

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	2028 Summer-Off Peak	2025 Spring Off-Peak	2028 Spring Off-Peak	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	2028 SP High CEC Forecast	
(New)Mercy Spring-Oro Loma 70 kV Line	P2-1:A13:49:_PANOCHE-ORO LOMA 115KV [3240] (PANOCHEJ-PANOCHE2)	P2-1	Line Section w/o Fault	NA	NA	109	NA	NA	NA	NA	NA	NA	Project: Losbanos Area reinforcement project review
	P2-1:A13:50:_PANOCHE-ORO LOMA 115KV [3240] (PANOCHEJ-HAMMONDS)	P2-1	Line Section w/o Fault	NA	NA	101	NA	NA	NA	NA	NA	NA	Project: Losbanos Area reinforcement project review
	P2-2:A13:25:_PANOCHE2 115KV SECTION 2D	P2-2	Bus	NA	NA	110	NA	NA	NA	NA	NA	NA	Continue to monitor
	P2-3:A13:42:_PANOCHE2 - 2D 115KV & PANOCHE-EXCELSIOR SW STA #2 LINE	P2-3	Non-Bus-Tie Breaker	NA	NA	110	NA	NA	NA	NA	NA	NA	Continue to monitor
	P2-4:A13:13:_PANOCHE1 SECTION 1D & PANOCHE2 SECTION 2D 115KV	P2-4	Bus-Tie-Breaker	NA	NA	124	NA	NA	NA	NA	NA	NA	Continue to monitor
	P1-2:A13:61:_PANOCHE-ORO LOMA 115KV [3240] & P1-2:A13:48:_WILSON-ORO LOMA 115KV [4200]	P6	N-1-1	<100	<100	107	<100	<100	<100	<100	<100	<100	Continue to monitor
(New)Mercy Springs-Canal 70 kV Line #1	P1-2:A13:73:_LOS BANOS-LIVINGSTON JCT-CANAL 70KV [8940]	P1-2	N-1	169	91	89	18	111	6	88	107	93	Project: Losbanos Area reinforcement
	P2-3:A13:52:_LOS BANS - MA 70KV & LOS BANOS-O'NEILL PGP LINE	P2-3	Non-Bus-Tie Breaker	0	0	116	0	0	0	0	0	0	Continue to monitor
(New)Oro Loma-Elnido 115kV Line	P2-1:A13:49:_PANOCHE-ORO LOMA 115KV [3240] (PANOCHEJ-PANOCHE2)	P2-1	Line Section w/o Fault	140	137	53	25	71	28	38	72	140	Project: Losbanos Area reinforcement
	P2-1:A13:50:_PANOCHE-ORO LOMA 115KV [3240] (PANOCHEJ-HAMMONDS)	P2-1	Line Section w/o Fault	105	102	48	16	58	32	21	58	104	Project: Losbanos Area reinforcement
	P2-2:A13:25:_PANOCHE2 115KV SECTION 2D	P2-2	Bus	140	137	53	25	71	28	38	72	140	Project: Oroloma Area reinforcement
	P2-3:A13:42:_PANOCHE2 - 2D 115KV & PANOCHE-EXCELSIOR SW STA #2 LINE	P2-3	Non-Bus-Tie Breaker	140	137	53	25	71	28	38	72	140	Project: Oroloma Area reinforcement
	P2-3:A14:1:_GREGG 230KV - MIDDLE BREAKER BAY 1	P2-3	Non-Bus-Tie Breaker	NConv	NConv	108	54	39	49	37	47	NConv	Contingency under review
	P2-4:A13:13:_PANOCHE1 SECTION 1D & PANOCHE2 SECTION 2D 115KV	P2-4	Bus-Tie-Breaker	143	138	47	25	72	28	38	74	141	Project: Oroloma Area reinforcement
	P5-5c:A13:1:_Los Banos 500-230-70kV Batt(Failure OF NON-REDUNDANT BATT)	P5-5	Non-Redundant Relay	14	28	NConv	NConv	NConv	NConv	46	NConv	NConv	Install Redundant battery
	P7-1:A13:13:_BORDEN-GREGG 230KV #1 & #2 [4400]	P7-1	DCTL	NConv	NConv	108	54	39	49	37	47	NConv	Continue to monitor
Atwater-El Capitan No 1 115kV line	P7-1:A13:6:_PANOCHE-TRANQLTYSS #1 230KV [0] & PANOCHE-TRANQLTYSS #2 230KV [0]	P7-1	DCTL	20	NA	NA	NA	82	NA	17	100	NA	Sensitivity only
