

Study Area: **PG&E Central Valley**  
Thermal Overloads



Overloaded Facility	Contingency (All and Worst P6)	Category	Category Description	Loading % (Baseline Scenarios)						Loading % (Sensitivity Scenarios)			Project & Potential Mitigation Solutions
				2025 Summer Peak	2028 Summer Peak	2035 Summer Peak	2025 Spring Off-Peak	2028 Spring Off-Peak	2028 Summer-Off Peak	2028 SP High CEC Forecast	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	
Atlantic 230/60 kV Transformer No. 1	Base Case	P0	N-0	64	79	101	48	13	9	80	35	48	Continue to Monitor
ATLANTIC-PLEASANT GROVE #1 115 kV Line	RIO OSO-LINCLN-SPI-LINC 115KV [0] & ATLANTIC-PLEASANT GROVE #1 115KV [6190]	P6	N-1-1	<100	<100	105	<100	<100	<100	<100	<100	<100	Continue to Monitor
Bell - Placer 115 kV Line	P2-4:A5:1:_GOLDHILL 230KV - SECTION 2D & 1D	P2-4	Bus-Tie-Breaker	NConv	NConv	NA	NConv	60	7	NConv	155	NConv	Under Review
	P2-4:A5:2:_GOLDHILL 115KV - SECTION 1F & 2F	P2-4	Bus-Tie-Breaker	90	134	NA	73	20	14	148	55	73	Under Review
	P4-2:A5:2:_STUCK BREAKER & NO BF RELAY GOLD HILL 115KV CB 172 OR 392	P5	Non-Redundant battery supply/Relay	55	74	127	43	18	13	77	32	43	Add Redundant relay
	P7-1:A5:19_Placer-Gold Hill No. 1 115 kV Line and Placer-Gold Hill No. 2 115 kV Line	P7	DCTL	55	74	126	43	18	13	76	32	43	Continue to Monitor
BELLOTA #1 BANK	P2-3:A11:47:_BELLOTA - 2D 115KV & BELLOTA-RVRBANK-TULLOCH-MELONES LINE	P2-3	Non-Bus-Tie Breaker	52	63	65	106	40	23	37	64	106	Operation Solution
	BELLOTA 230/115KV TB 2 & BELLOTA-RVRBANK-TULLOCH-MELONES 115KV [0]	P6	N-1-1	<100	<100	<100	108	<100	<100	<100	<100	108	Continue to Monitor
BELLOTA #2 230/115KV BANK	P2-3:A11:44:_BELLOTA - 1D 115KV & GOLD HILL-BELLOTA-LOCKEFORD LINE	P2-3	Non-Bus-Tie Breaker	48	53	85	100	25	9	46	58	99	Operation Solution
	BELLOTA 230/115KV TB 1 & BELLOTA-RVRBANK-TULLOCH-MELONES 115KV [0]	P6	N-1-1	<100	<100	<100	108	<100	<100	<100	<100	108	RAS recommended in 2019-2020 TPP
BELLOTA-RIVERBANK 115 kV Line	P2-4:A11:30:_TESLA 115KV - SECTION 2D & 1D	P2-4	Bus-Tie-Breaker	NConv	NConv	NConv	45	6	160	NConv	NConv	45	Project: Tesla 115 kV Bus Reconfiguration Project
	P2-2:A11:34:_BELLOTA 115KV SECTION 2D	P2-2	Bus	20	23	39	27	101	43	24	44	30	Operation Solution
BELLOTA-RIVERBANK-MELONES SW STA 115kV Line	P2-4:A11:30:_TESLA 115KV - SECTION 2D & 1D	P2-4	Bus-Tie-Breaker	NConv	NConv	NConv	60	17	327	NConv	NConv	60	Project: Tesla 115 kV Bus Reconfiguration Project
	P2-4:A11:1:_BELLOTA 230KV - SECTION 1E & 2E	P2-4	Bus-Tie-Breaker	72	111	78	NConv	60	31	9	88	NConv	Under Review
	P2-4:A11:8:_TESLA D 230KV - SECTION 1D & 2D	P2-4	Bus-Tie-Breaker	17	12	19	28	113	38	15	23	31	RAS recommended in 2019-2020 TPP
	P2-4:A11:1:_BELLOTA 230KV - SECTION 1E & 2E	P2-4	Bus-Tie-Breaker	126	207	81	NConv	76	48	41	131	NConv	RAS recommended in 2019-2020 TPP
	P5-5A:A11:11:_TESLA 115KV BUS (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant battery supply/Relay	NConv	NConv	NConv	3	178	42	NConv	NConv	11	Add Redundant relay
	P5-5C:A11:9:_TESLA 230-115KV BATT(FAILURE OF NON-REDUNDENT BATT)	P5	Non-Redundant battery supply/Relay	NConv	NConv	NConv	17	233	79	NConv	NConv	18	Add Redundant battery
	P5-5C:A11:12:_MANTECA 115-60KV BATT(FAILURE OF NON-REDUNDENT BATT)	P5	Non-Redundant battery supply/Relay	116	96	91	108	147	138	102	118	108	Add Redundant battery
	P7-1:A11:8:_STANISLAUS-MANTECA #2 115KV [3820] & MANTECA-RIPON 115KV [0]	P7	DCTL	NA	62	48	NA	105	79	61	NA	NA	Operation Solution
	P1-2:A4:34:_BRIGHTN-W.SCRMNO 115KV [0]	P1	N-1	106	103	99	70	5	16	105	65	69	Under Review
	P2-1:A4:27:_WEST SACRAMENTO-BRIGHTON 115KV [4110] (DPWT_TP2-BRIGHTN)	P2-1	Line Section w/o Fault	105	103	99	70	9	16	105	65	69	Review Project: Vaca Dixon Area Reinforcement Project
	P5-5C:A5:1:_RIO OSO 230-115KV BATT(FAILURE OF NON-REDUNDENT BATT)	P5	Non-Redundant battery supply/Relay	157	156	161	86	30	24	155	72	86	Add Redundant battery

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				2025 Summer Peak	2028 Summer Peak	2035 Summer Peak	2025 Spring Off-Peak	2028 Spring Off-Peak	2028 Summer-Off Peak	2028 SP High CEC Forecast	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	
Brighton - Howard JCT3 115 kV Line	BRIGHTN-W.SCRMNO 115KV [0] & WOODLAND-DAVIS 115KV [4210]	P6	N-1-1	<100	<100	176	96	<100	<100	<100	111	96	Review Project: Vaca Dixon Area Reinforcement Project
	WOODLAND-DAVIS 115KV [4210] & W.SCRMNO-DAVIS 115KV [0]	P6	N-1-1	<100	<100	165	<100	<100	<100	<100	113	<100	Review Project: Vaca Dixon Area Reinforcement Project
	P7-1:A4:16_Rio Oso-Woodland #1 115 kV Line & Rio Oso-Woodland #2 115 kV Line	P7	DCTL	95	114	96	75	24	20	116	57	75	Review Project: Vaca Dixon Area Reinforcement Project
	P7-1:A5:15_Rio Oso-Woodland No. 1 115 kV Line & Rio Oso-Woodland No. 2 115 kV Line	P7	DCTL	95	114	96	75	24	20	116	57	75	Review Project: Vaca Dixon Area Reinforcement Project
	P7-1:A4:17_Rio Oso-West Sacramento 115 kV Line & West Sacramento-Brighton 115 kV Line	P7	DCTL	140	146	130	88	10	22	150	84	88	Review Project: Vaca Dixon Area Reinforcement Project
Brighton 230/115 kV Transformer No. 1	P4-2:A5:1:_STUCK BREAKER & NO BF RELAY RIO OSO 115KV CB 402 412 422 432 442 462 OR 472	P5	Non-Redundant battery supply/Relay	76	104	80	57	17	18	106	44	57	Add Redundant relay
BRIGHTON-BELOTA 230kV Line	P5-5C:A5:1:_RIO OSO 230-115KV BATT(FAILURE OF NON-REDUNDENT BATT)	P5	Non-Redundant battery supply/Relay	152	NA	NA	81	NA	NA	NA	68	81	Add Redundant battery
BRIGHTON-DAVIS 115kV Line	P2-3:A4:22:_W.SCRMNO - DE 115KV & BRIGHTN-W.SCRMNO LINE	P2-3	Non-Bus-Tie Breaker	103	107	96	65	<100	14	109	62	64	Review Project: Vaca Dixon Area Reinforcement Project
	P5-5C:A5:1:_RIO OSO 230-115KV BATT(FAILURE OF NON-REDUNDENT BATT)	P5	Non-Redundant battery supply/Relay	107	106	109	58	18	15	106	49	58	Add Redundant battery
	WOODLAND-DAVIS 115KV [4210] & BRIGHTN-W.SCRMNO 115KV [0]	P6	N-1-1	153	195	<100	<100	<100	<100	205	96	<100	Review Project: Vaca Dixon Area Reinforcement Project
	P7-1:A4:17_Rio Oso-West Sacramento 115 kV Line & West Sacramento-Brighton 115 kV Line	P7	DCTL	97	101	89	60	<100	14	103	58	59	Review Project: Vaca Dixon Area Reinforcement Project
C.COSTAPPE - BDLSWSTA 230 kV Line	P5-5C:A11:1:_TESLA 500KV BATT(FAILURE OF NON-REDUNDENT BATT)	P5	Non-Redundant battery supply/Relay	76	NConv	NConv	29	23	48	NConv	102	29	Add Redundant battery
Carbona - Carbona JC 60 kV Line	Base Case	P0	N-0	62	78	106	40	23	29	79	48	40	Continue to Monitor
	P5-5A:A11:14:_KASSON 115KV BUS (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant battery supply/Relay	91	90	169	49	23	29	91	55	49	Add Redundant relay
COLGATE-SMARTVILLE #2 60kV Line	COLGATE-SMARTVILLE #1 60KV [6510] MOAS OPENED ON COLGATE_NRRWS1TP & BELLOTA 1-25 25.00KV GEN UNIT VS	P3	G-1 / N-1	<100	<100	101	<100	<100	<100	<100	<100	<100	Continue to Monitor
Cortina - Cortina M 115 kV Line	CORTINA 230/115KV TB 4 & WADHAM 13.80KV GEN UNIT 1	P3	G-1 / N-1	96	<100	<100	100	<100	<100	<100	<100	100	Operation Solution
CURTIS-MI-WUK 115 kV	P2-4:A11:1:_BELLOTA 230KV - SECTION 1E & 2E	P2-4	Bus-Tie-Breaker	85	100	97	NConv	78	76	92	90	NConv	Continue to Monitor
Deepwater TP - Davis 115 kV Line	WOODLAND-DAVIS 115KV [4210] & BRKR SLG-HOWARDJCT3-UCD_TP2 115KV [0] MOAS OPENED ON BRKRJCT_UCD_TP2	P6	N-1-1	102	130	103	<100	<100	<100	133	<100	<100	Review Project: Vaca Dixon Area Reinforcement Project
Deepwater TP - W Sacramento 115 kV Line	WOODLAND-DAVIS 115KV [4210] & BRIGHTON-DAVIS 115KV [1140] MOAS OPENED ON HOWARDJCT3_BRKRJCT	P6	N-1-1	103	131	105	<100	<100	<100	135	<100	<100	Review Project: Vaca Dixon Area Reinforcement Project
	BRIGHTON-DAVIS 115KV [1140] MOAS OPENED ON HOWARDJCT3_BRKRJCT & WOODLAND-DAVIS 115KV [4210]	P6	N-1-1	103	129	106	<100	<100	<100	133	<100	<100	Review Project: Vaca Dixon Area Reinforcement Project

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				2025 Summer Peak	2028 Summer Peak	2035 Summer Peak	2025 Spring Off-Peak	2028 Spring Off-Peak	2028 Summer-Off Peak	2028 SP High CEC Forecast	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	
DEL MAR-ATLANTIC #2 60kV Line	Base Case	P0	N-0	63	76	113	48	25	15	77	41	48	Continue to Monitor
	P1-4:A5:1:_RIO OSO SVC	P1	N-1	55	65	101	41	22	13	67	35	41	Continue to Monitor
	P2-3:A5:10:_GOLDHILL - 1E 230KV & MIDDLE FORK-GOLD HILL LINE	P2-3	Non-Bus-Tie Breaker	NA	NA	101	NA	NA	NA	NA	NA	NA	Continue to Monitor
	P2-3:A5:5:_RIO OSO 230KV - MIDDLE BREAKER BAY 1	P2-3	Non-Bus-Tie Breaker	55	65	101	41	22	13	67	35	41	Continue to Monitor
	P2-4:A11:1:_BELLOTA 230KV - SECTION 1E & 2E	P2-4	Bus-Tie-Breaker	55	65	102	41	22	13	67	35	41	Continue to Monitor
	P2-4:A11:7:_TESLA E 230KV - SECTION 2E & 1E	P2-4	Bus-Tie-Breaker	55	65	102	41	22	13	67	35	41	Continue to Monitor
	P2-4:A5:1:_GOLDHILL 230KV - SECTION 1D & 1E	P2-4	Bus-Tie-Breaker	NA	NA	101	NA	NA	NA	NA	NA	NA	Continue to Monitor
	P5-5A:A5:2:_RIO OSO 230 KV BUS (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant battery supply/Relay	55	65	105	41	22	13	67	35	41	Add Redundant relay
	P5-5C:A5:1:_RIO OSO 230-115KV BATT(FAILURE OF NON-REDUNDENT BATT)	P5	Non-Redundant battery supply/Relay	58	74	108	43	11	4	76	29	43	Add Redundant battery
	ATLANTIC-GOLD HILL 230KV [4330] & RIO OSO-ATLANTIC 230KV [5590]	P6	N-1-1	<100	<100	119	<100	<100	<100	<100	<100	<100	Continue to Monitor
	P7-1:A11:12:_LOCKEFORD-BELLOTA 230KV #1 [4990] & LOCKEFORD-BELLOTA 230KV #2 [4990]	P7	DCTL	NA	65	102	NA	22	13	67	NA	NA	Continue to Monitor
Dixon-Vaca #1 60 kV Line	P1-2:A4:56:_VACA-DXN-DIXON-J1-TRAVIS 60KV [0] MOAS OPENED ON TRAVIS TRAVISJT	P1	N-1	103	53	50	79	10	15	54	72	79	Review Project: Vaca Dixon Area Reinforcement Project
	P1-2:A4:55:_DIXON-VACA #2 60KV [6740]	P1	N-1	93	110	102	67	13	25	111	65	67	Review Project: Vaca Dixon Area Reinforcement Project
	DIXON-VACA #2 60KV [6740] & GWFTRCY3 18.00KV & GWFTRCY1 13.80KV & GWFTRCY2 13.80KV GEN UNITS	P3	G-1 / N-1	<100	<100	103	<100	<100	<100	<100	<100	<100	Review Project: Vaca Dixon Area Reinforcement Project
DONNELLS-CURTIS 115kV	P2-4:A11:1:_BELLOTA 230KV - SECTION 1E & 2E	P2-4	Bus-Tie-Breaker	90	108	100	NConv	76	77	100	94	NConv	Under Review
	SCHULTE SW STA-KASSON-MANTECA 115KV [7472] & SCHULTE SW STA-LAMMERS 115KV [3993]	P6	N-1-1	104	<100	<100	90	<100	<100	<100	<100	92	Under Review
Drum - Higgins 115 kV Line	P2-4:A5:2:_GOLDHILL 115KV - SECTION 1F & 2F	P2-4	Bus-Tie-Breaker	120	193	NA	89	74	42	217	52	89	Project: Gold Hill 230/115 kV Transformer Additoin Project. Short term: Action Plan
	P4-2:A5:2:_STUCK BREAKER & NO BF RELAY GOLD HILL 115KV CB 172 OR 392	P5	Non-Redundant battery supply/Relay	77	113	206	53	71	46	117	26	53	Add Redundant relay
	P5-5A:A5:3:_GOLD HILL 230 KV BUS (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant battery supply/Relay	NConv	NConv	NConv	NConv	123	50	NConv	173	NConv	Add Redundant relay
	P5-5C:A5:1:_RIO OSO 230-115KV BATT(FAILURE OF NON-REDUNDENT BATT)	P5	Non-Redundant battery supply/Relay	113	107	80	77	64	37	108	84	77	Add Redundant battery

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				2025 Summer Peak	2028 Summer Peak	2035 Summer Peak	2025 Spring Off-Peak	2028 Spring Off-Peak	2028 Summer-Off Peak	2028 SP High CEC Forecast	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	
	P7-1:A5:19_Placer-Gold Hill No. 1 115 kV Line and Placer-Gold Hill No. 2 115 kV Line	P7	DCTL	92	117	178	65	21	16	121	54	65	Under Review
Drum - Rio Oso 115 kV No. 1 Line	P2-3:A5:88:_DRUMPH1 115KV - RING R3 & R4	P2-3	Non-Bus-Tie Breaker	111	80	55	81	82	38	80	68	81	Under Review
	P5-5A:A5:3:_GOLD HILL 230 KV BUS (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant battery supply/Relay	NConv	NConv	NConv	54	156	43	NConv	43	54	Add Redundant relay
	P4-2:A5:2:_STUCK BREAKER & NO BF RELAY GOLD HILL 115KV CB 172 OR 392	P5	Non-Redundant battery supply/Relay	13	57	108	5	83	35	60	<100	5	Add Redundant relay
	P7-1:A5:19_Placer-Gold Hill No. 1 115 kV Line and Placer-Gold Hill No. 2 115 kV Line	P7	DCTL	7	50	106	3	82	35	52	2	3	Continue to Monitor
Drum 115/60 kV Transformer No. 1	P2-4:A5:1:_GOLDHILL 230KV - SECTION 2D & 1D	P2-4	Bus-Tie-Breaker	NA	NA	NA	NConv	108	33	NConv	37	NConv	Operation Solution
	RIO OSO-DRUMPH1-BRUNSWCK 115KV [0] & DRUM-HIGGINS 115KV [4393] MOAS OPENED ON CHCGO PK_HIGGINS	P6	N-1-1	<100	<100	<100	<100	107	<100	<100	<100	<100	Operation Solution
Eight Mile - Stagg 230 kV Line	P5-5C:A11:1:_TESLA 500KV BATT(FAILURE OF NON-REDUNDENT BATT)	P5	Non-Redundant battery supply/Relay	101	NConv	NConv	73	35	42	NConv	73	72	Add Redundant battery
Eldorado - Missouri Flat 115 kV No. 1 Line	P2-1:A5:13:_MISSOURI FLAT-GOLD HILL #1 115KV [2660] (GOLDHILL-CPM TAP)	P2-1	Line Section w/o Fault	84	102	143	64	4	12	104	44	64	Continue to Monitor
	P2-1:A5:51:_MISSOURI FLAT-GOLD HILL #1 115KV [2660] (SHPRING1-CLRKSVLT)	P2-1	Line Section w/o Fault	84	102	144	64	4	12	104	44	64	Continue to Monitor
	P2-2:A5:7:_GOLDHILL 115KV SECTION 2F	P2-2	Bus	8	10	147	8	17	9	10	5	8	Continue to Monitor
	P2-4:A5:18:_GOLDHILL 115KV - SECTION 2G & 2F	P2-4	Bus-Tie-Breaker	NA	NA	157	NA	NA	NA	NA	NA	NA	Continue to Monitor
Gold Hill #1 230/115 kV Bank	GOLDHILL 230/115KV TB 2 & DRUM-HIGGINS 115KV [4393] MOAS OPENED ON CHCGO PK_HIGGINS	P6	N-1-1	<100	104	<100	<100	<100	<100	106	<100	<100	Project: Gold Hill 230/115 kV Transformer Additoin Project. Short term: Action Plan
HAMMER-COUNTRY CLUB 60kV Line	P2-4:A11:22:_STAGG-D SECTION 1D & STAGG-E SECTION 1E 230KV	P2-4	Bus-Tie-Breaker	<100	146	139	<100	19	52	146	<100	<100	Existing RAS
	P2-4:A11:1:_BELLOTA 230KV - SECTION 1E & 2E	P2-4	Bus-Tie-Breaker	88	51	101	54	19	7	53	63	54	RAS recommended in 2019-2020 TPP
	P2-4:A11:22:_STAGG-D SECTION 1D & STAGG-E SECTION 1E 230KV	P2-4	Bus-Tie-Breaker	<100	192	184	<100	25	68	192	<100	<100	Existing RAS
	P4-2:A11:1:_STUCK BREAKER & NO BF RELAY STAGG 230 KV CB252	P5	Non-Redundant battery supply/Relay	<100	116	110	<100	14	40	116	<100	<100	Add Redundant relay
	P5-5A:A11:3:_STAGG 230KV BUS (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant battery supply/Relay	<100	116	110	<100	14	40	116	<100	<100	Add Redundant relay
	STAGG-TESLA 230KV [5680] & EIGHT MILE ROAD-STAGG 230KV [5002]	P6	N-1-1	<100	206	177	<100	<100	99	204	<100	<100	Existing RAS
	EIGHT MILE ROAD-STAGG 230KV [5002] & STAGG-TESLA 230KV [5680]	P6	N-1-1	<100	206	177	<100	<100	99	204	<100	<100	Existing RAS
	P7-1:A11:34:_EIGHT MILE ROAD-STAGG 230KV [5002] & STAGG-TESLA 230KV [5680]	P7	DCTL	<100	129	111	<100	21	55	129	<100	<100	Existing RAS

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				2025 Summer Peak	2028 Summer Peak	2035 Summer Peak	2025 Spring Off-Peak	2028 Spring Off-Peak	2028 Summer-Off Peak	2028 SP High CEC Forecast	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	
	P7-1:A11:18:_STAGG-COUNTRY CLUB #1 60KV [8080] & STAGG-COUNTRY CLUB #2 60KV [8090]	P7	DCTL	116	72	84	80	12	3	71	76	80	Existing RAS
Higgins - Bell 115 kV Line	P2-4:A5:2:_GOLDHILL 115KV - SECTION 1F & 2F	P2-4	Bus-Tie-Breaker	98	142	NA	76	17	14	157	59	76	Project: Gold Hill 230/115 kV Transformer Additoin Project. Short term: Action Plan
	P4-2:A5:2:_STUCK BREAKER & NO BF RELAY GOLD HILL 115KV CB 172 OR 392	P5	Non-Redundant battery supply/Relay	69	89	149	51	14	12	92	41	51	Add Redundant relay
	P5-5A:A5:6:_GOLD HILL 115 KV BUS (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant battery supply/Relay	69	89	149	51	14	12	92	41	51	Add Redundant relay
	P7-1:A5:19_Placer-Gold Hill No. 1 115 kV Line and Placer-Gold Hill No. 2 115 kV Line	P7	DCTL	69	89	149	51	14	12	92	41	51	Continue to Monitor
Howard JCT3 - Breaker JCT 115 kV Line	P1-2:A4:34:_BRIGHTN-W.SCRMNO 115KV [0]	P1	N-1	106	104	99	71	5	16	106	66	70	Under Review
	P2-1:A4:27:_WEST SACRAMENTO-BRIGHTON 115KV [4110] (DPWT_TP2-BRIGHTN)	P2-1	Line Section w/o Fault	106	103	99	70	8	16	106	66	69	Operation Solution
	P2-3:A4:22:_W.SCRMNO - DE 115KV & BRIGHTN-W.SCRMNO LINE	P2-3	Non-Bus-Tie Breaker	121	126	114	77	4	17	128	73	76	Operation Solution
	P5-5c(DC):A4:12:_Station DC Battery Supply ZAMORA 115kv Batt	P5	Non-Redundant battery supply/Relay	96	114	96	75	23	19	117	57	75	Add Redundant battery
	P4-2:A5:1:_STUCK BREAKER & NO BF RELAY RIO OSO 115KV CB 402 412 422 432 442 462 OR 472	P5	Non-Redundant battery supply/Relay	125	192	124	92	28	26	199	72	92	Add Redundant relay
	P5-5A:A5:5:_RIO OSO 115 KV BUS (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant battery supply/Relay	109	139	112	86	30	24	145	64	86	Add Redundant relay
	BRIGHTN-W.SCRMNO 115KV [0] & WOODLAND-DAVIS 115KV [4210]	P6	N-1-1	<100	<100	177	96	<100	<100	<100	112	96	Continue to Monitor
	WOODLAND-DAVIS 115KV [4210] & W.SCRMNO-DAVIS 115KV [0]	P6	N-1-1	<100	<100	166	<100	<100	<100	<100	114	<100	Continue to Monitor
	P7-1:A4:16_Rio Oso-Woodland #1 115 kV Line & Rio Oso-Woodland #2 115 kV Line	P7	DCTL	96	114	96	75	23	19	117	57	75	Review Project: Vaca Dixon Area Reinforcement Project
	P7-1:A4:17_Rio Oso-West Sacramento 115 kV Line & West Sacramento-Brighton 115 kV Line	P7	DCTL	141	147	130	89	10	22	151	85	88	Review Project: Vaca Dixon Area Reinforcement Project
Kasson - Carbona 60 kV Line	Base Case	P0	N-0	63	78	105	42	27	32	78	49	42	Continue to Monitor
	P1-3:A11:26:_KASSON 115/60KV TB 1	P1	N-1	107	126	192	75	40	56	128	85	75	RAS recommended in 2019-2020 TPP
	P5-5A:A11:14:_KASSON 115KV BUS (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant battery supply/Relay	141	131	234	85	40	57	133	90	85	Add Redundant relay
Kasson 115/60 kV Transformer No. 1	P1-2:A11:83:_LOUISE-MANTECA 60KV [0]	P1	N-1	70	82	105	50	28	40	82	57	50	Continue to Monitor
	P2-3:A11:108:_MANTECA 115KV - RING R4 & R3	P2-3	Non-Bus-Tie Breaker	72	84	108	53	31	42	85	59	53	Continue to Monitor
	P5-5C:A11:12:_MANTECA 115-60KV BATT(FAILURE OF NON-REDUNDENT BATT)	P5	Non-Redundant battery supply/Relay	70	82	106	50	28	40	82	57	50	Add Redundant battery

