2023-2024 ISO Reliability Assessment - Preliminary 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
				2025 Summer Peak	2028 Summer Peak	2035 Summer Peak	2025 Spring Off-Peak	2028 Spring Off-Peak	2028 SP High CEC Forecast	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	
Benton-Deschutes 60 kV Line	P2-4:A3:26:_COTWD_2D SECTION 2D & COTWD_2E SECTION 2E 115KV	P2-4	Bus-Tie-Breaker	62	32	48	117	53	31	46	62	Generaltion Redispatch
	P5-5(DC):A3:24: Station DC Battery Supply "Cottonwood 115kV Batt"	P5	Non-Redundant Relay	30	75	71	148	23	75	36	23	Operating solution
	P5-5:A3:3: "LOGAN CREEK 230KV BUS (FAILURE OF NON-REDUNDENT RELAY)"	P5	Non-Redundant Relay	NConv	NConv	NConv	30	NConv	NConv	NConv	NConv	Install redundant relay
	P5-5:A3:10:_COTTONWOOD 230KV BUS SECTION E/G/WAPA/F (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	NConv	NConv	NConv	29	NConv	NConv	NConv	NConv	Install redundant relay
	P1-3:A3:12:_COTWD_E2 230/60KV TB 2 & P1-3:A3:13:_COTWD_E 230/60KV TB 3	P6	N-1-1	191	259	228	30	28	322	122	280	Operating solution
Caribou No.11 230/115/60 kV Transformer	P2-4:A3:21:_TABLE MTN D SECTION 1D & TABLE MTN E SECTION 1E 230KV	P2-4	Bus-Tie-Breaker	NConv	NConv	NConv	29	NConv	NConv	NConv	NConv	Evaluate Caribou RAS
	P2-3:A3:27:_TABLE MTN D - 1D 230KV & LINE	P2-3	Non-Bus-Tie Breaker	NConv	NA	NA	NA	NConv	NA	NConv	NConv	Evaluate Caribou RAS
	P2-1:A3:23:_CARIBOU-TABLE MTN 230KV [4440] (BELDENTP-TABLE MTN D)	P2-1	Line Section w/o Fault	NConv	NConv	NConv	29	NConv	NConv	NConv	NConv	Evaluate Caribou RAS
	P2-2:A3:28:_TABLE MTN D 230KV SECTION 1D	P2-2	Bus	NConv	NConv	NConv	29	NConv	NConv	NConv	NConv	Evaluate Caribou RAS
Caribou-Plumas Jct 60 kV Line	P2-4:A3:21:_TABLE MTN D SECTION 1D & TABLE MTN E SECTION 1E 230KV	P2-4	Bus-Tie-Breaker	NConv	NConv	NConv	40	NConv	NConv	NConv	NConv	Evaluate Caribou RAS
	P2-3:A3:27:_TABLE MTN D - 1D 230KV & LINE	P2-3	Non-Bus-Tie Breaker	NConv	NA	NA	NA	NConv	NA	NConv	NConv	Evaluate Caribou RAS
	P2-1:A3:23:_CARIBOU-TABLE MTN 230KV [4440] (BELDENTP-TABLE MTN D)	P2-1	Line Section w/o Fault	NConv	NConv	NConv	41	NConv	NConv	NConv	NConv	Evaluate Caribou RAS
	P2-2:A3:28:_TABLE MTN D 230KV SECTION 1D	P2-2	Bus	NConv	NConv	NConv	40	NConv	NConv	NConv	NConv	Evaluate Caribou RAS
Cascade-Benton-Deschute 60 kV line	P2-4:A3:20:_COTWD_F2 SECTION 2F & COTWD_E2 SECTION 2E 230KV	P2-4	Bus-Tie-Breaker	37	52	11	121	27	51	14	27	Generaltion Redispatch
	P5-5:A3:3: "LOGAN CREEK 230KV BUS (FAILURE OF NON-REDUNDENT RELAY)"	P5	Non-Redundant Relay	NConv	NConv	NConv	11	NConv	NConv	NConv	NConv	Install redundant relay
	P5-5:A3:10:_COTTONWOOD 230KV BUS SECTION E/G/WAPA/F (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	NConv	NConv	NConv	11	NConv	NConv	NConv	NConv	Install redundant relay
	P1-3:A3:12:_COTWD_E2 230/60KV TB 2 & P1-3:A3:13:_COTWD_E 230/60KV TB 3	P6	N-1-1	92	124	109	11	16	154	60	134	Operating solution
	P1-3:A3:7:_COTWD_E2 230/115KV TB 1 & P1-3:A3:8:_COTWD_F2 230/115KV TB 4	P6	N-1-1	38	52	25	125	30	50	16	30	Operating solution
Cascade-Cottonwood 115 kV Line	P2-4:A3:20:_COTWD_F2 SECTION 2F & COTWD_E2 SECTION 2E 230KV	P2-4	Bus-Tie-Breaker	86	47	67	104	62	46	53	63	Generaltion Redispatch
	P5-5:A3:10:_COTTONWOOD 230KV BUS SECTION E/G/WAPA/F (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	NConv	NA	NConv	NA	NConv	NA	NConv	NConv	Install redundant relay
	P1-3:A3:37:_CASCADE 115/60KV TB 1 & Base Case	P6	N-1-1	94	70	106	89	33	70	107	73	Continue to Monitor
	P5-5:A3:1: "BUTT 115 KV BUS (FAILURE OF NON-REDUNDENT RELAY)"	P5	Non-Redundant Relay	NConv	NConv	NConv	60	45	NConv	NConv	45	Install redundant relay

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				2025 Summer Peak	2028 Summer Peak	2035 Summer Peak	2025 Spring Off-Peak	2028 Spring Off-Peak	2028 SP High CEC Forecast	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	
Cascade-Craig View 115 kV Line (Path 25)	P5-5:A3:3: "LOGAN CREEK 230KV BUS (FAILURE OF NON-REDUNDENT RELAY)"	P5	Non-Redundant Relay	NConv	NConv	NConv	93	NConv	NConv	NConv	NConv	Install redundant relay
	P5-5:A3:10:_COTTONWOOD 230KV BUS SECTION E/G/WAPA/F (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	NConv	NConv	NConv	93	NConv	NConv	NConv	NConv	Install redundant relay
Cascade-Deschutes 60 kV Line	P2-4:A3:26:_COTWD_2D SECTION 2D & COTWD_2E SECTION 2E 115KV	P2-4	Bus-Tie-Breaker	69	70	38	137	56	69	32	69	Generaltion Redispatch
	P2-1:A3:49:_CASCADE-COTTONWOOD 115KV [1240] (CASCADE-OREGNTRL)	P2-1	Line Section w/o Fault	100	92	100	101	68	92	100	68	Generaltion Redispatch
	P1-1:A3:62:_VOLTA1-2 9.11KV GEN UNIT 1 & P1-2:A3:38:_CASCADE-COTTONWOOD 115KV [1240]	P3	G-1/N-1	94	82	103	102	60	82	103	60	Generaltion Redispatch
	P1-1:A3:64:_SOUTH G 4.16KV GEN UNIT 1 & P1-2:A3:38:_CASCADE-COTTONWOOD 115KV [1240]	P3	G-1/N-1	92	82	101	99	60	82	101	60	Continue to Monitor
	P1-1:A3:75:_OLSENHYDRO 4.16KV GEN UNIT 1 & P1-2:A3:38:_CASCADE-COTTONWOOD 115KV [1240]	P3	G-1/N-1	93	86	102	104	63	82	102	63	Generaltion Redispatch
	P1-1:A3:76:_TKO 9.11KV GEN UNIT 3 & P1-2:A3:38:_CASCADE-COTTONWOOD 115KV [1240]	P3	G-1/N-1	93	85	102	102	63	82	102	63	Generaltion Redispatch
	P1-1:A3:92:_COLEMAN 6.60KV GEN UNIT 1 & P1-2:A3:38:_CASCADE-COTTONWOOD 115KV [1240]	P3	G-1/N-1	93	82	99	102	60	82	99	60	Generaltion Redispatch
	P5-5(DC):A3:13: Station DC Battery Supply "Oregon Trail 115kV Batt"	P5	Non-Redundant Relay	58	92	100	101	46	92	33	46	Install redundant battery
	P5-5(DC):A3:14: Station DC Battery Supply "Jessup 115kV Batt"	P5	Non-Redundant Relay	58	92	100	101	46	92	33	46	Install redundant battery
	P5-5:A3:1: "BUTT 115 KV BUS (FAILURE OF NON-REDUNDENT RELAY)"	P5	Non-Redundant Relay	NConv	NConv	NConv	46	36	NConv	NConv	36	Install redundant relay
	P5-5:A3:3: "LOGAN CREEK 230KV BUS (FAILURE OF NON-REDUNDENT RELAY)"	P5	Non-Redundant Relay	NConv	NConv	NConv	53	NConv	NConv	NConv	NConv	Install redundant relay
	P5-5:A3:10:_COTTONWOOD 230KV BUS SECTION E/G/WAPA/F (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	NConv	NConv	100	53	NConv	NConv	NConv	NConv	Install redundant relay
	P5-5:A3:11:_COTTONWOOD 115KV BUS 1/BUS 2 (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	NConv	133	NConv	182	NConv	131	NConv	NConv	Install redundant relay
	P1-3:A3:12:_COTWD_E2 230/60KV TB 2 & P1-3:A3:13:_COTWD_E 230/60KV TB 3	P6	N-1-1	273	384	278	35	56	474	36	382	Operating solution
Cottonwood-Benton No.1 60 kV	P2-4:A3:25:_COTWD_1E SECTION 1E & COTWD_2E SECTION 2E 115KV	P2-4	Bus-Tie-Breaker	41	45	30	101	22	44	47	41	Generaltion Redispatch
	P2-4:A3:20:_COTWD_F2 SECTION 2F & COTWD_E2 SECTION 2E 230KV	P2-4	Bus-Tie-Breaker	58	48	23	128	41	47	22	42	Generaltion Redispatch
	P5-5:A3:3: "LOGAN CREEK 230KV BUS (FAILURE OF NON-REDUNDENT RELAY)"	P5	Non-Redundant Relay	NConv	NConv	NConv	12	NConv	NConv	NConv	NConv	Install redundant relay

