	No Issues	No Issues	No Issues	WECC criteria not met	Under review
Valley-Serrano/Alberhill 500 kV with stuck breaker followed by Valley 4AA Bank	P4.2	Breaker Failure	No Issues	No Issues	No Issues	No Issues	No Issues	No violation
Devers - Red Bluff 500 kV #1 with stuck breaker followed by Devers-Valley 500 kV #1	P4.2	Breaker Failure	No Issues	No Issues	No Issues	No Issues	No Issues	No violation
Devers - Red Bluff 500 kV #2 with stuck breaker followed by Devers 1AA bank	P4.2	Breaker Failure	No Issues	No Issues	No Issues	No Issues	No Issues	No violation
Devers - Mirage 230 kV with stuck breaker followed by Coachell Valley-Mirage 230 kV	P4.2	Breaker Failure	No Issues	No Issues	No Issues	No Issues	No Issues	No violation
Devers - Vista 230 kV #1 with stuck breaker followed by Devers 3A bank	P4.2	Breaker Failure	No Issues	No Issues	No Issues	No Issues	No Issues	No violation
Devers - Vista 230 kV #2 with stuck breaker followed by Devers-San Bernardino 230 kV	P4.2	Breaker Failure	No Issues	No Issues	No Issues	No Issues	No Issues	No violation