Study Area: **PG&E Central Valley**  
 Thermal Overloads



Overloaded Facility	Contingency (All and Worst P6)	Category	Category Description	Loading % (Baseline Scenarios)						Loading % (Sensitivity Scenarios)			Project & Potential Mitigation Solutions
				2025 Summer Peak	2028 Summer Peak	2035 Summer Peak	2025 Spring Off-Peak	2028 Spring Off-Peak	2028 Summer-Off Peak	2028 SP High CEC Forecast	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	
	P7-1:A11:27:_TESLA-STOCKTON COGEN JCT 115KV [4010] & KASSON-LOUISE 60KV [7250]	P7	DCTL	67	79	103	48	25	37	80	54	48	Continue to Monitor
Lambie - Birds Landing 230 kV Line	P2-3:A4:4:_BDLSWSTA 230KV - MIDDLE BREAKER BAY 2	P2-3	Non-Bus-Tie Breaker	72	73	69	62	31	46	73	117	62	Sensitivity Only
LINCOLN-PLEASANT GROVE 115kV Line	RIO OSO-ATLANTIC 230KV [5590] & ATLANTIC-GOLD HILL 230KV [4330]	P6	N-1-1	92	115	178	<100	<100	<100	117	<100	<100	Under Review
LLNLU450 - LLNL TAP 115 kV Line	P2-4:A11:8:_TESLA D 230KV - SECTION 1D & 2D	P2-4	Bus-Tie-Breaker	112	120	146	36	168	19	118	129	36	Under Review
	TESLA D 230/115KV TB 1 & GWFTRCY3 18.00KV & GWFTRCY1 13.80KV & GWFTRCY2 13.80KV GEN UNITS	P3	G-1 / N-1	100	100	110	<100	<100	<100	99	<100	<100	Continue to Monitor
	P5-5A:A11:4:_TESLA 230KV BUS C&D&E (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant battery supply/Relay	44	57	NConv	24	130	27	53	NConv	16	Add Redundant relay
	TESLA D 230/115KV TB 1 & TESLA D 230/115KV TB 3	P6	N-1-1	99	122	147	<100	100	<100	120	96	<100	Operation Solution
LOCKEFORD #1 60kV Line	P2-4:A11:22:_STAGG-D SECTION 1D & STAGG-E SECTION 1E 230KV	P2-4	Bus-Tie-Breaker	<100	311	296	<100	24	87	311	<100	<100	Existing RAS
	P5-5C:A11:3:_STAGG 230-60KV BATT(Failure OF NON-REDUNDENT BATT)	P5	Non-Redundant battery supply/Relay	<100	287	284	<100	17	50	288	<100	<100	Add Redundant battery
	P4-2:A11:1:_STUCK BREAKER & NO BF RELAY STAGG 230 KV CB252	P5	Non-Redundant battery supply/Relay	<100	310	296	<100	24	87	310	<100	<100	Add Redundant relay
	P5-5A:A11:3:_STAGG 230KV BUS (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant battery supply/Relay	<100	310	296	<100	24	87	310	<100	<100	Add Redundant relay
	STAGG-TESLA 230KV [5680] & EIGHT MILE ROAD-STAGG 230KV [5002]	P6	N-1-1	<100	319	291	<100	<100	118	318	<100	<100	Existing RAS
	EIGHT MILE ROAD-STAGG 230KV [5002] & STAGG-TESLA 230KV [5680]	P6	N-1-1	<100	319	291	<100	<100	118	317	<100	<100	Existing RAS
	P7-1:A11:34:_EIGHT MILE ROAD-STAGG 230KV [5002] & STAGG-TESLA 230KV [5680]	P7	DCTL	<100	328	294	<100	38	118	328	<100	<100	Existing RAS
Manteca - Louise 60 kV Line	P1-3:A11:26:_KASSON 115/60KV TB 1	P1	N-1	105	124	188	74	40	56	125	84	74	RAS recommended in 2019-2020 TPP
	P5-5A:A11:14:_KASSON 115KV BUS (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant battery supply/Relay	138	128	229	84	40	56	130	89	84	Add Redundant relay
	P1-2:A11:46:_VIERRA-TRACY-KASSON 115KV [4310]	P1	N-1	102	15	11	83	40	28	15	68	83	Project: Vierra 115 kV Looping Project
	P2-1:A11:235:_VIERRA-TRACY-KASSON 115KV [4310] (CROSRDJT-BANTA)	P2-1	Line Section w/o Fault	105	NA	NA	87	NA	NA	NA	71	87	Generation Redispatch
	P2-1:A11:42:_SCHULTE SW STA-KASSON-MANTECA 115KV [7472] (MANTECA-LID JCT)	P2-1	Line Section w/o Fault	27	80	48	42	100	75	74	55	43	Under Review
	P2-1:A12:34:_BELLOTA-RIVERBANK-MELONES SW STA 115KV [1070] (RVRBK TP-TULLOCH_JCT)	P2-1	Line Section w/o Fault	30	27	<100	30	103	68	27	65	30	Generation Redispatch
	P2-2:A11:26:_KASSON 115KV SECTION 1D	P2-2	Bus	117	21	49	68	85	62	25	81	66	Generation Redispatch

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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 Summer-Off Peak	2028 SP High CEC Forecast	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	
Manteca - Vierra 115 kV Line	P2-3:A11:108:_MANTECA 115KV - RING R4 & R3	P2-3	Non-Bus-Tie Breaker	81	9	58	43	110	106	18	117	40	Generation Redispatch
	P2-4:A11:30:_TESLA 115KV - SECTION 2D & 1D	P2-4	Bus-Tie-Breaker	NConv	NConv	NConv	36	71	62	NConv	NConv	36	Project : Tesla 115 kV Bus Reconfiguration Project
	P2-4:A11:12:_BELLOTA 115KV - SECTION 1D & 2D	P2-4	Bus-Tie-Breaker	8	42	33	22	110	66	41	61	22	Generation Redispatch
	P2-4:A11:1:_BELLOTA 230KV - SECTION 1E & 2E	P2-4	Bus-Tie-Breaker	37	128	54	NConv	61	41	41	7	NConv	Generation Redispatch
	P5-5A:A11:11:_TESLA 115KV BUS (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant battery supply/Relay	NConv	NConv	NConv	9	27	106	NConv	NConv	9	Add Redundant relay
	P5-5C:A11:19:_SCHULTE SW STA 115KV BATT(FAILURE OF NON-REDUNDENT BATT)	P5	Non-Redundant battery supply/Relay	99	20	27	65	107	80	14	104	63	Add Redundant battery
	P5-5C:A11:15:_KASSON 115-60KV BATT(FAILURE OF NON-REDUNDENT BATT)	P5	Non-Redundant battery supply/Relay	108	50	23	89	82	61	45	69	89	Add Redundant battery
	P7-1:A11:15:_SCHULTE SW STA-KASSON-MANTECA 115KV [7472] & KASSON-LOUISE 60KV [7250]	P7	DCTL	25	65	23	32	113	88	58	73	32	Generation Redispatch
	P7-1:A11:31:_SCHULTE SW STA-KASSON-MANTECA 115KV [7472] & TESLA-SALADO-MANTECA 115KV [4000]	P7	DCTL	53	113	74	55	114	69	106	32	56	Generation Redispatch
Manteca 115/60 kV Transformer No. 1	P1-3:A11:26:_KASSON 115/60KV TB 1	P1	N-1	71	84	125	50	29	38	85	57	50	Continue to Monitor
Missouri Flat - Gold Hill 115 kV No. 2 Line	P2-1:A5:13:_MISSOURI FLAT-GOLD HILL #1 115KV [2660] (GOLDHILL-CPM TAP)	P2-1	Line Section w/o Fault	70	85	113	48	13	5	86	40	48	Continue to Monitor
	P2-4:A5:3:_GOLDHILL 115KV - SECTION 1F & 2F	P2-4	Bus-Tie-Breaker	NA	NA	114	NA	NA	NA	NA	NA	NA	Continue to Monitor
MI-WUK-FBERBORD 115 kV	P2-4:A11:1:_BELLOTA 230KV - SECTION 1E & 2E	P2-4	Bus-Tie-Breaker	85	100	90	NConv	78	76	93	92	NConv	Under Review
New BANTA-TRACY 115 kV Line	P1-2:A11:51:_TESLA-LEPRINO_JCT 115KV [0] MOAS OPENED ON LEPRINO_JCT_TRACY JC	P1	N-1	90	92	108	61	14	34	94	71	61	Continue to Monitor
	P2-1:A11:58:_TESLA-TRACY 115KV [4020] (TESLA-ELLIS_JCT)	P2-1	Line Section w/o Fault	91	93	108	62	14	34	94	71	62	Continue to Monitor
	P2-3:A11:34:_TESLA 115KV - MIDDLE BREAKER BAY 5	P2-3	Non-Bus-Tie Breaker	3	18	108	15	40	21	19	7	14	Continue to Monitor
	P5-5C:A11:19:_SCHULTE SW STA 115KV BATT(FAILURE OF NON-REDUNDENT BATT)	P5	Non-Redundant battery supply/Relay	142	91	100	110	29	7	91	77	111	Add Redundant battery
New Brighton-Lockeford 230 kV Line	P5-5C:A5:1:_RIO OSO 230-115KV BATT(FAILURE OF NON-REDUNDENT BATT)	P5	Non-Redundant battery supply/Relay	NA	155	167	NA	25	24	155	NA	NA	Add Redundant battery
NEW LOCKEFORD-BELLOTA 230kV	P5-5C:A5:1:_RIO OSO 230-115KV BATT(FAILURE OF NON-REDUNDENT BATT)	P5	Non-Redundant battery supply/Relay	NA	102	120	NA	29	33	103	NA	NA	Add Redundant battery

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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 Summer-Off Peak	2028 SP High CEC Forecast	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	
New Pease TP - E Marysville 60 kV Line	PALERMO-NICOLAUS 115KV [3210] MOAS OPENED ON PALERMO_E.MRY J2 & RIO OSO-NICOLAUS 115KV [3440]	P6	N-1-1	<100	189	277	<100	<100	<100	193	<100	<100	Operation Solution
	P7-1:A5:20_Palermo-Pease 115 kV Line amd Pease-Rio Oso 115 kV Line	P7	DCTL	NA	53	9	NA	76	111	53	NA	NA	Operation Solution
New TESLA - STOCKTON CO-GEN JCT 115KV Line	SCHULTE SW STA-LAMMERS 115KV [3993] & SCHULTE SW STA-KASSON-MANTECA 115KV [7472]	P6	N-1-1	<100	99	108	<100	<100	<100	98	<100	<100	Continue to Monitor
Nicolaus - Marysville 60 kV Line (Plumas-East Nicolaus)	P1-2:A5:86:_PEASE-MARYSVILLE-HARTER 60KV [7770]	P1	N-1	106	NA	NA	NA	NA	NA	NA	NA	NA	Disable Automatics
	P1-2:A5:48:_E.MRYSVE-MRYSVLE #1 60KV [0]	P1	N-1	NA	192	227	NA	13	40	196	NA	NA	Disable Automatics
	E.MRYSVE-MRYSVLE #1 60KV [0] & RBROCKLIN 12.47KV GEN UNIT 1	P3	G-1 / N-1	<100	<100	228	<100	<100	<100	<100	<100	<100	Continue to Monitor
	P5-5C:A5:4:_PEASE 115-60KV BATT(FAILURE OF NON-REDUNDENT BATT)	P5	Non-Redundant battery supply/Relay	106	NA	NA	NA	NA	NA	NA	NA	NA	Add Redundant battery
	PALERMO-NICOLAUS 115KV [3210] MOAS OPENED ON PALERMO_E.MRY J2 & RIO OSO-NICOLAUS 115KV [3440]	P6	N-1-1	<100	<100	111	<100	<100	<100	<100	<100	<100	Continue to Monitor
Pease - Marysville - Harter 60 kV Line	P2-1:A5:16:_PALERMO-NICOLAUS 115KV [3210] (E.MRYSVE-E.MRY J2)	P2-1	Line Section w/o Fault	53	20	101	78	54	87	53	81	78	Continue to Monitor
Pease - Pease Tap 60 kV Line	PALERMO-NICOLAUS 115KV [3210] MOAS OPENED ON PALERMO_E.MRY J2 & YUBA CTY 13.80KV GEN UNIT 1	P3	G-1 / N-1	<100	<100	100	<100	<100	<100	<100	<100	<100	Continue to Monitor
	RIO OSO-NICOLAUS 115KV [3440] & PALERMO-NICOLAUS 115KV [3210] MOAS OPENED ON PALERMO_E.MRY J2	P6	N-1-1	<100	144	219	<100	<100	<100	148	<100	<100	Under Review
Placer 115/60 kV Transformer No. 1	Base Case	P0	N-0	67	85	105	51	16	8	86	36	51	Continue to Monitor
PLACER-GOLD HILL #1 115kV Line	PLACER-GOLD HILL #2 115KV [4290] & DRUM-HIGGINS 115KV [4393] MOAS OPENED ON CHCGO PK_HIGGINS	P6	N-1-1	<100	<100	100	<100	<100	<100	<100	<100	<100	Continue to Monitor
Post Office JCT - Deepwater TP 115 kV Line	WOODLAND-DAVIS 115KV [4210] & BRIGHTN-W.SCRMNO 115KV [0]	P6	N-1-1	<100	110	<100	<100	<100	<100	117	<100	<100	Review Project: Vaca Dixon Area Reinforcement Project
	BRIGHTN-W.SCRMNO 115KV [0] & WOODLAND-DAVIS 115KV [4210]	P6	N-1-1	<100	100	<100	<100	<100	<100	104	<100	<100	Continue to Monitor
Rio Oso - Atlantic 230 kV Line No. 1	P2-2:A5:3:_GOLDHILL 230KV SECTION 2D	P2-2	Bus	93	100	87	60	28	20	102	76	60	Continue to Monitor
	P4-2:A5:1:_STUCK BREAKER & NO BF RELAY RIO OSO 115KV CB 402 412 422 432 442 462 OR 472	P5	Non-Redundant battery supply/Relay	91	121	80	66	36	20	123	65	68	Add Redundant relay
	RIO OSO-ATLANTIC 230KV [5590] & ATLANTIC-GOLD HILL 230KV [4330]	P6	N-1-1	118	146	137	<100	<100	<100	150	<100	<100	Under Review
RIO BRAVO (ROCKLIN) TAP 115 kV Line	RIO OSO-ATLANTIC 230KV [5590] & ATLANTIC-GOLD HILL 230KV [4330]	P6	N-1-1	103	126	193	<100	<100	<100	129	<100	<100	Under Review
Rio Oso - Linkcon 115 kV Line	P7-1:A5:2_Rio Oso-Atlantic 230 kV Line & Rio Oso-Gold Hill 230 kV Line	P7	DCTL	91	114	71	55	18	13	117	70	55	Project: Reconductor Rio Oso-SPI Jct-Lincoln 115kV line
	RIO OSO-ATLANTIC 230KV [5590] & ATLANTIC-GOLD HILL 230KV [4330]	P6	N-1-1	119	148	142	<100	<100	<100	151	<100	<100	Under Review
	P2-2:A4:20:_BRIGHTN 115KV SECTION ME	P2-2	Bus	104	117	97	71	20	22	124	66	71	Review Project: Vaca Dixon Area Reinforcement Project
	P2-4:A4:10:_BRIGHTN 115KV - SECTION ME & MD	P2-4	Bus-Tie-Breaker	104	118	97	71	20	22	124	66	71	Review Project: Vaca Dixon Area Reinforcement Project



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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 Summer-Off Peak	2028 SP High CEC Forecast	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	
Rio Oso - W. Sacramento 115 kV Line	P5-5A:A4:7:_BRIGHTON 230KV BUS (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant battery supply/Relay	146	146	116	79	22	24	152	70	79	Add Redundant relay
	P5-5c(DC):A4:2:_Station DC Battery Supply BRIGHTON 230kV Batt	P5	Non-Redundant battery supply/Relay	146	146	116	79	22	24	152	70	79	Add Redundant battery
	RIO OSO-BRIGHTON 230KV [5600] & BRIGHTON-LOCKFORD 230KV [0]	P6	N-1-1	<100	117	121	<100	<100	<100	122	<100	<100	Review Project: Vaca Dixon Area Reinforcement Project
	BRIGHTON-BELLOTA 230KV [4420] & RIO OSO-BRIGHTON 230KV [5600]	P6	N-1-1	129	<100	<100	<100	<100	<100	<100	<100	<100	Review Project: Vaca Dixon Area Reinforcement Project
	WOODLAND-DAVIS 115KV [4210] & BRIGHTN-W.SCRMNO 115KV [0]	P6	N-1-1	108	155	<100	<100	<100	<100	165	<100	<100	Review Project: Vaca Dixon Area Reinforcement Project
Rio Oso - Woodland 115 kV No. 1	P5-5A:A4:7:_BRIGHTON 230KV BUS (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant battery supply/Relay	93	103	79	54	18	17	107	44	54	Add Redundant relay
	P5-5c(DC):A4:2:_Station DC Battery Supply BRIGHTON 230kV Batt	P5	Non-Redundant battery supply/Relay	100	110	86	58	17	18	115	49	58	Add Redundant battery
Rio Oso 230/115 kV Bank No. 1	P2-2:A4:20:_BRIGHTN 115KV SECTION ME	P2-2	Bus	105	58	57	79	6	5	59	82	78	Project: Rio oso 230/115 kV Transfor upgrade Project
	P2-4:A4:10:_BRIGHTN 115KV - SECTION ME & MD	P2-4	Bus-Tie-Breaker	105	58	57	79	6	5	59	82	78	Project: Rio oso 230/115 kV Transfor upgrade Project
	P5-5c(DC):A4:2:_Station DC Battery Supply BRIGHTON 230kV Batt	P5	Non-Redundant battery supply/Relay	135	62	61	86	2	4	63	87	85	Add Redundant battery
	P7-1:A5:2_Rio Oso-Atlantic 230 kV Line & Rio Oso-Gold Hill 230 kV Line	P7	DCTL	115	48	57	78	4	5	48	93	78	Project: Rio oso 230/115 kV Transfor upgrade Project
Rio Oso 230/115 kV Bank No. 2	P2-3:A5:3:_RIO OSO 230KV - MIDDLE BREAKER BAY 3	P2-3	Non-Bus-Tie Breaker	101	61	80	75	7	12	64	80	75	Project: Rio oso 230/115 kV Transfor upgrade Project
Ripon - Manteca 115 kV Line	P2-1:A12:34:_BELLOTA-RIVERBANK-MELONES SW STA 115KV [1070] (RVRBK TP-TULLOCH_JCT)	P2-1	Line Section w/o Fault	69	60	51	62	115	100	63	79	62	Continue to Monitor
	P2-4:A11:1:_BELLOTA 230KV - SECTION 1E & 2E	P2-4	Bus-Tie-Breaker	69	68	50	NConv	35	16	23	30	NConv	Operation Solution
	MANTECA-MELONES 115KV [0] MOAS OPENED ON STANISLS_FRGTNTP1 & GWFTRCY3 18.00KV & GWFTRCY1 13.80KV & GWFTRCY2 13.80KV GEN UNITS	P3	G-1 / N-1	103	<100	<100	<100	87	<100	<100	<100	<100	Project: Manteca-Ripon-Riverbank-Melones Area 115 kV Line Reconductoring Stanislaus-Manteca rebuild project
	P5-5A:A11:11:_TESLA 115KV BUS (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant battery supply/Relay	NConv	NConv	NConv	49	57	140	NConv	NConv	49	Add Redundant relay
	SCHULTE SW STA-KASSON-MANTECA 115KV [7472] & SCHULTE SW STA-LAMMERS 115KV [3993]	P6	N-1-1	150	<100	<100	129	<100	<100	<100	104	117	Under Review
	MANTECA-MELONES 115KV [0] MOAS OPENED ON STANISLS_FRGTNTP1 & STANISLAUS-MANTECA #2 115KV [3820]	P6	N-1-1	111	<100	<100	77	91	109	71	95	<100	Under Review

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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 Summer-Off Peak	2028 SP High CEC Forecast	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	
Riverbank Jct - Ripon 115 kV Line	P2-1:A12:34:_BELLOTA-RIVERBANK-MELONES SW STA 115KV [1070] (RVRBK TP-TULLOCH_JCT)	P2-1	Line Section w/o Fault	66	57	49	59	110	96	61	76	59	Continue to Monitor
	P2-4:A11:30:_TESLA 115KV - SECTION 2D & 1D	P2-4	Bus-Tie-Breaker	NConv	NConv	NConv	112	41	49	NConv	NConv	112	Project: Tesla 115 kV Bus Reconfiguration Project
	P2-4:A11:12:_BELLOTA 115KV - SECTION 1D & 2D	P2-4	Bus-Tie-Breaker	50	38	20	44	119	93	36	72	44	Continue to Monitor
	MANTECA-MELONES 115KV [0] MOAS OPENED ON STANISLS_FRGTNTP1 & GWFTRCY3 18.00KV & GWFTRCY1 13.80KV & GWFTRCY2 13.80KV GEN UNITS	P3	G-1 / N-1	113	<100	<100	94	<100	<100	<100	<100	<100	Project: Manteca-Ripon-Riverbank-Melones Area 115 kV Line Reconductoring Stanislaus-Manteca rebuild project
	P5-5A:A11:11:_TESLA 115KV BUS (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant battery supply/Relay	NConv	NConv	NConv	14	24	48	36	NConv	14	Add Redundant relay
	P5-5C:A11:9:_TESLA 230-115KV BATT(FAILURE OF NON-REDUNDENT BATT)	P5	Non-Redundant battery supply/Relay	NConv	NConv	NConv	12	20	55	NConv	NConv	12	Add Redundant battery
	MANTECA-MELONES 115KV [0] MOAS OPENED ON STANISLS_FRGTNTP1 & STANISLAUS-MANTECA #2 115KV [3820]	P6	N-1-1	107	<100	<100	<100	87	104	68	91	<100	Project: Manteca-Ripon-Riverbank-Melones Area 115 kV Line Reconductoring Stanislaus-Manteca rebuild project
	SCHULTE SW STA-KASSON-MANTECA 115KV [7472] & SCHULTE SW STA-LAMMERS 115KV [3993]	P6	N-1-1	161	<100	<100	145	<100	<100	<100	103	132	Under Review
Rocklin - Taylor 60 kV Line	ATLANTIC-GOLD HILL 230KV [4330] & RIO OSO-ATLANTIC 230KV [5590]	P6	N-1-1	<100	<100	147	<100	<100	<100	<100	<100	<100	Continue to Monitor
SCHULTE SW STA-KASSON-MANTECA 115KV Line	P2-3:A11:39:_SCHULTE 115KV - MIDDLE BREAKER BAY 2	P2-3	Non-Bus-Tie Breaker	93	83	98	102	21	20	83	56	103	Operation Solution
	SCHULTE SW STA-LAMMERS 115KV [3993] & RIPON 1-25 25.00KV GEN UNIT VE	P3	G-1 / N-1	<100	<100	110	<100	<100	<100	<100	<100	<100	Continue to Monitor
	SCHULTE SW STA-LAMMERS 115KV [3993] & STANISLS 13.80KV GEN UNIT 1	P3	G-1 / N-1	102	<100	98	122	<100	<100	<100	<100	123	Operation Solution
	VIERRA-TESLA 115KV [0] & SCHULTE SW STA-LAMMERS 115KV [3993]	P6	N-1-1	<100	131	131	<100	<100	<100	130	<100	<100	Under Review
	SCHULTE SW STA-LAMMERS 115KV [3993] & TESLA-LEPRINO_JCT 115KV [0] MOAS OPENED ON LEPRINO_JCT_TRACY JC	P6	N-1-1	136	116	124	98	<100	<100	118	<100	93	Under Review
Spaulding - Summit 60 kV Line	P2-3:A5:90:_BRNSWALT 115KV - RING R5 & R6	P2-3	Non-Bus-Tie Breaker	101	94	27	52	84	76	93	49	52	Under Review
Stagg - Hammer 60 kV Line No. 1	P7-1:A11:18:_STAGG-COUNTRY CLUB #1 60KV [8080] & STAGG-COUNTRY CLUB #2 60KV [8090]	P7	DCTL	146	111	127	99	10	19	112	101	99	Operation Solution
Stanislaus - Manteca 115 kV Line No. 2	P5-5A:A11:11:_TESLA 115KV BUS (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant battery supply/Relay	NConv	NConv	NConv	42	12	81	NConv	NConv	42	Add Redundant relay
	P5-5C:A11:9:_TESLA 230-115KV BATT(FAILURE OF NON-REDUNDENT BATT)	P5	Non-Redundant battery supply/Relay	NConv	NConv	NConv	45	8	88	NConv	NConv	45	Add Redundant battery
	P2-4:A11:1:_BELLOTA 230KV - SECTION 1E & 2E	P2-4	Bus-Tie-Breaker	37	116	107	NConv	26	43	19	45	NConv	Operation Solution