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				2025 Summer Peak	2028 Summer Peak	2035 Summer Peak	2025 Spring Off-Peak	2028 Spring Off-Peak	2028 SP High CEC Forecast	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	
Line	P5-5:A3:10:_COTTONWOOD 230KV BUS SECTION E/G/WAPA/F (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	NConv	NConv	NConv	12	NConv	NConv	NConv	NConv	Install redundant relay
	P1-3:A3:12:_COTWD_E2 230/60KV TB 2 & P1-3:A3:13:_COTWD_E 230/60KV TB 3	P6	N-1-1	109	144	120	12	24	181	65	154	Operating solution
	P1-3:A3:7:_COTWD_E2 230/115KV TB 1 & P1-3:A3:8:_COTWD_F2 230/115KV TB 4	P6	N-1-1	59	47	30	132	44	47	4	45	Operating solution
Cottonwood-Round Mountain 230 kV Line	P5-5(DC):A3:2: Station DC Battery Supply "Table Mtn 500-230-115-60kV Batt"	P5	Non-Redundant Relay	NConv	NConv	NConv	22	2	NConv	NConv	3	Install redundant battery
Delevan-Cortina 230 kV Line	P5-5(DC):A3:2: Station DC Battery Supply "Table Mtn 500-230-115-60kV Batt"	P5	Non-Redundant Relay	NConv	NConv	NConv	3	57	NConv	NConv	57	Install redundant battery
Keswick-Cascade 60 kV Line	P5-5(DC):A3:24: Station DC Battery Supply "Cottonwood 115kV Batt"	P5	Non-Redundant Relay	35	66	109	157	38	64	47	38	Install redundant battery
Round Mountain 500/230 kV Bank	P5-5(DC):A3:2: Station DC Battery Supply "Table Mtn 500-230-115-60kV Batt"	P5	Non-Redundant Relay	NConv	NConv	NConv	12	50	NConv	NConv	49	Install redundant battery
Round Mountain-Cottonwood(E) No.3 230 kV Line	P5-5(DC):A3:2: Station DC Battery Supply "Table Mtn 500-230-115-60kV Batt"	P5	Non-Redundant Relay	NConv	NConv	NConv	28	5	NConv	NConv	5	Install redundant battery
	P1-2:A3:5:_ROUND MTN-COTTONWOOD #2 230KV [5640] & P1-3:A3:1:_ROUND MT 500/230KV TB 1	P6	N-1-1	110	98	95	23	83	98	98	83	Operating solution
Sycamore Creek-Notre Dame-Table Mountain 115 kV Line	P2-4:A3:11:_BUTTE 115KV - SECTION MD & ME	P2-4	Bus-Tie-Breaker	103	109	104	10	63	111	53	63	Table Mountain 115 kV RAS (recommended in previous cycle)
	P2-3:A3:48:_BUTTE - MD 115KV & TABLE MTN-BUTTE #1 LINE	P2-3	Non-Bus-Tie Breaker	126	132	132	17	83	134	69	83	Table Mountain 115 kV RAS (recommended in previous cycle)
	P2-2:A3:45:_BUTTE 115KV SECTION MD	P2-2	Bus	99	104	108	10	61	106	52	61	Table Mountain 115 kV RAS (recommended in previous cycle)
	P1-2:A3:50:_TABLE MTN-BUTTE #2 115KV [3920] & P1-2:A3:47:_SYCAMORE CREEK-NOTRE DAME-TABLE MTN 115KV [4314]	P6	N-1-1	125	131	132	23	86	133	65	86	Table Mountain 115 kV RAS (recommended in previous cycle)
	P7-1:A3:4_Sycamore Creek-Notre Dame-Table Mountain &Table Mountain-Butte No.2 115 kV Lines	P7	DCTL	109	115	108	17	72	116	53	72	Table Mountain 115 kV RAS (recommended in previous cycle)
	P7-1:A3:4_Sycamore Creek-Notre Dame-Table Mountain & Table Mountain-Butte No.2 115 kV Lines	P7	DCTL	125	131	121	24	86	133	65	86	Table Mountain 115 kV RAS (recommended in previous cycle)
Trinity-Keswick 60 kV Line	P5-5(DC):A3:24: Station DC Battery Supply "Cottonwood 115kV Batt"	P5	Non-Redundant Relay	20	65	90	139	27	64	37	28	Install redundant battery
Caribou-Westwood 60 kV Line	P2-4:A3:21:_TABLE MTN D SECTION 1D & TABLE MTN E SECTION 1E 230KV	P2-4	Bus-Tie-Breaker	NConv	NConv	NConv	10	NConv	NConv	NConv	NConv	Load Power Factor under review
	P2-3:A3:27:_TABLE MTN D - 1D 230KV & LINE	P2-3	Non-Bus-Tie Breaker	NConv	NA	NA	NA	NConv	NA	NConv	NConv	Load Power Factor under review
	P2-1:A3:23:_CARIBOU-TABLE MTN 230KV [4440] (BELDENTP-TABLE MTN D)	P2-1	Line Section w/o Fault	NConv	NConv	NConv	11	NConv	NConv	NConv	NConv	Load Power Factor under review
	P2-2:A3:28:_TABLE MTN D 230KV SECTION 1D	P2-2	Bus	NConv	NConv	NConv	11	NConv	NConv	NConv	NConv	Load Power Factor under review

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				2025 Summer Peak	2028 Summer Peak	2035 Summer Peak	2025 Spring Off-Peak	2028 Spring Off-Peak	2028 SP High CEC Forecast	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	
	P5-5:A3:1: "BUTT 115 KV BUS (FAILURE OF NON-REDUNDENT RELAY)"	P5	Non-Redundant Relay	NConv	NConv	NConv	66	30	NConv	NConv	30	Load Power Factor under review
	P5-5:A3:7:_TABLE MTN 230KV BUS SECTION D/E (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	60	NConv	48	31	53	NConv	44	53	Load Power Factor under review
Cottonwood No.2 60 kV Line	P1-3:A3:48:_RBPPCPH 60/13.8KV TB 1	P1	N-1	103	88	78	47	83	90	78	83	Project: Red Bluff-Coleman 60 kV Reinforcement Project
	P1-1:A3:2:_RBPPCPH 13.80KV GEN UNIT 16 & Base Case	P3	G-1/N-1	19	12	96	35	101	13	53	91	Operating solution
Table Mountain-Pease 60 kV Line (Tres Vias-Biggsjct)	P7-1:A3:15_Palermo-Pease 115 kV Line & Pease-Rio Oso 115 kV Line	P7	DCTL	22	32	168	22	31	32	168	31	Continue to Monitor

