2026-2027 ISO Reliability Assessment - Final Study Results
Study Area: PG&E North Valley
Thermal Overloads

California ISO

Overloaded Facility	Contingency (All and Worst P6)	Category	Category Description	Loading % (Baseline Scenarios)						Loading % (Sensitivity Scenarios)			Project & Potential Mitigation Solutions
				2028 Summer Peak	2031 Summer Peak	2036 Summer Peak	2028 Spring Off-Peak	2031 Spring Off-Peak	2036 Summer-Off Peak	2028 SP Heavy Renewable & Min Gas Gen	2028 OP Sensitivity	2031 SP High CEC Forecast	
Bigbar-Maplecreek 60 kV	HUMBOLDT-TRINITY 115KV and BRIDGEVILLE-COTTONWOOD 115KV	P6	N-1-1	< 100	< 100	< 100	< 100	Diverge	< 100	Diverge	100	< 100	Generation re-dispatch
BRIDGEVILLE-COTTONWOOD 115KV	KESWICK-CASCADE 60KV MOAS OPENED ON CASCADE_STLLWATR and TRINITY-COTTONWOOD 115KV MOAS OPENED ON JESSTAP COTWDPGE	P6	N-1-1	Diverge	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	Cascade 115/60 kV No.2 Transformer Project and Cascade-Benton 60 kV Line Project
	TRINITY 115-60KV BATT (FAILURE OF STATION DC BATTERY SUPPLY)	P5	Non-Redundant Battery/Relay	Diverge	NA	NA	73	NA	NA	107	72	NA	Install redundant battery/relay supply
CARIBOU 230/230KV TB 11	CRBU 1 11.50KV GEN UNIT 1 and SPIQUINCY 13.80KV GEN UNIT 1	P3	G-1/N-1	< 100	< 100	< 100	< 100	< 100	Diverge	< 100	< 100	< 100	Continue to monitor
CARIBOU-PLUMAS JCT 60KV	CARIBOU - 1D 230KV & CARIBOU-TABLE MTN LINE	P2	Breaker	< 100	14	37	< 100	Diverge	Diverge	< 100	< 100	14	Generation re-dispatch
	CARIBOU-TABLE MTN 230KV	P1	N-1	< 100	14	37	< 100	Diverge	Diverge	< 100	< 100	14	Generation re-dispatch
	TABLE MTN D - 1D 230KV & CARIBOU-TABLE MTN LINE	P2	Breaker	< 100	14	38	< 100	Diverge	Diverge	< 100	< 100	14	Generation re-dispatch
	CARIBOU-TABLE MTN 230KV (CARIBOU-BELDENTP)	P2	Line Section w/o Fault	< 100	14	37	< 100	Diverge	Diverge	< 100	< 100	14	Generation re-dispatch
	CARIBOU 230KV SECTION 1D	P2	Bus	< 100	14	37	< 100	Diverge	Diverge	< 100	< 100	14	Generation re-dispatch
	CRBU 1 11.50KV GEN UNIT 1 and CARIBOU 230/230KV TB 11	P3	G-1/N-1	< 100	< 100	< 100	< 100	< 100	Diverge	< 100	< 100	< 100	Continue to monitor
	Table Mountain-Paradise 115 KV Line and Caribou-Table Mountain 230 KV Line	P7	DCTL	<100	14	37	<100	Diverge	Diverge	<100	< 100	14	Generation re-dispatch
CARIBOU-WESTWOOD 60KV	SPIQUINCY 13.80KV GEN UNIT 1 and CARIBOU-TABLE MTN 230KV	P3	G-1/N-1	< 100	< 100	Diverge	< 100	< 100	< 100	< 100	< 100	< 100	Continue to monitor
CASCADE 115/60KV TB 1	CASCADE-BENTON-DESCHUTES 60KV and CASCADE-COTTONWOOD 115KV	P6	N-1-1	113	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	Cascade 115/60 kV No.2 Transformer Project and Cascade-Benton 60 kV Line Project
	Base Case	P0	Base Case	104	NA	NA	NA	NA	NA	106	NA	NA	Cascade 115/60 kV No.2 Transformer Project and Cascade-Benton 60 kV Line Project
	COTWD_F2 SECTION 2F & COTWD_E2 SECTION 2E 230KV	P2	Breaker	Diverge	< 100	42	54	111	38	Diverge	52	11	Cascade 115/60 kV No.2 Transformer Project and Cascade-Benton 60 kV Line Project
	COTWDPGE 115KV - SECTION 2D & 1D	P2	Breaker	Diverge	NA	NA	NA	NA	NA	Diverge	NA	NA	Cascade 115/60 kV No.2 Transformer Project and Cascade-Benton 60 kV Line Project
	TABLE MTN 500-230-115-60KV BATT (FAILURE OF STATION DC BATTERY SUPPLY)	P5	Non-Redundant Battery/Relay	NA	61	91	77	Diverge	Diverge	NA	77	61	Install redundant battery/relay supply
	COTTONWOOD 230KV BUS SECTION E/G/WAPA/F (FAILURE OF NON-REDUNDANT RELAY)	P5	Non-Redundant Battery/Relay	Diverge	Diverge	Diverge	43	Diverge	60	Diverge	42	Diverge	Install redundant battery/relay supply
	COTTONWOOD 230KV BATT (FAILURE OF STATION DC BATTERY SUPPLY)	P5	Non-Redundant Battery/Relay	Diverge	Diverge	Diverge	43	Diverge	13	Diverge	42	Diverge	Install redundant battery/relay supply
	ROUND MTN 500-230KV BATT (FAILURE OF STATION DC BATTERY SUPPLY)	P5	Non-Redundant Battery/Relay	NA	Diverge	< 100	Diverge	14.69	Diverge	NA	Diverge	Diverge	Install redundant battery/relay supply
