



Overloaded Facility	Contingency (All and Worst P6)	Category	Category Description	Loading % (Baseline Scenarios)								Loading % (Sensitivity Scenarios)			Project & Potential Mitigation Solutions
				2024 Summer Peak	2027 Summer Peak	2032 Summer Peak	2024 Winter Peak	2027 Winter Peak	2032 Winter Peak	2024 Spring Off-Peak	2027 Spring Off-Peak	2027 SP High CEC Forecast	2024 SP Heavy Renewable & Min Gas Gen	2024 OP Sensitivity	
Clear Lake - Eagle Rock 60 kV (Clear Lake 60 kV sub to Konocti Sub 60 kV) (31334 31338)	P5-5a:A2:9:_ FULTON BUS 115 kV 1 & 2 SECTION D(FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	NConv	NConv	70	52	NConv	53	72	54	NConv	63	72	Project: Clear Lake 60 kV System Reinforcement
	EAGLE ROCK-REDBUD 115KV [1480] & GEYSERS #3-CLOVERDALE 115KV [1650] MOAS OPENED ON AIDLINJCT_AIDLINGYSR	P6	N-1-1	126	114	140	<100	<100	<100	104	<100	114	<100	101	Review Project: Clear Lake 60 kV System Reinforcement
Corona- Lakeville 115kV Line	P7-1:A2:15:_ FULTON-SANTA ROSA #1 & FULTON-SANTA ROSA #2 LINES	P7	DCTL	109	116	150	80	90	118	75	50	117	73	75	SPS, battery storage or line capacity increase
	P5-5a:A2:1:_ FULTON 230 KV BAAH BUS #1 (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	103	110	130	69	83	107	69	26	111	53	65	Install Redundant Relay
	P5-5a:A2:9:_ FULTON BUS 115 kV 1 & 2 SECTION D(FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	NConv	NConv	102	60	NConv	86	57	38	NConv	54	57	Install Redundant Relay
	P5-5c(DC):A2:1:_ Station	P5	Non-Redundant Battery Supply	108	115	146	80	90	118	75	50	116	73	75	Install redudent battery supply
	P2-4:A2:7:_ FULTON 115KV - SECTION 2D & 1D	P2-4	Bus Tie Breaker Fault	109	116	149	80	91	118	<100	<100	117	<100	<100	SPS, battery storage or line capacity increase
	P5-5a:A2:10:_ FULTON BUS 115 KV 1 & 2 SECTION E/F(FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	NConv	NConv	146	80	NConv	118	75	50	NConv	73	75	Install Redundant Relay
	FULTON-SANTA ROSA #2 115KV [1630] & FULTON-SANTA ROSA #1 115KV [1620]	P6	N-1-1	109	116	150	<100	<100	118	<100	<100	117	<100	<100	SPS, battery storage or line capacity increase
	P7-1:A2:15:_ FULTON-SANTA ROSA #1 & FULTON-SANTA ROSA #2 LINES	P7	DCTL	109	116	150	80	90	118	<100	<100	117	<100	<100	SPS, battery storage or line capacity increase
EAGLE ROCK 115/60 kV BANK NO.1 (31344 31220)	GEYSERS #3-CLOVERDALE 115KV [1650] MOAS OPENED ON AIDLINJCT_AIDLINGYSR & EAGLE ROCK-REDBUD 115KV [1480] (2)	P6	N-1-1	107	104	127	<100	<100	<100	<100	<100	105	<100	<100	Generation redispatch
Eagle Rock- Redbud 115 kV (Eagle Rock 115kV to Lower Lake 115 Kv Jct) (31225 31262)	CORTINA-MENDOCINO #1 115KV [1330] MOAS OPENED ON LUCERNJ1_LUCERNE & GEYSERS #3-CLOVERDALE 115KV [1650] MOAS OPENED ON AIDLINJCT_AIDLINGYSR	P6	N-1-1	101	108	123	<100	<100	<100	<100	<100	108	<100	<100	Operating solution
Fulton- Santa Rosa No.1 115 kV (Fulton 115kv sub to Monoroe 1 115 kv Tap)	FULTON-SANTA ROSA #2 115KV [1630] & CORONA-LAKEVILLE 115KV [4311]	P6	N-1-1	116	123	160	<100	<100	114	<100	<100	124	<100	<100	SPS, battery storage or line capacity increase
	CORONA-LAKEVILLE 115KV [4311] & FULTON-SANTA ROSA #1 115KV [1620]	P6	N-1-1	115	123	158	<100	<100	114	<100	<100	124	<100	<100	SPS, battery storage or line capacity increase
GEYSER # 3 - CLOVERDALE 115K (CLOVERDALE 115KV to MPE TAP115KV) (31208 31210)	EAGLE ROCK-REDBUD 115KV [1480] & CORTINA-MENDOCINO #1 115KV [1330] MOAS OPENED ON LUCERNJ1_LUCERNE	P6	N-1-1	<100	<100	103	<100	<100	<100	<100	<100	<100	<100	<100	Continue to monitor
	P7-1:A2:23:_ EAGLE ROCK -REDBUD & CORTINA-MENDOCINO #1 LINES	P7	DCTL	85	93	102	55	60	70	76	48	94	62	75	Continue to monitor
HOPLAND BANK 115/60.00 BANK NO.2 (31336 31206)	FULTON BUS 115 KV 1 & 2 SECTION E/F(FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	NConv	NConv	137	155	NConv	152	158	150	NConv	147	162	Maintenance project to increase capacity of Hopland Bank#2
	MENDOCINO-UKIAH 115KV [2420] MOAS OPENED ON MENDOCNO_CALPELLA & GEYSERS #3-CLOVERDALE 115KV [1650] MOAS OPENED ON AIDLINJCT_AIDLINGYSR	P6	N-1-1	123	134	157	<100	<100	107	106	<100	134	<100	106	Maintenance project to increase capacity of Hopland Bank#2
IGNACO B 115/60.00 kV BANK No. 1	P1-3:A6:4:_ IGNACIO 230/115KV TB 4	P1	N-1	63	60	34	83	82	46	106	103	44	62	91	Re-adjust Bank Var flow
	Base case	P0	Base Case	59	59	34	77	77	45	103	101	37	55	86	Re-adjust Bank Var flow
	IGNACIO 230/115KV TB 4	P1	N-1	<100	<100	<100	<100	<100	<100	111	107	<100	<100	<100	Re-adjust Bank Var flow
IGNACO A 115/60.00 kV BANK No. 2	P1-3:A6:4:_ IGNACIO 230/115KV TB 4	P1	N-1	72	68	41	92	92	56	111	107	50	69	93	Re-adjust Bank Var flow
	Base case	P0	Base Case	66	66	41	85	86	55	105	103	42	61	85	Re-adjust Bank Var flow
Konocti - Eagle Rock 60kV	P5-5a:A2:12:_ MENDOCINO 115 KV BUS 1&2 (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	82	104	98	63	69	78	79	42	105	66	79	Install Redundant Relay
	P5-5a:A2:9:_ FULTON BUS 115 kV 1 & 2 SECTION D(FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	NConv	NConv	99	66	NConv	66	81	50	NConv	72	81	Install Redundant Relay
	P2-4:A2:5:_ MENDOCNO 115KV - SECTION 1D & 2D	P2-4	Bus Tie Breaker Fault	83	104	99	63	69	78	80	42	105	66	80	Review Project: Clear Lake 60 kV System Reinforcement
	P5-5a:A2:10:_ FULTON BUS 115 KV 1 & 2 SECTION E/F(FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	NConv	NConv	94	63	NConv	62	77	48	NConv	69	77	Install Redundant Relay
	GEYSERS #3-CLOVERDALE 115KV [1650] MOAS OPENED ON AIDLINJCT_AIDLINGYSR & EAGLE ROCK-REDBUD 115KV [1480]	P6	N-1-1	120	118	141	<100	<100	<100	<100	<100	119	<100	<100	Review Project: Clear Lake 60 kV System Reinforcement