Substation	Contingency (All and Worst P6)	Category	Category Description	Voltage PU (Baseline Scenarios)					Voltage PU (Sensitivity Scenarios)			Project & Potential Mitigation Solutions
				2025 Summer Peak	2028 Summer Peak	2035 Summer Peak	2025 Spring Off-Peak	2028 Spring Off-Peak	2028 SP High CEC Forecast	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	
CARIBOU 230kV	P1-2:A3:20:_CARIBOU-TABLE MTN 230KV [4440]	P1	N-1	0.58	0.52	0.71	0.77	0.69	0.71	0.69	0.52	Evaluate Caribou RAS
CARIBOU 115kV	P1-2:A3:20:_CARIBOU-TABLE MTN 230KV [4440]	P1	N-1	0.58	0.52	0.71	0.77	0.69	0.71	0.69	0.52	Evaluate Caribou RAS
WESTWOOD 60kV	P1-2:A3:20:_CARIBOU-TABLE MTN 230KV [4440]	P1	N-1	0.60	0.54	0.72	0.76	0.71	0.72	0.70	0.54	Evaluate Caribou RAS
ULTR WSD 60kV	P1-2:A3:20:_CARIBOU-TABLE MTN 230KV [4440]	P1	N-1	0.59	0.54	0.72	0.76	0.70	0.72	0.70	0.54	Evaluate Caribou RAS
CHESTER 60kV	P1-2:A3:20:_CARIBOU-TABLE MTN 230KV [4440]	P1	N-1	0.52	0.48	0.64	0.70	0.62	0.64	0.62	0.48	Evaluate Caribou RAS
HMLTN BR 60kV	P1-2:A3:20:_CARIBOU-TABLE MTN 230KV [4440]	P1	N-1	0.58	0.53	0.70	0.75	0.68	0.70	0.68	0.53	Evaluate Caribou RAS
COLLINSPINE 60kV	P1-2:A3:20:_CARIBOU-TABLE MTN 230KV [4440]	P1	N-1	0.52	0.47	0.63	0.69	0.61	0.63	0.61	0.47	Evaluate Caribou RAS
BIG MDWS 60kV	P1-2:A3:20:_CARIBOU-TABLE MTN 230KV [4440]	P1	N-1	0.57	0.52	0.69	0.75	0.68	0.70	0.68	0.52	Evaluate Caribou RAS
GRAYSFLAT 60kV	P1-2:A3:20:_CARIBOU-TABLE MTN 230KV [4440]	P1	N-1	0.56	0.51	0.69	0.76	0.67	0.69	0.67	0.51	Evaluate Caribou RAS
GANSNER 60kV	P1-2:A3:20:_CARIBOU-TABLE MTN 230KV [4440]	P1	N-1	0.55	0.50	0.68	0.76	0.67	0.69	0.67	0.50	Evaluate Caribou RAS
SPANSHCK 60kV	P1-2:A3:20:_CARIBOU-TABLE MTN 230KV [4440]	P1	N-1	0.56	0.51	0.69	0.76	0.67	0.69	0.67	0.51	Evaluate Caribou RAS
EST Q1 60kV	P1-2:A3:20:_CARIBOU-TABLE MTN 230KV [4440]	P1	N-1	0.57	0.51	0.69	0.76	0.67	0.70	0.67	0.51	Evaluate Caribou RAS
EST QNCY 60kV	P1-2:A3:20:_CARIBOU-TABLE MTN 230KV [4440]	P1	N-1	0.57	0.51	0.70	0.76	0.67	0.70	0.67	0.51	Evaluate Caribou RAS
ELIZ TWN 60kV	P1-2:A3:20:_CARIBOU-TABLE MTN 230KV [4440]	P1	N-1	0.57	0.51	0.69	0.76	0.67	0.70	0.67	0.51	Evaluate Caribou RAS
CARIBOU 60kV	P1-2:A3:20:_CARIBOU-TABLE MTN 230KV [4440]	P1	N-1	0.57	0.51	0.69	0.76	0.67	0.70	0.67	0.51	Evaluate Caribou RAS
STLLWATR 60kV	P1-2:A3:68:_KESWICK-CASCADE 60KV [7260] MOAS OPENED ON CASCADE_STLLWATR	P1	N-1	0.92	0.90	0.96	1.01	0.98	0.97	0.98	0.90	Operating Solution
RED BLFF 60kV	P1-2:A3:78:_COTTONWOOD-RED BLUFF 60KV [6660] MOAS OPENED ON RED B JT_RED BLFF	P1	N-1	0.88	0.86	0.97	1.04	0.91	0.97	0.91	0.86	Operating Solution
DIRYVLLE 60kV	P1-2:A3:78:_COTTONWOOD-RED BLUFF 60KV [6660] MOAS OPENED ON RED B JT_RED BLFF	P1	N-1	0.90	0.89	0.98	1.04	0.92	0.98	0.92	0.88	Operating Solution
LS MLNSJ 60kV	P1-2:A3:78:_COTTONWOOD-RED BLUFF 60KV [6660] MOAS OPENED ON RED B JT_RED BLFF	P1	N-1	0.89	0.87	0.97	1.04	0.90	0.98	0.90	0.87	Operating Solution
VINA 60kV	P1-2:A3:78:_COTTONWOOD-RED BLUFF 60KV [6660] MOAS OPENED ON RED B JT_RED BLFF	P1	N-1	0.87	0.86	0.96	1.04	0.89	0.97	0.89	0.86	Operating Solution
CHESTER 60kV	P1-2:A3:87:_CARIBOU-WESTWOOD 60KV [6300] MOAS OPENED ON HMLTN BR_BIG MDWS (2)	P1	N-1	0.92	0.88	0.94	0.90	0.91	0.94	0.91	0.88	Evaluate Power Factor

Substation	Contingency (All and Worst P6)	Category	Category Description	Voltage PU (Baseline Scenarios)					Voltage PU (Sensitivity Scenarios)			Project & Potential Mitigation Solutions
				2025 Summer Peak	2028 Summer Peak	2035 Summer Peak	2025 Spring Off-Peak	2028 Spring Off-Peak	2028 SP High CEC Forecast	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	
COLLINSPINE 60kV	P1-2:A3:87:_CARIBOU-WESTWOOD 60KV [6300] MOAS OPENED ON HMLTN BR_BIG MDWS (2)	P1	N-1	0.92	0.88	0.94	0.89	0.90	0.94	0.90	0.88	Evaluate Power Factor
ANTLER 60kV	P1-3:A3:37:_CASCADE 115/60KV TB 1	P1	N-1	0.91	0.89	0.93	0.98	0.96	0.93	0.96	0.89	Continue to Monitor
PPL 60kV	P1-3:A3:37:_CASCADE 115/60KV TB 1	P1	N-1	0.91	0.89	0.93	0.98	0.96	0.94	0.96	0.89	Continue to Monitor
RBPPCPH 60kV	P1-3:A3:48:_RBPPCPH 60/13.8KV TB 1	P1	N-1	0.87	0.97	0.91	1.04	0.91	0.91	0.91	0.97	Project: Tyler 60 kV Shunt Capacitor
CR CANAL 60kV	P1-3:A3:48:_RBPPCPH 60/13.8KV TB 1	P1	N-1	0.86	0.97	0.90	1.04	0.91	0.91	0.91	0.97	Project: Tyler 60 kV Shunt Capacitor
TYLER 60kV	P1-3:A3:48:_RBPPCPH 60/13.8KV TB 1	P1	N-1	0.87	0.97	0.91	1.05	0.91	0.91	0.91	0.97	Project: Tyler 60 kV Shunt Capacitor
CARIBOU 230kV	P2-1:A3:21:_CARIBOU-TABLE MTN 230KV [4440] (CARIBOU-BELDENTP)	P2-1	Line Section w/o Fault	0.58	0.52	0.71	0.77	0.69	0.71	0.69	0.52	Evaluate Caribou RAS
CARIBOU 115kV	P2-1:A3:21:_CARIBOU-TABLE MTN 230KV [4440] (CARIBOU-BELDENTP)	P2-1	Line Section w/o Fault	0.58	0.52	0.71	0.77	0.69	0.71	0.69	0.52	Evaluate Caribou RAS
WESTWOOD 60kV	P2-1:A3:21:_CARIBOU-TABLE MTN 230KV [4440] (CARIBOU-BELDENTP)	P2-1	Line Section w/o Fault	0.60	0.54	0.72	0.76	0.71	0.72	0.71	0.54	Evaluate Caribou RAS
ULTR WSD 60kV	P2-1:A3:21:_CARIBOU-TABLE MTN 230KV [4440] (CARIBOU-BELDENTP)	P2-1	Line Section w/o Fault	0.59	0.54	0.72	0.76	0.70	0.72	0.70	0.54	Evaluate Caribou RAS
CHESTER 60kV	P2-1:A3:21:_CARIBOU-TABLE MTN 230KV [4440] (CARIBOU-BELDENTP)	P2-1	Line Section w/o Fault	0.52	0.48	0.64	0.70	0.62	0.64	0.62	0.47	Evaluate Caribou RAS
HMLTN BR 60kV	P2-1:A3:21:_CARIBOU-TABLE MTN 230KV [4440] (CARIBOU-BELDENTP)	P2-1	Line Section w/o Fault	0.58	0.53	0.70	0.75	0.68	0.70	0.68	0.52	Evaluate Caribou RAS
COLLINSPINE 60kV	P2-1:A3:21:_CARIBOU-TABLE MTN 230KV [4440] (CARIBOU-BELDENTP)	P2-1	Line Section w/o Fault	0.52	0.47	0.63	0.69	0.61	0.63	0.61	0.47	Evaluate Caribou RAS
BIG MDWS 60kV	P2-1:A3:21:_CARIBOU-TABLE MTN 230KV [4440] (CARIBOU-BELDENTP)	P2-1	Line Section w/o Fault	0.57	0.52	0.69	0.75	0.68	0.70	0.68	0.51	Evaluate Caribou RAS
GRAYSFLAT 60kV	P2-1:A3:21:_CARIBOU-TABLE MTN 230KV [4440] (CARIBOU-BELDENTP)	P2-1	Line Section w/o Fault	0.56	0.51	0.69	0.76	0.67	0.69	0.67	0.50	Evaluate Caribou RAS
GANSNER 60kV	P2-1:A3:21:_CARIBOU-TABLE MTN 230KV [4440] (CARIBOU-BELDENTP)	P2-1	Line Section w/o Fault	0.55	0.50	0.68	0.76	0.67	0.69	0.67	0.50	Evaluate Caribou RAS
SPANSHCK 60kV	P2-1:A3:21:_CARIBOU-TABLE MTN 230KV [4440] (CARIBOU-BELDENTP)	P2-1	Line Section w/o Fault	0.56	0.51	0.69	0.76	0.67	0.69	0.67	0.50	Evaluate Caribou RAS
EST Q1 60kV	P2-1:A3:21:_CARIBOU-TABLE MTN 230KV [4440] (CARIBOU-BELDENTP)	P2-1	Line Section w/o Fault	0.57	0.51	0.70	0.76	0.67	0.70	0.67	0.51	Evaluate Caribou RAS
EST QNCY 60kV	P2-1:A3:21:_CARIBOU-TABLE MTN 230KV [4440] (CARIBOU-BELDENTP)	P2-1	Line Section w/o Fault	0.57	0.51	0.70	0.76	0.67	0.70	0.67	0.51	Evaluate Caribou RAS
ELIZ TWN 60kV	P2-1:A3:21:_CARIBOU-TABLE MTN 230KV [4440] (CARIBOU-BELDENTP)	P2-1	Line Section w/o Fault	0.57	0.51	0.69	0.76	0.67	0.70	0.67	0.51	Evaluate Caribou RAS
CARIBOU 60kV	P2-1:A3:21:_CARIBOU-TABLE MTN 230KV [4440] (CARIBOU-BELDENTP)	P2-1	Line Section w/o Fault	0.57	0.51	0.69	0.76	0.67	0.70	0.67	0.51	Evaluate Caribou RAS
CARIBOU 115kV	P2-2:A3:21:_CARIBOU 230KV SECTION 1D	P2-2	Bus	0.57	0.52	0.70	0.78	0.68	0.70	0.68	0.52	Evaluate Caribou RAS
WESTWOOD 60kV	P2-2:A3:21:_CARIBOU 230KV SECTION 1D	P2-2	Bus	0.59	0.54	0.71	0.77	0.70	0.72	0.70	0.54	Evaluate Caribou RAS
ULTR WSD 60kV	P2-2:A3:21:_CARIBOU 230KV SECTION 1D	P2-2	Bus	0.59	0.54	0.71	0.77	0.70	0.71	0.70	0.54	Evaluate Caribou RAS
CHESTER 60kV	P2-2:A3:21:_CARIBOU 230KV SECTION 1D	P2-2	Bus	0.52	0.48	0.63	0.71	0.62	0.63	0.62	0.47	Evaluate Caribou RAS
HMLTN BR 60kV	P2-2:A3:21:_CARIBOU 230KV SECTION 1D	P2-2	Bus	0.57	0.52	0.70	0.76	0.68	0.70	0.68	0.52	Evaluate Caribou RAS