Study Area: PG&E Central Valley  
Thermal Overloads



Overloaded Facility	Contingency (All and Worst P6)	Category	Category Description	Loading % (Baseline Scenarios)						Loading % (Sensitivity Scenarios)			Project & Potential Mitigation Solutions
				2025 Summer Peak	2028 Summer Peak	2035 Summer Peak	2025 Spring Off-Peak	2028 Spring Off-Peak	2028 Summer-Off Peak	2028 SP High CEC Forecast	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	
Stanislaus - Melones Sw- Riverbank JCT SW STA 115 kV Line	P5-5A:A11:14:_KASSON 115KV BUS (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant battery supply/Relay	107	42	51	78	22	46	49	50	76	Add Redundant relay
	P5-5C:A11:19:_SCHULTE SW STA 115KV BATT(FAILURE OF NON-REDUNDENT BATT)	P5	Non-Redundant battery supply/Relay	102	35	35	86	34	42	38	74	84	Add Redundant battery
	P5-5A:A11:11:_TESLA 115KV BUS (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant battery supply/Relay	NConv	NConv	NConv	39	120	130	NConv	NConv	39	Add Redundant relay
STANISLAUS-MELONES SW STA-MANTECA #1 115kV Line	P2-4:A11:30:_TESLA 115KV - SECTION 2D & 1D	P2-4	Bus-Tie-Breaker	NConv	NConv	NConv	112	41	49	NConv	NConv	112	Project: Tesla 115 kV Bus Reconfiguration Project
	MELONES-RIVRBKJT-STANISLS 115KV [0] & GWFTRCY3 18.00KV & GWFTRCY1 13.80KV & GWFTRCY2 13.80KV GEN UNITS	P3	G-1 / N-1	104	<100	<100	<100	<100	<100	<100	<100	<100	Project: Manteca-Ripon-Riverbank-Melones Area 115 kV Line Reconductoring Stanislaus-Manteca rebuild project
	SCHULTE SW STA-KASSON-MANTECA 115KV [7472] & SCHULTE SW STA-LAMMERS 115KV [3993]	P6	N-1-1	125	<100	<100	111	<100	<100	<100	91	100	Under Review
	STANISLS-MELONES-RIVRBKJT 115KV [0] & STANISLAUS-MANTECA #2 115KV [3820]	P6	N-1-1	111	<100	<100	81	85	105	<100	91	77	Project: Manteca-Ripon-Riverbank-Melones Area 115 kV Line Reconductoring Stanislaus-Manteca rebuild project
STANISLAUS-MELONES SW STA-RIVERBANK JCT SW STA 115 kV Line	P2-4:A11:30:_TESLA 115KV - SECTION 2D & 1D	P2-4	NConv	NConv	NConv	117	41	49	NConv	NConv	117		Project: Tesla 115 kV Bus Reconfiguration Project
	SCHULTE SW STA-KASSON-MANTECA 115KV [7472] & SCHULTE SW STA-LAMMERS 115KV [3993]	P6	N-1-1	168	<100	<100	151	<100	<100	<100	107	137	Under Review
Stanislaus-Melones-Manteca 115 kV Line No. 1	P2-4:A11:12:_BELLOTA 115KV - SECTION 1D & 2D	P2-4	Bus-Tie-Breaker	56	40	28	51	100	83	37	72	51	Continue to Monitor
	P2-4:A11:1:_BELLOTA 230KV - SECTION 1E & 2E	P2-4	Bus-Tie-Breaker	30	100	104	NConv	22	34	20	40	NConv	Under Review
	P5-5A:A11:14:_KASSON 115KV BUS (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant battery supply/Relay	106	50	56	84	48	60	55	69	83	Add Redundant relay
	P5-5A:A11:11:_TESLA 115KV BUS (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant battery supply/Relay	NConv	NConv	NConv	55	48	117	NConv	NConv	55	Add Redundant relay
	P5-5C:A11:9:_TESLA 230-115KV BATT(FAILURE OF NON-REDUNDENT BATT)	P5	Non-Redundant battery supply/Relay	NConv	NConv	NConv	59	40	130	NConv	NConv	59	Add Redundant battery
	P7-1:A11:3:_STANISLAUS-MANTECA #2 115KV [3820] & STANISLAUS-MELONES SW STA-RIVERBANK JCT SW STA 115KV [3841]	P7	DCTL	97	55	55	81	98	115	65	91	77	Continue to Monitor
	P7-1:A11:8:_STANISLAUS-MANTECA #2 115KV [3820] & MANTECA-RIPON 115KV [0]	P7	DCTL	NA	59	68	NA	111	122	69	NA	NA	Operation Solution
Stockton 'A' - Lockeford - Bellota 115 kV Line No. 2	P2-2:A11:33:_BELLOTA 115KV SECTION 1D	P2-2	Bus	84	97	137	70	18	44	99	65	70	Continue to Monitor
	P2-3:A11:44:_BELLOTA - 1D 115KV & GOLD HILL-BELLOTA-LOCKEFORD LINE	P2-3	Non-Bus-Tie Breaker	96	109	152	76	22	49	111	70	76	Operation Solution

Study Area: **PG&E Central Valley**  
Thermal Overloads



Overloaded Facility	Contingency (All and Worst P6)	Category	Category Description	Loading % (Baseline Scenarios)						Loading % (Sensitivity Scenarios)			Project & Potential Mitigation Solutions
				2025 Summer Peak	2028 Summer Peak	2035 Summer Peak	2025 Spring Off-Peak	2028 Spring Off-Peak	2028 Summer-Off Peak	2028 SP High CEC Forecast	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	
	P2-3:A11:45: BELLOTA - 1D 115KV & BELLOTA-RIVERBANK LINE	P2-3	Non-Bus-Tie Breaker	84	97	137	70	18	44	99	65	70	Continue to Monitor
STOCKTON A-LOCKEFORD-BELLOTA #1 115KV Line	P2-1:A11:79: STOCKTON A-LOCKEFORD-BELLOTA #1 115KV [3880] (LCKFRDJA-BELLOTA)	P2-1	Line Section w/o Fault	65	75	107	48	15	31	76	51	48	Continue to Monitor
	P2-2:A11:33: BELLOTA 115KV SECTION 1D	P2-2	Bus	68	79	120	50	15	31	80	53	50	Continue to Monitor
	STOCKTON A-LOCKEFORD-BELLOTA #2 115KV [3890] MOAS OPENED ON KYOHOTAP_LCKFRDJB & GOLD HILL-BELLOTA-LOCKEFORD 115KV [1690]	P6	N-1-1	<100	<100	105	<100	<100	<100	<100	<100	<100	Continue to Monitor
Table Mountain-Pease 60 kV Line (Peachton-Gridley)	P5-5A:A5:4: PEASE 115 KV BUS (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant battery supply/Relay	105	40	32	132	47	56	40	140	132	Add Redundant relay
	P7-1:A5:20_Palermo-Pease 115 kV Line amd Pease-Rio Oso 115 kV Line	P7	DCTL	50	26	29	87	47	54	25	156	87	Continue to Monitor
Tesla - Tracy 115 kV Line	P5-5C:A11:19: SCHULTE SW STA 115KV BATT(FAILURE OF NON-REDUNDENT BATT)	P5	Non-Redundant battery supply/Relay	146	116	132	106	15	21	116	91	107	Add Redundant battery
TESLA-SALADO-MANTECA 115kV Line	P5-5A:A11:14: KASSON 115KV BUS (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant battery supply/Relay	146	64	68	103	21	5	63	69	104	Add Redundant relay
	SCHULTE SW STA-KASSON-MANTECA 115KV [7472] & SCHULTE SW STA-LAMMERS 115KV [3993]	P6	N-1-1	135	<100	<100	<100	<100	<100	<100	91	102	Under Review
	SCHULTE SW STA-LAMMERS 115KV [3993] & SCHULTE SW STA-KASSON-MANTECA 115KV [7472]	P6	N-1-1	176	<100	<100	153	<100	<100	<100	<100	153	Under Review
TESLA-SCHULTE SW STA #1 115KV Line	P2-2:A11:65: TESLA 115KV SECTION 1D	P2-2	Bus	88	35	NA	27	74	23	35	111	27	Sensitivity Only
	TESLA-SCHULTE SW STA #2 115KV [3970] & GWFTRCY3 18.00KV & GWFTRCY1 13.80KV & GWFTRCY2 13.80KV GEN UNITS	P3	G-1 / N-1	137	121	125	110	<100	<100	121	<100	109	Operation Solution
	TESLA-SCHULTE SW STA #1 115KV [3980] & GWF TRACY-SCHULTE 115KV	P6	N-1-1	128	110	120	99	<100	<100	109	<100	98	Under Review
UCD TP2 - Davis 115 kV Line	WOODLAND-DAVIS 115KV [4210] & BRIGHTN-W.SCRMNO 115KV [0]	P6	N-1-1	124	157	<100	<100	<100	<100	166	<100	<100	Review Project: Vaca Dixon Area Reinforcement Project
Vaca - Bahia 230 kV Line	P5-5C:A11:1: TESLA 500KV BATT(FAILURE OF NON-REDUNDENT BATT)	P5	Non-Redundant battery supply/Relay	107	NConv	NConv	61	44	70	NConv	117	61	Add Redundant battery
Vaca - Lambie 230 kV Line	P5-5A:A11:4: TESLA 230KV BUS C&D&E (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant battery supply/Relay	90	48	NConv	79	33	45	50	NConv	79	Add Redundant relay
Vaca-Plainfield 60 kV line	Base Case	P0	N-0	61	109	128	54	43	10	110	17	54	Review Project: Vaca Dixon Area Reinforcement Project
	P1-4:A4:18: PLAINFLDE SVD=V	P1	N-1	NA	97	117	NA	37	8	98	NA	NA	Continue to Monitor
	PLAINFLDE SVD=V & GWFTRCY3 18.00KV & GWFTRCY1 13.80KV & GWFTRCY2 13.80KV GEN UNITS	P3	G-1 / N-1	<100	<100	117	<100	<100	<100	<100	<100	<100	Continue to Monitor
Valley Springs - Martell 60 kV Line No. 1	P1-2:A11:76: VALLEY SPRINGS-CLAY 60KV [8264]	P1	N-1	124	139	152	98	17	50	140	86	98	Operation Solution

Study Area: **PG&E Central Valley**  
 Thermal Overloads



Overloaded Facility	Contingency (All and Worst P6)	Category	Category Description	Loading % (Baseline Scenarios)						Loading % (Sensitivity Scenarios)			Project & Potential Mitigation Solutions
				2025 Summer Peak	2028 Summer Peak	2035 Summer Peak	2025 Spring Off-Peak	2028 Spring Off-Peak	2028 Summer-Off Peak	2028 SP High CEC Forecast	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	
Valley Springs - Market 60 kV Line No. 2	P7-1:A11:14:_ VALLEY SPRINGS-CLAY 60KV [8252] & VALLEY SPRINGS #2 60KV [8231]	P7	DCTL	124	139	152	98	17	50	140	86	97	Existing operating procedure
Vierra - Banta 115 kV Line	SCHULTE SW STA-KASSON-MANTECA 115KV [7472] & SCHULTE SW STA-LAMMERS 115KV [3993]	P6	N-1-1	<100	<100	107	<100	<100	<100	<100	<100	<100	Under Review
Weber 60 kV Line No. 2 (Weber - French Camp)	P1-2:A11:79:_WEBER-FRENCH CAMP #1 60KV [8320]	P1	N-1	109	124	154	80	23	54	126	89	80	Under Review
West Sacramento - Brighton 115 kV Line	P5-5C:A5:1:_RIO OSO 230-115KV BATT(FAILURE OF NON-REDUNDENT BATT)	P5	Non-Redundant battery supply/Relay	121	123	128	61	16	19	123	54	61	Add Redundant battery
West Sacramento - Davis 115 kV Line	P4-2:A5:1:_STUCK BREAKER & NO BF RELAY RIO OSO 115KV CB 402 412 422 432 442 462 OR 472	P5	Non-Redundant battery supply/Relay	74	115	64	51	21	13	118	47	51	Add Redundant relay
West Sacramento - Deepwater 115 kV Line	P5-5C:A5:1:_RIO OSO 230-115KV BATT(FAILURE OF NON-REDUNDENT BATT)	P5	Non-Redundant battery supply/Relay	100	104	87	38	34	13	104	57	38	Add Redundant battery
	P5-5c(DC):A4:2:_Station DC Battery Supply BRIGHTON 230kv Batt	P5	Non-Redundant battery supply/Relay	97	102	65	35	34	13	107	60	35	Add Redundant battery
Woodland - Davis 115 kV Line	P2-2:A4:20:_BRIGHTN 115KV SECTION ME	P2-2	Bus	137	104	81	78	11	10	110	70	78	Review Project: Vaca Dixon Area Reinforcement Project
	P2-3:A4:21:_BRIGHTN - ME 115KV & BRIGHTON-DAVIS LINE	P2-3	Non-Bus-Tie Breaker	138	105	81	78	11	10	111	71	78	Review Project: Vaca Dixon Area Reinforcement Project
	P2-4:A4:10:_BRIGHTN 115KV - SECTION ME & MD	P2-4	Bus-Tie-Breaker	155	117	96	90	23	19	123	87	90	Review Project: Vaca Dixon Area Reinforcement Project
	P5-5A:A4:7:_BRIGHTON 230KV BUS (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant battery supply/Relay	174	133	101	89	15	13	139	75	89	Add Redundant relay
	P5-5c(DC):A4:16:_Station DC Battery Supply BRIGHTON 115kv Batt	P5	Non-Redundant battery supply/Relay	150	105	81	78	11	10	111	72	78	Add Redundant battery
	P4-2:A5:1:_STUCK BREAKER & NO BF RELAY RIO OSO 115KV CB 402 412 422 432 442 462 OR 472	P5	Non-Redundant battery supply/Relay	90	98	57	69	16	20	102	55	69	Add Redundant relay
	BRIGHTON-BELOTA 230KV [4420] & RIO OSO-BRIGHTON 230KV [5600]	P6	N-1-1	174	<100	<100	<100	<100	<100	<100	<100	<100	Review Project: Vaca Dixon Area Reinforcement Project
	RIO OSO-BRIGHTON 230KV [5600] & BRIGHTON-LOCKFORD 230KV [0]	P6	N-1-1	<100	118	105	<100	<100	<100	124	<100	<100	Review Project: Vaca Dixon Area Reinforcement Project

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 Summer-Off Peak	2028 SP High CEC Forecast	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	
ALLEGHNY 60 kV	Base Case	P0	N-0	1.03	1.02	0.94	1.02	1.06	1.07	1.02	1.04	1.02	Continue to monitor future load forecast
ATLANTC 230 kV	Base Case	P0	N-0	0.99	0.97	0.93	0.98	1.03	1.03	0.97	1.00	0.98	Continue to monitor future load forecast
BRIGHTON 230 kV	Base Case	P0	N-0	0.97	0.95	0.93	0.97	1.03	1.02	0.94	0.98	0.97	Vaca Dixon Area Reinforcement project
DEL MAR 60 kV	Base Case	P0	N-0	1.01	1.01	0.90	1.00	1.05	1.04	1.01	1.04	1.00	Continue to monitor future load forecast
DIST2047 60 kV	Base Case	P0	N-0	0.93	0.88	0.89	0.98	0.96	0.96	0.88	0.95	0.98	System adjustments or voltage support if needed
DUNNIGAN 60 kV	Base Case	P0	N-0	0.95	0.97	0.95	1.01	1.02	1.02	0.97	0.97	1.01	Continue to monitor future load forecast
FORST HL 60 kV	Base Case	P0	N-0	0.98	0.97	0.95	1.00	1.03	1.02	0.97	0.99	1.00	Continue to monitor future load forecast
GOLDHILL 230 kV	Base Case	P0	N-0	1.00	0.98	0.93	0.99	1.02	1.03	0.98	1.00	0.99	Continue to monitor future load forecast
GRSS VLY 60 kV	Base Case	P0	N-0	1.03	1.02	0.94	1.02	1.07	1.08	1.02	1.05	1.02	Continue to monitor future load forecast
MDDLE FK 60 kV	Base Case	P0	N-0	0.98	0.98	0.95	0.98	0.99	0.99	0.98	0.98	0.98	Continue to monitor future load forecast
MDDLK M 230 kV	Base Case	P0	N-0	0.98	0.98	0.95	0.98	0.99	0.99	0.98	0.98	0.98	Continue to monitor future load forecast
PLAINLDE 60 kV	Base Case	P0	N-0	0.95	0.92	0.89	0.97	0.99	1.04	0.93	1.01	0.97	Vaca Dixon Area Reinforcement project
RIO OSO 230 kV	Base Case	P0	N-0	1.00	0.97	0.94	0.99	1.03	1.03	0.97	1.01	0.99	Continue to monitor future load forecast
ROCKLIN 60 kV	Base Case	P0	N-0	1.02	1.02	0.93	1.01	1.05	1.04	1.02	1.04	1.01	Continue to monitor future load forecast
SIERRAPI 60 kV	Base Case	P0	N-0	1.01	1.01	0.90	1.00	1.05	1.04	1.01	1.04	1.00	Continue to monitor future load forecast
TAYLOR 60 kV	Base Case	P0	N-0	1.02	1.02	0.93	1.01	1.04	1.04	1.02	1.04	1.01	Continue to monitor future load forecast

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 Summer-Off Peak	2028 SP High CEC Forecast	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	
WILKINS 60 kV	Base Case	P0	N-0	0.96	0.91	0.90	1.00	0.98	0.98	0.91	0.98	1.00	System adjustments or voltage support if needed
CALVO 60 kV	P1-3:A11:26:_KASSON 115/60KV TB 1	P1	N-1	0.96	0.95	0.84	0.98	0.99	1.03	0.95	0.98	0.98	Continue to monitor future load forecast
CAMPUS 115 kV	P1-2:A4:25:_WOODLAND-DAVIS 115KV [4210]	P1	N-1	0.97	0.93	0.99	1.03	1.11	1.08	0.93	0.99	1.03	System adjustments or voltage support if needed
CARBONA 60 kV	P1-3:A11:26:_KASSON 115/60KV TB 1	P1	N-1	0.92	0.90	0.75	0.95	0.97	1.03	0.90	0.94	0.95	System adjustments or voltage support if needed
DAVIS 115 kV	P1-2:A4:25:_WOODLAND-DAVIS 115KV [4210]	P1	N-1	0.98	0.94	0.99	1.03	1.10	1.08	0.93	1.00	1.03	System adjustments or voltage support if needed
DEL MAR 60 kV	P1-4:A5:1:_RIO OSO SVC	P1	N-1	0.99	0.99	0.88	1.00	1.05	1.04	0.98	1.02	1.00	Continue to monitor future load forecast
DEL MAR 60 kV	P1-2:A11:107:_LOCKFORD-BRIGHTON 230KV [0]	P1	N-1	NA	1.01	0.90	NA	1.05	1.04	1.01	NA	NA	Continue to monitor future load forecast
DIST2047 60 kV	P1-2:A4:49:_CORTINA #1 60KV [6580] MOAS OPENED ON CORTINA ARBUCKLE	P1	N-1	0.91	0.85	0.85	0.94	1.00	0.96	0.85	0.95	0.94	System adjustments or voltage support if needed
DIST2047 60 kV	P1-2:A4:27:_CORTINA-MENDOCINO #1 115KV [1330]	P1	N-1	0.93	0.88	0.88	0.98	0.96	0.96	0.88	0.95	0.98	System adjustments or voltage support if needed
ENVRO_HY 60kV	P1-3:A5:37:_OXBOW 60/9.11KV TB 1	P1	N-1	0.93	0.92	0.88	0.96	1.02	1.01	0.91	0.95	0.96	System adjustments or voltage support if needed
ENVRO_HY 60kV	P1-1:A5:23:_OXBOW F 9.11KV GEN UNIT 1	P1	N-1	0.93	0.92	0.88	0.96	1.02	1.01	0.91	0.95	0.96	System adjustments or voltage support if needed
FORST HL 60 kV	P1-2:A5:50:_OXBOW TAP 60KV [7561] MOAS OPENED ON ENVRO_HY FORST HL	P1	N-1	0.93	0.91	0.89	0.96	1.02	1.01	0.91	0.95	0.96	System adjustments or voltage support if needed
FORST HL 60 kV	P1-1:A5:23:_OXBOW F 9.11KV GEN UNIT 1	P1	N-1	0.93	0.92	0.88	0.96	1.02	1.01	0.91	0.95	0.96	System adjustments or voltage support if needed
FORST HL 60 kV	P1-3:A5:37:_OXBOW 60/9.11KV TB 1	P1	N-1	0.93	0.92	0.88	0.96	1.02	1.01	0.91	0.95	0.96	System adjustments or voltage support if needed
FORST HL 60 kV	P1-1:A5:20:_ROLLINSF 6.60KV GEN UNIT 1	P1	N-1	0.94	0.93	0.90	0.96	1.02	1.01	0.92	0.95	0.96	System adjustments or voltage support if needed
FORST HL 60 kV	P1-3:A5:34:_ROLLINS 60/6.6KV TB 1	P1	N-1	0.94	0.93	0.90	0.96	1.02	1.01	0.92	0.95	0.96	System adjustments or voltage support if needed

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 Summer-Off Peak	2028 SP High CEC Forecast	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	
GUSTINE 60kV	P1-2:A12:19:_CROW CREEK SW STA-FRONTIER SOLAR PV 60KV [7859]	P1	N-1	0.93	0.89	0.95	0.97	1.09	1.07	0.89	0.98	0.97	System adjustments or voltage support if needed
LOCKFORD 230 kV	P1-2:A11:5:_LOCKEFORD-BELLOTA 230KV [4990]	P1	N-1	0.91	0.97	0.94	0.89	1.02	1.02	0.97	0.91	0.89	System adjustments or voltage support if needed
LYOTH-SP 60 kV	P1-3:A11:26:_KASSON 115/60KV TB 1	P1	N-1	0.94	0.92	0.78	0.96	0.98	1.03	0.92	0.95	0.96	System adjustments or voltage support if needed
MRYSVLLE 60 kV	P1-2:A5:48:_E.MRYSVE-MRYSVLLE #1 60KV [0]	P1	N-1	NA	0.90	0.84	NA	1.03	1.03	0.89	NA	NA	System adjustments or voltage support if needed
OXBOW 60 kV	P1-3:A5:37:_OXBOW 60/9.11KV TB 1	P1	N-1	0.93	0.92	0.88	0.96	1.02	1.01	0.91	0.95	0.96	System adjustments or voltage support if needed
OXBOW 60 kV	P1-1:A5:23:_OXBOW F 9.11KV GEN UNIT 1	P1	N-1	0.93	0.92	0.88	0.96	1.02	1.01	0.91	0.95	0.96	System adjustments or voltage support if needed
PLAINFLDE 60 kV	P1-3:A4:25:_VACA-DIX 115/60KV TB 5	P1	N-1	0.94	0.93	0.89	0.97	0.99	1.04	0.92	1.00	0.97	Vaca Dixon Area Reinforcement project
PLAINFLDE 60 kV	P1-3:A4:26:_VACA-DIX 115/60KV TB 9	P1	N-1	0.94	0.92	0.89	0.97	0.99	1.04	0.91	1.01	0.97	Vaca Dixon Area Reinforcement project
PLAINFLDE 60 kV	P1-3:A4:7:_VACA-DIX 230/115KV TB 3	P1	N-1	0.94	0.93	0.89	0.97	0.99	1.04	0.93	1.01	0.97	Vaca Dixon Area Reinforcement project
SIERRAPI 60 kV	P1-4:A5:1:_RIO OSO SVC	P1	N-1	0.99	0.99	0.88	1.00	1.05	1.04	0.98	1.02	1.00	Continue to monitor future load forecast
SIERRAPI 60 kV	P1-2:A11:33:_LODI STIG-EIGHT MILE ROAD 230KV [5001]	P1	N-1	1.01	1.01	0.90	0.99	1.05	1.04	1.00	1.04	0.99	Continue to monitor future load forecast
SIERRAPI 60 kV	P1-2:A5:43:_LINCOLN-PLEASANT GROVE 115KV [7400] MOAS OPENED ON RBROCKLINJCT PLSNT	P1	N-1	1.01	1.01	0.89	1.00	1.05	1.04	1.00	1.04	1.00	Continue to monitor future load forecast
SIERRAPI 60 kV	P1-2:A5:4:_PALERMO-COLGATE 230KV [5360]	P1	N-1	1.01	1.01	0.90	1.00	1.05	1.04	1.01	1.04	1.00	Continue to monitor future load forecast
SIERRAPI 60 kV	P1-2:A11:107:_LOCKFORD-BRIGHTON 230KV [0]	P1	N-1	NA	1.01	0.90	NA	1.05	1.04	1.01	NA	NA	Continue to monitor future load forecast
SIERRAPI 60 kV	P1-2:A4:60:_BRIGHTON-LOCKFORD 230KV [0]	P1	N-1	NA	1.01	0.90	NA	1.05	1.04	1.01	NA	NA	Continue to monitor future load forecast
UCDAVSJ1 115 kV	P1-2:A4:25:_WOODLAND-DAVIS 115KV [4210]	P1	N-1	0.98	0.94	0.99	1.03	1.10	1.08	0.93	1.00	1.03	System adjustments or voltage support if needed