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				2024 Summer Peak	2027 Summer Peak	2032 Summer Peak	2024 Winter Peak	2027 Winter Peak	2032 Winter Peak	2024 Spring Off-Peak	2027 Spring Off-Peak	2027 SP High CEC Forecast	2024 SP Heavy Renewable & Min Gas Gen	2024 OP Sensitivity	
	P7-1:A2:23:_EAGLE ROCK -REDBUD & CORTINA-MENDOCINO #1 LINES	P7	DCTL	92	97	108	61	63	69	76	41	98	<100	<100	Review Project: Clear Lake 60 kV System Reinforcement
Mendocino - Philo Jct - Hopland 60 kV(Mendocino Sub 60kV to UKIAH JT 60kV) (31300 31327)	P5-5a:A2:10:_ FULTON BUS 115 KV 1 & 2 SECTION E/F(FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	NConv	NConv	73	35	NConv	44	52	41	NConv	43	52	Install Redundant Relay
	MENDOCINO-UKIAH 115KV [2420] MOAS OPENED ON MENDOCNO_CALPELLA & GEYSERS #3-CLOVERDALE 115KV [1650] MOAS OPENED ON AIDLINJCT_AIDLINGYSR	P6	N-1-1	104	124	146	<100	<100	<100	<100	<100	125	<100	<100	Operating solution
Mendocino -Clearlake 60 kV (Mendocino Sub 60 kV to Upper Lake Sub 60 Kv)	EGLE RCK - MA 115KV & EGLE RCK-HOMSTKTP-CORTINA LINE	P2-3	Non-Bus Tie Breaker Fault	<100	<100	NConv	<100	<100	<100	<100	<100	<100	<100	<100	Continue to monitor
Santa Rosa- Corona 115 kv (Santa Rosa 115kv sub to Pennygrove Sub 115 kv)	P5-5a:A2:1:_ FULTON 230 KV BAAH BUS #1 (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	111	118	140	65	78	103	72	27	119	57	68	Install Redundant Relay
	P5-5c(DC):A2:1:_ Station	P5	Non-Redundant Battery Supply	116	124	158	76	86	114	79	54	125	79	80	Install redundant battery supply
	P2-4:A2:7:_ FULTON 115KV - SECTION 2D & 1D	P2-4	Bus Tie Breaker Fault	117	125	162	76	87	114	79	55	126	80	79	SPS, battery storage or line capacity increase
	P5-5a:A2:10:_ FULTON BUS 115 KV 1 & 2 SECTION E/F(FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	NConv	NConv	158	76	NConv	114	80	55	NConv	80	80	Install Redundant Relay
	FULTON-SANTA ROSA #2 115KV [1630] & FULTON-SANTA ROSA #1 115KV [1620]	P6	N-1-1	117	125	162	<100	<100	114	<100	<100	126	<100	<100	SPS, battery storage or line capacity increase
	P7-1:A2:15:_ FULTON-SANTA ROSA #1 & FULTON-SANTA ROSA #2 LINES	P7	DCTL	117	125	162	<100	86	114	<100	<100	126	<100	<100	SPS, battery storage or line capacity increase
Tulucay - Vaca 230 kV (30440 30 30)	P5-5a:A2:14:_ LAKEVILLE 230 kV BUS 1&2 SECTION E(FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	103	109	98	<100	<100	<100	<100	<100	112	95	107	Project: Vaca Dixon-Lakeville 230 kV corroidor series compensation
	VACA-LAKEVILLE #1 230KV [5840] & GEYSR18-LAKEVILE-GEYSR20-GEYSR13 230KV [0] MOAS OPENED ON G13TT1_8_SANTAFE	P6	N-1-1	102	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	Project: Vaca Dixon-Lakeville 230 kV corroidor series compensation
Vaca-Lakeville #1 230Kv (30435 30 30)	GEYSR18-LAKEVILE-GEYSR20-GEYSR13 230KV [0] MOAS OPENED ON G13TT1_8_SANTAFE & TULUCAY-VACA 230KV [5800]	P6	N-1-1	<100	106	<100	<100	<100	<100	<100	<100	108	<100	<100	Project: Vaca Dixon-Lakeville 230 kV corroidor series compensation
Fulton - Hopland 60 kV (Hopland Jct 60 kV to Cloverdale Jct 60 kV)	P2-3:A6:2:_ SILVERDO - 1E 115KV & SILVERDO-FULTON-EGLE RCK LINE	P2-3	Non-Bus Tie Breaker Fault	87	84	37	66	74	29	88	100	88	100	105	Sensitivity study
	P7-1:A2:5:_ GEYSERS #17-FULTON & EAGLE ROCK-FULTON-SILVERADO LINES	P7	DCTL	91	89	41	69	77	30	92	104	92	104	110	Continue to monitor
	P7-1:A2:6:_ GEYSERS #9-LAKEVILLE & EAGLE ROCK-FULTON-SILVERADO LINES	P7	DCTL	98	96	43	74	82	33	99	111	100	112	117	Continue to monitor
	P5-5a:A2:9:_ FULTON BUS 115 kV 1 & 2 SECTION D(FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	NConv	NConv	126	172	NConv	84	227	202	NConv	200	231	Install Redundant Relay
	P1-2:A2:19:_ EGLE RCK-FULTON-SILVERDO 115KV [0]	P1	N-1	87	84	37	66	74	29	88	100	88	100	105	Sensitivity study
	P5-5a:A2:10:_ FULTON BUS 115 KV 1 & 2 SECTION E/F(FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	NConv	NConv	112	170	NConv	82	253	226	NConv	222	254	Install Redundant Relay
	P5-5c(DC):A2:17:_ Station	P5	Non-Redundant Battery Supply	87	84	37	66	74	29	88	100	88	100	105	Install redundant battery supply
	P5-5c(DC):A6:5:_ Station	P5	Non-Redundant Battery Supply	87	84	37	66	74	29	88	100	88	100	105	Install redundant battery supply
	EGLE RCK-FULTON-SILVERDO 115KV [0] & FULTON 230/115KV TB 9	P6	N-1-1	100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	Continue to monitor
	EGLE RCK-HOMSTKTP-CORTINA 115KV [0] & EGLE RCK-FULTON-SILVERDO 115KV [0]	P6	N-1-1	<100	<100	<100	<100	<100	<100	101	129	<100	114	111	Continue to monitor
Fulton- Molino- Cotati 60 kV(Molino sub 60 kV to Molino Jct 60 kV)	P5-5a:A2:10:_ FULTON BUS 115 KV 1 & 2 SECTION E/F(FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	NConv	NConv	243	NConv	NConv	167	<100	NConv	NConv	NConv	NConv	Install Redundant Relay
	FULTON 230/115KV TB 9 & FULTON 230/115KV TB 4	P6	N-1-1	<100	<100	104	<100	<100	<100	<100	<100	<100	<100	<100	Operating solution
	P2-2:A2:28:_ FULTON 115KV SECTION 1F	P2-2	Bus	116	127	81	49	48	39	48	26	111	85	48	Review the power factor in near term base cases
	P2-3:A2:10:_ FULTON 230KV - MIDDLE BREAKER BAY 3	P2-3	Non-Bus Tie Breaker Fault	116	127	84	49	48	39	48	26	111	85	48	Review the power factor in near term base cases



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				2024 Summer Peak	2027 Summer Peak	2032 Summer Peak	2024 Winter Peak	2027 Winter Peak	2032 Winter Peak	2024 Spring Off-Peak	2027 Spring Off-Peak	2027 SP High CEC Forecast	2024 SP Heavy Renewable & Min Gas Gen	2024 OP Sensitivity	
Fulton -Calistoga 60 kV (Fulton Sub 60 kV to St. Helena Jct 60 kV)	P2-3:A2:12:_FULTON 230KV - MIDDLE BREAKER BAY 8	P2-3	Non-Bus Tie Breaker Fault	116	127	85	49	48	39	48	26	111	85	48	Review the power factor in near term base cases
	P2-3:A6:2:_SILVERDO - 1E 115KV & SILVERDO-FULTON-EGLE RCK LINE	P2-3	Non-Bus Tie Breaker Fault	116	127	81	49	48	39	48	26	111	85	48	Review the power factor in near term base cases
	P1-2:A6:12:_SILVERDO-FULTON-EGLE RCK 115KV [0]	P1	N-1	116	127	81	49	48	39	48	26	111	85	48	Review the power factor in near term base cases
	P1-3:A2:26:_FULTON 115/60KV TB 1	P1	N-1	116	127	81	49	48	39	48	26	111	85	48	Review the power factor in near term base cases
	P1-3:A2:27:_FULTON 115/60KV TB 2	P1	N-1	116	127	81	49	48	39	48	26	111	85	48	Review the power factor in near term base cases
	P1-3:A2:2:_FULTON 230/115KV TB 9	P1	N-1	116	127	85	49	48	39	48	26	111	85	48	Review the power factor in near term base cases
	P1-2:A2:65:_LAKEVILLE #1 60KV [7360]	P1	N-1	101	111	92	56	55	63	50	19	111	63	51	Review the power factor in near term base cases
	P5-5a:A2:1:_FULTON 230 KV BAAH BUS #1 (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	128	142	112	53	53	47	56	31	142	97	56	Install Redundant Relay
	P5-5a:A2:2:_FULTON 230 KV BAAH BUS #2 (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	104	116	92	49	48	41	48	26	117	85	48	Install Redundant Relay
	P5-5a:A2:5:_SANTA ROSA 115 KV(FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	116	107	79	49	48	39	48	26	126	85	48	Install Redundant Relay
	P5-5c(DC):A2:17:_Station	P5	Non-Redundant Battery Supply	116	127	81	49	48	39	48	26	111	85	48	Install redundant battery supply
	P5-5c(DC):A2:2:_Station	P5	Non-Redundant Battery Supply	111	128	NConv	49	48	48	48	26	130	85	48	Install redundant battery supply
	P5-5c(DC):A6:5:_Station	P5	Non-Redundant Battery Supply	116	127	81	49	48	39	48	26	111	85	48	Install redundant battery supply
	Base case	P0	Base Case	116	127	95	52	51	42	56	31	126	99	56	Review the power factor in near term base cases
Tulucay - Napa #2 60 kV (Tulucay 60 kV to Basalt 60 kV)	FULTON 230/115KV TB 4 & FULTON 230/115KV TB 9	P6	N-1-1	<100	<100	108	<100	<100	<100	<100	<100	<100	<100	<100	Continue to monitor
	Base case	P0	Base Case	124	78	89	53	51	60	81	41	78	99	82	Operating solution
	P1-2:A2:68:_TULUCAY-NAPA #1 60KV [8180] MOAS OPENED ON TULCY JT_CRD-JCT	P1	N-1	133	97	111	62	63	74	<100	50	97	105	88	Review project: Tulucay - Napa #2 60 kV Capacity Increase
	P1-2:A6:22:_TULUCAY-NAPA #1 60KV [8180] MOAS OPENED ON TULCAY1_TULCY JT	P1	N-1	136	99	113	64	65	76	89	51	98	108	91	Review project: Tulucay - Napa #2 60 kV Capacity Increase
	P1-2:A6:24:_TULUCAY-NAPA #1 60KV [8180] MOAS OPENED ON TULCY JT_CRD-JCT	P1	N-1	133	97	111	62	63	74	87	50	97	105	88	Review project: Tulucay - Napa #2 60 kV Capacity Increase
	P1-2:A2:66:_TULUCAY-NAPA #1 60KV [8180] MOAS OPENED ON TULCAY1_TULCY JT	P1	N-1	136	99	113	64	65	76	89	51	98	108	91	Review project: Tulucay - Napa #2 60 kV Capacity Increase
	P1-1:A2:12:_GEYSER17 13.80KV GEN UNIT 1 & P1-2:A2:67:_TULUCAY-NAPA #1 60KV [8180] MOAS OPENED ON TULCAY1_TULCY JT	P3	G-1/N-1	<100	<100	114	<100	<100	<100	<100	<100	<100	<100	<100	Review project: Tulucay - Napa #2 60 kV Capacity Increase
	P1-1:A2:14:_GEYSER20 13.80KV GEN UNIT 1 & P1-2:A2:66:_TULUCAY-NAPA #1 60KV [8180] MOAS OPENED ON TULCAY1_TULCY JT	P3	G-1/N-1	136	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	Project: Tulucay - Napa #2 60 kV Capacity Increase
Eagle Rock- Fulton- Silverado 115 kv (Eagle rock sub to Ricon Jct Jct2 115 kv)	FULTON 230/115KV TB 9 & FULTON 230/115KV TB 4	P6	N-1-1	<100	106	NConv	<100	<100	<100	<100	<100	<100	<100	<100	Operating solution
	P5-5a:A2:1:_FULTON 230 KV BAAH BUS #1 (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	92	95	105	59	64	64	80	72	96	84	86	Install Redundant Relay
	P5-5c(DC):A2:2:_Station	P5	Non-Redundant Battery Supply	94	98	NConv	66	76	73	95	75	100	82	105	Install redundant battery supply
HOPLAND BANK 115/60.00 BANK NO.2	P2-4:A2:5:_MENDOCNO 115KV - SECTION 1D & 2D	P2-4	Bus Tie Breaker Fault	90	98	95	88	96	105	94	65	99	78	92	Continue to monitor
	P5-5a:A2:10:_ FULTON BUS 115 KV 1 & 2 SECTION E/F(FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	NConv	NConv	137	155	NConv	152	158	150	NConv	147	162	Install Redundant Relay
	P5-5a:A2:12:_ MENDOCINO 115 KV BUS 1&2 (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	93	101	100	90	98	108	96	66	102	79	94	Install Redundant Relay