Substation	Contingency (All and Worst P6)	Category	Category Description	Voltage PU (Baseline Scenarios)					Voltage PU (Sensitivity Scenarios)			Project & Potential Mitigation Solutions
				2025 Summer Peak	2028 Summer Peak	2035 Summer Peak	2025 Spring Off-Peak	2028 Spring Off-Peak	2028 SP High CEC Forecast	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	
COLLINSPINE 60kV	P2-2:A3:21:_CARIBOU 230KV SECTION 1D	P2-2	Bus	0.51	0.47	0.63	0.71	0.61	0.63	0.61	0.47	Evaluate Caribou RAS
BIG MDWS 60kV	P2-2:A3:21:_CARIBOU 230KV SECTION 1D	P2-2	Bus	0.56	0.51	0.69	0.77	0.67	0.69	0.67	0.51	Evaluate Caribou RAS
GRAYSFLAT 60kV	P2-2:A3:21:_CARIBOU 230KV SECTION 1D	P2-2	Bus	0.56	0.51	0.68	0.77	0.67	0.69	0.67	0.51	Evaluate Caribou RAS
GANSNER 60kV	P2-2:A3:21:_CARIBOU 230KV SECTION 1D	P2-2	Bus	0.55	0.50	0.68	0.77	0.66	0.68	0.66	0.50	Evaluate Caribou RAS
SPANSHCK 60kV	P2-2:A3:21:_CARIBOU 230KV SECTION 1D	P2-2	Bus	0.55	0.50	0.68	0.77	0.66	0.68	0.66	0.50	Evaluate Caribou RAS
EST Q1 60kV	P2-2:A3:21:_CARIBOU 230KV SECTION 1D	P2-2	Bus	0.56	0.51	0.69	0.77	0.66	0.69	0.66	0.51	Evaluate Caribou RAS
EST QNCY 60kV	P2-2:A3:21:_CARIBOU 230KV SECTION 1D	P2-2	Bus	0.56	0.51	0.69	0.77	0.66	0.69	0.66	0.51	Evaluate Caribou RAS
ELIZ TWN 60kV	P2-2:A3:21:_CARIBOU 230KV SECTION 1D	P2-2	Bus	0.56	0.51	0.69	0.77	0.66	0.69	0.66	0.51	Evaluate Caribou RAS
CARIBOU 60kV	P2-2:A3:21:_CARIBOU 230KV SECTION 1D	P2-2	Bus	0.56	0.51	0.69	0.77	0.67	0.69	0.67	0.51	Evaluate Caribou RAS
CASCADE 115kV	P2-2:A3:37:_CASCADE 115KV SECTION MA	P2-2	Bus	0.89	0.88	0.91	1.04	1.01	0.91	1.01	0.87	Operating Solution
ANTLER 60kV	P2-2:A3:37:_CASCADE 115KV SECTION MA	P2-2	Bus	0.91	0.89	0.93	1.01	0.98	0.94	0.98	0.89	Operating Solution
PPL 60kV	P2-2:A3:37:_CASCADE 115KV SECTION MA	P2-2	Bus	0.91	0.89	0.93	1.01	0.98	0.94	0.98	0.89	Operating Solution
CASCADE 115kV	P2-3:A3:38:_CASCADE - MA 115KV & CASCADE-COTTONWOOD LINE	P2-3	Non-Bus-Tie Breaker	0.89	0.88	0.91	1.04	1.01	0.91	1.01	0.87	Operating Solution
ANTLER 60kV	P2-3:A3:38:_CASCADE - MA 115KV & CASCADE-COTTONWOOD LINE	P2-3	Non-Bus-Tie Breaker	0.91	0.89	0.93	1.01	0.98	0.94	0.98	0.89	Operating Solution
PPL 60kV	P2-3:A3:38:_CASCADE - MA 115KV & CASCADE-COTTONWOOD LINE	P2-3	Non-Bus-Tie Breaker	0.91	0.89	0.93	1.01	0.98	0.94	0.98	0.89	Operating Solution
WESTWOOD 60kV	P1-1:A3:17:_COLLINSPINE2 13.80KV GEN UNIT 1 & P1-3:A3:4:_CARIBOU 230/230KV TB 11	P3	G-1/N-1	1.00	0.99	1.00	0.78	1.00	1.00	1.00	0.99	Continue to Monitor
ULTR WSD 60kV	P1-1:A3:17:_COLLINSPINE2 13.80KV GEN UNIT 1 & P1-3:A3:4:_CARIBOU 230/230KV TB 11	P3	G-1/N-1	1.00	1.00	1.00	0.78	1.00	1.00	1.00	1.00	Continue to Monitor
CHESTER 60kV	P1-1:A3:17:_COLLINSPINE2 13.80KV GEN UNIT 1 & P1-3:A3:4:_CARIBOU 230/230KV TB 11	P3	G-1/N-1	0.99	0.98	0.99	0.72	0.99	0.99	0.99	0.98	Continue to Monitor
HMLTN BR 60kV	P1-1:A3:17:_COLLINSPINE2 13.80KV GEN UNIT 1 & P1-3:A3:4:_CARIBOU 230/230KV TB 11	P3	G-1/N-1	1.01	1.00	1.01	0.77	1.00	1.01	1.00	1.00	Continue to Monitor
COLLINSPINE 60kV	P1-1:A3:17:_COLLINSPINE2 13.80KV GEN UNIT 1 & P1-3:A3:4:_CARIBOU 230/230KV TB 11	P3	G-1/N-1	0.99	0.98	0.99	0.72	0.99	0.99	0.99	0.98	Continue to Monitor
BIG MDWS 60kV	P1-1:A3:17:_COLLINSPINE2 13.80KV GEN UNIT 1 & P1-3:A3:4:_CARIBOU 230/230KV TB 11	P3	G-1/N-1	1.01	1.01	1.01	0.78	1.01	1.01	1.01	1.01	Continue to Monitor

Substation	Contingency (All and Worst P6)	Category	Category Description	Voltage PU (Baseline Scenarios)					Voltage PU (Sensitivity Scenarios)			Project & Potential Mitigation Solutions
				2025 Summer Peak	2028 Summer Peak	2035 Summer Peak	2025 Spring Off-Peak	2028 Spring Off-Peak	2028 SP High CEC Forecast	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	
GRAYSFLAT 60kV	P1-1:A3:17:_COLLINSPINE2 13.80KV GEN UNIT 1 & P1-3:A3:4:_CARIBOU 230/230KV TB 11	P3	G-1/N-1	1.02	1.02	1.02	0.78	1.02	1.02	1.02	1.02	Continue to Monitor
GANSNER 60kV	P1-1:A3:17:_COLLINSPINE2 13.80KV GEN UNIT 1 & P1-3:A3:4:_CARIBOU 230/230KV TB 11	P3	G-1/N-1	1.02	1.02	1.02	0.78	1.02	1.02	1.02	1.02	Continue to Monitor
SPANSHCK 60kV	P1-1:A3:17:_COLLINSPINE2 13.80KV GEN UNIT 1 & P1-3:A3:4:_CARIBOU 230/230KV TB 11	P3	G-1/N-1	1.02	1.02	1.02	0.78	1.02	1.02	1.02	1.02	Continue to Monitor
EST Q1 60kV	P1-1:A3:17:_COLLINSPINE2 13.80KV GEN UNIT 1 & P1-3:A3:4:_CARIBOU 230/230KV TB 11	P3	G-1/N-1	1.03	1.02	1.03	0.78	1.02	1.03	1.02	1.02	Continue to Monitor
EST QNCY 60kV	P1-1:A3:17:_COLLINSPINE2 13.80KV GEN UNIT 1 & P1-3:A3:4:_CARIBOU 230/230KV TB 11	P3	G-1/N-1	1.03	1.02	1.03	0.78	1.02	1.03	1.02	1.02	Continue to Monitor
BIG BAR 60kV	P1-1:A3:19:_SPIANDERSON2 12.50KV GEN UNIT 1 & P1-2:A3:36:_BRIDGEVILLE-COTTONWOOD 115KV [1110]	P3	G-1/N-1	0.98	1.01	0.73	0.99	0.99	0.95	0.99	1.01	Continue to Monitor
TAP 65 60kV	P1-1:A3:19:_SPIANDERSON2 12.50KV GEN UNIT 1 & P1-2:A3:36:_BRIDGEVILLE-COTTONWOOD 115KV [1110]	P3	G-1/N-1	1.00	1.00	0.82	0.98	1.00	0.97	1.00	1.00	Continue to Monitor
TRINITY 60kV	P1-1:A3:19:_SPIANDERSON2 12.50KV GEN UNIT 1 & P1-2:A3:36:_BRIDGEVILLE-COTTONWOOD 115KV [1110]	P3	G-1/N-1	1.00	1.00	0.82	0.98	1.01	0.97	1.00	1.00	Continue to Monitor
ELIZ TWN 60kV	P1-1:A3:17:_COLLINSPINE2 13.80KV GEN UNIT 1 & P1-3:A3:4:_CARIBOU 230/230KV TB 11	P3	G-1/N-1	1.03	1.02	1.03	0.78	1.02	1.03	1.02	1.02	Continue to Monitor
CARIBOU 60kV	P1-1:A3:17:_COLLINSPINE2 13.80KV GEN UNIT 1 & P1-3:A3:4:_CARIBOU 230/230KV TB 11	P3	G-1/N-1	1.02	1.02	1.02	0.78	1.02	1.02	1.02	1.02	Continue to Monitor
WESTWOOD 60kV	P1-1:A3:17:_COLLINSPINE2 13.80KV GEN UNIT 1 & P1-3:A3:41:_CARIBOU 115/11.5KV TB 1	P3	G-1/N-1	0.94	0.89	0.94	0.92	0.96	0.94	0.96	0.89	Evaluate Caribou RAS
ULTR WSD 60kV	P1-1:A3:17:_COLLINSPINE2 13.80KV GEN UNIT 1 & P1-3:A3:41:_CARIBOU 115/11.5KV TB 1	P3	G-1/N-1	0.94	0.90	0.94	0.92	0.97	0.94	0.97	0.90	Evaluate Caribou RAS
CHESTER 60kV	P1-1:A3:17:_COLLINSPINE2 13.80KV GEN UNIT 1 & P1-3:A3:41:_CARIBOU 115/11.5KV TB 1	P3	G-1/N-1	0.89	0.87	0.89	0.89	0.95	0.89	0.95	0.87	Evaluate Caribou RAS
RBPPCPH 60kV	P1-1:A3:27:_PIT 4 13.80KV GEN UNIT 1 & P1-3:A3:13:_COTWD_E 230/60KV TB 3	P3	G-1/N-1	1.00	1.01	0.89	1.04	0.91	0.99	0.91	1.01	Continue to Monitor
RBPPCPH 60kV	P1-1:A3:28:_PIT 4 13.80KV GEN UNIT 2 & P1-3:A3:13:_COTWD_E 230/60KV TB 3	P3	G-1/N-1	1.00	1.01	0.89	1.04	0.91	0.99	0.91	1.01	Continue to Monitor