	P1-2:A13:52:_WILSON-ATWATER #2 115KV [4160] & P1-2:A13:44:_ATWATER-LIVINGSTON-MERCED 115KV [1030] MOAS OPENED ON ATWATR J MERCED	P6	N-1-1	91	<100	107	<100	<100	<100	<100	<100	<100	Continue to monitor
Atwater-Merced 115 kV Line	P2-4:A13:12:_WILSON A SECTION 1D & WILSON B SECTION 2D 115KV	P2-4	Bus-Tie-Breaker	NConv	NA	NA	NA	NConv	NA	NConv	NConv	NA	Project: Wilson 115kV reinforcement
	P5-5a:A13:1:_WILSON 115 KV #1 & #2 BUS (FAILURE OF NON-REDUNDANT RELAY)	P5-5	Non-Redundant Relay	NConv	NA	NA	NA	NConv	NA	NConv	NConv	NA	Install Redundant Relay
	P5-5c:A13:2:_Wilson 230-115kV Batt(Failure OF NON-REDUNDANT BATT)	P5-5	Non-Redundant Relay	NConv	NConv	NConv	20	NConv	33	NConv	NConv	NConv	Install Redundant battery
Barton-Airways-Sanger 115 kV Line	P2-2:A14:48:_HERNDON 115KV SECTION 2D	P2-2	Bus	40	37	10	42	12	113	40	16	35	Generation Re-dispatch
	P2-3:A14:65:_HERNDON - 2D 115KV & HERNDON-BULLARD #2 LINE	P2-3	Non-Bus-Tie Breaker	40	38	9	42	12	113	40	16	35	Generation Re-dispatch
	P2-3:A14:66:_HERNDON - 2D 115KV & HERNDON-WOODWARD LINE	P2-3	Non-Bus-Tie Breaker	39	37	27	42	12	113	40	16	34	Generation Re-dispatch
	P2-4:A14:1:_HERNDON 230KV - SECTION 1E & 2E	P2-4	Bus-Tie-Breaker	83	80	107	36	70	17	49	63	82	Continue to monitor
	P5-5c:A13:1:_Los Banos 500-230-70kV Batt(Failure OF NON-REDUNDANT BATT)	P5-5	Non-Redundant Relay	16	13	NConv	NConv	NConv	NConv	39	NConv	NConv	Install Redundant battery
	P7-1:A14:26:_HENTAP1-MUSTANGSS #1 230KV [0] & TRANQLTYSS-MCMULLN1 #1 230KV [0]	P7-1	DCTL	31	27	NConv	59	43	108	67	72	34	Continue to monitor
	P7-1:A14:22:_HENTAP1-MUSTANGSS #1 230KV [0] & HERNDON-KEARNEY 230KV [4900]	P7-1	DCTL	51	47	NConv	64	57	109	77	87	54	Continue to monitor
	P7-1:A14:25:_HERNDON-BARTON 115KV [1750] & MANCHESTER-AIRWAYS-SANGER 115KV [2180]	P7-1	DCTL	93	90	119	23	67	11	54	67	92	Continue to monitor

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	2028 Summer-Off Peak	2025 Spring Off-Peak	2028 Spring Off-Peak	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	2028 SP High CEC Forecast	
	P7-1:A14:26:_HENTAP1-MUSTANGSS #1 230KV [0] & TRANQLTYSS-MCMULLN1 #1 230KV [0]	P7-1	DCTL	58	53	NConv	66	63	107	78	94	61	Continue to monitor
Bellota - Warnerville 230 kV Line	P5-5c:A13:1:_Los Banos 500-230-70kV Batt(Failure OF NON-REDUNDENT BATT)	P5-5	Non-Redundant Relay	35	16	NConv	NConv	NConv	NConv	20	NConv	NConv	Install Redundant battery
Borden 230/70 kV Bank 4	P2-3:A13:15:_BORDEN 230KV - MIDDLE BREAKER BAY 2	P2-3	Non-Bus-Tie Breaker	75	73	104	13	52	41	27	52	73	Continue to monitor
Borden 230/70 kV Transformer #1	P1-3:A13:10:_BORDEN 230/70KV TB 4	P1-3	N-1	116	72	103	12	81	40	39	81	73	Project: Borden capacity increase insufficient for 2035 Loading
	P2-3:A13:17:_BORDEN 230KV - MIDDLE BREAKER BAY 4	P2-3	Non-Bus-Tie Breaker	114	71	101	12	81	40	41	81	71	Project: Borden capacity increase insufficient for 2035 Loading
Borden-Gregg 230 kV Line	P5-5c:A13:1:_Los Banos 500-230-70kV Batt(Failure OF NON-REDUNDENT BATT)	P5-5	Non-Redundant Relay	18	10	NConv	NConv	NConv	NConv	24	NConv	NConv	Install Redundant battery