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	P5-5a:A2:9:_ FULTON BUS 115 kV 1 & 2 SECTION D(FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	NConv	NConv	154	158	NConv	154	158	149	NConv	148	163	Install Redundant Relay
	P5-5c(DC):A2:2:_ Station	P5	Non-Redundant Battery Supply	83	79	NConv	69	74	106	69	50	81	61	72	Install redundant battery supply
LAKEVILLE #2 60 kV (Petaluma Jct 60 kV to Petaluma A)	P5-5c(DC):A2:2:_ Station	P5	Non-Redundant Battery Supply	N/A	N/A	NConv	N/A	N/A	102	N/A	N/A	N/A	N/A	N/A	Install redundant battery supply
	P5-5a:A2:1:_ FULTON 230 KV BAAH BUS #1 (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	NConv	NConv	122	NConv	NConv	70	NConv	NConv	NConv	NConv	NConv	Install Redundant Relay
	P5-5a:A2:9:_ FULTON BUS 115 kV 1 & 2 SECTION D(FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	NConv	NConv	225	NConv	NConv	155	NConv	NConv	NConv	NConv	NConv	Install Redundant Relay
	P5-5a:A2:10:_ FULTON BUS 115 KV 1 & 2 SECTION E/F(FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	5	5	156	2	2	104	2	1	5	4	2	Install Redundant Relay
Ignacio - Mare Island No.2 (Ignacio sub to Hamilton Wetlands sub)	P2-3:A2:1:_ GEYSR12 - 1D 230KV & FULTON-GEYSR16-GEYSR12-GEYSR14 LINE	P2-3	Non-Bus Tie Breaker Fault	75	79	104	31	29	41	43	10	80	48	43	Continue to monitor
	P2-3:A2:9:_ FULTON 230KV - MIDDLE BREAKER BAY 7	P2-3	Non-Bus Tie Breaker Fault	75	79	104	31	29	41	43	10	80	48	43	Continue to monitor
	P5-5a:A2:10:_ FULTON BUS 115 KV 1 & 2 SECTION E/F(FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	75	79	103	31	29	41	43	10	80	48	43	Install Redundant Relay
	P5-5a:A2:14:_ LAKEVILLE 230 kV BUS 1&2 SECTION E(FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	75	79	105	31	29	41	43	10	80	48	43	Install Redundant Relay
	P5-5a:A2:1:_ FULTON 230 KV BAAH BUS #1 (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	75	79	104	31	29	41	43	10	80	48	43	Install Redundant Relay
	P5-5a:A2:2:_ FULTON 230 KV BAAH BUS #2 (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	75	79	105	31	29	41	43	10	80	48	43	Install Redundant Relay
	P5-5c(DC):A2:1:_ Station	P5	Non-Redundant Battery Supply	75	81	106	31	29	41	43	10	82	48	43	Install redundant battery supply
	P1-3:A6:5:_ IGNACIO 230/115KV TB 6	P1	N-1	77	81	106	31	29	41	43	10	83	48	43	Continue to monitor
Vaca-Vacaville-Jameson-North Tower 115 kV Line	P2-2:A6:16:_ NRTH TWR 115KV SECTION 1E	P2-2	Bus	109	108	56	82	88	33	119	106	112	152	154	Project: North Tower 115kV Looping project
	P2-2:A6:18:_ NRTH TWR 115KV SECTION 1G	P2-2	Bus	109	108	56	82	88	33	119	106	112	152	154	Project: North Tower 115kV Looping project
	P2-4:A6:5:_ NRTH TWR 115KV - SECTION 1E & 1F	P2-4	Bus Tie Breaker Fault	109	108	56	82	88	33	119	106	112	152	154	Project: North Tower 115kV Looping project
	P2-4:A6:6:_ NRTH TWR 115KV - SECTION 1F & 1G	P2-4	Bus Tie Breaker Fault	109	108	56	82	88	33	119	106	112	152	154	Project: North Tower 115kV Looping project

Substation	Contingency (All and Worst P6)	Category	Category Description	High/Low Voltage	Voltage PU (Baseline Scenarios)								Voltage PU (Sensitivity Scenarios)			Project & Potential Mitigation Solutions
					2024 Summer Peak	2027 Summer Peak	2032 Summer Peak	2024 Winter Peak	2027 Winter Peak	2032 Winter Peak	2024 Spring Off-Peak	2027 Spring Off-Peak	2027 SP High CEC Forecast	2024 SP Heavy Renewable & Min Gas Gen	2024 OP Sensitivity	
MENDOCNO 115 kV	Basecase	P0	Base Case	High	1.05	<1.05	<1.05	1.06	1.05	<1.05	1.05	1.05	<1.05	<1.05	<1.05	System adjustments or voltage support if needed
CALPELLA 115 kV	Basecase	P0	Base Case	High	1.05	<1.05	<1.05	1.06	1.05	<1.05	1.05	1.05	<1.05	<1.05	<1.05	System adjustments or voltage support if needed
HPLND JT 115 kV	Basecase	P0	Base Case	High	<1.05	<1.05	<1.05	1.05	<1.05	<1.05	<1.05	1.05	<1.05	<1.05	<1.05	System adjustments or voltage support if needed
LUCERNE 115 kV	Basecase	P0	Base Case	High	<1.05	<1.05	<1.05	1.05	<1.05	<1.05	<1.05	1.05	<1.05	<1.05	<1.05	System adjustments or voltage support if needed
INDIN VL 115 kV	Basecase	P0	Base Case	High	<1.05	<1.05	<1.05	1.05	<1.05	<1.05	<1.05	<1.05	<1.05	<1.05	<1.05	System adjustments or voltage support if needed
FRT BRGG 60 kV	Basecase	P0	Base Case	High	<1.05	<1.05	<1.05	<1.05	<1.05	<1.05	<1.05	<1.05	<1.05	1.05	<1.05	System adjustments or voltage support if needed
BIG RIVR 60 kV	Basecase	P0	Base Case	High	<1.05	<1.05	<1.05	<1.05	<1.05	<1.05	<1.05	<1.05	<1.05	1.07	<1.05	System adjustments or voltage support if needed
ELK 60 kV	Basecase	P0	Base Case	High	<1.05	<1.05	<1.05	<1.05	<1.05	<1.05	<1.05	<1.05	<1.05	1.06	<1.05	System adjustments or voltage support if needed
PNT ARNA 60 kV	Basecase	P0	Base Case	High	<1.05	<1.05	<1.05	<1.05	<1.05	<1.05	<1.05	<1.05	<1.05	1.05	<1.05	System adjustments or voltage support if needed
GARCIA 60 kV	Basecase	P0	Base Case	High	<1.05	<1.05	<1.05	<1.05	<1.05	<1.05	<1.05	<1.05	<1.05	1.06	<1.05	System adjustments or voltage support if needed
MLNO JCT 60 kV	Basecase	P0	Base Case	High	<1.05	<1.05	<1.05	<1.05	<1.05	<1.05	1.05	1.05	<1.05	<1.05	<1.05	System adjustments or voltage support if needed
CALISTGA 60 kV	Basecase	P0	Base Case	Low	0.82	0.79	0.90	0.89	0.90	>0.9	>0.9	>0.9	0.80	0.85	>0.9	Voltage support
PENNGRVE 115 kV	P1-2:A2:32:_CORONA-LAKEVILLE 115KV [4311]	P1	N-1	Low	0.97	0.97	0.90	1.00	0.99	0.93	1.05	1.04	0.97	0.99	1.04	Continue to monitor
CORONA 115 kV	P1-2:A2:32:_CORONA-LAKEVILLE 115KV [4311]	P1	N-1	Low	0.97	0.96	0.90	0.99	0.98	0.93	1.05	1.04	0.96	0.99	1.04	Continue to monitor
LYTNVLE 60 kV	P1-2:A2:43:_LAYTONVILLE-WILLITS 60KV [8360]	P1	N-1	Low	0.99	0.99	0.79	0.71	0.62	0.49	1.02	1.04	0.99	0.99	1.01	Continue to monitor
COVELO6 60 kV	P1-2:A2:43:_LAYTONVILLE-WILLITS 60KV [8360]	P1	N-1	Low	0.99	0.98	0.78	0.70	0.61	0.49	1.01	1.04	0.98	0.99	1.01	Continue to monitor
HARTLEY 60 kV	P1-3:A2:25:_EGLE RCK 115/60KV TB 1	P1	N-1	Low	0.98	0.95	0.90	0.98	0.96	0.93	0.98	1.02	0.95	0.98	0.98	Continue to monitor
CLER LKE 60 kV	P1-2:A2:54:_KONOCTI-EAGLE ROCK 60KV [6861]	P1	N-1	Low	0.98	0.95	0.89	0.97	0.96	0.92	0.98	1.01	0.95	0.97	0.97	Continue to monitor
KONOCTI6 60 kV	P1-2:A2:54:_KONOCTI-EAGLE ROCK 60KV [6861]	P1	N-1	Low	0.96	0.95	0.88	0.95	0.94	0.90	0.95	1.02	0.96	0.94	0.95	Continue to monitor
LOWR LKE 60 kV	P1-2:A2:54:_KONOCTI-EAGLE ROCK 60KV [6861]	P1	N-1	Low	0.96	0.97	0.89	0.94	0.94	0.91	0.95	1.03	0.97	0.93	0.94	Continue to monitor
EGLE RCK 60 kV	P1-3:A2:25:_EGLE RCK 115/60KV TB 1	P1	N-1	Low	0.96	0.96	0.88	0.95	0.94	0.90	0.95	1.02	0.96	0.94	0.95	Continue to monitor
GUALALA 60 kV	P1-3:A2:2:_FULTON 230/115KV TB 9	P1	N-1	Low	1.00	0.99	0.88	1.00	0.99	0.92	1.01	1.05	0.99	1.03	1.01	Continue to monitor
PUEBLO 115 kV	P1-2:A2:35:_SONOMA-PUEBLO 115KV [3810]	P1	N-1	Low	0.90	0.90	0.96	0.99	0.99	0.90	1.03	1.03	0.90	0.94	1.02	Review the power factor in near term base cases
HIGHWAY 115 kV	P1-3:A6:5:_IGNACIO 230/115KV TB 6	P1	N-1	Low	0.93	0.92	0.86	0.99	0.99	0.93	0.98	1.02	0.92	0.95	0.98	Continue to monitor
NTWR ALT 115 kV	P1-3:A6:5:_IGNACIO 230/115KV TB 6	P1	N-1	Low	0.93	0.92	0.86	0.99	0.98	0.93	0.98	1.02	0.92	0.94	0.98	Continue to monitor
CALISTGA 60 kV	P1-1:A2:10:_GEYSER14 13.80KV GEN UNIT 1	P1	N-1	Low	0.82	0.78	0.89	0.89	0.90	0.96	0.96	1.03	0.79	0.85	0.95	Voltage support
MONROE1 115 kV	P2-4:A2:7:_FULTON 115KV - SECTION 2D & 1D	P2-4	Bus Tie Breaker Fault	Low	0.86	0.85	0.76	0.93	0.92	0.83	0.96	0.98	0.85	0.90	0.96	Switch in the Fulton SVD (230 kV)
MONROE2 115 kV	P2-4:A2:7:_FULTON 115KV - SECTION 2D & 1D	P2-4	Bus Tie Breaker Fault	Low	0.86	0.85	0.76	0.93	0.92	0.83	0.96	0.98	0.85	0.90	0.96	Operating solution