Substation	Contingency (All and Worst P6)	Category	Category Description	Voltage PU (Baseline Scenarios)					Voltage PU (Sensitivity Scenarios)			Project & Potential Mitigation Solutions
				2025 Summer Peak	2028 Summer Peak	2035 Summer Peak	2025 Spring Off-Peak	2028 Spring Off-Peak	2028 SP High CEC Forecast	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	
RBPPCPH 60kV	P1-1:A3:29:_JBBLACK1 13.80KV GEN UNIT 1 & P1-3:A3:13:_COTWD_E 230/60KV TB 3	P3	G-1/N-1	1.00	1.02	0.89	1.04	0.91	0.99	0.91	1.01	Continue to Monitor
RBPPCPH 60kV	P1-1:A3:2:_RBPPCPH 13.80KV GEN UNIT 16 & P1-3:A3:12:_COTWD_E2 230/60KV TB 2	P3	G-1/N-1	1.00	1.01	0.89	1.04	0.89	0.99	0.91	1.01	Continue to Monitor
RBPPCPH 60kV	P1-1:A3:2:_RBPPCPH 13.80KV GEN UNIT 16 & P1-3:A3:13:_COTWD_E 230/60KV TB 3	P3	G-1/N-1	1.00	1.01	0.90	1.04	0.89	0.99	0.91	1.01	Continue to Monitor
RBPPCPH 60kV	P1-1:A3:2:_RBPPCPH 13.80KV GEN UNIT 16 & P1-3:A3:1:_ROUND MT 500/230KV TB 1	P3	G-1/N-1	1.00	1.01	0.90	1.04	0.89	0.99	0.91	1.01	Continue to Monitor
RBPPCPH 60kV	P1-1:A3:30:_JBBLACK2 13.80KV GEN UNIT 1 & P1-3:A3:13:_COTWD_E 230/60KV TB 3	P3	G-1/N-1	1.00	1.02	0.89	1.04	0.91	0.99	0.91	1.01	Continue to Monitor
RBPPCPH 60kV	P1-1:A3:62:_VOLTA1-2 9.11KV GEN UNIT 1 & P1-3:A3:13:_COTWD_E 230/60KV TB 3	P3	G-1/N-1	1.00	1.01	0.89	1.04	0.91	0.99	0.91	1.01	Continue to Monitor
RBPPCPH 60kV	P1-1:A3:64:_SOUTH G 4.16KV GEN UNIT 1 & P1-3:A3:13:_COTWD_E 230/60KV TB 3	P3	G-1/N-1	1.00	1.01	0.89	1.04	0.91	0.99	0.91	1.01	Continue to Monitor
RBPPCPH 60kV	P1-1:A3:75:_OLSENHYDRO 4.16KV GEN UNIT 1 & P1-3:A3:13:_COTWD_E 230/60KV TB 3	P3	G-1/N-1	1.00	1.01	0.89	1.04	0.91	0.99	0.91	1.01	Continue to Monitor
RBPPCPH 60kV	P1-1:A3:76:_TKO 9.11KV GEN UNIT 3 & P1-3:A3:13:_COTWD_E 230/60KV TB 3	P3	G-1/N-1	1.00	1.01	0.89	1.04	0.91	0.99	0.91	1.01	Continue to Monitor
COLLINSPINE 60kV	P1-1:A3:17:_COLLINSPINE2 13.80KV GEN UNIT 1 & P1-3:A3:41:_CARIBOU 115/11.5KV TB 1	P3	G-1/N-1	0.89	0.86	0.88	0.89	0.95	0.88	0.95	0.86	Evaluate Caribou RAS
WESTWOOD 60kV	P1-1:A3:17:_COLLINSPINE2 13.80KV GEN UNIT 1 & P1-3:A3:5:_CARIBOU 230/13.8KV TB 1	P3	G-1/N-1	0.94	0.90	0.94	0.93	0.97	0.94	0.97	0.90	Evaluate Caribou RAS
CHESTER 60kV	P1-1:A3:17:_COLLINSPINE2 13.80KV GEN UNIT 1 & P1-3:A3:5:_CARIBOU 230/13.8KV TB 1	P3	G-1/N-1	0.90	0.87	0.89	0.89	0.95	0.90	0.95	0.87	Evaluate Caribou RAS
CR CANAL 60kV	P1-1:A3:27:_PIT 4 13.80KV GEN UNIT 1 & P1-3:A3:13:_COTWD_E 230/60KV TB 3	P3	G-1/N-1	1.00	1.01	0.89	1.04	0.90	0.99	0.90	1.01	Continue to Monitor
CR CANAL 60kV	P1-1:A3:28:_PIT 4 13.80KV GEN UNIT 2 & P1-3:A3:13:_COTWD_E 230/60KV TB 3	P3	G-1/N-1	1.00	1.01	0.89	1.04	0.90	0.99	0.90	1.01	Continue to Monitor
CR CANAL 60kV	P1-1:A3:29:_JBBLACK1 13.80KV GEN UNIT 1 & P1-3:A3:13:_COTWD_E 230/60KV TB 3	P3	G-1/N-1	1.00	1.01	0.89	1.04	0.90	0.99	0.90	1.01	Continue to Monitor
CR CANAL 60kV	P1-1:A3:2:_RBPPCPH 13.80KV GEN UNIT 16 & P1-3:A3:12:_COTWD_E2 230/60KV TB 2	P3	G-1/N-1	1.00	1.01	0.89	1.04	0.89	0.99	0.90	1.01	Continue to Monitor