CASCADE-BENTON-DESCHUTES 60KV	COTWD_F2 SECTION 2F & COTWD_E2 SECTION 2E 230KV	P2	Breaker	Diverge	78	32	134	317	78	Diverge	128	68	Mitigation under development
	COTWD_2E - 2E 115KV & BRIDGEVILLE-COTTONWOOD LINE	P2	Breaker	NA	84	93	NA	123	54	NA	NA	81	Generation re-dispatch
	COTWD_1E SECTION 1E & COTWD_2E SECTION 2E 115KV	P2	Breaker	NA	84	93	NA	123	54	NA	NA	81	Generation re-dispatch
	COTWD_2E 115KV SECTION 2E	P2	Bus	NA	84	93	NA	123	54	NA	NA	81	Generation re-dispatch
	COTWDPGE 115KV - SECTION 2D & 1D	P2	Breaker	Diverge	NA	NA	Diverge	NA	NA	Diverge	Diverge	NA	Mitigation under development
	COLEMAN-COTTONWOOD 60KV and COTTONWOOD-RED BLUFF 60KV MOAS OPENED ON RED B JT_RED BLFF	P6	N-1-1	< 100	Diverge	Diverge	< 100	< 100	< 100	< 100	< 100	Diverge	Mitigation under development
	COTTONWOOD 230KV BUS SECTION E/G/WAPA/F (FAILURE OF NON-REDUNDANT RELAY)	P5	Non-Redundant Battery/Relay	Diverge	Diverge	Diverge	88	Diverge	155	Diverge	88	Diverge	Install redundant battery/relay supply
	COTTONWOOD 115KV BUS 1/BUS 2 (FAILURE OF NON-REDUNDANT RELAY)	P5	Non-Redundant Battery/Relay	Diverge	113	89	Diverge	40	45	Diverge	Diverge	107	Install redundant battery/relay supply
	COTTONWOOD 230KV BATT (FAILURE OF STATION DC BATTERY SUPPLY)	P5	Non-Redundant Battery/Relay	Diverge	Diverge	Diverge	82	Diverge	34	Diverge	82	Diverge	Install redundant battery/relay supply
CASCADE-COTTONWOOD 115KV	COTWD_F2 SECTION 2F & COTWD_E2 SECTION 2E 230KV	P2	Breaker	Diverge	NA	NA	62	NA	NA	Diverge	61	NA	Mitigation under development
	TABLE MTN5JT-BUS D AND E 230KV and CASCADE 115/60KV TB 1	P6	N-1-1	< 100	< 100	< 100	< 100	< 100	< 100	101	< 100	< 100	Sensitivity only
	COTTONWOOD 230KV BUS SECTION E/G/WAPA/F (FAILURE OF NON-REDUNDANT RELAY)	P5	Non-Redundant Battery/Relay	Diverge	Diverge	Diverge	50	Diverge	58	Diverge	49	Diverge	Install redundant battery/relay supply
	COTTONWOOD 230KV BATT (FAILURE OF STATION DC BATTERY SUPPLY)	P5	Non-Redundant Battery/Relay	Diverge	NA	NA	52	NA	NA	Diverge	50	NA	Install redundant battery/relay supply
COTTONWOOD-BENTON #1 60KV	COTWD_F2 SECTION 2F & COTWD_E2 SECTION 2E 230KV	P2	Breaker	Diverge	42	57	39	138	16	Diverge	38	39	Cascade 115/60 kV No.2 Transformer Project and Cascade-Benton 60 kV Line Project
	COTTONWOOD 230KV BUS SECTION E/G/WAPA/F (FAILURE OF NON-REDUNDANT RELAY)	P5	Non-Redundant Battery/Relay	Diverge	Diverge	Diverge	37	Diverge	59	Diverge	37	Diverge	Install redundant battery/relay supply
COTTONWOOD-BENTON #2 60KV	COTWD_F2 SECTION 2F & COTWD_E2 SECTION 2E 230KV	P2	Breaker	Diverge	< 100	20	33	104	20	Diverge	32	< 100	Cascade 115/60 kV No.2 Transformer Project and Cascade-Benton 60 kV Line Project
	COTWD_E2 230/115KV TB 1 and COTWD_F2 230/115KV TB 4	P6	N-1-1	< 100	< 100	< 100	< 100	104	< 100	< 100	< 100	< 100	Generation re-dispatch
COTTONWOOD-RED BLUFF 60KV	COLEMAN-RED BLUFF 60KV and COTTONWOOD-RED BLUFF 60KV MOAS OPENED ON COTTONWD_RED B JT	P6	N-1-1	< 100	< 100	110	< 100	< 100	< 100	< 100	< 100	< 100	Red Bluff-Coleman 60 kV Reinforcement
COTWD_E2 230/115KV TB 1	COTWD_F2 230/115KV TB 4	P1	N-1	96	NA	NA	100	NA	NA	113	99	NA	Sensitivity only
	COTWDPGE 115KV SECTION 2F	P2	Bus	95	NA	NA	100	NA	NA	113	99	NA	Sensitivity only
	COTWD_F2 - 2F 230KV & COTWD_F2-PIT 1-BRNY_FST LINE	P2	Breaker	89	NA	NA	92	NA	NA	116	92	NA	Sensitivity only
	COTWD_F2 SECTION 2F & COTWWAP2 SECTION 2G 230KV	P2	Breaker	89	NA	NA	92	NA	NA	116	92	NA	Sensitivity only
	COTWD_F2 230KV SECTION 2F	P2	Bus	89	NA	NA	92	NA	NA	116	92	NA	Sensitivity only
	COTWD_F SECTION 1F & COTWD_F2 SECTION 2F 230KV	P2	Breaker	89	NA	NA	91	NA	NA	118	90	NA	Sensitivity only
	MTN GATE JCT-CASCADE 60KV MOAS OPENED ON MTN GATE_JCT_MTN GATE and COTWD_F2 230/115KV TB 4	P6	N-1-1	< 100	< 100	< 100	100	< 100	< 100	< 100	100	< 100	Generation re-dispatch
COTWDWAP TO ROUND MT 230KV	TABLE MTN 500-230-115-60KV BATT (FAILURE OF STATION DC BATTERY SUPPLY)	P5	Non-Redundant Battery/Relay	Diverge	99	56	82	Diverge	Diverge	Diverge	82	99	Install redundant battery/relay supply