Substation	Contingency (All and Worst P6)	Category	Category Description	High/Low Voltage	Voltage PU (Baseline Scenarios)								Voltage PU (Sensitivity Scenarios)			Project & Potential Mitigation Solutions
					2024 Summer Peak	2027 Summer Peak	2032 Summer Peak	2024 Winter Peak	2027 Winter Peak	2032 Winter Peak	2024 Spring Off-Peak	2027 Spring Off-Peak	2027 SP High CEC Forecast	2024 SP Heavy Renewable & Min Gas Gen	2024 OP Sensitivity	
SNTA RSA 115 kV	P2-4:A2:7:_FULTON 115KV - SECTION 2D & 1D	P2-4	Bus Tie Breaker Fault	Low	0.86	0.85	0.77	0.93	0.92	0.83	0.96	0.98	0.85	0.90	0.96	Operating solution
STNY PTP 115 kV	P2-4:A2:7:_FULTON 115KV - SECTION 2D & 1D	P2-4	Bus Tie Breaker Fault	Low	0.87	0.87	0.79	0.94	0.93	0.85	0.96	0.98	0.87	0.91	0.96	Operating solution
STONY PT 115 kV	P2-4:A2:7:_FULTON 115KV - SECTION 2D & 1D	P2-4	Bus Tie Breaker Fault	Low	0.87	0.87	0.79	0.94	0.93	0.85	0.96	0.98	0.86	0.91	0.96	Operating solution
BELLVUE 115 kV	P2-4:A2:7:_FULTON 115KV - SECTION 2D & 1D	P2-4	Bus Tie Breaker Fault	Low	0.88	0.88	0.80	0.94	0.93	0.86	0.96	0.98	0.87	0.92	0.96	Operating solution
PENNGRVE 115 kV	P2-4:A2:11:_LAKEVILLE 115KV - SECTION 1D & 2D	P2-4	Bus Tie Breaker Fault	Low	0.97	0.97	0.89	0.99	0.98	0.93	1.05	1.05	0.97	1.00	1.04	Continue to monitor
PENNGRVE 115 kV	P2-4:A2:7:_FULTON 115KV - SECTION 2D & 1D	P2-4	Bus Tie Breaker Fault	Low	0.91	0.91	0.85	0.95	0.94	0.89	0.97	0.98	0.90	0.94	0.97	Continue to monitor
CORONA 115 kV	P2-2:A2:36:_LAKEVILLE 115KV SECTION 1D	P2-2	Bus	Low	0.97	0.96	0.89	0.99	0.98	0.93	1.05	1.04	0.96	0.99	1.04	Continue to monitor
SONOMA 115 kV	P2-4:A2:11:_LAKEVILLE 115KV - SECTION 1D & 2D	P2-4	Bus Tie Breaker Fault	Low	0.92	0.92	0.84	0.96	0.94	0.91	1.03	1.05	0.92	0.96	1.02	Continue to monitor
WILLITS 60 kV	P2-4:A2:5:_MENDOCNO 115KV - SECTION 1D & 2D	P2-4	Bus Tie Breaker Fault	Low	0.98	0.93	0.88	0.99	0.98	0.90	1.02	1.03	0.93	1.00	0.99	Continue to monitor
LYTNVILLE 60 kV	P2-2:A2:16:_MENDOCNO 115KV SECTION 2D	P2-2	Bus	Low	0.99	0.98	0.89	0.97	0.96	0.93	1.02	1.02	0.98	1.01	1.01	Continue to monitor
COVELO6 60 kV	P2-2:A2:16:_MENDOCNO 115KV SECTION 2D	P2-2	Bus	Low	0.99	0.97	0.88	0.96	0.95	0.92	1.01	1.02	0.97	1.01	1.00	Continue to monitor
HARTLEY 60 kV	P2-2:A2:21:_EGLE RCK 115KV SECTION MA	P2-2	Bus	Low	0.98	0.97	0.90	0.98	0.96	0.93	0.98	1.02	0.97	0.98	0.99	Continue to monitor
CLER LKE 60 kV	P2-2:A2:21:_EGLE RCK 115KV SECTION MA	P2-2	Bus	Low	0.98	0.97	0.89	0.97	0.96	0.92	0.98	1.02	0.97	0.97	0.99	Continue to monitor
KONOCITI6 60 kV	P2-2:A2:21:_EGLE RCK 115KV SECTION MA	P2-2	Bus	Low	0.96	0.97	0.88	0.95	0.94	0.91	0.95	1.02	0.97	0.95	0.96	Continue to monitor
LOWR LKE 60 kV	P2-2:A2:21:_EGLE RCK 115KV SECTION MA	P2-2	Bus	Low	0.96	0.99	0.89	0.94	0.94	0.91	0.95	1.03	0.99	0.93	0.96	Continue to monitor
EGLE RCK 60 kV	P2-2:A2:21:_EGLE RCK 115KV SECTION MA	P2-2	Bus	Low	0.96	0.97	0.88	0.95	0.94	0.91	0.95	1.02	0.97	0.95	0.96	Continue to monitor
GUALALA 60 kV	P2-2:A2:36:_LAKEVILLE 115KV SECTION 1D	P2-2	Bus	Low	1.00	0.99	0.90	1.00	1.00	0.94	1.02	1.05	0.99	1.04	1.01	Continue to monitor
WILLITSJ 60 kV	P2-4:A2:5:_MENDOCNO 115KV - SECTION 1D & 2D	P2-4	Bus Tie Breaker Fault	Low	0.98	0.93	0.88	1.00	0.98	0.91	1.02	1.03	0.93	1.00	0.99	Continue to monitor
PUEBLO 115 kV	P2-4:A2:11:_LAKEVILLE 115KV - SECTION 1D & 2D	P2-4	Bus Tie Breaker Fault	Low	0.95	0.94	0.87	0.97	0.95	0.93	1.03	1.05	0.94	0.98	1.02	Continue to monitor
HIGHWAY J2 115 kV	P2-3:A2:7:_GEYSR20 - 1D 230KV & GEYSR18-LAKEVILLE-GEYSR20-GEYSR13 LINE	P2-3	Non-Bus Tie Breaker Fault	Low	0.95	0.94	0.89	1.01	1.00	0.95	1.02	1.04	0.94	0.96	1.00	Continue to monitor
HIGHWAY 115 kV	P2-2:A2:5:_NCPA2 230KV SECTION 1D	P2-2	Bus	Low	0.95	0.94	0.88	1.01	1.00	0.95	1.02	1.04	0.94	0.96	1.00	Continue to monitor
NTWR ALT 115 kV	P2-2:A2:10:_GEYSR17 230KV SECTION 1D	P2-2	Bus	Low	0.96	0.95	0.90	1.01	1.01	0.96	1.02	1.04	0.95	0.97	1.00	Continue to monitor
MEYERTP2 115 kV	P2-2:A2:5:_NCPA2 230KV SECTION 1D	P2-2	Bus	Low	0.94	0.94	0.88	1.00	1.00	0.95	1.01	1.04	0.94	0.96	1.00	Continue to monitor
CALISTGA 60 kV	P2-2:A2:26:_FULTON 115KV SECTION 1D	P2-2	Bus	Low	0.82	0.79	0.86	0.89	0.89	0.93	0.94	1.02	0.79	0.83	0.95	Voltage support
ANNAPOLS 60kV	P1-1:A2:12:_GEYSER17 13.80KV GEN UNIT 1 & P1-2:A2:2:_FULTON-GEYSR16-GEYSR12-GEYSR14 230KV [0]	P3	G-1/N-1	Low	>0.9	>0.9	0.88	>0.9	>0.9	>0.9	>0.9	>0.9	>0.9	>0.9	>0.9	Continue to monitor