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 Summer-Off Peak	2028 SP High CEC Forecast	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	
WESTLEY 60 kV	P1-3:A11:26:_KASSON 115/60KV TB 1	P1	N-1	0.94	0.93	0.75	0.94	0.99	1.01	0.92	0.96	0.94	System adjustments or voltage support if needed
WHEATLND 60 kV	P1-2:A5:28:_RIO OSO-NICOLAUS 115KV [3440]	P1	N-1	0.97	0.94	0.89	0.97	1.04	1.04	0.94	0.99	0.97	System adjustments or voltage support if needed
WHEATLND 60 kV	P1-2:A5:28:_RIO OSO-NICOLAUS 115KV [3440]	P1	N-1	0.97	0.94	0.89	0.97	1.04	1.04	0.94	0.99	0.97	System adjustments or voltage support if needed
WILKINS 60 kV	P1-2:A4:49:_CORTINA #1 60KV [6580] MOAS OPENED ON CORTINA ARBUCKLE	P1	N-1	0.94	0.88	0.86	0.95	1.01	0.98	0.88	0.98	0.95	System adjustments or voltage support if needed
WILKINS 60 kV	P1-2:A4:27:_CORTINA-MENDOCINO #1 115KV [1330]	P1	N-1	0.95	0.91	0.90	1.00	0.98	0.98	0.91	0.98	1.00	System adjustments or voltage support if needed
APPLE HL 115 kV	P2-1:A5:51:_MISSOURI FLAT-GOLD HILL #1 115KV [2660] (SHPRING1-CLRKSVLT)	P2	Bus/Breaker	1.01	0.99	0.83	0.99	1.05	1.06	0.99	1.04	0.99	Continue to monitor future load forecast
APPLE HL 115 kV	P2-1:A5:13:_MISSOURI FLAT-GOLD HILL #1 115KV [2660] (GOLDHILL-CPM TAP)	P2	Bus/Breaker	1.01	0.99	0.83	0.99	1.05	1.06	0.99	1.04	0.99	Continue to monitor future load forecast
APPLE HL 115 kV	P2-2:A5:7:_GOLDHILL 115KV SECTION 2F	P2	Bus/Breaker	1.04	1.04	0.82	1.03	1.05	1.05	1.04	1.05	1.03	Continue to monitor future load forecast
APPLE HL 115 kV	P2-4:A5:18:_GOLDHILL 115KV - SECTION 2G & 2F	P2	Bus/Breaker	NA	NA	0.82	NA	NA	NA	NA	NA	NA	Continue to monitor future load forecast
APPLE HL 115 kV	P2-4:A5:3:_GOLDHILL 115KV - SECTION 1F & 2F	P2	Bus/Breaker	NA	NA	0.83	NA	NA	NA	NA	NA	NA	Continue to monitor future load forecast
ATLANTC 230 kV	P2-4:A11:7:_TESLA E 230KV - SECTION 2E & 1E	P2	Bus/Breaker	0.99	0.97	0.90	0.98	1.03	1.03	0.97	1.00	0.98	Continue to monitor future load forecast
ATLANTI 60 kV	P2-4:A11:1:_BELLOTA 230KV - SECTION 1E & 2E	P2	Bus/Breaker	1.01	1.00	0.90	NConv	1.04	1.04	1.00	1.03	NConv	Continue to monitor future load forecast
ATLANTI 60 kV	P2-4:A11:7:_TESLA E 230KV - SECTION 2E & 1E	P2	Bus/Breaker	1.02	1.02	0.90	1.00	1.04	1.04	1.02	1.03	1.00	Continue to monitor future load forecast
AUBURN 60 kV	P2-4:A5:2:_GOLDHILL 115KV - SECTION 1F & 2F	P2	Bus/Breaker	0.99	0.83	NA	0.99	1.03	1.03	0.76	1.02	0.99	System adjustments or voltage support if needed
AUBURN 60 kV	P2-4:A5:2:_GOLDHILL 115KV - SECTION 1F & 2F	P2	Bus/Breaker	0.99	0.83	NA	0.99	1.03	1.03	0.77	1.02	0.99	System adjustments or voltage support if needed
AVENA 115 kV	P2-4:A11:1:_BELLOTA 230KV - SECTION 1E & 2E	P2	Bus/Breaker	0.97	0.89	0.96	NConv	1.04	1.05	0.99	1.00	NConv	System adjustments or voltage support if needed

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 Summer-Off Peak	2028 SP High CEC Forecast	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	
BANTA 115 kV	P2-4:A11:8:_TESLA D 230KV - SECTION 1D & 2D	P2	Bus/Breaker	0.96	0.97	0.96	0.98	1.03	1.03	0.96	0.90	0.98	System adjustments or voltage support if needed
BEARDSLY 115 kV	P2-4:A11:1:_BELLOTA 230KV - SECTION 1E & 2E	P2	Bus/Breaker	1.02	0.85	1.04	NConv	1.05	1.05	1.04	1.03	NConv	System adjustments or voltage support if needed
BELL PGE 115 kV	P2-4:A5:2:_GOLDHILL 115KV - SECTION 1F & 2F	P2	Bus/Breaker	0.92	0.79	NA	0.93	1.08	1.10	0.73	1.00	0.93	System adjustments or voltage support if needed
BELLOTA 115 kV	P2-4:A11:1:_BELLOTA 230KV - SECTION 1E & 2E	P2	Bus/Breaker	0.88	0.58	0.95	NConv	1.03	1.08	1.03	1.01	NConv	System adjustments or voltage support if needed
BRIGHTON 230 kV	P2-3:A5:5:_RIO OSO 230KV - MIDDLE BREAKER BAY 1	P2	Bus/Breaker	0.92	0.90	0.91	0.94	1.03	1.02	0.90	0.93	0.94	Vaca Dixon Area Reinforcement project
CAMANCHE 115 kV	P2-4:A11:1:_BELLOTA 230KV - SECTION 1E & 2E	P2	Bus/Breaker	0.89	0.58	0.94	NConv	1.04	1.09	1.03	1.01	NConv	System adjustments or voltage support if needed
CAMPUS 115 kV	P2-3:A4:21:_BRIGHTN - ME 115KV & BRIGHTON-DAVIS LINE	P2	Bus/Breaker	0.78	0.77	0.93	0.97	1.09	1.05	0.74	0.87	0.97	System adjustments or voltage support if needed
CATARACT 115 kV	P2-4:A11:1:_BELLOTA 230KV - SECTION 1E & 2E	P2	Bus/Breaker	0.97	0.84	0.99	NConv	1.05	1.06	1.02	1.01	NConv	System adjustments or voltage support if needed
CHCGO PK 115 kV	P2-4:A5:2:_GOLDHILL 115KV - SECTION 1F & 2F	P2	Bus/Breaker	0.99	0.91	NA	1.00	1.07	1.08	0.88	1.03	1.00	System adjustments or voltage support if needed
CL AMMNA 115kV	P2-4:A11:8:_TESLA D 230KV - SECTION 1D & 2D	P2	Bus/Breaker	0.96	0.96	0.96	0.98	1.03	1.03	0.96	0.90	0.98	System adjustments or voltage support if needed
CLRKSVLT 115	P2-1:A5:13:_MISSOURI FLAT-GOLD HILL #1 115KV [2660] (GOLDHILL-CPM TAP)	P2	Bus/Breaker	0.99	0.97	0.79	0.97	1.06	1.07	0.97	1.03	0.97	Continue to monitor future load forecast
CLRKSVLT 115	P2-2:A5:7:_GOLDHILL 115KV SECTION 2F	P2	Bus/Breaker	1.04	1.04	0.78	1.04	1.05	1.05	1.04	1.05	1.04	Continue to monitor future load forecast
CLRKSVLT 115	P2-4:A5:18:_GOLDHILL 115KV - SECTION 2G & 2F	P2	Bus/Breaker	NA	NA	0.79	NA	NA	NA	NA	NA	NA	Continue to monitor future load forecast
CLRKSVLT 115	P2-4:A5:3:_GOLDHILL 115KV - SECTION 1F & 2F	P2	Bus/Breaker	NA	NA	0.79	NA	NA	NA	NA	NA	NA	Continue to monitor future load forecast
CORTINA 115 kV	P2-3:A4:56:_CORTINA 230KV - RING R1 & R4	P2	Bus/Breaker	0.99	1.03	1.02	0.97	1.11	1.09	1.03	1.01	0.97	System adjustments or voltage support if needed
CORTINA 115 kV	P2-3:A4:53:_CORTINA 230KV - RING R2 & R3	P2	Bus/Breaker	0.99	1.02	1.01	0.97	1.10	1.09	1.02	1.01	0.97	System adjustments or voltage support if needed

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 Summer-Off Peak	2028 SP High CEC Forecast	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	
CORTINA 230 kV	P2-3:A4:53:_CORTINA 230KV - RING R2 & R3	P2	Bus/Breaker	0.97	0.99	0.96	0.95	1.10	1.08	0.99	0.99	0.95	System adjustments or voltage support if needed
CPM 115 kV	P2-1:A5:13:_MISSOURI FLAT-GOLD HILL #1 115KV [2660] (GOLDHILL-CPM TAP)	P2	Bus/Breaker	0.99	0.97	0.79	0.97	1.06	1.07	0.97	1.03	0.97	Continue to monitor future load forecast
CPM 115 kV	P2-2:A5:7:_GOLDHILL 115KV SECTION 2F	P2	Bus/Breaker	1.04	1.04	0.78	1.04	1.05	1.05	1.04	1.05	1.04	Continue to monitor future load forecast
CPM 115 kV	P2-4:A5:18:_GOLDHILL 115KV - SECTION 2G & 2F	P2	Bus/Breaker	NA	NA	0.79	NA	NA	NA	NA	NA	NA	Continue to monitor future load forecast
CPM 115 kV	P2-4:A5:3:_GOLDHILL 115KV - SECTION 1F & 2F	P2	Bus/Breaker	NA	NA	0.79	NA	NA	NA	NA	NA	NA	Continue to monitor future load forecast
CURTISS 115 kV	P2-4:A11:1:_BELLOTA 230KV - SECTION 1E & 2E	P2	Bus/Breaker	0.97	0.79	0.99	NConv	1.04	1.05	1.01	0.99	NConv	System adjustments or voltage support if needed
DAVIS 115 kV	P2-3:A4:21:_BRIGHTN - ME 115KV & BRIGHTON-DAVIS LINE	P2	Bus/Breaker	0.79	0.77	0.93	0.98	1.08	1.05	0.75	0.87	0.98	Vaca Dixon Area Reinforcement project
DEEPWATR 115KV	P2-3:A4:21:_BRIGHTN - ME 115KV & BRIGHTON-DAVIS LINE	P2	Bus/Breaker	0.78	0.76	0.92	0.98	1.07	1.05	0.74	0.87	0.98	Vaca Dixon Area Reinforcement project
DEEPWATR 115KV	P2-2:A4:20:_BRIGHTN 115KV SECTION ME	P2	Bus/Breaker	0.78	0.77	0.92	0.98	1.07	1.05	0.74	0.87	0.98	Vaca Dixon Area Reinforcement project
DIMOND_1 115 kV	P2-2:A5:8:_GOLDHILL 115KV SECTION 1E	P2	Bus/Breaker	>.95	>.95	0.88	>.95	>.95	>.95	>.95	>.95	>.95	System adjustments or voltage support if needed
DIMOND_1 115 kV	P2-1:A5:51:_MISSOURI FLAT-GOLD HILL #1 115KV [2660] (SHPRING1-CLRKSVLT)	P2	Bus/Breaker	0.99	0.97	0.79	0.97	1.06	1.06	0.97	1.03	0.97	Continue to monitor future load forecast
DMND SPR 115 kV	P2-2:A5:8:_GOLDHILL 115KV SECTION 1E	P2	Bus/Breaker	>.95	>.95	0.88	>.95	>.95	>.95	>.95	>.95	>.95	System adjustments or voltage support if needed
DMND SPR 115 kV	P2-1:A5:12:_MISSOURI FLAT-GOLD HILL #2 115KV [2670] (GOLDHILL-SHPRING2)	P2	Bus/Breaker	1.02	1.01	0.88	1.00	1.03	1.06	1.01	1.04	1.00	Continue to monitor future load forecast
DMND SPR 115 kV	P2-4:A5:17:_GOLDHILL 115KV - SECTION 2G & 1G	P2	Bus/Breaker	NA	NA	0.88	NA	NA	NA	NA	NA	NA	Continue to monitor future load forecast
DMND SPR 115 kV	P2-4:A5:2:_GOLDHILL 115KV - SECTION 1F & 1G	P2	Bus/Breaker	NA	NA	0.88	NA	NA	NA	NA	NA	NA	Continue to monitor future load forecast
DONNELLS 115 kV	P2-4:A11:1:_BELLOTA 230KV - SECTION 1E & 2E	P2	Bus/Breaker	1.02	0.86	1.04	NConv	1.05	1.05	1.04	1.03	NConv	System adjustments or voltage support if needed

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 Summer-Off Peak	2028 SP High CEC Forecast	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	
E.MRYSVE 115 kV	P2-1:A5:16:_PALERMO-NICOLAUS 115KV [3210] (E.MRYSVE-E.MRY J2)	P2	Bus/Breaker	>.95	0.89	0.87	>.95	1.11	1.13	0.89	>.95	>.95	System adjustments or voltage support if needed
ELDORAD 115 kV	P2-4:A5:18:_GOLDHILL 115KV - SECTION 2G & 2F	P2	Bus/Breaker	NA	NA	0.85	NA	NA	NA	NA	NA	NA	Continue to monitor future load forecast
ELDORAD 115 kV	P2-4:A5:3:_GOLDHILL 115KV - SECTION 1F & 2F	P2	Bus/Breaker	NA	NA	0.85	NA	NA	NA	NA	NA	NA	Continue to monitor future load forecast
FROGTOWN 115 kV	P2-4:A11:1:_BELLOTA 230KV - SECTION 1E & 2E	P2	Bus/Breaker	0.96	0.81	0.98	NConv	1.05	1.06	1.01	1.00	NConv	System adjustments or voltage support if needed
GOLDHILL 230 kV	P2-4:A11:7:_TESLA E 230KV - SECTION 2E & 1E	P2	Bus/Breaker	1.00	0.97	0.90	0.98	1.02	1.03	0.97	0.99	0.98	Continue to monitor future load forecast
HALSEY 60 kV	P2-4:A5:2:_GOLDHILL 115KV - SECTION 1F & 2F	P2	Bus/Breaker	0.99	0.83	NA	0.99	1.04	1.03	0.77	1.02	0.99	System adjustments or voltage support if needed
HIGGINS 115 kV	P2-4:A5:2:_GOLDHILL 115KV - SECTION 1F & 2F	P2	Bus/Breaker	0.94	0.82	NA	0.95	1.08	1.09	0.77	1.01	0.95	System adjustments or voltage support if needed
HJ HEINZ 115kV	P2-4:A11:8:_TESLA D 230KV - SECTION 1D & 2D	P2	Bus/Breaker	0.96	0.96	0.95	0.98	1.03	1.03	0.96	0.90	0.98	System adjustments or voltage support if needed
HORSESHE 115 kV	P2-4:A5:2:_GOLDHILL 115KV - SECTION 1F & 2F	P2	Bus/Breaker	0.91	0.77	NA	0.92	1.08	1.10	0.71	1.00	0.92	System adjustments or voltage support if needed
HORSESHE 115 kV	P2-4:A5:2:_GOLDHILL 115KV - SECTION 1F & 2F	P2	Bus/Breaker	0.91	0.77	NA	0.92	1.08	1.10	0.71	1.00	0.92	System adjustments or voltage support if needed
HORSESHE 115 kV	P2-4:A5:2:_GOLDHILL 115KV - SECTION 1F & 2F	P2	Bus/Breaker	0.92	0.78	NA	0.93	1.08	1.10	0.72	1.00	0.93	System adjustments or voltage support if needed
KASSON 115kV	P2-4:A11:8:_TESLA D 230KV - SECTION 1D & 2D	P2	Bus/Breaker	0.96	0.97	0.96	0.98	1.03	1.03	0.97	0.90	0.98	System adjustments or voltage support if needed
LEPRINO 115 kV	P2-4:A11:8:_TESLA D 230KV - SECTION 1D & 2D	P2	Bus/Breaker	0.96	0.96	0.95	0.98	1.03	1.03	0.96	0.90	0.98	System adjustments or voltage support if needed
LID 115 kV	P2-4:A11:8:_TESLA D 230KV - SECTION 1D & 2D	P2	Bus/Breaker	0.96	0.97	0.96	0.98	1.03	1.03	0.96	0.90	0.98	System adjustments or voltage support if needed
LOCKFORD 115 kV	P2-4:A11:1:_BELLOTA 230KV - SECTION 1E & 2E	P2	Bus/Breaker	0.88	0.57	0.93	NConv	1.04	1.08	1.03	1.01	NConv	System adjustments or voltage support if needed
LOCKFORD 115 kV	P2-3:A11:44:_BELLOTA - 1D 115KV & GOLD HILL-BELLOTA-LOCKFORD LINE	P2	Bus/Breaker	0.99	0.98	0.90	0.99	1.05	1.04	0.98	1.01	0.99	Continue to monitor future load forecast

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 Summer-Off Peak	2028 SP High CEC Forecast	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	
LOCKFORD 230 kV	P2-4:A11:1:_BELLOTA 230KV - SECTION 1E & 2E	P2	Bus/Breaker	0.90	0.89	0.85	NConv	1.02	1.01	0.89	0.91	NConv	System adjustments or voltage support if needed
MANTECA 115kV	P2-4:A11:8:_TESLA D 230KV - SECTION 1D & 2D	P2	Bus/Breaker	0.96	0.96	0.95	0.97	1.03	1.03	0.96	0.90	0.97	System adjustments or voltage support if needed
MELONES 115	P2-4:A11:1:_BELLOTA 230KV - SECTION 1E & 2E	P2	Bus/Breaker	0.95	0.77	0.98	NConv	1.05	1.06	1.02	0.99	NConv	System adjustments or voltage support if needed
MI-WUK 115 kV	P2-4:A11:1:_BELLOTA 230KV - SECTION 1E & 2E	P2	Bus/Breaker	0.99	0.81	1.01	NConv	1.05	1.05	1.02	1.01	NConv	System adjustments or voltage support if needed
MIZOU_T2 115 kV	P2-4:A5:17:_GOLDHILL 115KV - SECTION 2G & 1G	P2	Bus/Breaker	NA	NA	0.88	NA	NA	NA	NA	NA	NA	Continue to monitor future load forecast
MIZOU_T2 115 kV	P2-4:A5:2:_GOLDHILL 115KV - SECTION 1F & 1G	P2	Bus/Breaker	NA	NA	0.88	NA	NA	NA	NA	NA	NA	Continue to monitor future load forecast
MOBILCHE 115 kV	P2-3:A4:21:_BRIGHTN - ME 115KV & BRIGHTON-DAVIS LINE	P2	Bus/Breaker	0.88	0.88	0.97	0.99	1.07	1.05	0.86	0.93	0.99	System adjustments or voltage support if needed
MOBILCHE 115 kV	P2-3:A4:18:_BRIGHTN - ME 115KV & BRIGHTN-W.SCRMNO LINE	P2	Bus/Breaker	0.88	0.88	0.97	0.99	1.07	1.05	0.86	0.93	0.99	System adjustments or voltage support if needed
MSHR 60V 60 kV	P2-4:A11:22:_STAGG-D SECTION 1D & STAGG-E SECTION 1E 230KV	P2	Bus/Breaker	>.95	0.53	0.50	>.95	1.07	1.00	0.52	>.95	>.95	System adjustments or voltage support if needed
MTN_QUAR 60 kV	P2-4:A5:2:_GOLDHILL 115KV - SECTION 1F & 2F	P2	Bus/Breaker	0.99	0.83	NA	0.99	1.04	1.03	0.76	1.02	0.99	System adjustments or voltage support if needed
NEW HOPE 60	P2-4:A11:1:_BELLOTA 230KV - SECTION 1E & 2E	P2	Bus/Breaker	0.98	0.99	0.89	NConv	1.04	1.03	0.98	0.99	NConv	Continue to monitor future load forecast
NEWCSTL1 115 kV	P2-4:A5:2:_GOLDHILL 115KV - SECTION 1F & 2F	P2	Bus/Breaker	0.91	0.78	NA	0.92	1.08	1.10	0.72	1.00	0.92	System adjustments or voltage support if needed
NEWCSTL2 115 kV	P2-4:A5:2:_GOLDHILL 115KV - SECTION 1F & 2F	P2	Bus/Breaker	0.92	0.78	NA	0.93	1.08	1.10	0.72	1.00	0.93	System adjustments or voltage support if needed
NEWCASTLE 115 kV	P2-4:A5:2:_GOLDHILL 115KV - SECTION 1F & 2F	P2	Bus/Breaker	0.92	0.78	NA	0.92	1.08	1.10	0.72	1.00	0.92	System adjustments or voltage support if needed
PENRYN 60 kV	P2-4:A5:2:_GOLDHILL 115KV - SECTION 1F & 2F	P2	Bus/Breaker	0.98	0.82	NA	0.98	1.03	1.03	0.75	1.02	0.98	System adjustments or voltage support if needed
PEORIA 115 kV	P2-4:A11:1:_BELLOTA 230KV - SECTION 1E & 2E	P2	Bus/Breaker	0.95	0.77	0.98	NConv	1.04	1.06	1.01	0.99	NConv	System adjustments or voltage support if needed

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 Summer-Off Peak	2028 SP High CEC Forecast	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	
PLACER 115 kV	P2-4:A5:2:_GOLDHILL 115KV - SECTION 1F & 2F	P2	Bus/Breaker	0.92	0.78	NA	0.93	1.08	1.10	0.72	1.00	0.93	System adjustments or voltage support if needed
PLACER 60 kV	P2-4:A5:2:_GOLDHILL 115KV - SECTION 1F & 2F	P2	Bus/Breaker	0.99	0.83	NA	0.99	1.03	1.03	0.77	1.02	0.99	System adjustments or voltage support if needed
POST 115 kV	P2-3:A4:18:_BRIGHTN - ME 115KV & BRIGHTN-W.SCRMNO LINE	P2	Bus/Breaker	0.79	0.78	0.93	0.98	1.07	1.05	0.75	0.87	0.98	System adjustments or voltage support if needed
POST 115 kV	P2-3:A4:21:_BRIGHTN - ME 115KV & BRIGHTON-DAVIS LINE	P2	Bus/Breaker	0.79	0.78	0.93	0.98	1.07	1.05	0.75	0.88	0.98	System adjustments or voltage support if needed
R.TRACK 115 kV	P2-4:A11:1:_BELLOTA 230KV - SECTION 1E & 2E	P2	Bus/Breaker	0.95	0.77	0.98	NConv	1.05	1.06	1.01	0.98	NConv	System adjustments or voltage support if needed
RCTRK J. 115 kV	P2-4:A11:1:_BELLOTA 230KV - SECTION 1E & 2E	P2	Bus/Breaker	0.96	0.78	0.99	NConv	1.04	1.06	1.01	0.99	NConv	System adjustments or voltage support if needed
RIPON 115 kV	P2-4:A11:8:_TESLA D 230KV - SECTION 1D & 2D	P2	Bus/Breaker	0.95	0.95	0.96	0.96	1.03	1.03	0.95	0.90	0.96	System adjustments or voltage support if needed
ROCKLIN 60 kV	P2-4:A11:1:_BELLOTA 230KV - SECTION 1E & 2E	P2	Bus/Breaker	1.01	1.00	0.89	NConv	1.05	1.04	0.99	1.03	NConv	Continue to monitor future load forecast
RVRBANK 115 kV	P2-4:A11:1:_BELLOTA 230KV - SECTION 1E & 2E	P2	Bus/Breaker	0.89	0.60	0.94	NConv	1.04	1.08	1.03	1.00	NConv	System adjustments or voltage support if needed
RVRBK J1 115 kV	P2-4:A11:1:_BELLOTA 230KV - SECTION 1E & 2E	P2	Bus/Breaker	0.89	0.59	0.94	NConv	1.04	1.08	1.03	1.00	NConv	System adjustments or voltage support if needed
SANDBAR 115 kV	P2-4:A11:1:_BELLOTA 230KV - SECTION 1E & 2E	P2	Bus/Breaker	1.02	0.85	1.03	NConv	1.05	1.05	1.04	1.03	NConv	System adjustments or voltage support if needed
SEBASTIA 60 kV	P2-4:A11:22:_STAGG-D SECTION 1D & STAGG-E SECTION 1E 230KV	P2	Bus/Breaker	>.95	0.38	0.31	>.95	1.05	0.95	0.38	>.95	>.95	System adjustments or voltage support if needed
SHPRING 115 kV	P2-1:A5:51:_MISSOURI FLAT-GOLD HILL #1 115KV [2660] (SHPRING1-CLRSVLT)	P2	Bus/Breaker	0.99	0.97	0.79	0.97	1.06	1.07	0.97	1.03	0.97	Continue to monitor future load forecast
SHPRING 115 kV	P2-1:A5:13:_MISSOURI FLAT-GOLD HILL #1 115KV [2660] (GOLDHILL-CPM TAP)	P2	Bus/Breaker	0.99	0.97	0.79	0.97	1.06	1.07	0.97	1.03	0.97	Continue to monitor future load forecast
SHPRING2 115 kV	P2-4:A5:17:_GOLDHILL 115KV - SECTION 2G & 1G	P2	Bus/Breaker	NA	NA	0.88	NA	NA	NA	NA	NA	NA	Continue to monitor future load forecast
SHPRING2 115 kV	P2-4:A5:2:_GOLDHILL 115KV - SECTION 1F & 1G	P2	Bus/Breaker	NA	NA	0.88	NA	NA	NA	NA	NA	NA	Continue to monitor future load forecast