Graysflat-Elizabeth town 60 kV	CARIBOU-TABLE MTN 230KV	P1	N-1	< 100	14	37	< 100	Diverge	Diverge	< 100	< 100	14	Generation re-dispatch
	TABLE MTN D - 1D 230KV & CARIBOU-TABLE MTN LINE	P2	Breaker	< 100	14	38	< 100	Diverge	Diverge	< 100	< 100	14	Generation re-dispatch
	CARIBOU-TABLE MTN 230KV (CARIBOU-BELDENTP)	P2	Line Section w/o Fault	< 100	14	37	< 100	Diverge	Diverge	< 100	< 100	14	Generation re-dispatch
	CARIBOU - 1D 230KV & CARIBOU-TABLE MTN LINE	P2	Breaker	< 100	14	37	< 100	Diverge	Diverge	< 100	< 100	14	Generation re-dispatch
	CARIBOU 230KV SECTION 1D	P2	Bus	< 100	14.24	36.97	< 100	Diverge	Diverge	< 100	< 100	14	Generation re-dispatch
	CRBU 1 11.50KV GEN UNIT 1 and CARIBOU 230/230KV TB 11	P3	G-1/N-1	< 100	< 100	< 100	< 100	< 100	Diverge	< 100	< 100	< 100	Continue to monitor
	Table Mountain-Paradise 115 KV Line and Caribou-Table Mountain 230 KV Line	P7	DCTL	<100	14	37	<100	Diverge	Diverge	<100	< 100	14	Generation re-dispatch
HT CRKRG 60/60KV TB 1	BIDWL-LSTCRK 60/4.16KV TB 1 and CARIBOU-WESTWOOD 60KV MOAS OPENED ON HMLTN BR_BIG MDWS	P6	N-1-1	< 100	< 100	< 100	< 100	< 100	101	< 100	< 100	< 100	Table Mountain Second 500/230 kV Transformer
	HATCREEK 6.60KV GEN UNIT 1 and CARIBOU-WESTWOOD 60KV MOAS OPENED ON HMLTN BR_BIG MDWS	P3	G-1/N-1	< 100	< 100	< 100	< 100	< 100	100.1	< 100	< 100	< 100	Continue to monitor
KESWICK-CASCADE 60KV	COTWDPGE 115KV - SECTION 2D & 1D	P2	Breaker	Diverge	NA	NA	Diverge	NA	NA	Diverge	Diverge	NA	Mitigation under development
	TRINITY-COTTONWOOD 115KV MOAS OPENED ON TRINITY_JESSTAP and BRIDGEVILLE-COTTONWOOD 115KV	P6	N-1-1	< 100	< 100	< 100	Diverge	< 100	< 100	< 100	Diverge	< 100	Generation re-dispatch
	COTTONWOOD 115KV BUS 1/BUS 2 (FAILURE OF NON-REDUNDANT RELAY)	P5	Non-Redundant Battery/Relay	Diverge	31	80	Diverge	< 100	39	Diverge	Diverge	< 100	Install redundant battery/relay supply
Keswick-Stillwater 60 kV	COTWDPGE 115KV - SECTION 2D & 1D	P2	Breaker	Diverge	NA	NA	Diverge	NA	NA	Diverge	Diverge	NA	Mitigation under development
	TRINITY-COTTONWOOD 115KV MOAS OPENED ON TRINITY_JESSTAP and BRIDGEVILLE-COTTONWOOD 115KV	P6	N-1-1	< 100	< 100	< 100	Diverge	< 100	< 100	< 100	Diverge	< 100	Generation re-dispatch
	COTTONWOOD 115KV BUS 1/BUS 2 (FAILURE OF NON-REDUNDANT RELAY)	P5	Non-Redundant Battery/Relay	Diverge	51	67	Diverge	< 100	54	Diverge	Diverge	40	Install redundant battery/relay supply
KESWICK-TRINITY 60KV	COTTONWOOD 115KV BUS 1/BUS 2 (FAILURE OF NON-REDUNDANT RELAY)	P5	Non-Redundant Battery/Relay	Diverge	52	50	Diverge	< 100	57	Diverge	Diverge	43	Install redundant battery/relay supply
	COTWDPGE 115KV - SECTION 2D & 1D	P2	Breaker	Diverge	NA	NA	Diverge	NA	NA	Diverge	Diverge	NA	Mitigation under development
	TRINITY-COTTONWOOD 115KV MOAS OPENED ON TRINITY_JESSTAP and BRIDGEVILLE-COTTONWOOD 115KV	P6	N-1-1	< 100	< 100	< 100	Diverge	< 100	< 100	< 100	Diverge	< 100	Generation re-dispatch
PALERMO 230/115KV TB 1	TABLE MTN-RIO OSO 230KV and PALERMO-COLGATE 230KV	P6	N-1-1	< 100	100	102	< 100	< 100	< 100	< 100	< 100	100	Continue to monitor
	Palermo-Colgate 230 KV Line and Table Mountain(D)-Rio Oso 230 KV Line	P7	DCTL	44	100	108	32	87	33	21	33	103	Mitigation under development
ROUND MTN-COTTONWOOD #2 230KV	TABLE MTN 500-230-115-60KV BATT (FAILURE OF STATION DC BATTERY SUPPLY)	P5	Non-Redundant Battery/Relay	Diverge	119	68	99	Diverge	Diverge	Diverge	99	118	Install redundant battery/relay supply
ROUND MTN-COTTONWOOD #3 230KV	TABLE MTN 500-230-115-60KV BATT (FAILURE OF STATION DC BATTERY SUPPLY)	P5	Non-Redundant Battery/Relay	Diverge	130	75	109	Diverge	Diverge	Diverge	109	129	Install redundant battery/relay supply
SYCAMORE CREEK-NOTRE DAME-TABLE MTN 115KV	BUTTE - MD 115KV & TABLE MTN-BUTTE #1 LINE	P2	Breaker	104	105	124	58	29	25	43	58	108	Mitigation under development
TABLE MTN D 230/115KV TB 4	TABLE MTN D - 1D 230KV & LINE	P2	Breaker	86	NA	NA	104	NA	NA	Diverge	103	NA	Mitigation under development