Substation	Contingency (All and Worst P6)	Category	Category Description	High/Low Voltage	Voltage PU (Baseline Scenarios)								Voltage PU (Sensitivity Scenarios)			Project & Potential Mitigation Solutions
					2024 Summer Peak	2027 Summer Peak	2032 Summer Peak	2024 Winter Peak	2027 Winter Peak	2032 Winter Peak	2024 Spring Off-Peak	2027 Spring Off-Peak	2027 SP High CEC Forecast	2024 SP Heavy Renewable & Min Gas Gen	2024 OP Sensitivity	
CALISTGA 60kV	P1-1:A2:12:_GEYSER17 13.80KV GEN UNIT 1 & P1-3:A2:2:_FULTON 230/115KV TB 9	P3	G-1/N-1	Low	0.80	0.77	0.85	>0.9	>0.9	>0.9	>0.9	>0.9	0.77	>0.9	>0.9	Voltage support
CLER LKE 60kV	P1-1:A2:17:_POTTRVLY 2.40KV GEN UNIT 3 & P1-3:A2:25:_EGLE RCK 115/60KV TB 1	P3	G-1/N-1	Low	>0.9	>0.9	0.89	>0.9	>0.9	>0.9	>0.9	>0.9	>0.9	>0.9	>0.9	Continue to monitor
CORONA 115kV	P1-1:A2:12:_GEYSER17 13.80KV GEN UNIT 1 & P1-2:A2:32:_CORONA-LAKEVILLE 115KV [4311]	P3	G-1/N-1	Low	>0.9	>0.9	0.88	>0.9	>0.9	>0.9	>0.9	>0.9	>0.9	>0.9	>0.9	Continue to monitor
COVELO6 60kV	P1-1:A2:12:_GEYSER17 13.80KV GEN UNIT 1 & P1-2:A2:43:_LAYTONVILLE-WILLITS 60KV [8360]	P3	G-1/N-1	Low	>0.9	>0.9	0.72	>0.9	0.54	0.48	>0.9	>0.9	>0.9	>0.9	>0.9	Continue to monitor
DUNBAR 60kV	P1-1:A2:8:_GEYSER12 13.80KV GEN UNIT 1 & P1-2:A2:65:_LAKEVILLE #1 60KV [7360]	P3	G-1/N-1	Low	0.84	0.82	0.89	>0.9	>0.9	>0.9	>0.9	>0.9	0.82	>0.9	>0.9	Switch in the Fulton SVD (230 kV)
EGLE RCK 60kV	P1-1:A2:17:_POTTRVLY 2.40KV GEN UNIT 3 & P1-3:A2:25:_EGLE RCK 115/60KV TB 1	P3	G-1/N-1	Low	>0.9	>0.9	0.88	>0.9	>0.9	>0.9	>0.9	>0.9	>0.9	>0.9	>0.9	Continue to monitor
GUALALA 60kV	P1-1:A2:12:_GEYSER17 13.80KV GEN UNIT 1 & P1-2:A2:2:_FULTON-GEYSR16-GEYSR12-GEYSR14 230KV [0]	P3	G-1/N-1	Low	>0.9	>0.9	0.85	>0.9	>0.9	>0.9	>0.9	>0.9	>0.9	>0.9	>0.9	Continue to monitor
HARTLEY 60kV	P1-1:A2:17:_POTTRVLY 2.40KV GEN UNIT 3 & P1-3:A2:25:_EGLE RCK 115/60KV TB 1	P3	G-1/N-1	Low	>0.9	>0.9	0.90	>0.9	>0.9	>0.9	>0.9	>0.9	>0.9	>0.9	>0.9	Continue to monitor
HIGHWAY 115kV	P1-1:A2:12:_GEYSER17 13.80KV GEN UNIT 1 & P1-3:A6:5:_IGNACIO 230/115KV TB 6	P3	G-1/N-1	Low	>0.9	>0.9	0.86	>0.9	>0.9	>0.9	>0.9	>0.9	>0.9	>0.9	>0.9	Continue to monitor
KONOCI6 60kV	P1-1:A2:17:_POTTRVLY 2.40KV GEN UNIT 3 & P1-3:A2:25:_EGLE RCK 115/60KV TB 1	P3	G-1/N-1	Low	>0.9	>0.9	0.88	>0.9	>0.9	>0.9	>0.9	>0.9	>0.9	>0.9	>0.9	Continue to monitor
LOWR LKE 60kV	P1-1:A2:17:_POTTRVLY 2.40KV GEN UNIT 3 & P1-3:A2:25:_EGLE RCK 115/60KV TB 1	P3	G-1/N-1	Low	>0.9	>0.9	0.89	>0.9	>0.9	>0.9	>0.9	>0.9	>0.9	>0.9	>0.9	Continue to monitor
LYTNVLE 60kV	P1-1:A2:12:_GEYSER17 13.80KV GEN UNIT 1 & P1-2:A2:43:_LAYTONVILLE-WILLITS 60KV [8360]	P3	G-1/N-1	Low	>0.9	>0.9	0.73	>0.9	0.55	0.49	>0.9	>0.9	>0.9	>0.9	>0.9	Continue to monitor
MEYERTP2 115kV	P1-1:A2:12:_GEYSER17 13.80KV GEN UNIT 1 & P1-3:A6:5:_IGNACIO 230/115KV TB 6	P3	G-1/N-1	Low	>0.9	>0.9	0.85	>0.9	>0.9	>0.9	>0.9	>0.9	>0.9	>0.9	>0.9	Continue to monitor
NTWR ALT 115kV	P1-1:A2:12:_GEYSER17 13.80KV GEN UNIT 1 & P1-3:A6:5:_IGNACIO 230/115KV TB 6	P3	G-1/N-1	Low	>0.9	>0.9	0.85	>0.9	>0.9	>0.9	>0.9	>0.9	>0.9	>0.9	>0.9	Continue to monitor
PENNGRVE 115kV	P1-1:A2:12:_GEYSER17 13.80KV GEN UNIT 1 & P1-2:A2:32:_CORONA-LAKEVILLE 115KV [4311]	P3	G-1/N-1	Low	>0.9	>0.9	0.89	>0.9	>0.9	>0.9	>0.9	>0.9	>0.9	>0.9	>0.9	Continue to monitor
PUEBLO 115kV	P1-1:A2:10:_GEYSER14 13.80KV GEN UNIT 1 & P1-2:A2:35:_SONOMA-PUEBLO 115KV [3810]	P3	G-1/N-1	Low	0.90	>0.9	>0.9	>0.9	>0.9	>0.9	>0.9	>0.9	>0.9	>0.9	>0.9	Operating solution
ST.HELNA 60kV	P1-1:A2:12:_GEYSER17 13.80KV GEN UNIT 1 & P1-2:A2:2:_FULTON-GEYSR16-GEYSR12-GEYSR14 230KV [0]	P3	G-1/N-1	Low	>0.9	0.89	0.90	>0.9	>0.9	>0.9	>0.9	>0.9	0.89	>0.9	>0.9	Fulton-Calistoga Maintenance project

Substation	Contingency (All and Worst P6)	Category	Category Description	High/Low Voltage	Voltage PU (Baseline Scenarios)								Voltage PU (Sensitivity Scenarios)			Project & Potential Mitigation Solutions
					2024 Summer Peak	2027 Summer Peak	2032 Summer Peak	2024 Winter Peak	2027 Winter Peak	2032 Winter Peak	2024 Spring Off-Peak	2027 Spring Off-Peak	2027 SP High CEC Forecast	2024 SP Heavy Renewable & Min Gas Gen	2024 OP Sensitivity	
DUNBAR 60 kV	P5-5c(DC):A2:2:_Station	P5	Non-Redundant Battery Supply	Low	0.83	0.79	NConv	0.93	0.95	0.81	0.99	1.05	0.79	0.92	0.98	Install redundant battery supply
FULTON 115 kV	P5-5a:A2:1:_ FULTON 230 KV BAAH BUS #1 (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	Low	0.88	0.87	0.80	>0.9	>0.9	0.85	>0.9	>0.9	0.87	>0.9	>0.9	Install Redundant Relay
SNTA RSA 115 kV	P5-5a:A2:10:_ FULTON BUS 115 KV 1 & 2 SECTION E/F(FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	Low	NConv	NConv	0.78	>0.9	NConv	0.83	>0.9	>0.9	NConv	>0.9	>0.9	Install Redundant Relay
STONY PT 115 kV	P5-5a:A2:10:_ FULTON BUS 115 KV 1 & 2 SECTION E/F(FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	Low	NConv	NConv	0.81	>0.9	NConv	0.85	>0.9	>0.9	NConv	>0.9	>0.9	Install Redundant Relay
PENNGRVE 115 kV	P5-5a:A2:10:_ FULTON BUS 115 KV 1 & 2 SECTION E/F(FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	Low	NConv	NConv	0.87	>0.9	NConv	0.89	>0.9	>0.9	NConv	>0.9	>0.9	Install Redundant Relay
PTTR VLY 60 kV	P5-5c(DC):A2:3:_Station	P5	Non-Redundant Battery Supply	Low	0.86	0.36	0.54	NConv	NConv	NConv	NConv	>0.9	0.36	0.49	0.42	Install redundant battery supply
WILLITS 60 kV	P5-5c(DC):A2:3:_Station	P5	Non-Redundant Battery Supply	Low	0.82	0.39	0.49	NConv	NConv	NConv	NConv	>0.9	0.39	0.53	0.44	Install redundant battery supply
LYTNVLE 60 kV	P5-5c(DC):A2:3:_Station	P5	Non-Redundant Battery Supply	Low	0.83	0.46	0.52	NConv	NConv	NConv	NConv	>0.9	0.46	0.59	0.48	Install redundant battery supply
COVELO6 60 kV	P5-5a:A2:10:_ FULTON BUS 115 KV 1 & 2 SECTION E/F(FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	Low	NConv	NConv	0.90	>0.9	NConv	>0.9	>0.9	>0.9	NConv	>0.9	>0.9	Install Redundant Relay
GUALALA 60 kV	P5-5a:A2:10:_ FULTON BUS 115 KV 1 & 2 SECTION E/F(FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	Low	NConv	NConv	0.30	0.29	NConv	0.35	0.28	0.50	NConv	0.36	0.28	Install Redundant Relay
FORT RSS 60 kV	P5-5a:A2:10:_ FULTON BUS 115 KV 1 & 2 SECTION E/F(FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	Low	NConv	NConv	0.33	0.30	NConv	0.38	0.29	0.50	NConv	0.36	0.29	Install Redundant Relay
SLMN CRK 60 kV	P5-5a:A2:10:_ FULTON BUS 115 KV 1 & 2 SECTION E/F(FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	Low	NConv	NConv	0.33	0.30	NConv	0.38	0.29	0.50	NConv	0.36	0.29	Install Redundant Relay
MONTE RO 60 kV	P5-5a:A2:10:_ FULTON BUS 115 KV 1 & 2 SECTION E/F(FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	Low	NConv	NConv	0.35	0.31	NConv	0.40	0.29	0.50	NConv	0.37	0.30	Install Redundant Relay
WOHLER 60 kV	P5-5a:A2:10:_ FULTON BUS 115 KV 1 & 2 SECTION E/F(FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	Low	NConv	NConv	0.38	0.32	NConv	0.43	0.31	0.50	NConv	0.37	0.31	Install Redundant Relay
WHLR TAP 60 kV	P5-5a:A2:10:_ FULTON BUS 115 KV 1 & 2 SECTION E/F(FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	Low	NConv	NConv	0.38	0.32	NConv	0.43	0.31	0.50	NConv	0.37	0.31	Install Redundant Relay
MIRABEL 60 kV	P5-5a:A2:10:_ FULTON BUS 115 KV 1 & 2 SECTION E/F(FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	Low	NConv	NConv	0.38	0.32	NConv	0.43	0.31	0.50	NConv	0.37	0.31	Install Redundant Relay
MOLINO 60 kV	P5-5a:A2:10:_ FULTON BUS 115 KV 1 & 2 SECTION E/F(FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	Low	NConv	NConv	0.42	0.32	NConv	0.46	0.31	0.51	NConv	0.38	0.32	Install Redundant Relay
GYSRVLE 60 kV	P5-5a:A2:10:_ FULTON BUS 115 KV 1 & 2 SECTION E/F(FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	Low	NConv	NConv	0.41	0.36	NConv	0.46	0.33	0.50	NConv	0.40	0.33	Install Redundant Relay