Substation	Contingency (All and Worst P6)	Category	Category Description	Voltage PU (Baseline Scenarios)					Voltage PU (Sensitivity Scenarios)			Project & Potential Mitigation Solutions
				2025 Summer Peak	2028 Summer Peak	2035 Summer Peak	2025 Spring Off-Peak	2028 Spring Off-Peak	2028 SP High CEC Forecast	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	
CR CANAL 60kV	P1-1:A3:2:_RBPPCPH 13.80KV GEN UNIT 16 & P1-3:A3:13:_COTWD_E 230/60KV TB 3	P3	G-1/N-1	1.00	1.01	0.90	1.04	0.88	0.99	0.90	1.01	Continue to Monitor
CR CANAL 60kV	P1-1:A3:2:_RBPPCPH 13.80KV GEN UNIT 16 & P1-3:A3:1:_ROUND MT 500/230KV TB 1	P3	G-1/N-1	1.00	1.01	0.89	1.04	0.89	0.99	0.91	1.01	Continue to Monitor
CR CANAL 60kV	P1-1:A3:30:_JBBLACK2 13.80KV GEN UNIT 1 & P1-3:A3:13:_COTWD_E 230/60KV TB 3	P3	G-1/N-1	1.00	1.01	0.89	1.04	0.90	0.99	0.90	1.01	Continue to Monitor
CR CANAL 60kV	P1-1:A3:62:_VOLTA1-2 9.11KV GEN UNIT 1 & P1-3:A3:13:_COTWD_E 230/60KV TB 3	P3	G-1/N-1	1.00	1.01	0.89	1.04	0.90	0.99	0.90	1.01	Continue to Monitor
CR CANAL 60kV	P1-1:A3:64:_SOUTH G 4.16KV GEN UNIT 1 & P1-3:A3:13:_COTWD_E 230/60KV TB 3	P3	G-1/N-1	1.00	1.01	0.89	1.04	0.90	0.99	0.90	1.01	Continue to Monitor
CR CANAL 60kV	P1-1:A3:75:_OLSENHYDRO 4.16KV GEN UNIT 1 & P1-3:A3:13:_COTWD_E 230/60KV TB 3	P3	G-1/N-1	1.00	1.01	0.89	1.04	0.90	0.99	0.90	1.01	Continue to Monitor
CR CANAL 60kV	P1-1:A3:76:_TKO 9.11KV GEN UNIT 3 & P1-3:A3:13:_COTWD_E 230/60KV TB 3	P3	G-1/N-1	1.00	1.01	0.89	1.04	0.90	0.99	0.90	1.01	Continue to Monitor
COLLINSPINE 60kV	P1-1:A3:17:_COLLINSPINE2 13.80KV GEN UNIT 1 & P1-3:A3:5:_CARIBOU 230/13.8KV TB 1	P3	G-1/N-1	0.89	0.87	0.89	0.93	0.95	0.89	0.95	0.87	Evaluate Caribou RAS
TYLER 60kV	P1-1:A3:27:_PIT 4 13.80KV GEN UNIT 1 & P1-3:A3:13:_COTWD_E 230/60KV TB 3	P3	G-1/N-1	1.00	1.01	0.89	1.05	0.90	0.99	0.90	1.01	Continue to Monitor
TYLER 60kV	P1-1:A3:28:_PIT 4 13.80KV GEN UNIT 2 & P1-3:A3:13:_COTWD_E 230/60KV TB 3	P3	G-1/N-1	1.00	1.01	0.89	1.05	0.90	0.99	0.90	1.01	Continue to Monitor
TYLER 60kV	P1-1:A3:29:_JBBLACK1 13.80KV GEN UNIT 1 & P1-3:A3:13:_COTWD_E 230/60KV TB 3	P3	G-1/N-1	1.00	1.01	0.89	1.05	0.90	0.99	0.90	1.01	Continue to Monitor
TYLER 60kV	P1-1:A3:2:_RBPPCPH 13.80KV GEN UNIT 16 & P1-3:A3:12:_COTWD_E2 230/60KV TB 2	P3	G-1/N-1	1.00	1.01	0.89	1.04	0.89	0.99	0.90	1.01	Continue to Monitor
TYLER 60kV	P1-1:A3:2:_RBPPCPH 13.80KV GEN UNIT 16 & P1-3:A3:13:_COTWD_E 230/60KV TB 3	P3	G-1/N-1	1.00	1.01	0.90	1.04	0.89	0.99	0.90	1.01	Continue to Monitor
TYLER 60kV	P1-1:A3:2:_RBPPCPH 13.80KV GEN UNIT 16 & P1-3:A3:1:_ROUND MT 500/230KV TB 1	P3	G-1/N-1	1.00	1.01	0.89	1.04	0.89	0.99	0.91	1.01	Continue to Monitor
TYLER 60kV	P1-1:A3:30:_JBBLACK2 13.80KV GEN UNIT 1 & P1-3:A3:13:_COTWD_E 230/60KV TB 3	P3	G-1/N-1	1.00	1.01	0.89	1.05	0.90	0.99	0.90	1.01	Continue to Monitor
TYLER 60kV	P1-1:A3:62:_VOLTA1-2 9.11KV GEN UNIT 1 & P1-3:A3:13:_COTWD_E 230/60KV TB 3	P3	G-1/N-1	1.00	1.01	0.89	1.05	0.90	0.99	0.90	1.01	Continue to Monitor

Substation	Contingency (All and Worst P6)	Category	Category Description	Voltage PU (Baseline Scenarios)					Voltage PU (Sensitivity Scenarios)			Project & Potential Mitigation Solutions
				2025 Summer Peak	2028 Summer Peak	2035 Summer Peak	2025 Spring Off-Peak	2028 Spring Off-Peak	2028 SP High CEC Forecast	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	
TYLER 60kV	P1-1:A3:64:_SOUTH G 4.16KV GEN UNIT 1 & P1-3:A3:13:_COTWD_E 230/60KV TB 3	P3	G-1/N-1	1.00	1.01	0.89	1.05	0.90	0.99	0.90	1.01	Continue to Monitor
TYLER 60kV	P1-1:A3:75:_OLSENHYDRO 4.16KV GEN UNIT 1 & P1-3:A3:13:_COTWD_E 230/60KV TB 3	P3	G-1/N-1	1.00	1.01	0.89	1.05	0.90	0.99	0.90	1.01	Continue to Monitor
TYLER 60kV	P1-1:A3:76:_TKO 9.11KV GEN UNIT 3 & P1-3:A3:13:_COTWD_E 230/60KV TB 3	P3	G-1/N-1	1.00	1.01	0.89	1.05	0.90	0.99	0.90	1.01	Continue to Monitor
CHESTER 60kV	P1-1:A3:17:_COLLINSPINE2 13.80KV GEN UNIT 1 & P1-3:A3:51:_CARIBOU 60/11.5KV TB 1	P3	G-1/N-1	0.90	0.87	0.89	0.89	0.95	0.89	0.95	0.87	Evaluate Caribou RAS
COLLINSPINE 60kV	P1-1:A3:17:_COLLINSPINE2 13.80KV GEN UNIT 1 & P1-3:A3:51:_CARIBOU 60/11.5KV TB 1	P3	G-1/N-1	0.89	0.87	0.89	0.89	0.95	0.89	0.95	0.87	Evaluate Caribou RAS
TRINITY 115kV	P1-1:A3:19:_SPIANDERSON2 12.50KV GEN UNIT 1 & P1-2:A3:36:_BRIDGEVILLE-COTTONWOOD 115KV [1110]	P3	G-1/N-1	1.00	1.00	0.82	0.98	1.01	0.98	1.00	1.00	Continue to Monitor
COLLINSPINE 60kV	P1-1:A3:54:_CRBU 1 11.50KV GEN UNIT 1 & P1-1:A3:87:_SPIQUINCY 13.80KV GEN UNIT 1	P3	G-1/N-1	0.93	0.89	0.93	0.91	0.95	0.93	0.95	0.90	Evaluate Caribou RAS
WESTWOOD 60kV	P1-1:A3:54:_CRBU 1 11.50KV GEN UNIT 1 & P1-3:A3:4:_CARIBOU 230/230KV TB 11	P3	G-1/N-1	0.84	0.60	1.00	0.93	0.89	1.00	0.89	0.99	Evaluate Caribou RAS
ULTR WSD 60kV	P1-1:A3:54:_CRBU 1 11.50KV GEN UNIT 1 & P1-3:A3:4:_CARIBOU 230/230KV TB 11	P3	G-1/N-1	0.84	0.59	1.00	0.93	0.89	1.00	0.89	1.00	Evaluate Caribou RAS
CHESTER 60kV	P1-1:A3:54:_CRBU 1 11.50KV GEN UNIT 1 & P1-3:A3:4:_CARIBOU 230/230KV TB 11	P3	G-1/N-1	0.81	0.56	0.89	0.91	0.86	0.89	0.86	0.98	Evaluate Caribou RAS
HMLTN BR 60kV	P1-1:A3:54:_CRBU 1 11.50KV GEN UNIT 1 & P1-3:A3:4:_CARIBOU 230/230KV TB 11	P3	G-1/N-1	0.83	0.59	1.01	0.93	0.88	1.01	0.88	1.00	Evaluate Caribou RAS
COLLINSPINE 60kV	P1-1:A3:54:_CRBU 1 11.50KV GEN UNIT 1 & P1-3:A3:4:_CARIBOU 230/230KV TB 11	P3	G-1/N-1	0.81	0.56	0.89	0.91	0.86	0.89	0.86	0.98	Evaluate Caribou RAS
BIG MDWS 60kV	P1-1:A3:54:_CRBU 1 11.50KV GEN UNIT 1 & P1-3:A3:4:_CARIBOU 230/230KV TB 11	P3	G-1/N-1	0.82	0.58	1.01	0.93	0.88	1.01	0.88	1.01	Evaluate Caribou RAS
GRAYSFLAT 60kV	P1-1:A3:54:_CRBU 1 11.50KV GEN UNIT 1 & P1-3:A3:4:_CARIBOU 230/230KV TB 11	P3	G-1/N-1	0.82	0.57	0.90	0.93	0.87	0.90	0.87	1.02	Evaluate Caribou RAS
GANSNER 60kV	P1-1:A3:54:_CRBU 1 11.50KV GEN UNIT 1 & P1-3:A3:4:_CARIBOU 230/230KV TB 11	P3	G-1/N-1	0.81	0.56	0.90	0.93	0.87	0.90	0.87	1.02	Evaluate Caribou RAS
SPANSHCK 60kV	P1-1:A3:54:_CRBU 1 11.50KV GEN UNIT 1 & P1-3:A3:4:_CARIBOU 230/230KV TB 11	P3	G-1/N-1	0.82	0.56	0.90	0.93	0.87	0.90	0.87	1.02	Evaluate Caribou RAS