2026-2027 ISO Reliability Assessment - Final Study Results
Study Area: PG&E North Valley
Thermal Overloads

California ISO

Overloaded Facility	Contingency (All and Worst P6)	Category	Category Description	Loading % (Baseline Scenarios)						Loading % (Sensitivity Scenarios)			Project & Potential Mitigation Solutions
				2028 Summer Peak	2031 Summer Peak	2036 Summer Peak	2028 Spring Off-Peak	2031 Spring Off-Peak	2036 Summer-Off Peak	2028 SP Heavy Renewable & Min Gas Gen	2028 OP Sensitivity	2031 SP High CEC Forecast	
TABLE MTN E 230/115KV TB 3	TABLE MTN D - 1D 230KV & LINE	P2	Breaker	129	NA	NA	129	NA	NA	Diverge	128	NA	Mitigation under development
	TABLE MTN D - 1D 230KV & CARIBOU-TABLE MTN LINE	P2	Breaker	106	113	129	46	Diverge	Diverge	51	58	117	Mitigation under development
	TABLE MTN D 230KV SECTION 1D	P2	Bus	106	112	128	46	Diverge	Diverge	51	58	117	Mitigation under development
TABLE MTN E-HYATT3-THERMLTO 230KV	TABLE MTN E-THM JCT 230KV NO FAULT	P2	Line Section w/o Fault	97	96	97	96	29	29	133	96	96	Sensitivity only
TABLE MTN-BUTTE #1 115KV	SYCAMORE CREEK-NOTRE DAME-TABLE MTN 115KV and TABLE MTN-BUTTE #2 115KV	P6	N-1-1	105	104	125	< 100	< 100	< 100	< 100	< 100	108	Mitigation under development
	Sycamore Creek-Notre Dame-Table Mountain and Table Mountain-Butte No.2 115 KV Lines	P7	DCTL	105	104	125	59	25	36	42	59	108	Mitigation under development
TABLE MTN-BUTTE #2 115KV	SYCAMORE CREEK-NOTRE DAME-TABLE MTN 115KV and TABLE MTN-BUTTE #1 115KV	P6	N-1-1	104	102	124	< 100	< 100	< 100	< 100	< 100	106	Mitigation under development
TABLE MTN-PALERMO 230KV	TABLE MTN5JT-BUS D AND E 230KV and TABLE MTN-RIO OSO 230KV	P6	N-1-1	< 100	< 100	< 100	< 100	< 100	< 100	102	< 100	< 100	Sensitivity only
TBL MT2M 230/230KV TB 1	TABLE MTN D SECTION 2D & TABLE MTN E SECTION 2E 230KV	P2	Breaker	NA	51	63	NA	101	34	NA	NA	55	Table Mountain Second 500/230 kV Transformer
TRINITY 115/60KV TB 1	TRINITY-MAPLE CREEK 60KV MOAS OPENED ON TRINITY_TAP 65 and BRIDGEVILLE-COTTONWOOD 115KV	P6	N-1-1	< 100	< 100	< 100	100	124	< 100	127	100	< 100	New Humboldt 115/115 kV Phase Shifter with 115 kV line to Humboldt 115 kV Substation
	HUMBOLDT-TRINITY 115KV and BRIDGEVILLE-COTTONWOOD 115KV	P6	N-1-1	< 100	< 100	< 100	< 100	Diverge	< 100	Diverge	< 100	< 100	Continue to monitor
	SPIQUINCY 13.80KV GEN UNIT 1 and BRIDGEVILLE-COTTONWOOD 115KV	P3	G-1/N-1	< 100	< 100	< 100	< 100	99.85	< 100	100.85	< 100	< 100	Sensitivity only
TRINITY-COTTONWOOD 115KV	KESWICK-CASCADE 60KV MOAS OPENED ON CASCADE_STLLWATR and BRIDGEVILLE-COTTONWOOD 115KV	P6	N-1-1	Diverge	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	Cascade 115/60 kV No.2 Transformer Project and Cascade-Benton 60 kV Line Project
VOLTA-DESCHUTES 60KV	COLEMAN-COTTONWOOD 60KV and COTTONWOOD-RED BLUFF 60KV MOAS OPENED ON RED B JT_RED BLFF	P6	N-1-1	< 100	Diverge	< 100	< 100	< 100	< 100	< 100	< 100	Diverge	Cascade 115/60 kV No.2 Transformer Project and Cascade-Benton 60 kV Line Project
VOLTA-SOUTH 60KV	COLEMAN-COTTONWOOD 60KV and COTTONWOOD-RED BLUFF 60KV MOAS OPENED ON RED B JT_RED BLFF	P6	N-1-1	110	Diverge	Diverge	< 100	< 100	< 100	< 100	< 100	Diverge	Red Bluff-Coleman 60 kV Reinforcement
WESTWOOD-WESTWOODLMUD #1 60KV	SPIQUINCY 13.80KV GEN UNIT 1 and CARIBOU-TABLE MTN 230KV	P3	G-1/N-1	< 100	< 100	Diverge	< 100	< 100	< 100	< 100	< 100	< 100	Continue to monitor
	CARIBOU 230/230KV TB 11	P1	N-1	< 100	88	101	< 100	Diverge	Diverge	< 100	< 100	82	Continue to monitor
	CARIBOU-TABLE MTN 230KV	P1	N-1	< 100	89	101	< 100	Diverge	Diverge	< 100	< 100	78	Continue to monitor
	TABLE MTN D - 1D 230KV & CARIBOU-TABLE MTN LINE	P2	Breaker	< 100	91	101	< 100	Diverge	Diverge	< 100	< 100	78	Continue to monitor
	TABLE MTN D 230KV SECTION 1D	P2	Bus	< 100	80	104	< 100	Diverge	Diverge	< 100	< 100	79	Continue to monitor
	CARIBOU-TABLE MTN 230KV (BELDENTP-TABLE MTN D)	P2	Line Section w/o Fault	< 100	80	103	< 100	Diverge	Diverge	< 100	< 100	79	Continue to monitor