Substation	Contingency (All and Worst P6)	Category	Category Description	High/Low Voltage	Voltage PU (Baseline Scenarios)								Voltage PU (Sensitivity Scenarios)			Project & Potential Mitigation Solutions
					2024 Summer Peak	2027 Summer Peak	2032 Summer Peak	2024 Winter Peak	2027 Winter Peak	2032 Winter Peak	2024 Spring Off-Peak	2027 Spring Off-Peak	2027 SP High CEC Forecast	2024 SP Heavy Renewable & Min Gas Gen	2024 OP Sensitivity	
GYSR 1-2 60 kV	P5-5a:A2:10:_ FULTON BUS 115 KV 1 & 2 SECTION E/F(FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	Low	NConv	NConv	0.41	0.36	NConv	0.46	0.33	0.50	NConv	0.40	0.33	Install Redundant Relay
WINDSOR 60 kV	P5-5a:A2:10:_ FULTON BUS 115 KV 1 & 2 SECTION E/F(FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	Low	NConv	NConv	0.41	0.35	NConv	0.46	0.32	0.50	NConv	0.39	0.32	Install Redundant Relay
FCHMNTP2 60 kV	P5-5a:A2:10:_ FULTON BUS 115 KV 1 & 2 SECTION E/F(FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	Low	NConv	NConv	0.41	0.36	NConv	0.47	0.33	0.50	NConv	0.40	0.33	Install Redundant Relay
FULTON 60 kV	P5-5a:A2:10:_ FULTON BUS 115 KV 1 & 2 SECTION E/F(FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	Low	NConv	NConv	0.40	0.33	NConv	0.45	0.31	0.50	NConv	0.38	0.31	Install Redundant Relay
FTCH MTN 60 kV	P5-5a:A2:10:_ FULTON BUS 115 KV 1 & 2 SECTION E/F(FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	Low	NConv	NConv	0.42	0.36	NConv	0.47	0.33	0.50	NConv	0.40	0.33	Install Redundant Relay
HDSBGTP1 60 kV	P5-5a:A2:10:_ FULTON BUS 115 KV 1 & 2 SECTION E/F(FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	Low	NConv	NConv	0.42	0.36	NConv	0.47	0.33	0.51	NConv	0.40	0.33	Install Redundant Relay
FTCHMTNP 60 kV	P5-5a:A2:10:_ FULTON BUS 115 KV 1 & 2 SECTION E/F(FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	Low	NConv	NConv	0.43	0.37	NConv	0.48	0.34	0.51	NConv	0.41	0.34	Install Redundant Relay
LAGUNA 60 kV	P5-5a:A2:10:_ FULTON BUS 115 KV 1 & 2 SECTION E/F(FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	Low	NConv	NConv	0.49	0.31	NConv	0.53	0.31	0.50	NConv	0.38	0.31	Install Redundant Relay
COTATI 60 kV	P5-5a:A2:10:_ FULTON BUS 115 KV 1 & 2 SECTION E/F(FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	Low	NConv	NConv	0.57	0.31	NConv	0.60	0.31	0.50	NConv	0.38	0.32	Install Redundant Relay
LAGUNATP 60 kV	P5-5a:A2:10:_ FULTON BUS 115 KV 1 & 2 SECTION E/F(FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	Low	NConv	NConv	0.49	0.31	NConv	0.53	0.31	0.50	NConv	0.38	0.31	Install Redundant Relay
PETC_JCT 60 kV	P5-5a:A2:10:_ FULTON BUS 115 KV 1 & 2 SECTION E/F(FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	Low	NConv	NConv	0.72	>0.9	NConv	0.74	>0.9	>0.9	NConv	>0.9	>0.9	Install Redundant Relay
PETLMA A 60 kV	P5-5a:A2:10:_ FULTON BUS 115 KV 1 & 2 SECTION E/F(FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	Low	NConv	NConv	0.73	>0.9	NConv	0.75	>0.9	>0.9	NConv	>0.9	>0.9	Install Redundant Relay
SNMA TAP 60 kV	P5-5a:A2:10:_ FULTON BUS 115 KV 1 & 2 SECTION E/F(FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	Low	NConv	NConv	0.56	0.31	NConv	0.59	0.31	0.50	NConv	0.38	0.32	Install Redundant Relay
SNMALDFL 60 kV	P5-5a:A2:10:_ FULTON BUS 115 KV 1 & 2 SECTION E/F(FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	Low	NConv	NConv	0.56	0.31	NConv	0.59	0.31	0.50	NConv	0.38	0.32	Install Redundant Relay
DUNBAR 60 kV	P5-5c(DC):A2:2:_ Station	P5	Non-Redundant Battery Supply	Low	0.83	0.79	NConv	>0.9	>0.9	0.81	>0.9	>0.9	0.79	>0.9	>0.9	Install redundant battery supply
HIGHWAY 115 kV	P5-5a:A2:10:_ FULTON BUS 115 KV 1 & 2 SECTION E/F(FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	Low	NConv	NConv	0.88	>0.9	NConv	>0.9	>0.9	>0.9	NConv	>0.9	>0.9	Install Redundant Relay
NTWR ALT 115 kV	P5-5a:A2:10:_ FULTON BUS 115 KV 1 & 2 SECTION E/F(FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	Low	NConv	NConv	0.88	>0.9	NConv	>0.9	>0.9	>0.9	NConv	>0.9	>0.9	Install Redundant Relay

Substation	Contingency (All and Worst P6)	Category	Category Description	High/Low Voltage	Voltage PU (Baseline Scenarios)								Voltage PU (Sensitivity Scenarios)			Project & Potential Mitigation Solutions
					2024 Summer Peak	2027 Summer Peak	2032 Summer Peak	2024 Winter Peak	2027 Winter Peak	2032 Winter Peak	2024 Spring Off-Peak	2027 Spring Off-Peak	2027 SP High CEC Forecast	2024 SP Heavy Renewable & Min Gas Gen	2024 OP Sensitivity	
MEYERTP2 115 kV	P5-5a:A2:10:_ FULTON BUS 115 KV 1 & 2 SECTION E/F(FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	Low	NConv	NConv	0.88	>0.9	NConv	>0.9	>0.9	>0.9	NConv	>0.9	>0.9	Install Redundant Relay
ST.HELNA 60 kV	P5-5a:A2:10:_ FULTON BUS 115 KV 1 & 2 SECTION E/F(FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	Low	NConv	NConv	0.35	0.28	NConv	0.41	0.28	0.49	NConv	0.31	0.28	Install Redundant Relay
CALISTGA 60 kV	P5-5a:A2:10:_ FULTON BUS 115 KV 1 & 2 SECTION E/F(FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant Relay	Low	NConv	NConv	0.30	0.24	NConv	0.36	0.25	0.48	NConv	0.26	0.25	Install Redundant Relay
ANNAPOLS 60kV	P1-3:A2:2:_ FULTON 230/115KV TB 9 & P1-3:A2:1:_ FULTON 230/115KV TB 4	P6	N-1-1	Low	0.89	0.87	0.75	>0.9	>0.9	0.81	>0.9	>0.9	0.87	>0.9	>0.9	Operating solution
BELLVUE 115kV	P1-2:A2:25:_ FULTON-SANTA ROSA #1 115KV [1620] & P1-2:A2:26:_ FULTON-SANTA ROSA #2 115KV [1630]	P6	N-1-1	Low	0.88	0.88	0.80	>0.9	>0.9	0.86	>0.9	>0.9	0.87	>0.9	>0.9	Operating solution
CALISTGA 60kV	P1-3:A2:2:_ FULTON 230/115KV TB 9 & P1-3:A2:1:_ FULTON 230/115KV TB 4	P6	N-1-1	Low	0.63	0.59	0.68	0.82	0.80	0.80	>0.9	>0.9	0.59	0.75	>0.9	Voltage support
CALPELLA 115kV	P1-2:A2:15:_ GEYSERS #3-CLOVERDALE 115KV [1650] MOAS OPENED ON AIDLINJCT_AIDLINGYSR & P1-2:A2:11:_ MENDOCINO-UKIAH 115KV [2420] MOAS OPENED ON MENDOCNO_CALPELLA	P6	N-1-1	Low	0.72	0.68	0.59	0.84	0.82	0.76	0.78	0.86	0.67	0.79	0.78	Operating solution
CLOVRDLE 115kV	P1-2:A2:11:_ MENDOCINO-UKIAH 115KV [2420] MOAS OPENED ON MENDOCNO_CALPELLA & P1-2:A2:15:_ GEYSERS #3-CLOVERDALE 115KV [1650] MOAS OPENED ON AIDLINJCT_AIDLINGYSR	P6	N-1-1	Low	0.74	0.70	0.61	0.84	0.83	0.77	0.80	0.87	0.70	0.80	0.80	Operating solution
COTATI 60kV	P1-3:A2:2:_ FULTON 230/115KV TB 9 & P1-3:A2:1:_ FULTON 230/115KV TB 4	P6	N-1-1	Low	>0.9	0.89	0.88	>0.9	>0.9	>0.9	>0.9	>0.9	0.89	>0.9	>0.9	Operating solution
FORT RSS 60kV	P1-3:A2:2:_ FULTON 230/115KV TB 9 & P1-3:A2:1:_ FULTON 230/115KV TB 4	P6	N-1-1	Low	0.90	0.88	0.76	>0.9	>0.9	0.83	>0.9	>0.9	0.88	>0.9	>0.9	Operating solution
FULTON 115kV	P1-3:A2:2:_ FULTON 230/115KV TB 9 & P1-3:A2:1:_ FULTON 230/115KV TB 4	P6	N-1-1	Low	0.88	0.87	0.81	>0.9	>0.9	0.85	>0.9	>0.9	0.87	>0.9	>0.9	Operating solution
GUALALA 60kV	P1-3:A2:2:_ FULTON 230/115KV TB 9 & P1-3:A2:1:_ FULTON 230/115KV TB 4	P6	N-1-1	Low	0.88	0.86	0.71	>0.9	>0.9	0.79	>0.9	>0.9	0.86	>0.9	>0.9	Operating solution
GYSRVLLE 60kV	P1-3:A2:2:_ FULTON 230/115KV TB 9 & P1-3:A2:1:_ FULTON 230/115KV TB 4	P6	N-1-1	Low	>0.9	0.90	0.83	>0.9	>0.9	0.88	>0.9	>0.9	0.90	>0.9	>0.9	Operating solution
HPLND JT 115kV	P1-2:A2:11:_ MENDOCINO-UKIAH 115KV [2420] MOAS OPENED ON MENDOCNO_CALPELLA & P1-2:A2:15:_ GEYSERS #3-CLOVERDALE 115KV [1650] MOAS OPENED ON AIDLINJCT_AIDLINGYSR	P6	N-1-1	Low	0.75	0.70	0.62	0.84	0.83	0.77	0.80	0.87	0.70	0.81	0.80	Operating solution
PUEBLO 115kV	P1-2:A2:35:_ SONOMA-PUEBLO 115KV [3810] & P1-2:A6:5:_ IGNACIO-SOBRANTE 230KV [4920]	P6	N-1-1	Low	0.90	>0.9	>0.9	>0.9	>0.9	>0.9	>0.9	>0.9	>0.9	>0.9	>0.9	Operating solution
RINCON 115kV	P1-3:A2:2:_ FULTON 230/115KV TB 9 & P1-3:A2:1:_ FULTON 230/115KV TB 4	P6	N-1-1	Low	0.90	0.89	0.83	>0.9	>0.9	0.87	>0.9	>0.9	0.89	>0.9	>0.9	SPS, battery storage or line capacity increase