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Transient Stability



Contingency	Category	Category Description	Transient Stability Performance					Potential Mitigation Solutions
			Baseline Scenarios			Sensitivity Scenarios		
			2026 Summer Peak	2031 Summer Peak	2023 Spring Off-Peak	2026 SP High CEC Forecast	2023 OP Heavy Renewable & Min Gas Gen	
Devers - El Casco 230 kV with stuck breaker followed by El Casco 2A bank	P4.2	Breaker Failure	No Issues	No Issues	No Issues	No Issues	No Issues	No violation
Mirage-J.Hinds 230 kV with stuck breaker followed by Mirage-Ramon 230 kV	P4.2	Breaker Failure	No Issues	No Issues	WECC criteria not met	No Issues	Diverge	Under review
Mirage-J.Hinds 230 kV with stuck breaker followed by Mirage-Ramon 230 kV Blythe 1CT trip (RAS)	P4.2	Breaker Failure	No Issues	No Issues	No Issues	No Issues	No Issues	No violation
BlytheSCE-EagleMTN 161 kV, non-redundant pilot relay fail	P5.2	Non-Redundant Relay	No Issues	No Issues	No Issues	No Issues	No Issues	No violation
BlytheSCE-EagleMTN 161 kV, non-redundant pilot relay fail	P5.2	Non-Redundant Relay	No Issues	No Issues	No Issues	No Issues	No Issues	No violation
EagleMTN-IronMTN 230 kV, non-redundant pilot relay fail	P5.2	Non-Redundant Relay	No Issues	No Issues	No Issues	No Issues	No Issues	No violation
EagleMTN-IronMTN 230 kV, non-redundant pilot relay fail	P5.2	Non-Redundant Relay	No Issues	No Issues	No Issues	No Issues	No Issues	No violation
EagleMTN Bus, non-redundant relayfail	P5.5	Non-Redundant Relay	No Issues	No Issues	No Issues	No Issues	No Issues	No violation
EagleMTN Bus & Blythe 1CT trip, non-redundant relay fail	P5.5	Non-Redundant Relay	No Issues	No Issues	No Issues	No Issues	No Issues	No violation
Julian Hinds-EagleMTN 230 kV, non-redundant pilot relay fail	P5.2	Non-Redundant Relay	No Issues	No Issues	No Issues	No Issues	WECC criteria not met	Under review
Julian Hinds-EagleMTN 230 kV & Blythe 1CT trip (RAS), non-redundant pilot relay fail	P5.2	Non-Redundant Relay	No Issues	No Issues	No Issues	No Issues	WECC criteria not met	Under review
Julian Hinds-Mirage 230 kV, non-redundant pilot relay fail	P5.2	Non-Redundant Relay	No Issues	No Issues	WECC criteria not met	No Issues	Diverge	Under review
Julian Hinds-Mirage 230 kV & Blythe 1CT trip (RAS),non-redundant pilot relay fail	P5.2	Non-Redundant Relay	No Issues	No Issues	No Issues	No Issues	No Issues	No violation
Julian Hinds-Mirage 230 kV, , non-redundant pilot relay fail	P5.2	Non-Redundant Relay	No Issues	No Issues	No Issues	No Issues	No Issues	No violation
Etiwata 230 kV Bus, non-redundant relay fail	P5.5	Non-Redundant Relay	No Issues	No Issues	No Issues	No Issues	WECC criteria not met	No violation
Julian Hinds-Mirage & EagleMTN-IronMTN 230 kV	P6.1	N-1-1	No Issues	No Issues	WECC criteria not met	No Issues	Diverge	Under review
Julian Hinds-Mirage & EagleMTN-IronMTN 230 kV & ISO7720 (OP)	P6.1	N-1-1	No Issues	No Issues	No Issues	No Issues	No Issues	No violation
Colorado River - Red Bluff 500 kV #1 & #2	P6.1	N-1-1	No Issues	No Issues	No Issues	No Issues	No Issues	No violation
Devers - Red Bluff 500 kV #1 & #2	P6.1	N-1-1	No Issues	No Issues	No Issues	No Issues	No Issues	No violation
Devers - Valley 500 kV #1 & #2	P6.1	N-1-1	No Issues	No Issues	No Issues	No Issues	No Issues	No violation
Etiwanda - San Bernardino & El Casco-San Bernardino 230kV	P6.1	N-1-1	No Issues	No Issues	No Issues	No Issues	No Issues	No violation
San Bernardino - Vista & Devers - San Bernardino 230kV	P6.1	N-1-1	No Issues	No Issues	No Issues	No Issues	No Issues	No violation
Colorado River - Palo Verde & Colorado River - Delaney 500 kV	P6.1	N-1-1	No Issues	No Issues	No Issues	No Issues	No Issues	No violation
Devers - Mirage 230 kV #1 & #2	P7.1	DCTL	No Issues	Unstable	No Issues	No Issues	Diverge	Under review
Devers - Mirage 230 kV #1 & #2 with RAS	P7.1	DCTL	No Issues	Unstable	No Issues	No Issues	Diverge	Under review
Devers-San Bernardino & Devers-El Casco 230 kV	P7.1	DCTL	No Issues	No Issues	No Issues	No Issues	No Issues	No violation
Devers-San Bernardino & San Bernardino-El Casco 230 kV	P7.1	DCTL	No Issues	No Issues	No Issues	No Issues	No Issues	No violation
Devers - Vista 230 kV # 1 & #2	P7.1	DCTL	No Issues	No Issues	No Issues	No Issues	No Issues	No violation
Etiwanda-San Bernardino & San Bernardino-Vista 230 kV	P7.1	DCTL	No Issues	No Issues	No Issues	No Issues	No Issues	No violation
Mira Loma-Vista #2 & Mira Loma-Vista #1/Vista-Wildlife 230 kV	P7.1	DCTL	No Issues	No Issues	No Issues	No Issues	No Issues	No violation
Mirage-Ramon & Coachella Valley-Mirage 230 kV	P7.1	DCTL	No Issues	No Issues	Diverge	No Issues	Diverge	Under review
Mirage-Ramon & Coachella Valley-Mirage 230 kV with RAS	P7.1	DCTL	No Issues	No Issues	Diverge	No Issues	Diverge	Under review
Valley Substation 500 kV Bus & AA Banks	Extreme		WECC criteria not met	WECC criteria not met	WECC criteria not met	WECC criteria not met	WECC criteria not met	Under review with PTO

Study Area: SCE Eastern area



Single Contingency Load Drop

Worst Contingency	Category	Category Description	Amount of Load Drop (MW)									Potential Mitigation Solutions
			2023 Summer Peak	2026 Summer Peak	2031 Summer Peak	2023 Spring Off-Peak	2026 Spring Off-Peak	2031 Spring Off-Peak	2026 SP High CEC Forecast	2023 SP Heavy Renewable & Min Gas Gen	2023 OP Heavy Renewable & Min Gas Gen	

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

Study Area: SCE Eastern area



Single Source Substation with more than 100 MW Load

Substation	Load Served (MW)									Potential Mitigation Solutions
	2023 Summer Peak	2026 Summer Peak	2031 Summer Peak	2023 Spring Off-Peak	2026 Spring Off-Peak	2031 Spring Off-Peak	2026 SP High CEC Forecast	2023 SP Heavy Renewable & Min Gas Gen	2023 OP Heavy Renewable & Min Gas Gen	

No single source substation with more than 100 MW