	TABLE MTN D 230KV - SECTION 1D & 2D	P2	Breaker	< 100	80	104	< 100	Diverge	Diverge	< 100	< 100	79	Continue to monitor
	TABLE MTN D SECTION 1D & TABLE MTN E SECTION 1E 230KV	P2	Breaker	< 100	80	104	< 100	Diverge	Diverge	< 100	< 100	78	Continue to monitor
	SPIQUINCY 13.80KV GEN UNIT 1 and CARIBOU-TABLE MTN 230KV	P3	G-1/N-1	< 100	< 100	Diverge	< 100	< 100	< 100	< 100	< 100	< 100	Continue to monitor
	CARIBOU-TABLE MTN 230KV and SPIQUINCY 13.80KV GEN UNIT 1	P3	G-1/N-1	< 100	< 100	Diverge	< 100	< 100	< 100	< 100	< 100	< 100	Continue to monitor
	ROUND MTN 500-230KV BATT (FAILURE OF STATION DC BATTERY SUPPLY)	P5	Non-Redundant Battery/Relay	Diverge	Diverge	118	37	41	69	Diverge	38	Diverge	Install redundant battery/relay supply
	TABLE MTN 500-230-115-60KV BATT (FAILURE OF STATION DC BATTERY SUPPLY)	P5	Non-Redundant Battery/Relay	Diverge	75	102	< 100	Diverge	Diverge	Diverge	< 100	98	Install redundant battery/relay supply
	CARIBOU 230 KV BUS (FAILURE OF NON-REDUNDANT RELAY)	P5	Non-Redundant Battery/Relay	< 100	87	101	< 100	Diverge	Diverge	< 100	< 100	78	Install redundant battery/relay supply
	CARIBOU PH #2 230 KV BUS (FAILURE OF NON-REDUNDANT RELAY)	P5	Non-Redundant Battery/Relay	< 100	87	101	< 100	Diverge	Diverge	< 100	< 100	78	Install redundant battery/relay supply
	TABLE MTN 230KV BUS SECTION D/E (FAILURE OF NON-REDUNDANT RELAY)	P5	Non-Redundant Battery/Relay	< 100	48	101	< 100	Diverge	Diverge	< 100	< 100	78	Install redundant battery/relay supply
	Table Mountain-Paradise 115 KV Line and Caribou-Table Mountain 230 KV Line	P7	DCTL	<100	89	101	<100	Diverge	Diverge	<100	< 100	78	Continue to monitor

California ISO

Substation	Contingency (All and Worst P6)	Category	Category Description	Voltage PU (Baseline Scenarios)						Voltage PU (Sensitivity Scenarios)			Project & Potential Mitigation Solutions
				2028 Summer Peak	2031 Summer Peak	2036 Summer Peak	2028 Spring Off-Peak	2031 Spring Off-Peak	2036 Summer-Off Peak	2028 SP Heavy Renewable & Min Gas Gen	2028 OP Sensitivity	2031 SP High CEC Forecast	
ARCATA 60.0 kV	FORBESTOWN 11.50KV GEN UNIT 1 and BRIDGEVILLE-COTTONWOOD 115KV	P3	G-1/N-1	0.83	> 0.9	> 0.9	> 0.9	> 0.9	> 0.9	> 0.9	> 0.9	> 0.9	New Humboldt 115/115 kV Phase Shifter with 115 kV line to Humboldt 115 kV Substation
CASCADE 60.0 kV	CASCADE-BENTON-DESCHUTES 60KV and CASCADE 115/60KV TB 1	P6	N-1-1	> 0.9	0.60	0.56	0.66	> 0.9	> 0.9	> 0.9	0.70	0.62	Mitigation under development
	CARIBOU-TABLE MTN 230KV	P1	N-1	NA	0.54	0.69	NA	Diverge	Diverge	NA	NA	0.52	Mitigation under development
	CARIBOU 230/230KV TB 11	P1	N-1	NA	0.54	0.88	NA	Diverge	Diverge	NA	NA	0.56	Mitigation under development
	CARIBOU-TABLE MTN 230KV (CARIBOU-BELDENTP)	P2	Line Section w/o Fault	NA	0.54	0.69	NA	Diverge	Diverge	NA	NA	0.52	Mitigation under development
	CARIBOU-TABLE MTN 230KV (BELDENTP-TABLE MTN D)	P2	Line Section w/o Fault	NA	0.55	0.72	NA	Diverge	Diverge	NA	NA	0.53	Mitigation under development
	CARIBOU 230KV SECTION 1D	P2	Bus	NA	0.54	0.70	NA	Diverge	Diverge	NA	NA	0.52	Mitigation under development
	TABLE MTN D 230KV SECTION 1D	P2	Bus	NA	0.55	0.70	NA	Diverge	Diverge	NA	NA	0.53	Mitigation under development
	CARIBOU - 1D 230KV & CARIBOU-TABLE MTN LINE	P2	Breaker	NA	0.54	0.70	NA	Diverge	Diverge	NA	NA	0.52	Mitigation under development
	TABLE MTN D - 1D 230KV & CARIBOU-TABLE MTN LINE	P2	Breaker	NA	0.53	0.67	NA	Diverge	Diverge	NA	NA	0.52	Mitigation under development
	TABLE MTN D SECTION 1D & TABLE MTN E SECTION 1E 230KV	P2	Breaker	NA	0.55	0.65	NA	Diverge	Diverge	NA	NA	0.53	Mitigation under development
	TABLE MTN D 230KV - SECTION 1D & 2D	P2	Breaker	NA	0.54	0.67	NA	Diverge	Diverge	NA	NA	0.53	Mitigation under development
	TABLE MTN 500-230-115-60KV BATT (FAILURE OF STATION DC BATTERY SUPPLY)	P5	Non-Redundant Battery/Relay	Diverge	0.54	0.63	NA	Diverge	Diverge	Diverge	NA	0.52	Install redundant battery/relay supply