Substation	Contingency (All and Worst P6)	Category	Category Description	High/Low Voltage	Voltage PU (Baseline Scenarios)								Voltage PU (Sensitivity Scenarios)			Project & Potential Mitigation Solutions
					2024 Summer Peak	2027 Summer Peak	2032 Summer Peak	2024 Winter Peak	2027 Winter Peak	2032 Winter Peak	2024 Spring Off-Peak	2027 Spring Off-Peak	2027 SP High CEC Forecast	2024 SP Heavy Renewable & Min Gas Gen	2024 OP Sensitivity	
SILVERDO 115kV	P1-3:A2:1: _FULTON 230/115KV TB 4 & P1-3:A2:2: _FULTON 230/115KV TB 9	P6	N-1-1	Low	0.90	0.89	0.83	>0.9	>0.9	0.87	>0.9	>0.9	0.89	>0.9	>0.9	SPS, battery storage or line capacity increase
SLMN CRK 60kV	P1-3:A2:2: _FULTON 230/115KV TB 9 & P1-3:A2:1: _FULTON 230/115KV TB 4	P6	N-1-1	Low	0.90	0.88	0.77	>0.9	>0.9	0.83	>0.9	>0.9	0.88	>0.9	>0.9	SPS, battery storage or line capacity increase
SNMALDFL 60kV	P1-3:A2:2: _FULTON 230/115KV TB 9 & P1-3:A2:1: _FULTON 230/115KV TB 4	P6	N-1-1	Low	>0.9	0.89	0.88	>0.9	>0.9	>0.9	>0.9	>0.9	0.89	>0.9	>0.9	SPS, battery storage or line capacity increase
SNTA RSA 115kV	P1-2:A2:25: _FULTON-SANTA ROSA #1 115KV [1620] & P1-2:A2:26: _FULTON-SANTA ROSA #2 115KV [1630]	P6	N-1-1	Low	0.86	0.85	0.76	>0.9	>0.9	0.83	>0.9	>0.9	0.85	>0.9	>0.9	Operating solution
ST.HELNA 60kV	P1-3:A2:2: _FULTON 230/115KV TB 9 & P1-3:A2:1: _FULTON 230/115KV TB 4	P6	N-1-1	Low	0.77	0.74	0.77	0.90	0.88	0.85	>0.9	>0.9	0.74	0.85	>0.9	Fulton-Calistoga Maintenance project
STONY PT 115kV	P1-2:A2:26: _FULTON-SANTA ROSA #2 115KV [1630] & P1-2:A2:25: _FULTON-SANTA ROSA #1 115KV [1620]	P6	N-1-1	Low	0.87	0.87	0.79	>0.9	>0.9	0.85	>0.9	>0.9	0.86	>0.9	>0.9	Operating solution
UKIAH 115kV	P1-2:A2:11: _MENDOCINO-UKIAH 115KV [2420] MOAS OPENED ON MENDOCNO_CALPELLA & P1-2:A2:15: _GEYSERS #3-CLOVERDALE 115KV [1650] MOAS OPENED ON AIDLINJCT_AIDLINGYSR	P6	N-1-1	Low	0.73	0.68	0.59	0.83	0.82	0.76	0.78	0.86	0.68	0.79	0.78	Operating solution
FULTON 230 kV	P7-1:A2:11: _GEYSERS #12-FULTON & GEYSERS #9-LAKEVILLE LINES	P7	DCTL	Low	0.96	0.96	0.90	0.99	0.99	0.94	1.01	1.01	0.96	0.97	1.00	Continue to monitor
MONROE1 115 kV	P7-1:A2:15: _FULTON-SANTA ROSA #1 & FULTON-SANTA ROSA #2 LINES	P7	DCTL	Low	0.86	0.85	0.76	0.93	0.92	0.83	0.95	0.98	0.85	0.90	0.95	Operating solution
MONROE2 115 kV	P7-1:A2:15: _FULTON-SANTA ROSA #1 & FULTON-SANTA ROSA #2 LINES	P7	DCTL	Low	0.86	0.85	0.76	0.92	0.92	0.83	0.95	0.98	0.85	0.90	0.95	Operating solution
SNTA RSA 115 kV	P7-1:A2:15: _FULTON-SANTA ROSA #1 & FULTON-SANTA ROSA #2 LINES	P7	DCTL	Low	0.86	0.85	0.76	0.93	0.92	0.83	0.95	0.98	0.85	0.90	0.95	Operating solution
STONY PT 115 kV	P7-1:A2:15: _FULTON-SANTA ROSA #1 & FULTON-SANTA ROSA #2 LINES	P7	DCTL	Low	0.87	0.87	0.79	0.93	0.93	0.85	0.95	0.98	0.86	0.91	0.95	Operating solution
PENNGRVE 115 kV	P7-1:A2:15: _FULTON-SANTA ROSA #1 & FULTON-SANTA ROSA #2 LINES	P7	DCTL	Low	0.91	0.90	0.85	0.95	0.94	0.89	0.97	0.98	0.90	0.94	0.97	Continue to monitor
SONOMA 115 kV	P7-1:A2:16: _LAKEVILLE-SONOMA #1 & LAKEVILLE-SONOMA #2 LINES	P7	DCTL	Low	0.92	0.92	0.86	0.95	0.94	0.92	1.02	1.04	0.92	0.96	1.02	Continue to monitor
STHELNJ2 115 kV	P7-1:A2:21: _FULTON - HOPLAND 60 kV & GEYSER 12 - FULTON & GEYSER 17 - FULTON 230 KV LINES	P7	DCTL	Low	0.98	0.97	0.90	1.01	1.00	0.94	1.03	1.04	0.97	0.99	1.02	Continue to monitor
LYTNVLE 60 kV	P7-1:A2:23: _EAGLE ROCK -REDBUD & CORTINA-MENDOCINO #1 LINES	P7	DCTL	Low	0.98	1.00	0.88	0.96	0.96	0.92	1.02	1.02	0.98	1.01	1.00	Continue to monitor
COVELO6 60 kV	P7-1:A2:23: _EAGLE ROCK -REDBUD & CORTINA-MENDOCINO #1 LINES	P7	DCTL	Low	0.98	0.99	0.87	0.96	0.95	0.91	1.01	1.02	0.97	1.01	1.00	Continue to monitor
GUALALA 60 kV	P7-1:A2:11: _GEYSERS #12-FULTON & GEYSERS #9-LAKEVILLE LINES	P7	DCTL	Low	0.99	0.98	0.84	1.00	1.00	0.91	1.01	1.04	0.98	1.03	1.01	Continue to monitor
ANNAPOLS 60 kV	P7-1:A2:11: _GEYSERS #12-FULTON & GEYSERS #9-LAKEVILLE LINES	P7	DCTL	Low	1.00	0.99	0.86	1.01	1.01	0.93	1.02	1.04	0.99	1.04	1.01	Continue to monitor
FORT RSS 60 kV	P7-1:A2:11: _GEYSERS #12-FULTON & GEYSERS #9-LAKEVILLE LINES	P7	DCTL	Low	1.01	1.00	0.88	1.02	1.02	0.94	1.02	1.04	0.99	1.04	1.02	Continue to monitor
SLMN JCT 60 kV	P7-1:A2:11: _GEYSERS #12-FULTON & GEYSERS #9-LAKEVILLE LINES	P7	DCTL	Low	1.01	1.00	0.89	1.02	1.02	0.95	1.02	1.04	1.00	1.04	1.02	Continue to monitor