Substation	Contingency (All and Worst P6)	Category	Category Description	Voltage PU (Baseline Scenarios)					Voltage PU (Sensitivity Scenarios)			Project & Potential Mitigation Solutions
				2025 Summer Peak	2028 Summer Peak	2035 Summer Peak	2025 Spring Off-Peak	2028 Spring Off-Peak	2028 SP High CEC Forecast	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	
EST Q1 60kV	P1-1:A3:54:_CRBU 1 11.50KV GEN UNIT 1 & P1-3:A3:4:_CARIBOU 230/230KV TB 11	P3	G-1/N-1	0.82	0.57	1.03	0.93	0.87	1.03	0.87	1.02	Evaluate Caribou RAS
EST QNCY 60kV	P1-1:A3:54:_CRBU 1 11.50KV GEN UNIT 1 & P1-3:A3:4:_CARIBOU 230/230KV TB 11	P3	G-1/N-1	0.82	0.57	1.03	0.93	0.87	1.03	0.87	1.02	Evaluate Caribou RAS
ELIZ TWN 60kV	P1-1:A3:54:_CRBU 1 11.50KV GEN UNIT 1 & P1-3:A3:4:_CARIBOU 230/230KV TB 11	P3	G-1/N-1	0.82	0.57	1.03	0.93	0.87	1.03	0.87	1.02	Evaluate Caribou RAS
CARIBOU 60kV	P1-1:A3:54:_CRBU 1 11.50KV GEN UNIT 1 & P1-3:A3:4:_CARIBOU 230/230KV TB 11	P3	G-1/N-1	0.82	0.57	1.02	0.93	0.87	1.02	0.87	1.02	Evaluate Caribou RAS
WESTWOOD 60kV	P1-1:A3:54:_CRBU 1 11.50KV GEN UNIT 1 & P1-3:A3:41:_CARIBOU 115/11.5KV TB 1	P3	G-1/N-1	0.94	0.90	0.94	0.94	0.96	0.94	0.96	0.91	Evaluate Caribou RAS
ULTR WSD 60kV	P1-1:A3:54:_CRBU 1 11.50KV GEN UNIT 1 & P1-3:A3:41:_CARIBOU 115/11.5KV TB 1	P3	G-1/N-1	0.94	0.90	0.94	0.94	0.97	0.94	0.97	0.92	Evaluate Caribou RAS
CHESTER 60kV	P1-1:A3:54:_CRBU 1 11.50KV GEN UNIT 1 & P1-3:A3:41:_CARIBOU 115/11.5KV TB 1	P3	G-1/N-1	0.93	0.89	0.93	0.94	0.95	0.93	0.95	0.91	Evaluate Caribou RAS
COLLINSPINE 60kV	P1-1:A3:54:_CRBU 1 11.50KV GEN UNIT 1 & P1-3:A3:41:_CARIBOU 115/11.5KV TB 1	P3	G-1/N-1	0.93	0.89	0.93	0.93	0.95	0.93	0.95	0.91	Evaluate Caribou RAS
MTN GATE 60kV	P1-1:A3:62:_VOLTA1-2 9.11KV GEN UNIT 1 & P1-3:A3:37:_CASCADE 115/60KV TB 1	P3	G-1/N-1	0.92	0.90	0.94	0.98	0.96	0.94	0.96	0.90	Operating Solution
ANTLER 60kV	P1-1:A3:62:_VOLTA1-2 9.11KV GEN UNIT 1 & P1-3:A3:37:_CASCADE 115/60KV TB 1	P3	G-1/N-1	0.91	0.89	0.93	0.98	0.96	0.93	0.96	0.89	Operating Solution
PPL 60kV	P1-1:A3:62:_VOLTA1-2 9.11KV GEN UNIT 1 & P1-3:A3:37:_CASCADE 115/60KV TB 1	P3	G-1/N-1	0.91	0.89	0.93	0.98	0.96	0.94	0.96	0.89	Operating Solution
VINA 60kV	P1-1:A3:64:_SOUTH G 4.16KV GEN UNIT 1 & P1-2:A3:78:_COTTONWOOD-RED BLUFF 60KV [6660] MOAS OPENED ON RED B JT_RED BLFF	P3	G-1/N-1	0.87	0.85	0.96	1.03	0.89	0.97	0.89	0.86	Evaluate Caribou RAS
MTN GATE 60kV	P1-1:A3:75:_OLSENHYDRO 4.16KV GEN UNIT 1 & P1-3:A3:37:_CASCADE 115/60KV TB 1	P3	G-1/N-1	0.92	0.90	0.94	0.98	0.96	0.94	0.96	0.90	Operating Solution
ANTLER 60kV	P1-1:A3:75:_OLSENHYDRO 4.16KV GEN UNIT 1 & P1-3:A3:37:_CASCADE 115/60KV TB 1	P3	G-1/N-1	0.91	0.89	0.93	0.98	0.96	0.93	0.96	0.89	Operating Solution
PPL 60kV	P1-1:A3:75:_OLSENHYDRO 4.16KV GEN UNIT 1 & P1-3:A3:37:_CASCADE 115/60KV TB 1	P3	G-1/N-1	0.91	0.89	0.93	0.98	0.96	0.94	0.96	0.89	Operating Solution
MTN GATE 60kV	P1-1:A3:76:_TKO 9.11KV GEN UNIT 3 & P1-3:A3:37:_CASCADE 115/60KV TB 1	P3	G-1/N-1	0.92	0.90	0.94	0.98	0.96	0.94	0.96	0.90	Operating Solution

Substation	Contingency (All and Worst P6)	Category	Category Description	Voltage PU (Baseline Scenarios)					Voltage PU (Sensitivity Scenarios)			Project & Potential Mitigation Solutions
				2025 Summer Peak	2028 Summer Peak	2035 Summer Peak	2025 Spring Off-Peak	2028 Spring Off-Peak	2028 SP High CEC Forecast	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	
ANTLER 60kV	P1-1:A3:76:_TKO 9.11KV GEN UNIT 3 & P1-3:A3:37:_CASCADE 115/60KV TB 1	P3	G-1/N-1	0.91	0.89	0.93	0.98	0.96	0.93	0.96	0.89	Operating Solution
PPL 60kV	P1-1:A3:76:_TKO 9.11KV GEN UNIT 3 & P1-3:A3:37:_CASCADE 115/60KV TB 1	P3	G-1/N-1	0.91	0.89	0.93	0.98	0.96	0.94	0.96	0.89	Operating Solution
CARIBOU 230kV	P5-5:A3:7:_TABLE MTN 230KV BUS SECTION D/E (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	0.57	NConv	0.70	0.81	0.68	0.76	0.68	NConv	Install redundant relay
CARIBOU 115kV	P5-5:A3:7:_TABLE MTN 230KV BUS SECTION D/E (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	0.57	NConv	0.70	0.81	0.68	0.76	0.68	NConv	Install redundant relay
WESTWOOD 60kV	P5-5:A3:2:_CARIBOU 230 KV BUS (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	0.59	0.54	0.71	0.78	0.70	0.72	0.70	0.54	Install redundant relay
WESTWOOD 60kV	P5-5:A3:7:_TABLE MTN 230KV BUS SECTION D/E (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	0.59	NConv	0.72	0.81	0.70	0.77	0.70	NConv	Install redundant relay
ULTR WSD 60kV	P5-5:A3:2:_CARIBOU 230 KV BUS (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	0.59	0.54	0.71	0.78	0.70	0.71	0.70	0.54	Install redundant relay
ULTR WSD 60kV	P5-5:A3:7:_TABLE MTN 230KV BUS SECTION D/E (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	0.59	NConv	0.72	0.81	0.70	0.77	0.70	NConv	Install redundant relay
CHESTER 60kV	P5-5:A3:2:_CARIBOU 230 KV BUS (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	0.52	0.47	0.63	0.72	0.61	0.64	0.61	0.47	Install redundant relay
CHESTER 60kV	P5-5:A3:7:_TABLE MTN 230KV BUS SECTION D/E (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	0.52	NConv	0.64	0.75	0.61	0.70	0.61	NConv	Install redundant relay
HMLTN BR 60kV	P5-5:A3:2:_CARIBOU 230 KV BUS (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	0.57	0.52	0.70	0.77	0.68	0.70	0.68	0.52	Install redundant relay
HMLTN BR 60kV	P5-5:A3:7:_TABLE MTN 230KV BUS SECTION D/E (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	0.57	NConv	0.70	0.80	0.68	0.75	0.68	NConv	Install redundant relay
COLLINSPINE 60kV	P5-5:A3:2:_CARIBOU 230 KV BUS (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	0.51	0.47	0.63	0.72	0.61	0.63	0.61	0.47	Install redundant relay
COLLINSPINE 60kV	P5-5:A3:7:_TABLE MTN 230KV BUS SECTION D/E (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	0.51	NConv	0.63	0.75	0.61	0.69	0.61	NConv	Install redundant relay
BIG MDWS 60kV	P5-5:A3:2:_CARIBOU 230 KV BUS (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	0.56	0.51	0.69	0.78	0.67	0.69	0.67	0.51	Install redundant relay
BIG MDWS 60kV	P5-5:A3:7:_TABLE MTN 230KV BUS SECTION D/E (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	0.56	NConv	0.69	0.80	0.67	0.75	0.67	NConv	Install redundant relay