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 Summer-Off Peak	2028 SP High CEC Forecast	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	
SHW 60 kV	P2-4:A11:22:_STAGG-D SECTION 1D & STAGG-E SECTION 1E 230KV	P2	Bus/Breaker	>.95	0.38	0.31	>.95	1.05	0.95	0.37	>.95	>.95	System adjustments or voltage support if needed
SHWSS 60 kV	P2-4:A11:22:_STAGG-D SECTION 1D & STAGG-E SECTION 1E 230KV	P2	Bus/Breaker	>.95	0.38	0.31	>.95	1.05	0.95	0.37	>.95	>.95	System adjustments or voltage support if needed
SIERRAPI 60 kV	P2-3:A5:5:_RIO OSO 230KV - MIDDLE BREAKER BAY 1	P2	Bus/Breaker	0.99	0.99	0.87	1.00	1.05	1.04	0.98	1.02	1.00	Continue to monitor future load forecast
SIERRAPI 60 kV	P2-4:A11:1:_BELLOTA 230KV - SECTION 1E & 2E	P2	Bus/Breaker	1.00	0.99	0.86	NConv	1.05	1.04	0.99	1.03	NConv	Continue to monitor future load forecast
SJ COGEN 115 kV	P2-4:A11:1:_BELLOTA 230KV - SECTION 1E & 2E	P2	Bus/Breaker	0.87	0.55	0.91	NConv	1.04	1.08	1.02	1.00	NConv	System adjustments or voltage support if needed
SJ COGEN 115 kV	P2-3:A11:44:_BELLOTA - 1D 115KV & GOLD HILL-BELLOTA-LOCKEFORD LINE	P2	Bus/Breaker	0.96	0.95	0.83	0.97	1.05	1.03	0.94	0.99	0.97	System adjustments or voltage support if needed
SJ COGEN 115 kV	P2-3:A11:45:_BELLOTA - 1D 115KV & BELLOTA-RIVERBANK LINE	P2	Bus/Breaker	0.98	0.95	0.84	0.97	1.05	1.04	0.96	0.99	0.97	Continue to monitor future load forecast
SJ COGEN 115 kV	P2-2:A11:33:_BELLOTA 115KV SECTION 1D	P2	Bus/Breaker	0.98	0.96	0.85	0.97	1.05	1.04	0.96	0.99	0.97	Continue to monitor future load forecast
SPICAMIN 115 kV	P2-1:A5:51:_MISSOURI FLAT-GOLD HILL #1 115KV [2660] (SHPRING1-CLKSVLT)	P2	Bus/Breaker	1.01	0.99	0.83	0.99	1.05	1.06	0.99	1.04	0.99	Continue to monitor future load forecast
SPICAMIN 115 kV	P2-1:A5:13:_MISSOURI FLAT-GOLD HILL #1 115KV [2660] (GOLDHILL-CPM TAP)	P2	Bus/Breaker	1.01	0.99	0.83	0.99	1.05	1.06	0.99	1.04	0.99	Continue to monitor future load forecast
SPICAMIN 115 kV	P2-2:A5:7:_GOLDHILL 115KV SECTION 2F	P2	Bus/Breaker	1.04	1.04	0.82	1.03	1.05	1.05	1.04	1.05	1.03	Continue to monitor future load forecast
SPICAMIN 115 kV	P2-4:A5:18:_GOLDHILL 115KV - SECTION 2G & 2F	P2	Bus/Breaker	NA	NA	0.83	NA	NA	NA	NA	NA	NA	Continue to monitor future load forecast
SPICAMIN 115 kV	P2-4:A5:3:_GOLDHILL 115KV - SECTION 1F & 2F	P2	Bus/Breaker	NA	NA	0.83	NA	NA	NA	NA	NA	NA	Continue to monitor future load forecast
SPISONORA 115 kV	P2-4:A11:1:_BELLOTA 230KV - SECTION 1E & 2E	P2	Bus/Breaker	0.97	0.79	0.99	NConv	1.04	1.05	1.01	0.99	NConv	System adjustments or voltage support if needed
SPRNG GJ 115 kV	P2-4:A11:1:_BELLOTA 230KV - SECTION 1E & 2E	P2	Bus/Breaker	1.01	0.84	1.03	NConv	1.05	1.05	1.03	1.03	NConv	System adjustments or voltage support if needed
SPRNG GP 115 kV	P2-4:A11:1:_BELLOTA 230KV - SECTION 1E & 2E	P2	Bus/Breaker	1.01	0.85	1.03	NConv	1.05	1.05	1.04	1.03	NConv	System adjustments or voltage support if needed

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 Summer-Off Peak	2028 SP High CEC Forecast	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	
STAGG 60 kV	P2-4:A11:22:_STAGG-D SECTION 1D & STAGG-E SECTION 1E 230KV	P2	Bus/Breaker	>.95	0.42	0.35	>.95	1.07	0.98	0.42	>.95	>.95	System adjustments or voltage support if needed
STAGG-D 230 kV	P2-4:A11:7:_TESLA E 230KV - SECTION 2E & 1E	P2	Bus/Breaker	0.98	0.97	0.89	0.97	1.04	1.04	0.97	0.97	0.97	Continue to monitor future load forecast
STAGG-H 230 kV	P2-4:A11:7:_TESLA E 230KV - SECTION 2E & 1E	P2	Bus/Breaker	0.98	0.98	0.89	0.97	1.04	1.04	0.98	0.97	0.97	Continue to monitor future load forecast
STANISLS 115 kV	P2-4:A11:1:_BELLOTA 230KV - SECTION 1E & 2E	P2	Bus/Breaker	0.98	0.84	0.99	NConv	1.06	1.06	1.02	1.01	NConv	System adjustments or voltage support if needed
STCKTNJB 115 kV	P2-4:A11:1:_BELLOTA 230KV - SECTION 1E & 2E	P2	Bus/Breaker	0.87	0.57	0.93	NConv	1.04	1.08	1.03	1.00	NConv	System adjustments or voltage support if needed
STKTON A 115 kV	P2-4:A11:1:_BELLOTA 230KV - SECTION 1E & 2E	P2	Bus/Breaker	0.87	0.55	0.90	NConv	1.04	1.08	1.02	1.00	NConv	System adjustments or voltage support if needed
STN COGN 115	P2-3:A11:45:_BELLOTA - 1D 115KV & BELLOTA-RIVERBANK LINE	P2	Bus/Breaker	0.98	0.95	0.84	0.97	1.05	1.03	0.96	0.99	0.97	Continue to monitor future load forecast
STN COGN 115	P2-2:A11:33:_BELLOTA 115KV SECTION 1D	P2	Bus/Breaker	0.98	0.95	0.84	0.97	1.05	1.04	0.96	0.99	0.97	Continue to monitor future load forecast
TAYLOR 60 kV	P2-4:A11:1:_BELLOTA 230KV - SECTION 1E & 2E	P2	Bus/Breaker	1.01	1.00	0.89	NConv	1.04	1.04	1.00	1.03	NConv	Continue to monitor future load forecast
TAYLOR 60 kV	P2-4:A11:7:_TESLA E 230KV - SECTION 2E & 1E	P2	Bus/Breaker	1.02	1.02	0.89	1.00	1.04	1.04	1.01	1.03	1.00	Continue to monitor future load forecast
TAYLOR 60 kV	P2-3:A5:10:_GOLDHILL - 1E 230KV & MIDDLE FORK-GOLD HILL LINE	P2	Bus/Breaker	NA	NA	0.90	NA	NA	NA	NA	NA	NA	Continue to monitor future load forecast
TERMNOUS 60	P2-4:A11:22:_STAGG-D SECTION 1D & STAGG-E SECTION 1E 230KV	P2	Bus/Breaker	>.95	0.38	0.31	>.95	1.05	0.96	0.37	>.95	>.95	System adjustments or voltage support if needed
THURMAN SS 230 kV	P2-4:A11:1:_BELLOTA 230KV - SECTION 1E & 2E	P2	Bus/Breaker	NA	0.89	0.85	NA	1.02	1.01	0.88	NA	NA	System adjustments or voltage support if needed
TRACY 115 kV	P2-4:A11:8:_TESLA D 230KV - SECTION 1D & 2D	P2	Bus/Breaker	0.96	0.96	0.95	0.98	1.03	1.03	0.96	0.90	0.98	System adjustments or voltage support if needed
TULLOCH 115 kV	P2-4:A11:1:_BELLOTA 230KV - SECTION 1E & 2E	P2	Bus/Breaker	0.93	0.71	0.98	NConv	1.04	1.06	1.02	0.98	NConv	System adjustments or voltage support if needed
UCDAVSJ1 115 kV	P2-3:A4:21:_BRIGHTN - ME 115KV & BRIGHTON-DAVIS LINE	P2	Bus/Breaker	0.79	0.77	0.93	0.98	1.08	1.05	0.75	0.87	0.98	Vaca Dixon Area Reinforcement project



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 Summer-Off Peak	2028 SP High CEC Forecast	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	
UOP 60 kV	P2-4:A11:22:_STAGG-D SECTION 1D & STAGG-E SECTION 1E 230KV	P2	Bus/Breaker	>.95	0.42	0.35	>.95	1.07	0.99	0.42	>.95	>.95	System adjustments or voltage support if needed
VALLY HM 115 kV	P2-4:A11:1:_BELLOTA 230KV - SECTION 1E & 2E	P2	Bus/Breaker	0.97	0.87	0.97	NConv	1.05	1.05	1.00	1.00	NConv	System adjustments or voltage support if needed
W.SCRMNO 115 kV	P2-3:A4:21:_BRIGHTN - ME 115KV & BRIGHTON-DAVIS LINE	P2	Bus/Breaker	0.79	0.78	0.93	0.99	1.07	1.05	0.75	0.88	0.98	Vaca Dixon Area Reinforcement project
W.SCRMNO 115 kV	P2-2:A4:20:_BRIGHTN 115KV SECTION ME	P2	Bus/Breaker	0.79	0.78	0.93	0.99	1.07	1.05	0.75	0.88	0.99	Vaca Dixon Area Reinforcement project
W.SCRMNO 115 kV	P2-3:A4:19:_BRIGHTN - ME 115KV & BRIGHTON-GRAND ISLAND #1 LINE	P2	Bus/Breaker	0.79	0.78	0.93	0.99	1.07	1.05	0.75	0.88	0.99	Vaca Dixon Area Reinforcement project
W.SCRMNO 115 kV	P2-3:A4:20:_BRIGHTN - ME 115KV & BRIGHTON-GRAND ISLAND #2 LINE	P2	Bus/Breaker	0.79	0.78	0.93	0.99	1.07	1.05	0.75	0.88	0.99	Vaca Dixon Area Reinforcement project
W.SCRMNO 115 kV	P2-4:A4:10:_BRIGHTN 115KV - SECTION ME & MD	P2	Bus/Breaker	0.79	0.78	0.93	0.99	1.07	1.05	0.76	0.88	0.99	Vaca Dixon Area Reinforcement project
WHEATLND 60 kV	P2-3:A5:84:_E.NICOLS 115KV - RING R1 & R2	P2	Bus/Breaker	0.97	0.94	0.89	0.97	1.04	1.04	0.94	0.99	0.97	System adjustments or voltage support if needed
WILKINS 60 kV	P2-4:A4:2:_VACA-DIX 230KV - SECTION 2F & 1F	P2	Bus/Breaker	0.96	0.91	0.90	0.99	0.98	0.97	0.91	0.98	0.99	System adjustments or voltage support if needed
WILKINS 60 kV	P2-4:A4:3:_VACA-DIX 230KV - SECTION 1E & 2E	P2	Bus/Breaker	0.96	0.90	0.90	1.00	0.98	0.98	0.90	0.98	1.00	System adjustments or voltage support if needed
WOODLANDBIOM 115 kV	P2-3:A4:21:_BRIGHTN - ME 115KV & BRIGHTON-DAVIS LINE	P2	Bus/Breaker	0.87	0.86	0.96	0.99	1.07	1.05	0.84	0.92	0.99	Vaca Dixon Area Reinforcement project
WOODLANDBIOM 115 kV	P2-3:A4:18:_BRIGHTN - ME 115KV & BRIGHTN-W.SCRMNO LINE	P2	Bus/Breaker	0.87	0.86	0.96	0.99	1.07	1.05	0.85	0.92	0.99	Vaca Dixon Area Reinforcement project
WOODLANDBIOM 115 kV	P2-2:A4:20:_BRIGHTN 115KV SECTION ME	P2	Bus/Breaker	0.87	0.86	0.97	0.99	1.07	1.05	0.84	0.92	0.99	Vaca Dixon Area Reinforcement project
WOODLD 115 kV	P2-3:A4:21:_BRIGHTN - ME 115KV & BRIGHTON-DAVIS LINE	P2	Bus/Breaker	0.87	0.87	0.97	0.99	1.07	1.05	0.85	0.93	0.99	Vaca Dixon Area Reinforcement project
WOODLD 115 kV	P2-3:A4:18:_BRIGHTN - ME 115KV & BRIGHTN-W.SCRMNO LINE	P2	Bus/Breaker	0.88	0.87	0.97	0.99	1.07	1.05	0.86	0.93	0.99	Vaca Dixon Area Reinforcement project
WOODLD 115 kV	P2-2:A4:20:_BRIGHTN 115KV SECTION ME	P2	Bus/Breaker	0.88	0.87	0.97	0.99	1.07	1.05	0.86	0.93	0.99	Vaca Dixon Area Reinforcement project

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 Summer-Off Peak	2028 SP High CEC Forecast	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	
WOODLD 115 kV	P2-3:A4:19:_BRIGHTN - ME 115KV & BRIGHTON-GRAND ISLAND #1 LINE	P2	Bus/Breaker	0.88	0.87	0.97	0.99	1.07	1.05	0.86	0.93	0.99	Vaca Dixon Area Reinforcement project
WOODLD 115 kV	P2-3:A4:20:_BRIGHTN - ME 115KV & BRIGHTON-GRAND ISLAND #2 LINE	P2	Bus/Breaker	0.88	0.87	0.97	0.99	1.07	1.05	0.86	0.93	0.99	Vaca Dixon Area Reinforcement project
WOODLD 115 kV	P2-4:A4:10:_BRIGHTN 115KV - SECTION ME & MD	P2	Bus/Breaker	0.88	0.87	0.97	0.99	1.07	1.05	0.86	0.93	0.99	Vaca Dixon Area Reinforcement project
WSTLNESW 60 kV	P2-4:A11:22:_STAGG-D SECTION 1D & STAGG-E SECTION 1E 230KV	P2	Bus/Breaker	>.95	0.43	0.36	>.95	1.07	0.99	0.42	>.95	>.95	System adjustments or voltage support if needed
BEALE_2 60kV	P1-1:A5:14:_NARROWSPH2 13.80KV GEN UNIT 1 & P1-2:A5:56:_COLGATE-SMARTVILLE #1	P3	G-1/N-1	>.95	>.95	0.89	>.95	>.95	>.95	>.95	>.95	>.95	System adjustments or voltage support if needed
BRIGHTON 230 kV	P1-1:A4:18:_WOODLANDBIOM 13.80KV GEN UNIT 1 & P1-2:A4:7:_RIO QSO-BRIGHTON 230KV	P3	G-1/N-1	>.95	>.95	>.95	>.95	>.95	>.95	0.90	>.95	>.95	System adjustments or voltage support if needed
BRWNS VY 60kV	P1-1:A5:14:_NARROWSPH2 13.80KV GEN UNIT 1 & P1-2:A5:56:_COLGATE-SMARTVILLE #1	P3	G-1/N-1	>.95	>.95	0.90	>.95	>.95	>.95	>.95	>.95	>.95	System adjustments or voltage support if needed
DEEPWATR 115kV	P1-1:A4:18:_WOODLANDBIOM 13.80KV GEN UNIT 1 & P1-2:A4:34:_BRIGHTN-W.SCRMNO	P3	G-1/N-1	>.95	>.95	>.95	>.95	>.95	>.95	0.90	>.95	>.95	System adjustments or voltage support if needed
DIST2047 60 kV	P1-1:A5:5:_COLGATE2 13.80KV GEN UNIT 1 & P1-3:A4:24:_CORTINA 115/60KV TB 5	P3	G-1/N-1	0.90	>.95	>.95	>.95	>.95	>.95	>.95	>.95	>.95	System adjustments or voltage support if needed
DIST2047 60 kV	P1-1:A4:30:_CORTINA 1-25 25.00KV GEN UNIT VE & P1-2:A4:49:_CORTINA #1 60KV [6580]	P3	G-1/N-1	>.95	>.95	0.84	>.95	>.95	>.95	>.95	>.95	>.95	System adjustments or voltage support if needed
DIST2047 60 kV	P1-1:A4:15:_MONTEZUMA2W 0.69KV GEN UNIT 1 & P1-2:A4:3:_DELEVAN-CORTINA 230KV	P3	G-1/N-1	>.95	0.88	0.88	>.95	>.95	>.95	>.95	>.95	>.95	System adjustments or voltage support if needed
ENVRO_HY 60kV	P1-1:A5:20:_ROLLINSF 6.60KV GEN UNIT 1 & P1-3:A5:37:_OXBOW 60/9.11KV TB 1	P3	G-1/N-1	0.88	0.86	>.95	>.95	>.95	>.95	0.86	>.95	>.95	System adjustments or voltage support if needed
ENVRO_HY 60kV	P1-1:A5:23:_OXBOW F 9.11KV GEN UNIT 1 & P1-1:A5:20:_ROLLINSF 6.60KV GEN	P3	G-1/N-1	0.88	0.86	>.95	>.95	>.95	>.95	0.86	>.95	>.95	System adjustments or voltage support if needed
FORST HL 60 kV	P1-1:A5:23:_OXBOW F 9.11KV GEN UNIT 1 & P1-1:A5:20:_ROLLINSF 6.60KV GEN	P3	G-1/N-1	0.88	0.86	>.95	>.95	>.95	>.95	0.86	>.95	>.95	System adjustments or voltage support if needed
GRSS VLY 60 kV	P1-1:A5:14:_NARROWSPH2 13.80KV GEN UNIT 1 & P1-2:A5:4:_PALERMO-COLGATE 230KV	P3	G-1/N-1	>.95	>.95	0.89	>.95	>.95	>.95	>.95	>.95	>.95	System adjustments or voltage support if needed
GUSTINE 60kV	P1-1:A11:14:_RIPONCOGEN 13.80KV GEN UNIT 1 & P1-2:A12:19:_CROW CREEK SW STA-	P3	G-1/N-1	>.95	0.89	>.95	>.95	>.95	>.95	0.89	>.95	>.95	System adjustments or voltage support if needed

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 Summer-Off Peak	2028 SP High CEC Forecast	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	
GUSTINE 60kV	P1-1:A11:29:_GWFTRCY3 18.00KV & GWFTRCY1 13.80KV & GWFTRCY2 13.80KV GEN UNITS & P1-1:A12:13:_STANISLS 13.80KV GEN UNIT 1 & P1-2:A12:19:_CROW CREEK SW STA-FRONTIER SOLAR PV	P3	G-1/N-1	>.95	0.88	>.95	>.95	>.95	>.95	0.87	>.95	>.95	System adjustments or voltage support if needed
GUSTINE 60kV	P1-1:A5:30:_RBROCKLIN 12.47KV GEN UNIT 1 & P1-2:A5:34:_RIO OSO-LINCLN-SPI-LINC 115KV [0]	P3	G-1/N-1	>.95	0.89	>.95	>.95	>.95	>.95	0.89	>.95	>.95	System adjustments or voltage support if needed
LINCLN 115kV	P1-1:A5:30:_RBROCKLIN 12.47KV GEN UNIT 1 & P1-2:A5:34:_RIO OSO-LINCLN-SPI-LINC 115KV [0]	P3	G-1/N-1	>.95	>.95	0.89	>.95	>.95	>.95	>.95	>.95	>.95	System adjustments or voltage support if needed
LINCLN 115kV	P1-1:A5:9:_RALSTON 13.80KV GEN UNIT 1 & P1-2:A5:34:_RIO OSO-LINCLN-SPI-LINC 115KV [0]	P3	G-1/N-1	>.95	>.95	0.90	>.95	>.95	>.95	>.95	>.95	>.95	System adjustments or voltage support if needed
LINCLN 115kV	P1-1:A5:38:_WISE 12.47KV GEN UNIT 1 & P1-2:A5:34:_RIO OSO-LINCLN-SPI-LINC 115KV [0]	P3	G-1/N-1	>.95	>.95	0.90	>.95	>.95	>.95	>.95	>.95	>.95	System adjustments or voltage support if needed
LINCLN 115kV	P1-1:A11:34:_BELLOTA 1-25 25.00KV GEN UNIT VS & P1-2:A5:34:_RIO OSO-LINCLN-SPI-LINC 115KV [0]	P3	G-1/N-1	>.95	>.95	0.90	>.95	>.95	>.95	>.95	>.95	>.95	System adjustments or voltage support if needed
MRYSVLE 60 kV	P1-1:A5:30:_RBROCKLIN 12.47KV GEN UNIT 1 & P1-2:A5:48:_E.MRYSVE-MRYSVLE #1	P3	G-1/N-1	>.95	0.89	0.84	>.95	>.95	>.95	>.95	>.95	>.95	System adjustments or voltage support if needed
MRYSVLE 60 kV	P1-1:A5:29:_SPILINCF 12.50KV GEN UNIT 1 & P1-2:A5:48:_E.MRYSVE-MRYSVLE #1 60KV [0]	P3	G-1/N-1	>.95	0.89	0.84	>.95	>.95	>.95	>.95	>.95	>.95	System adjustments or voltage support if needed
MRYSVLE 60 kV	P1-1:A5:9:_RALSTON 13.80KV GEN UNIT 1 & P1-2:A5:48:_E.MRYSVE-MRYSVLE #1 60KV [0]	P3	G-1/N-1	>.95	0.90	0.84	>.95	>.95	>.95	0.89	>.95	>.95	System adjustments or voltage support if needed
NARRWS 1 60kV	P1-1:A5:14:_NARROWSPH2 13.80KV GEN UNIT 1 & P1-2:A5:56:_COLGATE-SMARTVILLE #1	P3	G-1/N-1	>.95	>.95	0.90	>.95	>.95	>.95	>.95	>.95	>.95	System adjustments or voltage support if needed
NARRWS 2 60kV	P1-1:A5:14:_NARROWSPH2 13.80KV GEN UNIT 1 & P1-2:A5:56:_COLGATE-SMARTVILLE #1	P3	G-1/N-1	>.95	>.95	0.90	>.95	>.95	>.95	>.95	>.95	>.95	System adjustments or voltage support if needed
OXBOW 60 kV	P1-1:A5:20:_ROLLINSF 6.60KV GEN UNIT 1 & P1-3:A5:37:_OXBOW 60/9.11KV TB 1	P3	G-1/N-1	0.88	0.86	>.95	>.95	>.95	>.95	0.86	>.95	>.95	System adjustments or voltage support if needed
OXBOW 60 kV	P1-1:A5:23:_OXBOW F 9.11KV GEN UNIT 1 & P1-1:A5:20:_ROLLINSF 6.60KV GEN	P3	G-1/N-1	0.88	0.86	>.95	>.95	>.95	>.95	0.86	>.95	>.95	System adjustments or voltage support if needed
PIKE CTY 60kV	P1-1:A5:14:_NARROWSPH2 13.80KV GEN UNIT 1 & P1-2:A5:4:_PALERMO-COLGATE 230KV	P3	G-1/N-1	>.95	>.95	0.90	>.95	>.95	>.95	>.95	>.95	>.95	Continue to monitor future load forecast
PLSNT GR 115kV	P1-1:A5:30:_RBROCKLIN 12.47KV GEN UNIT 1 & P1-2:A5:34:_RIO OSO-LINCLN-SPI-LINC 115KV [0]	P3	G-1/N-1	>.95	>.95	0.90	>.95	>.95	>.95	>.95	>.95	>.95	Continue to monitor future load forecast
PLUMAS 60kV	P1-1:A5:30:_RBROCKLIN 12.47KV GEN UNIT 1 & P1-2:A5:48:_E.MRYSVE-MRYSVLE #1	P3	G-1/N-1	>.95	>.95	0.90	>.95	>.95	>.95	>.95	>.95	>.95	Continue to monitor future load forecast

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 Summer-Off Peak	2028 SP High CEC Forecast	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	
PLUMAS 60kV	P1-1:A5:29:_SPILINCF 12.50KV GEN UNIT 1 & P1-2:A5:48:_E.MRYSVE-MRYSVLE #1 60KV [0]	P3	G-1/N-1	>.95	>.95	0.90	>.95	>.95	>.95	>.95	>.95	>.95	Continue to monitor future load forecast
RBROCKLIN 115kV	P1-1:A5:30:_RBROCKLIN 12.47KV GEN UNIT 1 & P1-2:A5:34:_RIO OSO-LINCLN-SPI-LINC 115KV [0]	P3	G-1/N-1	>.95	>.95	0.90	>.95	>.95	>.95	>.95	>.95	>.95	Continue to monitor future load forecast
ROCKLIN 60 kV	P1-1:A5:30:_RBROCKLIN 12.47KV GEN UNIT 1 & P1-2:A5:34:_RIO OSO-LINCLN-SPI-LINC 115KV [0]	P3	G-1/N-1	>.95	>.95	0.90	>.95	>.95	>.95	>.95	>.95	>.95	Continue to monitor future load forecast
ROCKLIN 60 kV	P1-1:A5:9:_RALSTON 13.80KV GEN UNIT 1 & P1-4:A5:1:_RIO OSO SVC	P3	G-1/N-1	>.95	>.95	0.90	>.95	>.95	>.95	>.95	>.95	>.95	Continue to monitor future load forecast
SIERRAPI 60 kV	P1-1:A5:30:_RBROCKLIN 12.47KV GEN UNIT 1 & P1-4:A5:1:_RIO OSO SVC	P3	G-1/N-1	>.95	>.95	0.87	>.95	>.95	>.95	>.95	>.95	>.95	Continue to monitor future load forecast
TAYLOR 60 kV	P1-1:A5:30:_RBROCKLIN 12.47KV GEN UNIT 1 & P1-4:A5:1:_RIO OSO SVC	P3	G-1/N-1	>.95	>.95	0.90	>.95	>.95	>.95	>.95	>.95	>.95	Continue to monitor future load forecast
WEMR SWS 60kV	P1-1:A5:20:_ROLLINSF 6.60KV GEN UNIT 1 & P1-3:A5:10:_DRUMPH1 115/115KV TB 1	P3	G-1/N-1	>.95	>.95	0.89	>.95	>.95	>.95	>.95	>.95	>.95	Continue to monitor future load forecast
WHEATLND 60 kV	P1-1:A4:25:_WOODLD 2-25 25.00KV GEN UNIT VS & P1-2:A5:28:_RIO OSO-NICOLAUS 115KV	P3	G-1/N-1	>.95	>.95	0.89	>.95	>.95	>.95	>.95	>.95	>.95	Continue to monitor future load forecast
WHEATLND 60 kV	P1-1:A4:25:_WOODLD 2-25 25.00KV GEN UNIT VS & P1-2:A5:28:_RIO OSO-NICOLAUS 115KV	P3	G-1/N-1	>.95	>.95	0.89	>.95	>.95	>.95	>.95	>.95	>.95	Continue to monitor future load forecast
WILKINS 60 kV	P1-1:A4:30:_CORTINA 1-25 25.00KV GEN UNIT VE & P1-2:A4:49:_CORTINA #1 60KV [6580]	P3	G-1/N-1	>.95	>.95	0.86	>.95	>.95	>.95	>.95	>.95	>.95	Continue to monitor future load forecast
WILKINS 60 kV	P1-1:A11:29:_GWFTRCY3 18.00KV & GWFTRCY1 13.80KV & GWFTRCY2 13.80KV GEN UNITS & P1-	P3	G-1/N-1	>.95	>.95	0.86	>.95	>.95	>.95	>.95	>.95	>.95	Continue to monitor future load forecast
WILKINS 60 kV	P1-1:A4:11:_HIGHWINDS 0.69KV GEN UNIT 1 & P1-2:A4:49:_CORTINA #1 60KV [6580] MOAS OPENED ON	P3	G-1/N-1	>.95	>.95	0.86	>.95	>.95	>.95	>.95	>.95	>.95	Continue to monitor future load forecast
YUBACITY 60 kV	P1-1:A5:14:_NARROWSPH2 13.80KV GEN UNIT 1 & P1-2:A5:56:_COLGATE-SMARTVILLE #1	P3	G-1/N-1	>.95	>.95	0.90	>.95	>.95	>.95	>.95	>.95	>.95	Continue to monitor future load forecast
ALMENDRA 60 kV	P5-5A:A5:4:_PEASE 115 KV BUS (FAILURE OF NON-REDUNDANT RELAY)	P5	Non-Redundant battery supply	1.01	1.02	1.01	0.99	1.02	1.02	1.02	0.59	0.99	Sensitivity only
ATLANTC 230 kV	P5-5C:A5:1:_RIO OSO 230-115KV BATT(FAILURE OF NON-REDUNDANT BATT)	P5	Non-Redundant battery supply	0.97	0.94	0.81	0.97	1.03	1.04	0.93	0.99	0.97	System adjustments or voltage support if needed
ATLANTC 230 kV	P5-5C:A11:5:_BELLOTA 230-115KV BATT(FAILURE OF NON-REDUNDANT BATT)	P5	Non-Redundant battery supply	0.98	0.95	0.88	0.97	1.03	NConv	0.94	0.99	0.97	System adjustments or voltage support if needed