Substation	Contingency (All and Worst P6)	Category	Category Description	High/Low Voltage	Voltage PU (Baseline Scenarios)								Voltage PU (Sensitivity Scenarios)			Project & Potential Mitigation Solutions
					2024 Summer Peak	2027 Summer Peak	2032 Summer Peak	2024 Winter Peak	2027 Winter Peak	2032 Winter Peak	2024 Spring Off-Peak	2027 Spring Off-Peak	2027 SP High CEC Forecast	2024 SP Heavy Renewable & Min Gas Gen	2024 OP Sensitivity	
SLMN CRK 60 kV	P7-1:A2:21:_ FULTON - HOPLAND 60 kV & GEYSER 12 - FULTON & GEYSER 17 - FULTON 230 kV LINES	P7	DCTL	Low	1.00	1.00	0.87	1.02	1.02	0.94	1.02	1.04	0.99	1.03	1.02	Continue to monitor
MONTE RO 60 kV	P7-1:A2:21:_ FULTON - HOPLAND 60 kV & GEYSER 12 - FULTON & GEYSER 17 - FULTON 230 kV LINES	P7	DCTL	Low	1.01	1.01	0.89	1.02	1.03	0.95	1.02	1.04	1.00	1.03	1.02	Continue to monitor
GYSRVLE 60 kV	P7-1:A2:21:_ FULTON - HOPLAND 60 kV & GEYSER 12 - FULTON & GEYSER 17 - FULTON 230 kV LINES	P7	DCTL	Low	0.99	0.98	0.86	1.03	1.02	0.94	1.03	1.03	0.98	1.01	1.03	Continue to monitor
GYSR 1-2 60 kV	P7-1:A2:21:_ FULTON - HOPLAND 60 kV & GEYSER 12 - FULTON & GEYSER 17 - FULTON 230 kV LINES	P7	DCTL	Low	0.99	0.99	0.87	1.03	1.02	0.94	1.03	1.03	0.98	1.01	1.03	Continue to monitor
WINDSOR 60 kV	P7-1:A2:21:_ FULTON - HOPLAND 60 kV & GEYSER 12 - FULTON & GEYSER 17 - FULTON 230 kV LINES	P7	DCTL	Low	1.00	0.99	0.89	1.03	1.02	0.96	1.03	1.03	0.99	1.02	1.03	Continue to monitor
HDSBGTP2 60 kV	P7-1:A2:21:_ FULTON - HOPLAND 60 kV & GEYSER 12 - FULTON & GEYSER 17 - FULTON 230 kV LINES	P7	DCTL	Low	0.99	0.99	0.87	1.03	1.02	0.94	1.03	1.03	0.99	1.01	1.03	Continue to monitor
FTCH MTN 60 kV	P7-1:A2:21:_ FULTON - HOPLAND 60 kV & GEYSER 12 - FULTON & GEYSER 17 - FULTON 230 kV LINES	P7	DCTL	Low	0.99	0.99	0.87	1.03	1.02	0.94	1.03	1.03	0.99	1.01	1.03	Continue to monitor
HDSBGTP1 60 kV	P7-1:A2:21:_ FULTON - HOPLAND 60 kV & GEYSER 12 - FULTON & GEYSER 17 - FULTON 230 kV LINES	P7	DCTL	Low	0.99	0.99	0.87	1.03	1.02	0.94	1.03	1.03	0.99	1.01	1.03	Continue to monitor
SILVRDJ2 115 kV	P7-1:A2:21:_ FULTON - HOPLAND 60 kV & GEYSER 12 - FULTON & GEYSER 17 - FULTON 230 kV LINES	P7	DCTL	Low	0.98	0.97	0.90	1.01	1.00	0.95	1.03	1.04	0.97	0.99	1.02	Continue to monitor
SILVERDO 115 kV	P7-1:A2:21:_ FULTON - HOPLAND 60 kV & GEYSER 12 - FULTON & GEYSER 17 - FULTON 230 kV LINES	P7	DCTL	Low	0.98	0.97	0.90	1.01	1.00	0.94	1.03	1.04	0.97	0.99	1.02	Continue to monitor
MONTCLO 115 kV	P7-1:A2:21:_ FULTON - HOPLAND 60 kV & GEYSER 12 - FULTON & GEYSER 17 - FULTON 230 kV LINES	P7	DCTL	Low	0.98	0.97	0.90	1.01	1.00	0.94	1.03	1.04	0.97	0.99	1.02	Continue to monitor
MNTCLOPH 115 kV	P7-1:A2:11:_ GEYSERS #12-FULTON & GEYSERS #9-LAKEVILLE LINES	P7	DCTL	Low	0.98	0.97	0.90	1.01	1.00	0.94	1.03	1.04	0.97	0.99	1.02	Continue to monitor
PUEBLO 115 kV	P7-1:A2:16:_ LAKEVILLE-SONOMA #1 & LAKEVILLE-SONOMA #2 LINES	P7	DCTL	Low	0.95	0.94	0.89	0.97	0.95	0.94	1.02	1.04	0.94	0.98	1.01	Continue to monitor
LS GLLNS 115 kV	P7-1:A2:11:_ GEYSERS #12-FULTON & GEYSERS #9-LAKEVILLE LINES	P7	DCTL	Low	0.98	0.97	0.90	1.01	1.01	0.95	1.03	1.04	0.97	0.99	1.01	Continue to monitor
SAN RAFL 115 kV	P7-1:A2:11:_ GEYSERS #12-FULTON & GEYSERS #9-LAKEVILLE LINES	P7	DCTL	Low	0.98	0.97	0.89	1.01	1.01	0.95	1.03	1.04	0.97	0.99	1.01	Continue to monitor
HIGHWAY 115 kV	P7-1:A2:11:_ GEYSERS #12-FULTON & GEYSERS #9-LAKEVILLE LINES	P7	DCTL	Low	0.93	0.92	0.84	1.00	0.99	0.93	1.01	1.04	0.92	0.95	0.99	Continue to monitor
NTWR ALT 115 kV	P7-1:A2:11:_ GEYSERS #12-FULTON & GEYSERS #9-LAKEVILLE LINES	P7	DCTL	Low	0.93	0.92	0.84	1.00	0.99	0.92	1.01	1.04	0.92	0.95	0.99	Continue to monitor
CARQUINZ 115 kV	P7-1:A2:11:_ GEYSERS #12-FULTON & GEYSERS #9-LAKEVILLE LINES	P7	DCTL	Low	0.98	0.97	0.88	1.02	1.01	0.95	1.02	1.04	0.97	0.99	1.01	Continue to monitor
ST.HELNA 60 kV	P7-1:A2:11:_ GEYSERS #12-FULTON & GEYSERS #9-LAKEVILLE LINES	P7	DCTL	Low	0.91	0.89	0.88	0.96	0.97	0.96	0.99	1.03	0.89	0.93	0.99	Fulton-Calistoga Maintenance project
CALISTGA 60 kV	P7-1:A2:10:_ FULTON-IGNACIO #1 & FULTON-LAKEVILLE LINES	P7	DCTL	Low	0.82	0.78	0.90	0.89	0.89	0.95	0.96	1.03	0.80	0.85	0.95	Voltage support

Study Area: PG&E North Coast & North Bay

Voltage Deviation



Substation	Contingency (All and Worst P6)	Category	Category Description	Post Cont. Voltage Deviation % (Baseline Scenarios)								Post Cont. Voltage Deviation % (Sensitivity Scenarios)			Project & Potential Mitigation Solutions
				2024 Summer Peak	2027 Summer Peak	2032 Summer Peak	2024 Winter Peak	2027 Winter Peak	2032 Winter Peak	2024 Spring Off-Peak	2027 Spring Off-Peak	2027 SP High CEC Forecast	2024 SP Heavy Renewable & Min Gas Gen	2024 OP Sensitivity	
CALISTGA 60 kV	P1-2:A2:65:_LAKEVILLE #1 60KV [7360]	P1	N-1	<8	<8	10	<8	<8	<8	<8	<8	9	<8	<8	Voltage support
CORONA 115 kV	P1-2:A2:32:_CORONA-LAKEVILLE 115KV [4311]	P1	N-1	<8	<8	9	<8	<8	<8	<8	<8	<8	<8	<8	Continue to monitor
COVELO6 60 kV	P1-2:A2:43:_LAYTONVILLE-WILLITS 60KV [8360]	P1	N-1	<8	<8	13	27	36	44	<8	<8	<8	<8	<8	Continue to monitor
DUNBAR 60 kV	P1-2:A2:65:_LAKEVILLE #1 60KV [7360]	P1	N-1	14	16	14	<8	<8	<8	<8	<8	18	<8	<8	Switch in the Fulton SVD (230 kV)
KONOCI6 60 kV	P1-2:A2:54:_KONOCI-EAGLE ROCK 60KV [6861]	P1	N-1	<8	<8	11	<8	<8	<8	<8	<8	<8	<8	<8	Continue to monitor
LYTNVLE 60 kV	P1-2:A2:43:_LAYTONVILLE-WILLITS 60KV [8360]	P1	N-1	<8	<8	13	27	35	44	<8	<8	<8	<8	<8	Continue to monitor

Study Area: PG&E North Coast & North Bay

Transient Stability



Contingency	Category	Category Description	Transient Stability Performance						Potential Mitigation Solutions
			Baseline Scenarios				Sensitivity Scenarios		
			2024 Spring Off-Peak	2027 Summer Peak	2032 Summer Peak	2032 Spring Off-Peak	2027 SP High CEC Forecast	2024 OP Sensitivity	
In accordance with TPL-001-4- Requirement R2.6, this area relies on the past studies from the 2019-20 Transmission Planning Process for transient stability studies:									
http://www.caiso.com/Documents/AppendixC-BoardApprovedt2019-2020TransmissionPlan.pdf									

Study Area: PG&E North Coast & North Bay



Single Contingency Load Drop

Worst Contingency	Category	Category Description	Amount of Load Drop (MW)													Potential Mitigation Solutions
			2024 Summer Peak	2027 Summer Peak	2032 Summer Peak	2024 Winter Peak	2027 Winter Peak	2032 Winter Peak	2024 Spring Off-Peak	2027 Spring Off-Peak	2032 Spring Off-Peak	2027 SP High CEC Forecast	2024 SP Heavy Renewable & Min Gas Gen	2024 OP Sensitivity	2032 SP with Additional Transportation Electrification	

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

Study Area: PG&E North Coast & North Bay



Single Source Substation with more than 100 MW Load

Substation	Load Served (MW)													Potential Mitigation Solutions
	2024 Summer Peak	2027 Summer Peak	2032 Summer Peak	2024 Winter Peak	2027 Winter Peak	2032 Winter Peak	2024 Spring Off-Peak	2027 Spring Off-Peak	2032 Spring Off-Peak	2027 SP High CEC Forecast	2024 SP Heavy Renewable & Min Gas Gen	2024 OP Sensitivity	2032 SP with Additional Transportation Electrification	

No single source substation with more than 100 MW