Substation	Contingency (All and Worst P6)	Category	Category Description	Voltage PU (Baseline Scenarios)					Voltage PU (Sensitivity Scenarios)			Project & Potential Mitigation Solutions
				2025 Summer Peak	2028 Summer Peak	2035 Summer Peak	2025 Spring Off-Peak	2028 Spring Off-Peak	2028 SP High CEC Forecast	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	
GRAYSFLAT 60kV	P5-5:A3:2:_CARIBOU 230 KV BUS (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	0.55	0.51	0.68	0.78	0.67	0.69	0.67	0.51	Install redundant relay
GRAYSFLAT 60kV	P5-5:A3:7:_TABLE MTN 230KV BUS SECTION D/E (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	0.55	NConv	0.69	0.80	0.66	0.74	0.66	NConv	Install redundant relay
GANSNER 60kV	P5-5:A3:2:_CARIBOU 230 KV BUS (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	0.55	0.50	0.68	0.78	0.66	0.68	0.66	0.50	Install redundant relay
GANSNER 60kV	P5-5:A3:7:_TABLE MTN 230KV BUS SECTION D/E (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	0.55	NConv	0.68	0.80	0.66	0.74	0.66	NConv	Install redundant relay
SPANSHCK 60kV	P5-5:A3:2:_CARIBOU 230 KV BUS (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	0.55	0.50	0.68	0.78	0.66	0.69	0.66	0.50	Install redundant relay
SPANSHCK 60kV	P5-5:A3:7:_TABLE MTN 230KV BUS SECTION D/E (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	0.55	NConv	0.69	0.80	0.66	0.74	0.66	NConv	Install redundant relay
EST Q1 60kV	P5-5:A3:2:_CARIBOU 230 KV BUS (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	0.56	0.51	0.69	0.78	0.66	0.69	0.66	0.51	Install redundant relay
EST Q1 60kV	P5-5:A3:7:_TABLE MTN 230KV BUS SECTION D/E (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	0.56	NConv	0.69	0.80	0.66	0.75	0.66	NConv	Install redundant relay
EST QNCY 60kV	P5-5:A3:2:_CARIBOU 230 KV BUS (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	0.56	0.51	0.69	0.78	0.66	0.69	0.66	0.51	Install redundant relay
EST QNCY 60kV	P5-5:A3:7:_TABLE MTN 230KV BUS SECTION D/E (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	0.56	NConv	0.69	0.80	0.66	0.75	0.66	NConv	Install redundant relay
ELIZ TWN 60kV	P5-5:A3:2:_CARIBOU 230 KV BUS (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	0.56	0.51	0.69	0.78	0.66	0.69	0.66	0.51	Install redundant relay
ELIZ TWN 60kV	P5-5:A3:7:_TABLE MTN 230KV BUS SECTION D/E (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	0.56	NConv	0.69	0.80	0.66	0.75	0.66	NConv	Install redundant relay
CARIBOU 60kV	P5-5:A3:2:_CARIBOU 230 KV BUS (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	0.56	0.51	0.69	0.78	0.67	0.69	0.67	0.51	Install redundant relay
CARIBOU 60kV	P5-5:A3:7:_TABLE MTN 230KV BUS SECTION D/E (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	0.56	NConv	0.69	0.80	0.67	0.75	0.67	NConv	Install redundant relay
SYCAMORE 115kV	P7-1:A3:4_Sycamore Creek-Notre Dame-Table Mountain and Table Mountain-Butte No.2 115 kV Lines	P7	DCTL	0.91	0.89	0.96	1.06	0.97	0.96	0.97	0.89	Install Table Mountain 115 kV RAS

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	2025 Spring Off-Peak	2028 Spring Off-Peak	2028 SP High CEC Forecast	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	
BIG MDWS 60kV	P1-2:A3:20:_CARIBOU-TABLE MTN 230KV [4440]	P1	N-1	41	45	28	21	31	27	31	45	Evaluate Caribou RAS
CARIBOU 60kV	P1-2:A3:20:_CARIBOU-TABLE MTN 230KV [4440]	P1	N-1	132	146	93	73	101	92	101	146	Evaluate Caribou RAS
CARIBOU 115kV	P1-2:A3:20:_CARIBOU-TABLE MTN 230KV [4440]	P1	N-1	44	49	31	24	34	31	34	49	Evaluate Caribou RAS
CARIBOU 230kV	P1-2:A3:20:_CARIBOU-TABLE MTN 230KV [4440]	P1	N-1	45	50	32	26	34	32	34	50	Evaluate Caribou RAS
CHESTER 60kV	P1-2:A3:20:_CARIBOU-TABLE MTN 230KV [4440]	P1	N-1	42	45	30	24	34	30	34	45	Evaluate Caribou RAS
COLLINSPINE 60kV	P1-2:A3:20:_CARIBOU-TABLE MTN 230KV [4440]	P1	N-1	42	45	31	24	34	31	34	45	Evaluate Caribou RAS
ELIZ TWN 60kV	P1-2:A3:20:_CARIBOU-TABLE MTN 230KV [4440]	P1	N-1	43	47	25	24	33	25	33	47	Evaluate Caribou RAS
EST Q1 60kV	P1-2:A3:20:_CARIBOU-TABLE MTN 230KV [4440]	P1	N-1	43	47	25	24	33	24	33	47	Evaluate Caribou RAS
EST QNCY 60kV	P1-2:A3:20:_CARIBOU-TABLE MTN 230KV [4440]	P1	N-1	43	47	25	24	33	24	33	47	Evaluate Caribou RAS
GANSNER 60kV	P1-2:A3:20:_CARIBOU-TABLE MTN 230KV [4440]	P1	N-1	43	48	30	23	33	29	33	48	Evaluate Caribou RAS
GRAYSFLAT 60kV	P1-2:A3:20:_CARIBOU-TABLE MTN 230KV [4440]	P1	N-1	43	48	30	23	33	29	33	48	Evaluate Caribou RAS
HMLTN BR 60kV	P1-2:A3:20:_CARIBOU-TABLE MTN 230KV [4440]	P1	N-1	38	42	26	20	29	26	29	42	Evaluate Caribou RAS
SPANSHCK 60kV	P1-2:A3:20:_CARIBOU-TABLE MTN 230KV [4440]	P1	N-1	43	48	30	23	33	29	33	48	Evaluate Caribou RAS
ULTR WSD 60kV	P1-2:A3:20:_CARIBOU-TABLE MTN 230KV [4440]	P1	N-1	36	39	24	18	27	23	27	39	Evaluate Caribou RAS
WESTWOOD 60kV	P1-2:A3:20:_CARIBOU-TABLE MTN 230KV [4440]	P1	N-1	36	39	23	17	27	23	27	39	Evaluate Caribou RAS
BIG BAR 60kV	P1-2:A3:36:_BRIDGEVILLE-COTTONWOOD 115KV [1110]	P1	N-1	<8	<8	28	<8	<8	<8	<8	<8	Continue to Monitor
FRNCHGLH 60kV	P1-2:A3:36:_BRIDGEVILLE-COTTONWOOD 115KV [1110]	P1	N-1	<8	<8	11	<8	<8	<8	<8	<8	Continue to Monitor
GROUSCRK 60kV	P1-2:A3:36:_BRIDGEVILLE-COTTONWOOD 115KV [1110]	P1	N-1	<8	<8	35	<8	<8	<8	<8	<8	Continue to Monitor
HYAMPOM 60kV	P1-2:A3:36:_BRIDGEVILLE-COTTONWOOD 115KV [1110]	P1	N-1	<8	<8	35	<8	<8	<8	<8	<8	Continue to Monitor
HYMPOMJT 60kV	P1-2:A3:36:_BRIDGEVILLE-COTTONWOOD 115KV [1110]	P1	N-1	<8	<8	35	<8	<8	<8	<8	<8	Continue to Monitor
TAP 65 60kV	P1-2:A3:36:_BRIDGEVILLE-COTTONWOOD 115KV [1110]	P1	N-1	<8	<8	19	<8	<8	<8	<8	<8	Continue to Monitor
TRINITY 60kV	P1-2:A3:36:_BRIDGEVILLE-COTTONWOOD 115KV [1110]	P1	N-1	<8	<8	37	<8	<8	<8	<8	<8	Continue to Monitor
TRINITY 115kV	P1-2:A3:36:_BRIDGEVILLE-COTTONWOOD 115KV [1110]	P1	N-1	<8	<8	18	<8	<8	<8	<8	<8	Continue to Monitor
STLLWATR 60kV	P1-2:A3:68:_KESWICK-CASCADE 60KV [7260] MOAS OPENED ON CASCADE_STLLWATR	P1	N-1	<8	11	<8	<8	<8	<8	<8	11	Disable automatics at Stillwater

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	2025 Spring Off-Peak	2028 Spring Off-Peak	2028 SP High CEC Forecast	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	
ANTLER 60kV	P1-3:A3:37:_CASCADE 115/60KV TB 1	P1	N-1	<8	8	<8	<8	<8	<8	<8	8	Continue to Monitor
MTN GATE 60kV	P1-3:A3:37:_CASCADE 115/60KV TB 1	P1	N-1	<8	<8	<8	<8	<8	<8	<8	8	Continue to Monitor
PPL 60kV	P1-3:A3:37:_CASCADE 115/60KV TB 1	P1	N-1	<8	8	<8	<8	<8	<8	<8	8	Continue to Monitor
CR CANAL 60kV	P1-3:A3:48:_RBPPCPH 60/13.8KV TB 1	P1	N-1	13	<8	<8	<8	<8	<8	<8	<8	Project: Tyler 60 kV Shunt Capacitor
RBPPCPH 60kV	P1-3:A3:48:_RBPPCPH 60/13.8KV TB 1	P1	N-1	13	<8	<8	<8	<8	<8	<8	<8	Project: Tyler 60 kV Shunt Capacitor
RBPPJCT 60kV	P1-3:A3:48:_RBPPCPH 60/13.8KV TB 1	P1	N-1	13	<8	<8	<8	<8	<8	<8	<8	Project: Tyler 60 kV Shunt Capacitor
TYLER 60kV	P1-3:A3:48:_RBPPCPH 60/13.8KV TB 1	P1	N-1	13	<8	<8	<8	<8	<8	<8	<8	Project: Tyler 60 kV Shunt Capacitor

Contingency	Category	Category Description	Transient Stability Performance					Potential Mitigation Solutions
			Baseline Scenarios			Sensitivity Scenarios		
			2025 Spring Off-Peak	2028 Summer Peak	2035 Summer Peak	2028 SP High CEC Forecast	2025 OP Sensitivity	
In accordance with TPL-001-4- Requirement R2.6, this area relies on the past studies from the 2019-20 Transmission Planning Process for transient stability studies:								
http://www.caiso.com/Documents/AppendixC-BoardApprovedt2019-2020TransmissionPlan.pdf								

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

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

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

No single source substation with more than 100 MW