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 Summer-Off Peak	2028 SP High CEC Forecast	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	
ATLANTIC 115 kV	P5-5C:A5:1:_RIO OSO 230-115KV BATT(FAILURE OF NON-REDUNDANT BATT)	P5	Non-Redundent battery supply	0.99	0.95	0.82	0.99	1.05	1.07	0.95	1.01	0.99	System adjustments or voltage support if needed
AUBURN 60 kV	P4-2:A5:2:_STUCK BREAKER & NO BF RELAY GOLD HILL 115KV CB 172 OR 392	P5	Non-Redundent battery supply	1.02	0.97	0.57	1.02	1.03	1.03	0.96	1.02	1.02	System adjustments or voltage support if needed
AVENA 115 kV	P5-5A:A11:14:_KASSON 115KV BUS (FAILURE OF NON-REDUNDANT RELAY)	P5	Non-Redundent battery supply	0.84	0.96	0.92	0.89	1.03	1.04	0.96	0.94	0.89	System adjustments or voltage support if needed
BANTA 115 kV	P5-5C:A11:19:_SCHULTE SW STA 115KV BATT(FAILURE OF NON-REDUNDANT BATT)	P5	Non-Redundent battery supply	0.89	0.92	0.90	0.93	1.04	1.05	0.92	0.93	0.93	System adjustments or voltage support if needed
BOGUE 115 kV	P5-5C:A5:1:_RIO OSO 230-115KV BATT(FAILURE OF NON-REDUNDANT BATT)	P5	Non-Redundent battery supply	1.00	0.99	0.84	1.01	1.02	1.05	0.99	0.99	1.01	System adjustments or voltage support if needed
BRIGHTN 115 kV	P4-2:A5:1:_STUCK BREAKER & NO BF RELAY RIO OSO 115KV CB 402 412 422 432 442 462 OR 472	P5	Non-Redundent battery supply	1.03	0.91	1.03	1.06	1.07	1.07	0.89	1.06	1.06	System adjustments or voltage support if needed
BRIGHTON 230 kV	P4-2:A5:1:_STUCK BREAKER & NO BF RELAY RIO OSO 115KV CB 402 412 422 432 442 462 OR 472	P5	Non-Redundent battery supply	0.93	0.84	0.92	0.96	1.04	1.02	0.83	0.97	0.96	Vaca Dixon Area Reinforcement project
BRIGHTON 230 kV	P5-5A:A5:5:_RIO OSO 115 KV BUS (FAILURE OF NON-REDUNDANT RELAY)	P5	Non-Redundent battery supply	0.95	0.90	0.93	0.96	1.04	1.02	0.89	0.97	0.96	Vaca Dixon Area Reinforcement project
BRUNSWCK 115 kV	P5-5C:A5:3:_GOLD HILL 230-115-60KV BATT(FAILURE OF NON-REDUNDANT BATT)	P5	Non-Redundent battery supply	1.01	1.00	0.89	1.02	1.07	1.06	1.00	1.04	1.02	System adjustments or voltage support if needed
CALVO 60 kV	P5-5A:A11:14:_KASSON 115KV BUS (FAILURE OF NON-REDUNDANT RELAY)	P5	Non-Redundent battery supply	0.75	0.93	0.70	0.87	0.99	1.02	0.92	0.93	0.87	System adjustments or voltage support if needed
CAMPUS 115 kV	P5-5c(DC):A4:17:_Station DC Battery Supply WEST SACRAMENTO 115kv Batt	P5	Non-Redundent battery supply	0.95	0.95	0.99	1.01	1.10	1.06	0.95	0.98	1.01	System adjustments or voltage support if needed
CAMPUS 115 kV	P5-5c(DC):A4:11:_Station DC Battery Supply WOODLAND 115kv Batt	P5	Non-Redundent battery supply	0.98	0.94	1.00	1.04	1.11	1.08	0.93	1.00	1.04	System adjustments or voltage support if needed
CARBONA 60 kV	P5-5A:A11:14:_KASSON 115KV BUS (FAILURE OF NON-REDUNDANT RELAY)	P5	Non-Redundent battery supply	0.70	0.87	0.59	0.84	0.97	1.02	0.86	0.89	0.84	System adjustments or voltage support if needed
CL AMMNA 115kV	P5-5C:A11:19:_SCHULTE SW STA 115KV BATT(FAILURE OF NON-REDUNDANT BATT)	P5	Non-Redundent battery supply	0.89	0.94	0.92	0.93	1.04	1.05	0.94	0.93	0.93	System adjustments or voltage support if needed
COLGTE2 230 kV	P5-5C:A11:5:_BELLOTA 230-115KV BATT(FAILURE OF NON-REDUNDANT BATT)	P5	Non-Redundent battery supply	1.01	0.99	0.90	1.01	1.03	NConv	0.98	1.01	1.01	System adjustments or voltage support if needed
COLGTE2 230 kV	P5-5C:A5:1:_RIO OSO 230-115KV BATT(FAILURE OF NON-REDUNDANT BATT)	P5	Non-Redundent battery supply	1.01	1.00	0.90	1.01	1.03	1.02	1.00	1.02	1.01	System adjustments or voltage support if needed

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 Summer-Off Peak	2028 SP High CEC Forecast	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	
DAVIS 115 kV	P5-5A:A5:5:_RIO OSO 115 KV BUS (FAILURE OF NON-REDUNDANT RELAY)	P5	Non-Redundent battery supply	0.94	0.85	0.99	1.01	1.11	1.08	0.83	0.98	1.01	System adjustments or voltage support if needed
DEEPWATR 115kV	P5-5A:A5:5:_RIO OSO 115 KV BUS (FAILURE OF NON-REDUNDANT RELAY)	P5	Non-Redundent battery supply	0.99	0.90	1.01	1.03	1.09	1.08	0.89	1.02	1.03	System adjustments or voltage support if needed
DRUMPH1 115 kV	P5-5C:A5:3:_GOLD HILL 230-115-60KV BATT(Failure of Non-Redundent BATT)	P5	Non-Redundent battery supply	1.03	1.01	0.88	1.04	1.07	1.06	1.01	1.05	1.04	System adjustments or voltage support if needed
DRUMPH1MP2 115 kV	P5-5C:A5:3:_GOLD HILL 230-115-60KV BATT(Failure of Non-Redundent BATT)	P5	Non-Redundent battery supply	0.97	0.96	0.89	0.98	0.99	0.99	0.96	0.99	0.98	System adjustments or voltage support if needed
DRUMPH2 115 kV	P5-5C:A5:3:_GOLD HILL 230-115-60KV BATT(Failure of Non-Redundent BATT)	P5	Non-Redundent battery supply	1.03	1.01	0.88	1.04	1.07	1.06	1.01	1.05	1.04	System adjustments or voltage support if needed
DTCH FL2 115 kV	P5-5C:A5:3:_GOLD HILL 230-115-60KV BATT(Failure of Non-Redundent BATT)	P5	Non-Redundent battery supply	1.03	1.02	0.89	1.03	1.07	1.06	1.01	1.05	1.03	System adjustments or voltage support if needed
E.MRY J2 115 kV	P5-5C:A5:1:_RIO OSO 230-115KV BATT(Failure of Non-Redundent BATT)	P5	Non-Redundent battery supply	1.03	1.02	0.90	1.02	1.06	1.08	1.02	1.04	1.02	System adjustments or voltage support if needed
E.MRYSVE 115 kV	P5-5C:A5:1:_RIO OSO 230-115KV BATT(Failure of Non-Redundent BATT)	P5	Non-Redundent battery supply	1.03	1.02	0.90	1.02	1.06	1.08	1.02	1.04	1.02	System adjustments or voltage support if needed
E.NICOLS 115 kV	P5-5C:A5:1:_RIO OSO 230-115KV BATT(Failure of Non-Redundent BATT)	P5	Non-Redundent battery supply	1.01	1.00	0.85	1.00	1.06	1.08	1.00	1.03	1.00	System adjustments or voltage support if needed
ENCINAL 60 kV	P5-5A:A5:4:_PEASE 115 KV BUS (FAILURE OF NON-REDUNDANT RELAY)	P5	Non-Redundent battery supply	0.99	1.01	0.98	0.96	1.02	1.01	1.01	0.62	0.96	System adjustments or voltage support if needed
GLEAF2 60 kV	P5-5A:A5:4:_PEASE 115 KV BUS (FAILURE OF NON-REDUNDANT RELAY)	P5	Non-Redundent battery supply	1.02	1.02	1.02	1.00	1.03	1.02	1.02	0.59	1.00	Sensitivity only
GRAND IS 115 kV	P5-5A:A4:7:_BRIGHTON 230KV BUS (FAILURE OF NON-REDUNDANT RELAY)	P5	Non-Redundent battery supply	0.65	0.68	0.85	0.96	1.11	1.06	0.65	0.88	0.96	System adjustments or voltage support if needed
GRONMYER 60 kV	P5-5A:A11:14:_KASSON 115KV BUS (FAILURE OF NON-REDUNDANT RELAY)	P5	Non-Redundent battery supply	0.82	0.99	0.84	0.91	1.01	1.03	0.98	0.97	0.91	System adjustments or voltage support if needed
HALSEY 60 kV	P4-2:A5:2:_STUCK BREAKER & NO BF RELAY GOLD HILL 115KV CB 172 OR 392	P5	Non-Redundent battery supply	1.02	0.97	0.57	1.02	1.04	1.03	0.96	1.02	1.02	System adjustments or voltage support if needed
HARTER 60 kV	P5-5A:A5:4:_PEASE 115 KV BUS (FAILURE OF NON-REDUNDANT RELAY)	P5	Non-Redundent battery supply	1.01	1.01	1.00	0.99	1.02	1.02	1.01	0.58	0.99	System adjustments or voltage support if needed
HIGGINS 115 kV	P5-5C:A5:3:_GOLD HILL 230-115-60KV BATT(Failure of Non-Redundent BATT)	P5	Non-Redundent battery supply	0.97	0.93	0.64	0.98	1.10	1.09	0.92	1.02	0.98	System adjustments or voltage support if needed

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 Summer-Off Peak	2028 SP High CEC Forecast	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	
KASSON 60kV	P5-5A:A11:14: KASSON 115KV BUS (FAILURE OF NON-REDUNDANT RELAY)	P5	Non-Redundent battery supply	0.74	0.91	0.67	0.86	0.99	1.02	0.90	0.92	0.87	System adjustments or voltage support if needed
KNIGHT1 115 kV	P5-5A:A4:7: BRIGHTON 230KV BUS (FAILURE OF NON-REDUNDANT RELAY)	P5	Non-Redundent battery supply	0.84	0.89	0.96	0.99	1.07	1.06	0.87	0.96	0.99	System adjustments or voltage support if needed
KNIGHT1 115 kV	P5-5c(DC):A4:2: Station DC Battery Supply BRIGHTON 230kV Batt	P5	Non-Redundent battery supply	0.84	0.89	0.96	0.99	1.07	1.06	0.87	0.96	0.99	System adjustments or voltage support if needed
LINCLN 115kV	P5-5C:A5:1: RIO OSO 230-115KV BATT(FAILURE OF NON-REDUNDANT BATT)	P5	Non-Redundent battery supply	0.98	0.94	0.79	0.97	1.05	1.07	0.94	1.00	0.97	System adjustments or voltage support if needed
LIVE OAK 60 kV	P5-5A:A5:4: PEASE 115 KV BUS (FAILURE OF NON-REDUNDANT RELAY)	P5	Non-Redundent battery supply	0.99	1.01	0.98	0.96	1.02	1.01	1.01	0.64	0.96	System adjustments or voltage support if needed
LOUISE 60 kV	P5-5A:A11:14: KASSON 115KV BUS (FAILURE OF NON-REDUNDANT RELAY)	P5	Non-Redundent battery supply	0.80	0.97	0.80	0.90	1.01	1.03	0.96	0.96	0.90	System adjustments or voltage support if needed
LYOTH-SP 60 kV	P5-5A:A11:14: KASSON 115KV BUS (FAILURE OF NON-REDUNDANT RELAY)	P5	Non-Redundent battery supply	0.72	0.89	0.63	0.85	0.98	1.02	0.88	0.91	0.85	System adjustments or voltage support if needed
MANTECA 115kV	P5-5A:A11:14: KASSON 115KV BUS (FAILURE OF NON-REDUNDANT RELAY)	P5	Non-Redundent battery supply	0.81	0.95	0.91	0.87	1.03	1.04	0.95	0.92	0.87	System adjustments or voltage support if needed
MANTECA 115kV	P5-5C:A11:19: SCHULTE SW STA 115KV BATT(FAILURE OF NON-REDUNDANT BATT)	P5	Non-Redundent battery supply	0.89	0.94	0.92	0.93	1.04	1.05	0.94	0.94	0.93	System adjustments or voltage support if needed
MANTECA 60 kV	P5-5A:A11:14: KASSON 115KV BUS (FAILURE OF NON-REDUNDANT RELAY)	P5	Non-Redundent battery supply	0.84	1.00	0.88	0.92	1.02	1.03	1.00	0.98	0.92	System adjustments or voltage support if needed
MIDDLE FK 60 kV	P5-5C:A5:1: RIO OSO 230-115KV BATT(FAILURE OF NON-REDUNDANT BATT)	P5	Non-Redundent battery supply	0.98	0.96	0.86	0.98	0.99	0.99	0.96	0.98	0.98	System adjustments or voltage support if needed
MDDLK M 230 kV	P5-5C:A5:1: RIO OSO 230-115KV BATT(FAILURE OF NON-REDUNDANT BATT)	P5	Non-Redundent battery supply	0.98	0.96	0.86	0.98	0.99	0.99	0.96	0.98	0.98	System adjustments or voltage support if needed
MIDLFORK 230 kV	P5-5C:A5:1: RIO OSO 230-115KV BATT(FAILURE OF NON-REDUNDANT BATT)	P5	Non-Redundent battery supply	1.01	0.98	0.87	1.01	1.03	1.04	0.98	1.01	1.01	System adjustments or voltage support if needed
MOBILCHE 115 kV	P5-5c(DC):A4:16: Station DC Battery Supply BRIGHTON 115kV Batt	P5	Non-Redundent battery supply	0.81	0.88	0.97	0.99	1.07	1.05	0.86	0.93	0.99	System adjustments or voltage support if needed
MOBILCHE 115 kV	P4-2:A5:1: STUCK BREAKER & NO BF RELAY RIO OSO 115KV CB 402 412 422 432 442 462 OR 472	P5	Non-Redundent battery supply	0.87	0.63	0.97	0.99	1.11	1.07	0.60	0.95	0.99	System adjustments or voltage support if needed
MRYSVLE 60 kV	P5-5A:A5:4: PEASE 115 KV BUS (FAILURE OF NON-REDUNDANT RELAY)	P5	Non-Redundent battery supply	0.99	1.01	1.00	0.96	1.01	1.01	1.01	0.57	0.96	System adjustments or voltage support if needed



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 Summer-Off Peak	2028 SP High CEC Forecast	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	
MHR 60V 60 kV	P4-2:A11:1:_STUCK BREAKER & NO BF RELAY STAGG 230 KV CB252	P5	Non-Redundent battery supply	>.95	0.53	0.50	>.95	1.07	1.00	0.52	>.95	>.95	System adjustments or voltage support if needed
MSSDLEW 60 kV	P5-5A:A11:14:_ KASSON 115KV BUS (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundent battery supply	0.80	0.96	0.78	0.90	1.00	1.03	0.96	0.95	0.90	System adjustments or voltage support if needed
OI GLASS 115kV	P5-5C:A11:19:_ SCHULTE SW STA 115KV BATT(FAILURE OF NON-REDUNDENT BATT)	P5	Non-Redundent battery supply	0.86	0.90	0.87	0.92	1.05	1.06	0.90	0.91	0.92	System adjustments or voltage support if needed
OLIVH J3 115 kV	P5-5C:A5:1:_ RIO OSO 230-115KV BATT(FAILURE OF NON-REDUNDENT BATT)	P5	Non-Redundent battery supply	1.01	1.00	0.87	1.02	1.03	1.05	1.00	1.01	1.02	System adjustments or voltage support if needed
OLIVHRST 115 kV	P5-5C:A5:1:_ RIO OSO 230-115KV BATT(FAILURE OF NON-REDUNDENT BATT)	P5	Non-Redundent battery supply	1.02	1.00	0.87	1.02	1.03	1.05	1.00	1.01	1.02	System adjustments or voltage support if needed
PEASE 60 kV	P5-5A:A5:4:_ PEASE 115 KV BUS (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundent battery supply	1.00	1.01	1.00	0.98	1.02	1.01	1.01	0.59	0.98	System adjustments or voltage support if needed
PENRYN 60 kV	P4-2:A5:2:_ STUCK BREAKER & NO BF RELAY GOLD HILL 115KV CB 172 OR 392	P5	Non-Redundent battery supply	1.01	0.96	0.54	1.01	1.03	1.03	0.95	1.01	1.01	System adjustments or voltage support if needed
PIKE CTY 60kV	P5-5C:A11:5:_ BELLOTA 230-115KV BATT(FAILURE OF NON-REDUNDENT BATT)	P5	Non-Redundent battery supply	1.03	1.01	0.90	1.03	1.06	NConv	1.01	1.04	1.03	System adjustments or voltage support if needed
PIKE CTY 60kV	P5-5C:A5:1:_ RIO OSO 230-115KV BATT(FAILURE OF NON-REDUNDENT BATT)	P5	Non-Redundent battery supply	1.04	1.03	0.90	1.03	1.06	1.07	1.03	1.05	1.03	System adjustments or voltage support if needed
PLACER 115 kV	P5-5C:A5:3:_ GOLD HILL 230-115-60KV BATT(FAILURE OF NON-REDUNDENT BATT)	P5	Non-Redundent battery supply	0.95	0.90	0.57	0.97	1.10	1.10	0.89	1.01	0.97	System adjustments or voltage support if needed
PLACER 115 kV	P4-2:A5:2:_ STUCK BREAKER & NO BF RELAY GOLD HILL 115KV CB 172 OR 392	P5	Non-Redundent battery supply	0.95	0.90	0.58	0.97	1.10	1.10	0.90	1.01	0.97	System adjustments or voltage support if needed
PLACER 115 kV	P5-5A:A5:6:_ GOLD HILL 115 KV BUS (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundent battery supply	0.95	0.90	0.58	0.97	1.10	1.10	0.90	1.01	0.97	System adjustments or voltage support if needed
PLACER 60 kV	P4-2:A5:2:_ STUCK BREAKER & NO BF RELAY GOLD HILL 115KV CB 172 OR 392	P5	Non-Redundent battery supply	1.02	0.97	0.58	1.02	1.03	1.03	0.96	1.02	1.02	System adjustments or voltage support if needed
PLSNT GR 115kV	P5-5C:A5:1:_ RIO OSO 230-115KV BATT(FAILURE OF NON-REDUNDENT BATT)	P5	Non-Redundent battery supply	0.98	0.95	0.80	0.98	1.05	1.07	0.94	1.00	0.98	System adjustments or voltage support if needed
POST 115 kV	P4-2:A5:1:_ STUCK BREAKER & NO BF RELAY RIO OSO 115KV CB 402 412 422 432 442 462 OR 472	P5	Non-Redundent battery supply	0.95	0.76	1.00	1.02	1.09	1.08	0.73	1.01	1.02	System adjustments or voltage support if needed
POST 115 kV	P5-5A:A5:5:_ RIO OSO 115 KV BUS (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundent battery supply	0.99	0.90	1.02	1.03	1.09	1.08	0.88	1.02	1.03	System adjustments or voltage support if needed



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 Summer-Off Peak	2028 SP High CEC Forecast	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	
RALSTON 230 kV	P5-5C:A5:1:_RIO OSO 230-115KV BATT(FAILURE OF NON-REDUNDANT BATT)	P5	Non-Redundant battery supply	1.00	0.98	0.87	1.00	1.03	1.04	0.98	1.01	1.00	System adjustments or voltage support if needed
RBROCKLIN 115 kV	P5-5C:A5:1:_RIO OSO 230-115KV BATT(FAILURE OF NON-REDUNDANT BATT)	P5	Non-Redundant battery supply	0.98	0.95	0.80	0.98	1.05	1.07	0.94	1.00	0.98	System adjustments or voltage support if needed
RIO OSO 230 kV	P5-5C:A11:5:_BELLOTA 230-115KV BATT(FAILURE OF NON-REDUNDANT BATT)	P5	Non-Redundant battery supply	0.98	0.93	0.89	0.97	1.03	NConv	0.93	0.99	0.97	System adjustments or voltage support if needed
RIO OSO 230 kV	P5-5A:A11:2:_RIO OSO 230 KV BUS (FAILURE OF NON-REDUNDANT RELAY)	P5	Non-Redundant battery supply	1.04	0.88	0.87	0.94	1.03	1.03	0.88	1.08	0.94	System adjustments or voltage support if needed
RIPON 115 kV	P5-5A:A11:14:_KASSON 115KV BUS (FAILURE OF NON-REDUNDANT RELAY)	P5	Non-Redundant battery supply	0.81	0.94	0.92	0.86	1.03	1.04	0.94	0.91	0.86	System adjustments or voltage support if needed
RIPON 115 kV	P5-5C:A11:19:_SCHULTE SW STA 115KV BATT(FAILURE OF NON-REDUNDANT BATT)	P5	Non-Redundant battery supply	0.89	0.93	0.94	0.92	1.04	1.05	0.93	0.93	0.92	System adjustments or voltage support if needed
ROLLINS 60 kV	P5-5C:A5:3:_GOLD HILL 230-115-60KV BATT(FAILURE OF NON-REDUNDANT BATT)	P5	Non-Redundant battery supply	0.99	0.98	0.89	1.01	1.02	1.02	0.98	1.01	1.01	System adjustments or voltage support if needed
RPN JNCN 115 kV	P5-5A:A11:14:_KASSON 115KV BUS (FAILURE OF NON-REDUNDANT RELAY)	P5	Non-Redundant battery supply	0.82	0.95	0.92	0.87	1.03	1.04	0.95	0.92	0.87	System adjustments or voltage support if needed
RPN JNCN 115	P5-5C:A11:19:_SCHULTE SW STA 115KV BATT(FAILURE OF NON-REDUNDANT BATT)	P5	Non-Redundant battery supply	0.90	0.94	0.93	0.93	1.04	1.05	0.94	0.94	0.93	System adjustments or voltage support if needed
RPNJ2 115 kV	P5-5A:A11:14:_KASSON 115KV BUS (FAILURE OF NON-REDUNDANT RELAY)	P5	Non-Redundant battery supply	0.81	0.95	0.91	0.87	1.03	1.04	0.95	0.92	0.87	System adjustments or voltage support if needed
RPNJ2 115 kV	P5-5C:A11:19:_SCHULTE SW STA 115KV BATT(FAILURE OF NON-REDUNDANT BATT)	P5	Non-Redundant battery supply	0.89	0.94	0.93	0.93	1.04	1.05	0.94	0.94	0.93	System adjustments or voltage support if needed
RVRBK J2 115 kV	P5-5A:A11:14:_KASSON 115KV BUS (FAILURE OF NON-REDUNDANT RELAY)	P5	Non-Redundant battery supply	0.85	0.97	0.93	0.90	1.04	1.05	0.97	0.94	0.90	System adjustments or voltage support if needed
SEBASTIA 60 kV	P4-2:A11:1:_STUCK BREAKER & NO BF RELAY STAGG 230 KV CB252	P5	Non-Redundant battery supply	>.95	0.38	0.31	>.95	1.05	0.95	0.38	>.95	>.95	System adjustments or voltage support if needed
SHW 60 kV	P4-2:A11:1:_STUCK BREAKER & NO BF RELAY STAGG 230 KV CB252	P5	Non-Redundant battery supply	>.95	0.38	0.31	>.95	1.05	0.95	0.37	>.95	>.95	System adjustments or voltage support if needed
SHW 60 kV	P5-5A:A11:3:_STAGG 230KV BUS (FAILURE OF NON-REDUNDANT RELAY)	P5	Non-Redundant battery supply	>.95	0.38	0.31	>.95	1.05	0.95	0.37	>.95	>.95	System adjustments or voltage support if needed
STAGG 60 kV	P4-2:A11:1:_STUCK BREAKER & NO BF RELAY STAGG 230 KV CB252	P5	Non-Redundant battery supply	>.95	0.42	0.35	>.95	1.07	0.98	0.42	>.95	>.95	System adjustments or voltage support if needed