	CARIBOU PH #2 230 KV BUS (FAILURE OF NON-REDUNDANT RELAY)	P5	Non-Redundant Battery/Relay	NA	0.54	0.70	NA	Diverge	Diverge	NA	NA	0.52	Install redundant battery/relay supply
	CARIBOU 230 KV BUS (FAILURE OF NON-REDUNDANT RELAY)	P5	Non-Redundant Battery/Relay	NA	0.54	0.70	NA	Diverge	Diverge	NA	NA	0.52	Install redundant battery/relay supply
	TABLE MTN 230KV BUS SECTION D/E (FAILURE OF NON-REDUNDANT RELAY)	P5	Non-Redundant Battery/Relay	NA	0.53	0.65	NA	Diverge	Diverge	NA	NA	0.52	Install redundant battery/relay supply
	Table Mountain-Paradise 115 KV Line and Caribou-Table Mountain 230 KV Line	P7	DCTL	NA	0.54	0.69	NA	Diverge	Diverge	NA	NA	0.52	Mitigation under development
	CARIBOU-PLUMAS JCT 60KV MOAS OPENED ON CARIBOU_GRAYSFLTJT1 and CARIBOU-TABLE MTN 230KV	P6	N-1-1	> 0.9	> 0.9	0.51	> 0.9	> 0.9	> 0.9	> 0.9	> 0.9	> 0.9	Continue to monitor
	COLLINSPINE2 13.80KV GEN UNIT 1 and CARIBOU 230/230KV TB 11	P3	G-1/N-1	> 0.9	> 0.9	> 0.9	> 0.9	> 0.9	> 0.9	> 0.9	> 0.9	0.54	sensitivity only
CARIBOU 115.0 kV	CARIBOU-PLUMAS JCT 60KV MOAS OPENED ON CARIBOU_GRAYSFLTJT1 and CARIBOU-TABLE MTN 230KV	P6	N-1-1	> 0.9	> 0.9	0.52	> 0.9	> 0.9	> 0.9	> 0.9	> 0.9	> 0.9	Continue to monitor
	CARIBOU-TABLE MTN 230KV	P1	N-1	NA	0.54	0.71	NA	Diverge	Diverge	NA	NA	0.53	Mitigation under development
	CARIBOU-TABLE MTN 230KV (CARIBOU-BELDENTP)	P2	Line Section w/o Fault	NA	0.54	0.71	NA	Diverge	Diverge	NA	NA	0.53	Mitigation under development
	CARIBOU-TABLE MTN 230KV (BELDENTP-TABLE MTN D)	P2	Line Section w/o Fault	NA	0.56	0.74	NA	Diverge	Diverge	NA	NA	0.54	Mitigation under development
	CARIBOU 230KV SECTION 1D	P2	Bus	NA	0.55	0.71	NA	Diverge	Diverge	NA	NA	0.53	Mitigation under development
	TABLE MTN D 230KV SECTION 1D	P2	Bus	NA	0.56	0.71	NA	Diverge	Diverge	NA	NA	0.54	Mitigation under development
	CARIBOU - 1D 230KV & CARIBOU-TABLE MTN LINE	P2	Breaker	NA	0.55	0.71	NA	Diverge	Diverge	NA	NA	0.53	Mitigation under development
	TABLE MTN D - 1D 230KV & CARIBOU-TABLE MTN LINE	P2	Breaker	NA	0.54	0.68	NA	Diverge	Diverge	NA	NA	0.53	Mitigation under development
	TABLE MTN D SECTION 1D & TABLE MTN E SECTION 1E 230KV	P2	Breaker	NA	0.56	0.66	NA	Diverge	Diverge	NA	NA	0.54	Mitigation under development
	TABLE MTN D 230KV - SECTION 1D & 2D	P2	Breaker	NA	0.56	0.68	NA	Diverge	Diverge	NA	NA	0.54	Mitigation under development
	TABLE MTN 500-230-115-60KV BATT (FAILURE OF STATION DC BATTERY SUPPLY)	P5	Non-Redundant Battery/Relay	Diverge	0.54	0.64	NA	Diverge	Diverge	Diverge	NA	0.53	Install redundant battery/relay supply
	TABLE MTN 230KV BUS SECTION D/E (FAILURE OF NON-REDUNDANT RELAY)	P5	Non-Redundant Battery/Relay	NA	0.54	0.66	NA	Diverge	Diverge	NA	NA	0.53	Install redundant battery/relay supply
	Table Mountain-Paradise 115 KV Line and Caribou-Table Mountain 230 KV Line	P7	DCTL	NA	0.54	0.70	NA	Diverge	Diverge	NA	NA	0.53	Mitigation under development
CARIBOU 230.0 kV	CARIBOU-PLUMAS JCT 60KV MOAS OPENED ON CARIBOU_GRAYSFLTJT1 and CARIBOU-TABLE MTN 230KV	P6	N-1-1	> 0.9	> 0.9	0.52	> 0.9	> 0.9	> 0.9	> 0.9	> 0.9	> 0.9	Continue to monitor
	CARIBOU-TABLE MTN 230KV	P1	N-1	NA	0.54	0.70	NA	Diverge	Diverge	NA	NA	0.53	Mitigation under development
	CARIBOU-TABLE MTN 230KV (CARIBOU-BELDENTP)	P2	Line Section w/o Fault	NA	0.54	0.70	NA	Diverge	Diverge	NA	NA	0.53	Mitigation under development
	CARIBOU-TABLE MTN 230KV (BELDENTP-TABLE MTN D)	P2	Line Section w/o Fault	NA	0.56	0.74	NA	Diverge	Diverge	NA	NA	0.54	Mitigation under development
	TABLE MTN D 230KV SECTION 1D	P2	Bus	NA	0.56	0.72	NA	Diverge	Diverge	NA	NA	0.54	Mitigation under development
	TABLE MTN D - 1D 230KV & CARIBOU-TABLE MTN LINE	P2	Breaker	NA	0.54	0.68	NA	Diverge	Diverge	NA	NA	0.53	Mitigation under development
	TABLE MTN D SECTION 1D & TABLE MTN E SECTION 1E 230KV	P2	Breaker	NA	0.56	0.66	NA	Diverge	Diverge	NA	NA	0.54	Mitigation under development
	TABLE MTN D 230KV - SECTION 1D & 2D	P2	Breaker	NA	0.56	0.68	NA	Diverge	Diverge	NA	NA	0.54	Mitigation under development