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 Summer-Off Peak	2028 SP High CEC Forecast	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	
STAGG 60 kV	P5-5A:A11:3:_STAGG 230KV BUS (FAILURE OF NON-REDUNDANT RELAY)	P5	Non-Redundant battery supply	>.95	0.42	0.35	>.95	1.07	0.98	0.42	>.95	>.95	System adjustments or voltage support if needed
TERMNOUS 60	P4-2:A11:1:_STUCK BREAKER & NO BF RELAY STAGG 230 KV CB252	P5	Non-Redundant battery supply	>.95	0.38	0.31	>.95	1.05	0.96	0.37	>.95	>.95	System adjustments or voltage support if needed
THURMAN SS 230 kV	P5-5C:A11:5:_BELLOTA 230-115KV BATT(FAILURE OF NON-REDUNDANT BATT)	P5	Non-Redundant battery supply	NA	0.88	0.83	NA	1.02	NConv	0.87	NA	NA	System adjustments or voltage support if needed
THURMAN SS 230 kV	P5-5C:A5:1:_RIO OSO 230-115KV BATT(FAILURE OF NON-REDUNDANT BATT)	P5	Non-Redundant battery supply	NA	0.89	0.85	NA	1.02	1.02	0.89	NA	NA	System adjustments or voltage support if needed
UCDAVSJ1 115 kV	P5-5c(DC):A4:12:_Station DC Battery Supply ZAMORA 115kV Batt	P5	Non-Redundant battery supply	0.95	0.89	0.99	1.01	1.11	1.06	0.88	0.99	1.01	System adjustments or voltage support if needed
UCDAVSJ1 115 kV	P5-5A:A4:15:_WOODLAND (FAILURE OF NON-REDUNDANT RELAY)	P5	Non-Redundant battery supply	0.98	0.94	1.00	1.04	1.10	1.08	0.94	1.00	1.04	System adjustments or voltage support if needed
UCDAVSJ1 115 kV	P5-5c(DC):A4:11:_Station DC Battery Supply WOODLAND 115kV Batt	P5	Non-Redundant battery supply	0.98	0.94	1.00	1.04	1.10	1.08	0.94	1.00	1.04	System adjustments or voltage support if needed
UOP 60 kV	P4-2:A11:1:_STUCK BREAKER & NO BF RELAY STAGG 230 KV CB252	P5	Non-Redundant battery supply	>.95	0.42	0.35	>.95	1.07	0.98	0.42	>.95	>.95	System adjustments or voltage support if needed
UOP 60 kV	P5-5A:A11:3:_STAGG 230KV BUS (FAILURE OF NON-REDUNDANT RELAY)	P5	Non-Redundant battery supply	>.95	0.42	0.35	>.95	1.07	0.98	0.42	>.95	>.95	System adjustments or voltage support if needed
UOP 60 kV	P5-5C:A11:3:_STAGG 230-60KV BATT(FAILURE OF NON-REDUNDANT BATT)	P5	Non-Redundant battery supply	>.95	0.53	0.46	>.95	1.09	1.04	0.52	>.95	>.95	System adjustments or voltage support if needed
VALLY HM 115	P5-5A:A11:14:_KASSON 115KV BUS (FAILURE OF NON-REDUNDANT RELAY)	P5	Non-Redundant battery supply	0.85	0.97	0.94	0.89	1.04	1.05	0.97	0.94	0.89	System adjustments or voltage support if needed
VIERRA 115kV	P5-5A:A11:14:_KASSON 115KV BUS (FAILURE OF NON-REDUNDANT RELAY)	P5	Non-Redundant battery supply	0.81	0.96	0.92	0.86	1.03	1.04	0.96	0.91	0.86	System adjustments or voltage support if needed
VIERRA 115kV	P5-5C:A11:19:_SCHULTE SW STA 115KV BATT(FAILURE OF NON-REDUNDANT BATT)	P5	Non-Redundant battery supply	0.89	0.94	0.92	0.93	1.04	1.05	0.94	0.93	0.93	System adjustments or voltage support if needed
WEMR SWS 60kV	P5-5C:A5:3:_GOLD HILL 230-115-60KV BATT(FAILURE OF NON-REDUNDANT BATT)	P5	Non-Redundant battery supply	0.98	0.97	0.88	1.00	1.02	1.02	0.97	1.00	1.00	System adjustments or voltage support if needed
WEMR SWS 60kV	P4-2:A5:2:_STUCK BREAKER & NO BF RELAY GOLD HILL 115KV CB 172 OR 392	P5	Non-Redundant battery supply	0.98	0.97	0.89	1.00	1.02	1.02	0.97	1.00	1.00	System adjustments or voltage support if needed
WEMR SWS 60kV	P5-5A:A5:6:_GOLD HILL 115 KV BUS (FAILURE OF NON-REDUNDANT RELAY)	P5	Non-Redundant battery supply	0.98	0.97	0.89	1.00	1.02	1.02	0.97	1.00	1.00	System adjustments or voltage support if needed

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 Summer-Off Peak	2028 SP High CEC Forecast	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	
WESTLEY 60 kV	P5-5A:A11:14: KASSON 115KV BUS (FAILURE OF NON-REDUNDANT RELAY)	P5	Non-Redundent battery supply	0.72	0.90	0.60	0.83	0.98	1.00	0.89	0.91	0.83	System adjustments or voltage support if needed
WOODLD 115 kV	P5-5C:A5:1: RIO OSO 230-115KV BATT(FAILURE OF NON-REDUNDANT BATT)	P5	Non-Redundent battery supply	0.55	0.48	0.54	0.99	1.12	1.07	0.48	0.87	0.99	Vaca Dixon Area Reinforcement project
WOODLD 115 kV	P5-5A:A4:7: BRIGHTON 230KV BUS (FAILURE OF NON-REDUNDANT RELAY)	P5	Non-Redundent battery supply	0.77	0.81	0.93	0.97	1.08	1.06	0.79	0.93	0.97	Vaca Dixon Area Reinforcement project
WOODLD 115 kV	P5-5c(DC):A4:12: Station DC Battery Supply ZAMORA 115kv Batt	P5	Non-Redundent battery supply	0.94	0.87	0.99	1.00	1.11	1.07	0.86	0.98	0.99	System adjustments or voltage support if needed
WSTLNESW 60 kV	P4-2:A11:1: STUCK BREAKER & NO BF RELAY STAGG 230 KV CB252	P5	Non-Redundent battery supply	>.95	0.43	0.36	>.95	1.07	0.99	0.42	>.95	>.95	System adjustments or voltage support if needed
WSTLNESW 60 kV	P5-5A:A11:3: STAGG 230KV BUS (FAILURE OF NON-REDUNDANT RELAY)	P5	Non-Redundent battery supply	>.95	0.43	0.36	>.95	1.07	0.99	0.42	>.95	>.95	System adjustments or voltage support if needed
WSTLNESW 60 kV	P5-5C:A11:3: STAGG 230-60KV BATT(FAILURE OF NON-REDUNDANT BATT)	P5	Non-Redundent battery supply	>.95	0.53	0.47	>.95	1.09	1.04	0.52	>.95	>.95	System adjustments or voltage support if needed
YUBACITY 60 kV	P5-5A:A5:4: PEASE 115 KV BUS (FAILURE OF NON-REDUNDANT RELAY)	P5	Non-Redundent battery supply	1.01	1.02	1.00	0.99	1.02	1.02	1.02	0.58	0.99	Sensitivity only
YUBACITY 60 kV	P5-5A:A5:4: PEASE 115 KV BUS (FAILURE OF NON-REDUNDANT RELAY)	P5	Non-Redundent battery supply	1.01	1.02	1.00	0.99	1.02	1.02	1.02	0.58	0.99	Sensitivity only
ZAMORA 115 kV	P5-5A:A4:7: BRIGHTON 230KV BUS (FAILURE OF NON-REDUNDANT RELAY)	P5	Non-Redundent battery supply	0.82	0.86	0.95	0.98	1.06	1.06	0.85	0.95	0.98	System adjustments or voltage support if needed
ZAMORA 115 kV	P5-5c(DC):A4:2: Station DC Battery Supply BRIGHTON 230kv Batt	P5	Non-Redundent battery supply	0.82	0.86	0.95	0.98	1.06	1.06	0.85	0.95	0.98	System adjustments or voltage support if needed
BANTA 115 kV	P1-2:A11:55: SCHULTE SW STA-LAMMERS 115KV [3993] & P1-2:A11:42: SCHULTE SW STA-	P6	N-1-1	0.52	0.87	0.81	0.66	>.95	>.95	0.87	0.77	0.72	System adjustments or voltage support if needed
BANTA 115 kV	P1-2:A11:42: SCHULTE SW STA-KASSON-MANTECA 115KV [7472] & P1-2:A11:55: SCHULTE SW STA-	P6	N-1-1	0.52	0.87	0.81	0.66	>.95	>.95	0.87	0.77	0.67	System adjustments or voltage support if needed
CALVO 60 kV	P1-2:A11:55: SCHULTE SW STA-LAMMERS 115KV [3993] & P1-2:A11:42: SCHULTE SW STA-	P6	N-1-1	0.55	>.95	0.87	0.71	>.95	>.95	>.95	0.84	0.78	System adjustments or voltage support if needed
CALVO 60 kV	P1-2:A11:42: SCHULTE SW STA-KASSON-MANTECA 115KV [7472] & P1-2:A11:55: SCHULTE SW STA-	P6	N-1-1	0.56	>.95	0.87	0.72	>.95	>.95	>.95	0.84	0.72	System adjustments or voltage support if needed
CARBONA 60 kV	P1-2:A11:55: SCHULTE SW STA-LAMMERS 115KV [3993] & P1-2:A11:42: SCHULTE SW STA-	P6	N-1-1	0.50	>.95	0.80	0.68	>.95	>.95	>.95	0.80	0.75	System adjustments or voltage support if needed

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 Summer-Off Peak	2028 SP High CEC Forecast	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	
CARBONA 60 kV	P1-2:A11:42: SCHULTE SW STA-KASSON-MANTECA 115KV [7472] & P1-2:A11:55: SCHULTE SW STA-	P6	N-1-1	0.51	>.95	0.80	0.69	>.95	>.95	>.95	0.80	0.69	System adjustments or voltage support if needed
CL AMMNA 115kV	P1-2:A11:55: SCHULTE SW STA-LAMMERS 115KV [3993] & P1-2:A11:42: SCHULTE SW STA-	P6	N-1-1	0.53	>.95	>.95	0.66	>.95	>.95	>.95	0.78	0.72	System adjustments or voltage support if needed
CL AMMNA 115kV	P1-2:A11:42: SCHULTE SW STA-KASSON-MANTECA 115KV [7472] & P1-2:A11:55: SCHULTE SW STA-	P6	N-1-1	0.53	>.95	>.95	0.67	>.95	>.95	>.95	0.78	0.67	System adjustments or voltage support if needed
HJ HEINZ 115kV	P1-2:A11:55: SCHULTE SW STA-LAMMERS 115KV [3993] & P1-2:A11:42: SCHULTE SW STA-	P6	N-1-1	0.52	0.87	0.81	0.66	>.95	>.95	0.87	0.77	0.72	System adjustments or voltage support if needed
HJ HEINZ 115kV	P1-2:A11:42: SCHULTE SW STA-KASSON-MANTECA 115KV [7472] & P1-2:A11:55: SCHULTE SW STA-	P6	N-1-1	0.52	0.87	0.81	0.66	>.95	>.95	0.87	0.77	0.67	System adjustments or voltage support if needed
KASSON 60kV	P1-2:A11:55: SCHULTE SW STA-LAMMERS 115KV [3993] & P1-2:A11:42: SCHULTE SW STA-	P6	N-1-1	0.55	>.95	0.86	0.71	>.95	>.95	>.95	0.83	0.77	System adjustments or voltage support if needed
KASSON 60kV	P1-2:A11:42: SCHULTE SW STA-KASSON-MANTECA 115KV [7472] & P1-2:A11:55: SCHULTE SW STA-	P6	N-1-1	0.55	>.95	0.86	0.71	>.95	>.95	>.95	0.83	0.72	System adjustments or voltage support if needed
LAMMERS 115kV	P1-2:A11:55: SCHULTE SW STA-LAMMERS 115KV [3993] & P1-2:A11:42: SCHULTE SW STA-	P6	N-1-1	0.49	0.85	0.78	0.64	>.95	>.95	0.84	0.74	0.70	System adjustments or voltage support if needed
LAMMERS 115kV	P1-2:A11:42: SCHULTE SW STA-KASSON-MANTECA 115KV [7472] & P1-2:A11:55: SCHULTE SW STA-	P6	N-1-1	0.49	0.85	0.78	0.65	>.95	>.95	0.84	0.74	0.65	System adjustments or voltage support if needed
LYOTH-SP 60 kV	P1-2:A11:55: SCHULTE SW STA-LAMMERS 115KV [3993] & P1-2:A11:42: SCHULTE SW STA-	P6	N-1-1	0.53	>.95	0.83	0.69	>.95	>.95	>.95	0.82	0.76	System adjustments or voltage support if needed
LYOTH-SP 60 kV	P1-2:A11:42: SCHULTE SW STA-KASSON-MANTECA 115KV [7472] & P1-2:A11:55: SCHULTE SW STA-	P6	N-1-1	0.53	>.95	0.83	0.70	>.95	>.95	>.95	0.82	0.70	System adjustments or voltage support if needed
MANTECA 115kV	P1-2:A11:55: SCHULTE SW STA-LAMMERS 115KV [3993] & P1-2:A11:42: SCHULTE SW STA-	P6	N-1-1	0.56	>.95	0.86	0.69	>.95	>.95	>.95	0.80	0.74	System adjustments or voltage support if needed
MANTECA 115kV	P1-2:A11:42: SCHULTE SW STA-KASSON-MANTECA 115KV [7472] & P1-2:A11:55: SCHULTE SW STA-	P6	N-1-1	0.56	>.95	0.86	0.69	>.95	>.95	>.95	0.80	0.69	System adjustments or voltage support if needed
OI GLASS 115kV	P1-2:A11:55: SCHULTE SW STA-LAMMERS 115KV [3993] & P1-2:A11:42: SCHULTE SW STA-	P6	N-1-1	0.49	0.85	0.78	0.64	>.95	>.95	0.84	0.74	0.70	System adjustments or voltage support if needed
OI GLASS 115kV	P1-2:A11:42: SCHULTE SW STA-KASSON-MANTECA 115KV [7472] & P1-2:A11:55: SCHULTE SW STA-	P6	N-1-1	0.49	0.85	0.78	0.65	>.95	>.95	0.84	0.74	0.65	System adjustments or voltage support if needed
RIPON 115kV	P1-2:A11:55: SCHULTE SW STA-LAMMERS 115KV [3993] & P1-2:A11:42: SCHULTE SW STA-	P6	N-1-1	0.55	>.95	0.88	0.68	>.95	>.95	0.90	0.80	0.74	System adjustments or voltage support if needed

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 Summer-Off Peak	2028 SP High CEC Forecast	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	
RIPON 115kV	P1-2:A11:42: SCHULTE SW STA-KASSON-MANTECA 115KV [7472] & P1-2:A11:55: SCHULTE SW STA-	P6	N-1-1	0.56	>.95	0.88	0.69	>.95	>.95	0.90	0.80	0.69	System adjustments or voltage support if needed
RPNJ2 115kV	P1-2:A11:55: SCHULTE SW STA-LAMMERS 115KV [3993] & P1-2:A11:42: SCHULTE SW STA-	P6	N-1-1	0.56	>.95	0.87	0.69	>.95	>.95	>.95	0.80	0.75	System adjustments or voltage support if needed
VIERRA 115kV	P1-2:A11:55: SCHULTE SW STA-LAMMERS 115KV [3993] & P1-2:A11:42: SCHULTE SW STA-	P6	N-1-1	0.53	>.95	0.86	0.67	>.95	>.95	>.95	0.78	0.73	System adjustments or voltage support if needed
VIERRA 115kV	P1-2:A11:42: SCHULTE SW STA-KASSON-MANTECA 115KV [7472] & P1-2:A11:55: SCHULTE SW STA-	P6	N-1-1	0.54	>.95	0.86	0.67	>.95	>.95	>.95	0.78	0.68	System adjustments or voltage support if needed
WESTLEY 60 kV	P1-2:A11:55: SCHULTE SW STA-LAMMERS 115KV [3993] & P1-2:A11:42: SCHULTE SW STA-	P6	N-1-1	0.52	>.95	0.80	0.66	>.95	>.95	>.95	0.82	0.73	System adjustments or voltage support if needed
WESTLEY 60 kV	P1-2:A11:42: SCHULTE SW STA-KASSON-MANTECA 115KV [7472] & P1-2:A11:55: SCHULTE SW STA-	P6	N-1-1	0.53	>.95	0.80	0.67	>.95	>.95	>.95	0.82	0.67	System adjustments or voltage support if needed
ALMENDRA 60 kV	P7-1:A5:20_Palermo-Pease 115 kV Line amd Pease-Rio Oso 115 kV Line	P7	DCTL	1.01	1.03	1.01	0.99	1.04	1.03	1.03	0.52	0.99	Sensitivity only
ALMENDRA 60 kV	P7-1:A5:20_Palermo-Pease 115 kV Line amd Pease-Rio Oso 115 kV Line	P7	DCTL	1.01	1.03	1.01	0.99	1.04	1.03	1.03	0.52	0.99	Sensitivity only
AUBURN 60 kV	P7-1:A5:19_Placer-Gold Hill No. 1 115 kV Line and Placer-Gold Hill No. 2 115 kV Line	P7	DCTL	1.02	0.97	0.57	1.02	1.03	1.03	0.96	1.02	1.02	Continue to monitor future load forecast
AUBURN 60 kV	P7-1:A5:19_Placer-Gold Hill No. 1 115 kV Line and Placer-Gold Hill No. 2 115 kV Line	P7	DCTL	1.02	0.97	0.57	1.02	1.03	1.03	0.96	1.02	1.02	Continue to monitor future load forecast
BELL PGE 115 kV	P7-1:A5:19_Placer-Gold Hill No. 1 115 kV Line and Placer-Gold Hill No. 2 115 kV Line	P7	DCTL	0.96	0.91	0.59	0.97	1.10	1.10	0.90	1.01	0.97	System adjustments or voltage support if needed
BRIGHTON 230 kV	P7-1:A11:12: LOCKEFORD-BELLOTA 230KV #1 [4990] & LOCKEFORD-BELLOTA 230KV #2 [4990]	P7	DCTL	NA	0.90	0.87	NA	1.03	1.02	0.89	NA	NA	Vaca Dixon Area Reinforcement project
BRIGHTON 230 kV	P7-1:A11:12: LOCKEFORD-BELLOTA 230KV #1 [4990] & LOCKEFORD-BELLOTA 230KV #2 [4990]	P7	DCTL	NA	0.90	0.87	NA	1.03	1.02	0.89	NA	NA	Vaca Dixon Area Reinforcement project
BRUNSWCK 115 kV	P7-1:A5:19_Placer-Gold Hill No. 1 115 kV Line and Placer-Gold Hill No. 2 115 kV Line	P7	DCTL	1.02	1.00	0.90	1.02	1.07	1.06	1.00	1.04	1.02	Continue to monitor future load forecast
BRUNSWCK 115 kV	P7-1:A5:19_Placer-Gold Hill No. 1 115 kV Line and Placer-Gold Hill No. 2 115 kV Line	P7	DCTL	1.02	1.00	0.90	1.02	1.07	1.06	1.00	1.04	1.02	Continue to monitor future load forecast
CAMPUS 115 kV	P7-1:A4:17_Rio Oso-West Sacramento 115 kV Line & West Sacramento-Brighton 115 kV Line	P7	DCTL	0.88	0.85	0.96	1.02	1.09	1.06	0.84	0.95	1.01	System adjustments or voltage support if needed

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 Summer-Off Peak	2028 SP High CEC Forecast	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	
CAMPUS 115 kV	P7-1:A4:17_Rio Oso-West Sacramento 115 kV Line & West Sacramento-Brighton 115 kV Line	P7	DCTL	0.88	0.85	0.96	1.02	1.09	1.06	0.84	0.95	1.01	System adjustments or voltage support if needed
CAMPUS 115 kV	P7-1:A4:16_Rio Oso-Woodland #1 115 kV Line & Rio Oso-Woodland #2 115 kV Line	P7	DCTL	0.95	0.88	0.99	1.01	1.11	1.06	0.87	0.98	1.01	System adjustments or voltage support if needed
CAMPUS 115 kV	P7-1:A5:15_Rio Oso-Woodland No. 1 115 kV Line & Rio Oso-Woodland No. 2 115 kV Line	P7	DCTL	0.95	0.88	0.99	1.01	1.11	1.06	0.87	0.98	1.01	System adjustments or voltage support if needed
CAMPUS 115 kV	P7-1:A4:16_Rio Oso-Woodland #1 115 kV Line & Rio Oso-Woodland #2 115 kV Line	P7	DCTL	0.95	0.88	0.99	1.01	1.11	1.06	0.87	0.98	1.01	System adjustments or voltage support if needed
CAMPUS 115 kV	P7-1:A5:15_Rio Oso-Woodland No. 1 115 kV Line & Rio Oso-Woodland No. 2 115 kV Line	P7	DCTL	0.95	0.88	0.99	1.01	1.11	1.06	0.87	0.98	1.01	System adjustments or voltage support if needed
CHCGO PK 115 kV	P7-1:A5:19_Placer-Gold Hill No. 1 115 kV Line and Placer-Gold Hill No. 2 115 kV Line	P7	DCTL	1.01	0.99	0.78	1.02	1.08	1.08	0.98	1.04	1.02	Continue to monitor future load forecast
CHCGO PK 115 kV	P7-1:A5:19_Placer-Gold Hill No. 1 115 kV Line and Placer-Gold Hill No. 2 115 kV Line	P7	DCTL	1.01	0.99	0.78	1.02	1.08	1.08	0.98	1.04	1.02	Continue to monitor future load forecast
DAVIS 115 kV	P7-1:A4:17_Rio Oso-West Sacramento 115 kV Line & West Sacramento-Brighton 115 kV Line	P7	DCTL	0.89	0.85	0.96	1.02	1.08	1.06	0.84	0.95	1.02	System adjustments or voltage support if needed
DAVIS 115 kV	P7-1:A4:16_Rio Oso-Woodland #1 115 kV Line & Rio Oso-Woodland #2 115 kV Line	P7	DCTL	0.95	0.89	0.99	1.01	1.11	1.06	0.88	0.99	1.01	System adjustments or voltage support if needed
DEEPWATR 115kV	P7-1:A4:17_Rio Oso-West Sacramento 115 kV Line & West Sacramento-Brighton 115 kV Line	P7	DCTL	0.85	0.81	0.94	1.02	1.07	1.06	0.80	0.93	1.02	Vaca Dixon Area Reinforcement project
DEEPWATR 115kV	P7-1:A4:17_Rio Oso-West Sacramento 115 kV Line & West Sacramento-Brighton 115 kV Line	P7	DCTL	0.85	0.81	0.94	1.02	1.07	1.06	0.80	0.93	1.02	Vaca Dixon Area Reinforcement project
DEL MAR 60 kV	P7-1:A5:2_Rio Oso-Atlantic 230 kV Line & Rio Oso-Gold Hill 230 kV Line	P7	DCTL	1.01	1.01	0.87	1.00	1.05	1.04	1.01	1.03	1.00	Continue to monitor future load forecast
DEL MAR 60 kV	P7-1:A11:34_EIGHT MILE ROAD-STAGG 230KV [5002] & STAGG-TESLA 230KV [5680]	P7	DCTL	1.01	1.01	0.90	1.00	1.05	1.04	1.00	1.04	1.00	Continue to monitor future load forecast
DEL MAR 60 kV	P7-1:A11:9_EIGHT MILE ROAD-TESLA 230KV [4660] & STAGG-TESLA 230KV [5680]	P7	DCTL	1.01	1.01	0.87	0.99	1.05	1.04	1.01	1.03	0.99	Continue to monitor future load forecast
DIST2047 60 kV	P7-1:A4:5_Logan Creek-Delevan 230 kV Line & Delevan-Cortina 230 kV Line	P7	DCTL	0.93	0.88	0.88	0.97	0.96	0.95	0.88	0.95	0.97	System adjustments or voltage support if needed
DRUMPH2 115 kV	P7-1:A5:19_Placer-Gold Hill No. 1 115 kV Line and Placer-Gold Hill No. 2 115 kV Line	P7	DCTL	1.03	1.02	0.88	1.04	1.07	1.06	1.02	1.05	1.04	Continue to monitor future load forecast

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 Summer-Off Peak	2028 SP High CEC Forecast	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	
DTCH FL2 115 kV	P7-1:A5:19_Placer-Gold Hill No. 1 115 kV Line and Placer-Gold Hill No. 2 115 kV Line	P7	DCTL	1.03	1.02	0.90	1.04	1.07	1.06	1.02	1.05	1.04	Continue to monitor future load forecast
DTCH FL2 115 kV	P7-1:A5:19_Placer-Gold Hill No. 1 115 kV Line and Placer-Gold Hill No. 2 115 kV Line	P7	DCTL	1.03	1.02	0.90	1.04	1.07	1.06	1.02	1.05	1.04	Continue to monitor future load forecast
ENCINAL 60 kV	P7-1:A5:20_Palermo-Pease 115 kV Line amd Pease-Rio Oso 115 kV Line	P7	DCTL	1.00	1.02	0.98	0.97	1.03	1.03	1.02	0.55	0.97	Sensitivity only
ENCINAL 60 kV	P7-1:A5:20_Palermo-Pease 115 kV Line amd Pease-Rio Oso 115 kV Line	P7	DCTL	1.00	1.02	0.98	0.97	1.03	1.03	1.02	0.55	0.97	Sensitivity only
ENVRO_HY 60kV	P7-1:A5:19_Placer-Gold Hill No. 1 115 kV Line and Placer-Gold Hill No. 2 115 kV Line	P7	DCTL	0.98	0.97	0.88	1.00	1.03	1.02	0.96	1.00	1.00	Continue to monitor future load forecast
GLEAF2 60 kV	P7-1:A5:20_Palermo-Pease 115 kV Line amd Pease-Rio Oso 115 kV Line	P7	DCTL	1.02	1.03	1.02	1.00	1.04	1.04	1.03	0.52	1.00	Continue to monitor future load forecast
GLEAF2 60 kV	P7-1:A5:20_Palermo-Pease 115 kV Line amd Pease-Rio Oso 115 kV Line	P7	DCTL	1.02	1.03	1.02	1.00	1.04	1.04	1.03	0.52	1.00	Continue to monitor future load forecast
GOLDHILL 230 kV	P7-1:A4:3:_GOLD HILL-EIGHT MILE ROAD 230KV [4800] & GOLD HILL-LODI STIG 230KV [4810]	P7	DCTL	0.99	0.97	0.90	0.98	1.02	1.03	0.96	1.00	0.98	Continue to monitor future load forecast
GOLDHILL 230 kV	P7-1:A11:9:_EIGHT MILE ROAD-TESLA 230KV [4660] & STAGG-TESLA 230KV [5680]	P7	DCTL	1.00	0.98	0.90	0.98	1.02	1.03	0.98	1.00	0.98	Continue to monitor future load forecast
GOLDHILL 230 kV	P7-1:A11:9:_EIGHT MILE ROAD-TESLA 230KV [4660] & STAGG-TESLA 230KV [5680]	P7	DCTL	1.00	0.98	0.90	0.98	1.02	1.03	0.98	1.00	0.98	Continue to monitor future load forecast
HARTER 60 kV	P7-1:A11:34:_EIGHT MILE ROAD-STAGG 230KV [5002] & STAGG-TESLA 230KV [5680]	P7	DCTL	>.95	0.34	0.33	>.95	1.07	1.03	0.34	>.95	>.95	System adjustments or voltage support if needed
HARTER 60 kV	P7-1:A5:20_Palermo-Pease 115 kV Line amd Pease-Rio Oso 115 kV Line	P7	DCTL	1.01	1.02	1.00	0.99	1.04	1.03	1.02	0.51	0.99	Sensitivity only
HIGGINS 115 kV	P7-1:A5:20_Palermo-Pease 115 kV Line amd Pease-Rio Oso 115 kV Line	P7	DCTL	1.01	1.02	1.00	0.99	1.04	1.03	1.02	0.51	0.99	Sensitivity only
HIGGINS 115 kV	P7-1:A5:19_Placer-Gold Hill No. 1 115 kV Line and Placer-Gold Hill No. 2 115 kV Line	P7	DCTL	0.97	0.93	0.64	0.98	1.10	1.09	0.92	1.02	0.98	System adjustments or voltage support if needed
HIGGINS 115 kV	P7-1:A5:19_Placer-Gold Hill No. 1 115 kV Line and Placer-Gold Hill No. 2 115 kV Line	P7	DCTL	0.97	0.93	0.64	0.98	1.10	1.09	0.92	1.02	0.98	System adjustments or voltage support if needed
LIVE OAK 60 kV	P7-1:A5:20_Palermo-Pease 115 kV Line amd Pease-Rio Oso 115 kV Line	P7	DCTL	1.00	1.02	0.98	0.97	1.03	1.02	1.02	0.57	0.97	Sensitivity only

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 Summer-Off Peak	2028 SP High CEC Forecast	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	
LIVE OAK 60 kV	P7-1:A5:20_Palermo-Pease 115 kV Line amd Pease-Rio Oso 115 kV Line	P7	DCTL	1.00	1.02	0.98	0.97	1.03	1.02	1.02	0.57	0.97	Sensitivity only
LOCKFORD 230 kV	P7-1:A11:12:_LOCKEFORD-BELLOTA 230KV #1 [4990] & LOCKEFORD-BELLOTA 230KV #2 [4990]	P7	DCTL	NA	0.89	0.85	NA	1.02	1.01	0.89	NA	NA	Continue to monitor future load forecast
LOCKFORD 230 kV	P7-1:A11:12:_LOCKEFORD-BELLOTA 230KV #1 [4990] & LOCKEFORD-BELLOTA 230KV #2 [4990]	P7	DCTL	NA	0.89	0.85	NA	1.02	1.01	0.89	NA	NA	Continue to monitor future load forecast
MRYSVLE 60 kV	P7-1:A5:20_Palermo-Pease 115 kV Line amd Pease-Rio Oso 115 kV Line	P7	DCTL	0.99	1.01	1.00	0.96	1.02	1.02	1.01	0.50	0.96	System adjustments or voltage support if needed
MRYSVLE 60 kV	P7-1:A5:20_Palermo-Pease 115 kV Line amd Pease-Rio Oso 115 kV Line	P7	DCTL	0.99	1.01	1.00	0.96	1.02	1.02	1.01	0.50	0.96	System adjustments or voltage support if needed
MSHR 60V 60 kV	P7-1:A11:34:_EIGHT MILE ROAD-STAGG 230KV [5002] & STAGG-TESLA 230KV [5680]	P7	DCTL	>.95	0.46	0.48	>.95	1.06	1.02	0.46	>.95	>.95	System adjustments or voltage support if needed
MSHR 60V 60 kV	P7-1:A11:34:_EIGHT MILE ROAD-STAGG 230KV [5002] & STAGG-TESLA 230KV [5680]	P7	DCTL	>.95	0.46	0.48	>.95	1.06	1.02	0.46	>.95	>.95	System adjustments or voltage support if needed
MTN_QUAR 60 kV	P7-1:A5:19_Placer-Gold Hill No. 1 115 kV Line and Placer-Gold Hill No. 2 115 kV Line	P7	DCTL	1.02	0.97	0.56	1.02	1.04	1.03	0.96	1.02	1.02	Continue to monitor future load forecast
MTN_QUAR 60 kV	P7-1:A5:19_Placer-Gold Hill No. 1 115 kV Line and Placer-Gold Hill No. 2 115 kV Line	P7	DCTL	1.02	0.97	0.56	1.02	1.04	1.03	0.96	1.02	1.02	Continue to monitor future load forecast
NEW HOPE 60	P7-1:A11:12:_LOCKEFORD-BELLOTA 230KV #1 [4990] & LOCKEFORD-BELLOTA 230KV #2 [4990]	P7	DCTL	NA	0.99	0.89	NA	1.04	1.03	0.98	NA	NA	Continue to monitor future load forecast
PEASE 115 kV	P7-1:A5:20_Palermo-Pease 115 kV Line amd Pease-Rio Oso 115 kV Line	P7	DCTL	0.95	0.97	0.95	0.92	1.03	0.99	0.98	0.49	0.92	System adjustments or voltage support if needed
PEASE 115 kV	P7-1:A5:20_Palermo-Pease 115 kV Line amd Pease-Rio Oso 115 kV Line	P7	DCTL	0.95	0.97	0.95	0.92	1.03	0.99	0.98	0.49	0.92	System adjustments or voltage support if needed
PEASE 60 kV	P7-1:A5:20_Palermo-Pease 115 kV Line amd Pease-Rio Oso 115 kV Line	P7	DCTL	1.01	1.02	1.00	0.98	1.03	1.03	1.03	0.52	0.98	Sensitivity only
PEASE 60 kV	P7-1:A5:20_Palermo-Pease 115 kV Line amd Pease-Rio Oso 115 kV Line	P7	DCTL	1.01	1.02	1.00	0.98	1.03	1.03	1.03	0.52	0.98	Sensitivity only
PENRYN 60 kV	P7-1:A5:19_Placer-Gold Hill No. 1 115 kV Line and Placer-Gold Hill No. 2 115 kV Line	P7	DCTL	1.01	0.96	0.53	1.01	1.03	1.03	0.95	1.01	1.01	Continue to monitor future load forecast
PLACER 115 kV	P7-1:A5:19_Placer-Gold Hill No. 1 115 kV Line and Placer-Gold Hill No. 2 115 kV Line	P7	DCTL	0.95	0.90	0.58	0.97	1.10	1.10	0.90	1.01	0.97	System adjustments or voltage support if needed



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 Summer-Off Peak	2028 SP High CEC Forecast	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	
PLACER 115 kV	P7-1:A5:19_Placer-Gold Hill No. 1 115 kV Line and Placer-Gold Hill No. 2 115 kV Line	P7	DCTL	0.95	0.90	0.58	0.97	1.10	1.10	0.90	1.01	0.97	System adjustments or voltage support if needed
PLACER 60 kV	P7-1:A5:19_Placer-Gold Hill No. 1 115 kV Line and Placer-Gold Hill No. 2 115 kV Line	P7	DCTL	1.02	0.97	0.57	1.02	1.03	1.03	0.96	1.02	1.02	Continue to monitor future load forecast
PLACER 60 kV	P7-1:A5:19_Placer-Gold Hill No. 1 115 kV Line and Placer-Gold Hill No. 2 115 kV Line	P7	DCTL	1.02	0.97	0.57	1.02	1.03	1.03	0.96	1.02	1.02	Continue to monitor future load forecast
PLAINFLDE 60 kV	P7-1:A4:12_Lambie Sw Sta-Birds Landing Sw Sta 230 kV Line & Peabody-Birds Landing Sw Sta 230	P7	DCTL	NA	0.93	0.89	NA	0.99	1.04	0.93	NA	NA	Vaca Dixon Area Reinforcement project
PLAINFLDE 60 kV	P7-1:A4:15_Vaca-Vacaville-Jameson-North Tower 115 kV Line & Vaca-Vacaville-Coredelia 115 kV Line	P7	DCTL	NA	0.93	0.90	NA	0.99	1.04	0.93	NA	NA	Vaca Dixon Area Reinforcement project
POST 115 kV	P7-1:A4:17_Rio Oso-West Sacramento 115 kV Line & West Sacramento-Brighton 115 kV Line	P7	DCTL	0.86	0.82	0.95	1.02	1.07	1.06	0.80	0.93	1.02	System adjustments or voltage support if needed
POST 115 kV	P7-1:A4:17_Rio Oso-West Sacramento 115 kV Line & West Sacramento-Brighton 115 kV Line	P7	DCTL	0.86	0.82	0.95	1.02	1.07	1.06	0.80	0.93	1.02	System adjustments or voltage support if needed
Q653F 115 kV	P7-1:A5:15_Rio Oso-Woodland No. 1 115 kV Line & Rio Oso-Woodland No. 2 115 kV Line	P7	DCTL	0.95	0.89	0.99	1.00	1.11	1.07	0.88	0.99	1.00	Vaca Dixon Area Reinforcement project
Q653F 115 kV	P7-1:A4:16_Rio Oso-Woodland #1 115 kV Line & Rio Oso-Woodland #2 115 kV Line	P7	DCTL	0.95	0.89	0.99	1.00	1.11	1.07	0.88	0.99	1.00	Vaca Dixon Area Reinforcement project
Q653F 115 kV	P7-1:A5:15_Rio Oso-Woodland No. 1 115 kV Line & Rio Oso-Woodland No. 2 115 kV Line	P7	DCTL	0.95	0.89	0.99	1.00	1.11	1.07	0.88	0.99	1.00	Vaca Dixon Area Reinforcement project
ROCKLIN 60 kV	P7-1:A11:9_EIGHT MILE ROAD-TESLA 230KV [4660] & STAGG-TESLA 230KV [5680]	P7	DCTL	1.02	1.02	0.89	1.00	1.05	1.04	1.02	1.03	1.00	Continue to monitor future load forecast
ROLLINS 60 kV	P7-1:A5:19_Placer-Gold Hill No. 1 115 kV Line and Placer-Gold Hill No. 2 115 kV Line	P7	DCTL	0.99	0.98	0.90	1.01	1.02	1.02	0.98	1.01	1.01	Continue to monitor future load forecast
RPN JNCN 115 kV	P7-1:A5:19_Placer-Gold Hill No. 1 115 kV Line and Placer-Gold Hill No. 2 115 kV Line	P7	DCTL	0.99	0.98	0.90	1.01	1.02	1.02	0.98	1.01	1.01	Continue to monitor future load forecast
SHADYGLN 60 kV	P7-1:A5:19_Placer-Gold Hill No. 1 115 kV Line and Placer-Gold Hill No. 2 115 kV Line	P7	DCTL	0.99	0.98	0.89	1.00	1.02	1.02	0.97	1.01	1.00	Continue to monitor future load forecast
SHADYGLN 60 kV	P7-1:A5:19_Placer-Gold Hill No. 1 115 kV Line and Placer-Gold Hill No. 2 115 kV Line	P7	DCTL	0.99	0.98	0.89	1.00	1.02	1.02	0.97	1.01	1.00	Continue to monitor future load forecast
SHW 60 kV	P7-1:A11:34_EIGHT MILE ROAD-STAGG 230KV [5002] & STAGG-TESLA 230KV [5680]	P7	DCTL	>.95	0.31	0.27	>.95	1.04	1.01	0.31	>.95	>.95	System adjustments or voltage support if needed

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 Summer-Off Peak	2028 SP High CEC Forecast	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	
SHW 60 kV	P7-1:A11:34: EIGHT MILE ROAD-STAGG 230KV [5002] & STAGG-TESLA 230KV [5680]	P7	DCTL	>.95	0.31	0.27	>.95	1.04	1.01	0.31	>.95	>.95	System adjustments or voltage support if needed
SHWSS 60 kV	P7-1:A11:34: EIGHT MILE ROAD-STAGG 230KV [5002] & STAGG-TESLA 230KV [5680]	P7	DCTL	>.95	0.31	0.27	>.95	1.04	1.01	0.31	>.95	>.95	System adjustments or voltage support if needed
SIERRAPI 60 kV	P7-1:A12:3: BELLOTA-COTTLE 230KV [4360] & BELLOTA-WARNERVILLE 230KV [4380]	P7	DCTL	1.01	1.01	0.90	1.00	1.05	NConv	1.01	1.04	1.00	Continue to monitor future load forecast
SIERRAPI 60 kV	P7-1:A12:8: COTTLE-MELONES 230KV [4530] & BELLOTA-WARNERVILLE 230KV [4380]	P7	DCTL	1.01	1.01	0.90	1.00	1.05	NConv	1.01	1.04	1.00	Continue to monitor future load forecast
SIERRAPI 60 kV	P7-1:A4:3: GOLD HILL-EIGHT MILE ROAD 230KV [4800] & GOLD HILL-LODI STIG 230KV [4810]	P7	DCTL	1.01	1.00	0.87	0.99	1.05	1.04	1.00	1.04	0.99	Continue to monitor future load forecast
STAGG 60 kV	P7-1:A11:34: EIGHT MILE ROAD-STAGG 230KV [5002] & STAGG-TESLA 230KV [5680]	P7	DCTL	>.95	0.34	0.31	>.95	1.07	1.04	0.35	>.95	>.95	System adjustments or voltage support if needed
STAGG 60 kV	P7-1:A11:34: EIGHT MILE ROAD-STAGG 230KV [5002] & STAGG-TESLA 230KV [5680]	P7	DCTL	>.95	0.34	0.31	>.95	1.07	1.04	0.35	>.95	>.95	System adjustments or voltage support if needed
STAGG-F 230 kV	P7-1:A11:34: EIGHT MILE ROAD-STAGG 230KV [5002] & STAGG-TESLA 230KV [5680]	P7	DCTL	>.95	0.32	0.27	>.95	1.18	0.94	0.32	>.95	>.95	System adjustments or voltage support if needed
STAGG-F 230 kV	P7-1:A11:34: EIGHT MILE ROAD-STAGG 230KV [5002] & STAGG-TESLA 230KV [5680]	P7	DCTL	>.95	0.32	0.27	>.95	1.18	0.94	0.32	>.95	>.95	System adjustments or voltage support if needed
STAGG-F 230 kV	P7-1:A11:9: EIGHT MILE ROAD-TESLA 230KV [4660] & STAGG-TESLA 230KV [5680]	P7	DCTL	0.98	0.98	0.89	0.97	1.04	1.04	0.98	0.97	0.97	Continue to monitor future load forecast
STAGG-F 230 kV	P7-1:A11:9: EIGHT MILE ROAD-TESLA 230KV [4660] & STAGG-TESLA 230KV [5680]	P7	DCTL	0.98	0.98	0.89	0.97	1.04	1.04	0.98	0.97	0.97	Continue to monitor future load forecast
STAGG-H 230 kV	P7-1:A11:34: EIGHT MILE ROAD-STAGG 230KV [5002] & STAGG-TESLA 230KV [5680]	P7	DCTL	>.95	0.32	0.27	>.95	1.18	0.94	0.32	>.95	>.95	System adjustments or voltage support if needed
STAGG-H 230 kV	P7-1:A11:34: EIGHT MILE ROAD-STAGG 230KV [5002] & STAGG-TESLA 230KV [5680]	P7	DCTL	>.95	0.32	0.27	>.95	1.18	0.94	0.32	>.95	>.95	System adjustments or voltage support if needed
STAGG-H 230 kV	P7-1:A11:9: EIGHT MILE ROAD-TESLA 230KV [4660] & STAGG-TESLA 230KV [5680]	P7	DCTL	0.98	0.98	0.89	0.97	1.04	1.04	0.98	0.97	0.97	Continue to monitor future load forecast
STAGG-H 230 kV	P7-1:A11:9: EIGHT MILE ROAD-TESLA 230KV [4660] & STAGG-TESLA 230KV [5680]	P7	DCTL	0.98	0.98	0.89	0.97	1.04	1.04	0.98	0.97	0.97	Continue to monitor future load forecast
TAYLOR 60 kV	P7-1:A4:3: GOLD HILL-EIGHT MILE ROAD 230KV [4800] & GOLD HILL-LODI STIG 230KV [4810]	P7	DCTL	1.02	1.01	0.90	1.00	1.04	1.04	1.01	1.04	1.00	Continue to monitor future load forecast

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 Summer-Off Peak	2028 SP High CEC Forecast	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	
TAYLOR 60 kV	P7-1:A11:12: _LOCKEFORD-BELLOTA 230KV #1 [4990] & LOCKEFORD-BELLOTA 230KV #2 [4990]	P7	DCTL	NA	1.00	0.89	NA	1.04	1.04	1.00	NA	NA	Continue to monitor future load forecast
TAYLOR 60 kV	P7-1:A11:12: _LOCKEFORD-BELLOTA 230KV #1 [4990] & LOCKEFORD-BELLOTA 230KV #2 [4990]	P7	DCTL	NA	1.00	0.89	NA	1.04	1.04	1.00	NA	NA	Continue to monitor future load forecast
THURMAN SS 230 kV	P7-1:A11:12: _LOCKEFORD-BELLOTA 230KV #1 [4990] & LOCKEFORD-BELLOTA 230KV #2 [4990]	P7	DCTL	NA	0.89	0.85	NA	1.02	1.01	0.88	NA	NA	Continue to monitor future load forecast
THURMAN SS 230 kV	P7-1:A11:12: _LOCKEFORD-BELLOTA 230KV #1 [4990] & LOCKEFORD-BELLOTA 230KV #2 [4990]	P7	DCTL	NA	0.89	0.85	NA	1.02	1.01	0.88	NA	NA	Continue to monitor future load forecast
UCDAVSJ1 115 kV	P7-1:A4:17_ Rio Oso-West Sacramento 115 kV Line & West Sacramento-Brighton 115 kV Line	P7	DCTL	0.89	0.85	0.96	1.02	1.08	1.06	0.84	0.95	1.02	Vaca Dixon Area Reinforcement project
UCDAVSJ1 115 kV	P7-1:A4:17_ Rio Oso-West Sacramento 115 kV Line & West Sacramento-Brighton 115 kV Line	P7	DCTL	0.89	0.85	0.96	1.02	1.08	1.06	0.84	0.95	1.02	Vaca Dixon Area Reinforcement project
UOP 60 kV	P7-1:A11:34: _EIGHT MILE ROAD-STAGG 230KV [5002] & STAGG-TESLA 230KV [5680]	P7	DCTL	>.95	0.34	0.32	>.95	1.07	1.04	0.34	>.95	>.95	System adjustments or voltage support if needed
VALLY HM 115 kV	P7-1:A11:34: _EIGHT MILE ROAD-STAGG 230KV [5002] & STAGG-TESLA 230KV [5680]	P7	DCTL	>.95	0.34	0.32	>.95	1.07	1.04	0.34	>.95	>.95	System adjustments or voltage support if needed
W.SCRMNO 115 kV	P7-1:A4:17_ Rio Oso-West Sacramento 115 kV Line & West Sacramento-Brighton 115 kV Line	P7	DCTL	0.86	0.82	0.95	1.03	1.08	1.06	0.81	0.94	1.03	Vaca Dixon Area Reinforcement project
WEMR SWS 60kV	P7-1:A5:19_ Placer-Gold Hill No. 1 115 kV Line and Placer-Gold Hill No. 2 115 kV Line	P7	DCTL	0.98	0.97	0.88	1.00	1.02	1.02	0.97	1.00	1.00	Continue to monitor future load forecast
WEMR SWS 60kV	P7-1:A5:19_ Placer-Gold Hill No. 1 115 kV Line and Placer-Gold Hill No. 2 115 kV Line	P7	DCTL	0.98	0.97	0.88	1.00	1.02	1.02	0.97	1.00	1.00	Continue to monitor future load forecast
WHEATLND 60 kV	P7-1:A5:12_ Rio Oso-Nicolaus 115 kV Line & Bogue-Rio Oso 115 kV Line	P7	DCTL	0.96	0.94	0.89	0.97	1.03	1.04	0.94	0.98	0.97	System adjustments or voltage support if needed
WILKINS 60 kV	P7-1:A4:5_ Logan Creek-Delevan 230 kV Line & Delevan-Cortina 230 kV Line	P7	DCTL	0.95	0.91	0.90	0.99	0.98	0.97	0.91	0.97	0.99	System adjustments or voltage support if needed
WOODLANDBIOM 115 kV	P7-1:A5:15_ Rio Oso-Woodland No. 1 115 kV Line & Rio Oso-Woodland No. 2 115 kV Line	P7	DCTL	0.94	0.88	0.99	1.00	1.11	1.07	0.86	0.98	1.00	Vaca Dixon Area Reinforcement project
WOODLD 115 kV	P7-1:A4:16_ Rio Oso-Woodland #1 115 kV Line & Rio Oso-Woodland #2 115 kV Line	P7	DCTL	0.94	0.87	0.99	1.00	1.11	1.07	0.86	0.98	0.99	Vaca Dixon Area Reinforcement project
WOODLD 115 kV	P7-1:A5:15_ Rio Oso-Woodland No. 1 115 kV Line & Rio Oso-Woodland No. 2 115 kV Line	P7	DCTL	0.94	0.87	0.99	1.00	1.11	1.07	0.86	0.98	0.99	Vaca Dixon Area Reinforcement project

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 Summer-Off Peak	2028 SP High CEC Forecast	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	
WOODLD 115 kV	P7-1:A4:16_Rio Oso-Woodland #1 115 kV Line & Rio Oso-Woodland #2 115 kV Line	P7	DCTL	0.94	0.87	0.99	1.00	1.11	1.07	0.86	0.98	0.99	Vaca Dixon Area Reinforcement project
WOODLD 115 kV	P7-1:A5:15_Rio Oso-Woodland No. 1 115 kV Line & Rio Oso-Woodland No. 2 115 kV Line	P7	DCTL	0.94	0.87	0.99	1.00	1.11	1.07	0.86	0.98	0.99	Vaca Dixon Area Reinforcement project
WSTLNESW 60 kV	P7-1:A11:34: EIGHT MILE ROAD-STAGG 230KV [5002] & STAGG-TESLA 230KV [5680]	P7	DCTL	>.95	0.34	0.33	>.95	1.07	1.03	0.34	>.95	>.95	System adjustments or voltage support if needed
WSTLNESW 60 kV	P7-1:A11:34: EIGHT MILE ROAD-STAGG 230KV [5002] & STAGG-TESLA 230KV [5680]	P7	DCTL	>.95	0.34	0.33	>.95	1.07	1.03	0.34	>.95	>.95	System adjustments or voltage support if needed
YUBACITY 60 kV	P7-1:A5:20_Palermo-Pease 115 kV Line amd Pease-Rio Oso 115 kV Line	P7	DCTL	1.01	1.03	1.01	0.99	1.04	1.03	1.03	0.52	0.99	Sensitivity only
YUBACITY 60 kV	P7-1:A5:20_Palermo-Pease 115 kV Line amd Pease-Rio Oso 115 kV Line	P7	DCTL	1.01	1.03	1.01	0.99	1.04	1.03	1.03	0.52	0.99	Sensitivity only

Substation	Contingency	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 Summer-Off Peak	2028 SP High CEC Forecast	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	
BNTA CRB 60kV	P1-3:A11:26:_KASSON 115/60KV TB 1	P1		<8	<8	22				<8	<8	<8	Continue to Monitor
CALVO 60kV	P1-3:A11:26:_KASSON 115/60KV TB 1	P1		<8	<8	19	<8	<8	<8	<8	<8	<8	Continue to Monitor
CARBONA 60kV	P1-3:A11:26:_KASSON 115/60KV TB 1	P1		<8	<8	23	<8	<8	<8	10.231	<8	<8	Continue to Monitor
CRBNA JC 60kV	P1-3:A11:26:_KASSON 115/60KV TB 1	P1		<8	<8	23	<8	<8	<8	<8	<8	<8	Continue to Monitor
KASSON 60kV	P1-3:A11:26:_KASSON 115/60KV TB 1	P1		<8	<8	21	<8	<8	<8	<8	<8	<8	Continue to Monitor
MRYSVLLE 60kV	P1-2:A5:48:_E.MRYSVLE-MRYSVLLE #1	P1		<8	11	16	<8	<8	<8	11.594	<8	<8	Existing Procedure
WESTLEY 60kV	P1-3:A11:26:_KASSON 115/60KV TB 1	P1		<8	<8	23	<8	<8	<8	<8	<8	<8	Continue to Monitor

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-001-5- Requirement R2.6, this area relies on the past studies from the 2019-20 Transmission Planning Process for transient stability studies:								
<a href="http://www.caiso.com/Documents/AppendixC-BoardApprovedt2019-2020TransmissionPlan.pdf">http://www.caiso.com/Documents/AppendixC-BoardApprovedt2019-2020TransmissionPlan.pdf</a>								

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