	TABLE MTN 500-230-115-60KV BATT (FAILURE OF STATION DC BATTERY SUPPLY)	P5	Non-Redundant Battery/Relay	Diverge	0.55	0.64	NA	Diverge	Diverge	Diverge	NA	0.53	Install redundant battery/relay supply
	TABLE MTN 230KV BUS SECTION D/E (FAILURE OF NON-REDUNDANT RELAY)	P5	Non-Redundant Battery/Relay	NA	0.54	0.66	NA	Diverge	Diverge	NA	NA	0.53	Install redundant battery/relay supply
	Table Mountain-Paradise 115 KV Line and Caribou-Table Mountain 230 KV Line	P7	DCTL	NA	0.54	0.70	NA	Diverge	Diverge	NA	NA	0.53	Mitigation under development
CASCADE 115.0 kV	CASCADE-COTTONWOOD 115KV and CASCADE-BENTON-DESCHUTES 60KV	P6	N-1-1	> 0.9	> 0.9	0.53	> 0.9	> 0.9	> 0.9	> 0.9	> 0.9	> 0.9	Cascade 115/60 kV No.2 Transformer Project and Cascade-Benton 60 kV Line Project
	OLSENHYDRO 4.16KV GEN UNIT 1 and CASCADE-COTTONWOOD 115KV	P3	G-1/N-1	> 0.9	> 0.9	0.88	> 0.9	> 0.9	> 0.9	> 0.9	> 0.9	> 0.9	Continue to monitor
	CASCADE-COTTONWOOD 115KV	P1	N-1	0.89	1.03	0.89	1.02	1.06	1.08	0.90	1.02	1.03	Mitigation under development
	CASCADE-COTTONWOOD 115KV (OREGNTRL-SPIANDERSONJ)	P2	Line Section w/o Fault	0.99	1.02	0.91	1.02	1.04	1.09	0.89	1.02	1.02	sensitivity only
	CASCADE-COTTONWOOD 115KV (COTWDPGE-JESSUPJ1)	P2	Line Section w/o Fault	0.89	NA	NA	1.02	NA	NA	0.91	1.02	NA	Cascade 115/60 kV No.2 Transformer Project and Cascade-Benton 60 kV Line Project
	CASCADE-COTTONWOOD 115KV (CASCADE-OREGNTRL)	P2	Line Section w/o Fault	0.89	1.03	0.89	1.02	1.06	1.08	0.90	1.02	1.03	Mitigation under development
	COTWDPGE 115KV SECTION 2D	P2	Bus	Diverge	NA	NA	1.02	NA	NA	0.89	1.01	NA	Mitigation under development
	CASCADE 115KV SECTION MA	P2	Bus	0.89	0.90	0.89	0.90	1.02	1.03	0.90	0.90	0.90	Mitigation under development
	COTWD_2D - 2D 115KV & CASCADE-COTTONWOOD LINE	P2	Breaker	NA	1.03	0.89	NA	1.06	1.08	NA	NA	1.03	Mitigation under development
	COTWDPGE - 2D 115KV & BRIDGEVILLE-COTTONWOOD LINE	P2	Breaker	Diverge	NA	NA	1.02	NA	NA	0.89	1.01	NA	Mitigation under development
	COTWDPGE - 2D 115KV & CASCADE-COTTONWOOD LINE	P2	Breaker	Diverge	NA	NA	0.90	NA	NA	0.93	0.89	NA	Mitigation under development
	CASCADE - MA 115KV & CASCADE-COTTONWOOD LINE	P2	Breaker	0.89	0.90	0.89	0.91	1.02	1.03	0.90	0.90	0.90	Mitigation under development
	OREGON TRAIL 115KV BATT (FAILURE OF STATION DC BATTERY SUPPLY)	P5	Non-Redundant Battery/Relay	1.02	1.03	0.89	1.03	1.06	1.08	1.01	1.04	1.03	Install redundant battery/relay supply
	JESSUP 115KV BATT (FAILURE OF STATION DC BATTERY SUPPLY)	P5	Non-Redundant Battery/Relay	1.02	1.03	0.89	1.03	1.06	1.08	1.01	1.04	1.03	Install redundant battery/relay supply
	COTTONWOOD 115KV BATT (FAILURE OF STATION DC BATTERY SUPPLY)	P5	Non-Redundant Battery/Relay	1.02	0.89	0.91	1.03	0.94	0.92	1.00	1.04	0.89	Install redundant battery/relay supply
	COTTONWOOD 115KV BUS 1/BUS 2 (FAILURE OF NON-REDUNDANT RELAY)	P5	Non-Redundant Battery/Relay	Diverge	0.89	0.91	Diverge	0.94	0.92	Diverge	Diverge	0.89	Install redundant battery/relay supply
COLEMAN 60.0 kV	COLEMAN-COTTONWOOD 60KV and COTTONWOOD-RED BLUFF 60KV MOAS OPENED ON RED B JT RED BLFF	P6	N-1-1	0.66	> 0.9	> 0.9	> 0.9	> 0.9	> 0.9	> 0.9	> 0.9	> 0.9	Red Bluff-Coleman 60 kV Reinforcement
COTTONWD 60.0 kV	COTWD_E 230/60KV TB 3 and COTWD_E2 230/60KV TB 2	P6	N-1-1	> 0.9	0.89	0.87	> 0.9	> 0.9	> 0.9	> 0.9	> 0.9	0.90	Mitigation under development
COTWDPGE 115.0 kV	COTWD_F2 230/115KV TB 4 and COTWD_E2 230/115KV TB 1	P6	N-1-1	0.88	> 0.9	> 0.9	> 0.9	> 0.9	> 0.9	0.73	> 0.9	> 0.9	Cottonwood 230/115 kV Transformers 1 and 4 Replacement
	Base Case	P0	Base Case	1.04	NA	NA	1.05	NA	NA	1.03	1.05	NA	Continue to monitor
DESCHUTS 60.0 kV	CASCADE-BENTON-DESCHUTES 60KV and KILARC-DESCHUTES 60KV	P6	N-1-1	> 0.9	> 0.9	0.90	> 0.9	> 0.9	> 0.9	> 0.9	> 0.9	> 0.9	Cascade 115/60 kV No.2 Transformer Project and Cascade-Benton 60 kV Line Project
HUMBOLDT 115.0 kV	FORBESTOWN 11.50KV GEN UNIT 1 and BRIDGEVILLE-COTTONWOOD 115KV	P3	G-1/N-1	0.79	> 0.9	> 0.9	> 0.9	> 0.9	> 0.9	> 0.9	> 0.9	> 0.9	Continue to monitor
HUMBOLDT 60.0 kV	FORBESTOWN 11.50KV GEN UNIT 1 and BRIDGEVILLE-COTTONWOOD 115KV	P3	G-1/N-1	0.84	> 0.9	> 0.9	> 0.9	> 0.9	> 0.9	> 0.9	> 0.9	> 0.9	Continue to monitor
OREGNTRL 60.0 kV	COTWD_F2 230/115KV TB 4 and COTWD_E2 230/115KV TB 1	P6	N-1-1	> 0.9	> 0.9	> 0.9	> 0.9	> 0.9	> 0.9	0.87	> 0.9	> 0.9	Cascade 115/60 kV No.2 Transformer Project and Cascade-Benton 60 kV Line Project
PALERMO 230.0 kV	TABLE MTN-PALERMO 230KV MOAS OPENED ON TABLE MTN D_PALERMO and PALERMO-COLGATE 230KV	P6	N-1-1	> 0.9	> 0.9	0.87	> 0.9	> 0.9	> 0.9	> 0.9	> 0.9	> 0.9	Table Mountain Second 500/230 kV Transformer
	TABLE MTN D SECTION 1D & TABLE MTN E SECTION 1E 230KV	P2	Breaker	0.97	0.96	0.86	0.97	Diverge	Diverge	0.95	0.95	0.95	Continue to monitor
PALERMO 115.0 kV	Base Case	P0	Base Case	1.06	1.06	1.05	1.06	1.06	1.05	1.06	1.06	1.06	Continue to monitor
RED BLFF 60.0 kV	COLEMAN-COTTONWOOD 60KV and COTTONWOOD-RED BLUFF 60KV MOAS OPENED ON RED B JT RED BLFF	P6	N-1-1	0.55	> 0.9	> 0.9	> 0.9	> 0.9	> 0.9	> 0.9	> 0.9	> 0.9	Red Bluff-Coleman 60 kV Reinforcement
TABLE MTN D 230.0 kV	TABLE MTN D SECTION 1D & TABLE MTN E SECTION 1E 230KV	P2	Breaker	0.96	0.96	0.85	0.97	Diverge	Diverge	0.95	0.96	0.96	Continue to monitor
TRINITY 115.0 kV	FORBESTOWN 11.50KV GEN UNIT 1 and TRINITY-COTTONWOOD 115KV MOAS OPENED ON TRINITY JESSTAP	P3	G-1/N-1	0.90	> 0.9	> 0.9	> 0.9	> 0.9	> 0.9	> 0.9	> 0.9	> 0.9	Continue to monitor
TRINITY 60.0 kV	FORBESTOWN 11.50KV GEN UNIT 1 and TRINITY-COTTONWOOD 115KV MOAS OPENED ON TRINITY JESSTAP	P3	G-1/N-1	0.90	> 0.9	> 0.9	> 0.9	> 0.9	> 0.9	> 0.9	> 0.9	> 0.9	Continue to monitor

Substation	Contingency	Category	Category Description	Post Cont. Voltage Deviation % (Baseline Scenarios)						Post Cont. Voltage Deviation % (Sensitivity Scenarios)			Project & Potential Mitigation Solutions
				2028 Summer Peak	2031 Summer Peak	2036 Summer Peak	2028 Spring Off-Peak	2031 Spring Off-Peak	2036 Summer-Off Peak	2028 SP Heavy Renewable & Min Gas Gen	2028 OP Sensitivity	2031 SP High CEC Forecast	
CARIBOU 230.0 kV	CARIBOU-TABLE MTN 230KV	P1	N-1	NA	49	32	NA	Diverge	Diverge	NA	NA	50	Mitigation under development
CASCADE 115.0 kV	CASCADE-COTTONWOOD 115KV	P1	N-1	13	< 8	12	< 8	NA	NA	11	< 8	< 8	Mitigation under development
CARIBOU 115.0 kV	CARIBOU-TABLE MTN 230KV	P1	N-1	NA	47	31	NA	Diverge	Diverge	NA	NA	49	Mitigation under development
CARIBOU 60.0 kV	CARIBOU-TABLE MTN 230KV	P1	N-1	NA	46	30	NA	Diverge	Diverge	NA	NA	47	Mitigation under development
CARIBOU 60.0 kV	CARIBOU 230/230KV TB 11	P1	N-1	NA	45	12	NA	Diverge	Diverge	NA	NA	44	Mitigation under development

Contingency	Category	Category Description	Transient Stability Performance						Potential Mitigation Solutions
			Baseline Scenarios				Sensitivity Scenarios		
			2028 Spring Off-Peak	2031 Summer Peak	2036 Summer Peak	2036 Summer-Off Peak	2028 Spring OP Sensitivity	2031 SP High CEC Forecast	
In accordance with TPL-001-5- Requirement R2.6, this area relies on the past studies from the 2024-25 Transmission Planning Process for transient stability studies:									
https://stakeholdercenter.caiso.com/InitiativeDocuments/BoardApproved-AppendixC-2024-2025-TransmissionPlan.pdf									

Worst Contingency	Category	Category Description	Amount of Load Drop (MW)										Potential Mitigation Solutions
			2028 Summer Peak	2031 Summer Peak	2036 Summer Peak	2028 Spring Off-Peak	2036 Summer-Off Peak	2031 Spring Off-Peak	2036 Summer-Off Peak	2028 SP Heavy Renewable & Min Gas Gen	2028 OP Sensitivity	2031 SP High CEC Forecast	

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

Substation	2028 Summer Peak	2031 Summer Peak	2036 Summer Peak	2028 Spring Off-Peak	2031 Spring Off-Peak	2036 Summer-Off Peak	2028 SP Heavy Renewable & Min Gas Gen	2028 OP Sensitivity	2031 SP High CEC Forecast	Potential Mitigation Solutions

No single source substation with more than 100 MW