Borden-Madera #2 70 kV Line	P1-2:A13:68:_BORDEN-GLASS 70KV [8510]	P1-2	N-1	71	71	106	25	51	7	45	51	72	Continue to monitor
	P2-3:A14:1:_GREGG 230KV - MIDDLE BREAKER BAY 1	P2-3	Non-Bus-Tie Breaker	NConv	NConv	104	21	42	7	37	42	NConv	Contingency under review
	P1-2:A14:14:_BORDEN-GREGG #2 230KV [4400] & P1-2:A14:13:_BORDEN-GREGG #1 230KV [1082]	P6	N-1-1	<100	<100	101	<100	<100	<100	<100	<100	<100	Continue to monitor
	P7-1:A13:13:_BORDEN-GREGG 230KV #1 & #2 [4400]	P7-1	DCTL	NConv	NConv	104	21	42	7	37	42	NConv	Continue to monitor
Borden-Storey 230kV Line No 1	P5-5c:A13:1:_Los Banos 500-230-70kV Batt(Failure OF NON-REDUNDENT BATT)	P5-5	Non-Redundant Relay	25	19	NConv	NConv	NConv	NConv	16	NConv	NConv	Install Redundant battery
Borden-Storey 230kV Line No 2	P5-5c:A13:1:_Los Banos 500-230-70kV Batt(Failure OF NON-REDUNDENT BATT)	P5-5	Non-Redundant Relay	25	20	NConv	NConv	NConv	NConv	10	NConv	NConv	Install Redundant battery
California Ave.-Sanger 115 kV Line	P1-2:A14:69:_MCCALL-WEST FRESNO #2 115KV [2370]	P1-2	N-1	81	80	101	24	52	4	65	49	81	Continue to monitor
	P2-3:A14:52:_MC CALL 115KV - MIDDLE BREAKER BAY 5	P2-3	Non-Bus-Tie Breaker	82	80	101	24	52	4	65	49	81	Continue to monitor
	P5-5c:A14:10:_Mccall 230-115kV Batt(Failure OF NON-REDUNDENT BATT)	P5-5	Non-Redundant Relay	NConv	NConv	NConv	44	0	14	0	0	NConv	Install Redundant battery
	P7-1:A14:11:_CALIFORNIA AVE-MCCALL 115KV [2360] & MCCALL-WEST FRESNO #2 115KV [2370]	P7-1	DCTL	128	125	163	44	82	14	102	82	127	Operating solution
California Ave.-West Fresno 115 kV Line	P1-2:A14:69:_MCCALL-WEST FRESNO #2 115KV [2370]	P1-2	N-1	86	81	114	30	56	10	72	57	82	Continue to monitor
	P2-3:A14:52:_MC CALL 115KV - MIDDLE BREAKER BAY 5	P2-3	Non-Bus-Tie Breaker	86	81	113	30	56	10	72	57	82	Continue to monitor
	P1-2:A14:67:_SANGER-CALIFORNIA AVE 115KV [9130] & P1-2:A14:63:_CALIFORNIA AVE-MCCALL 115KV [2360]	P6	N-1-1	101	103	<100	<100	<100	<100	<100	<100	107	Operating solution
	P7-1:A14:11:_CALIFORNIA AVE-MCCALL 115KV [2360] & MCCALL-WEST FRESNO #2 115KV [2370]	P7-1	DCTL	89	84	119	30	57	10	74	57	85	Continue to monitor
Chowchilla-Kerckhoff #2 115 kV Line	Base Case	P0	Base Case	85	88	118	12	54	19	44	55	89	Continue to monitor
	P2-4:A13:12:_WILSON A SECTION 1D & WILSON B SECTION 2D 115KV	P2-4	Bus-Tie-Breaker	NConv	NA	NA	NA	NConv	NA	NConv	NConv	NA	Project:Wilson 115kV area reinforcement
	P2-4:A14:1:_HERNDON 230KV - SECTION 1E & 2E	P2-4	Bus-Tie-Breaker	62	66	64	38	29	118	16	32	59	Generation Re-dispatch
	P2-4:A14:21:_HERNDON 115KV - SECTION 1D & 2D	P2-4	Bus-Tie-Breaker	66	70	73	47	17	127	17	32	64	Generation Re-dispatch
	P5-5a:A13:1:_WILSON 115 KV #1 & #2 BUS (FAILURE OF NON-REDUNDENT RELAY)	P5-5	Non-Redundant Relay	NConv	NA	NA	NA	NConv	NA	NConv	NConv	NA	Install Redundant Relay
	P5-5a:A14:2:_HERNDON #1 115KV BUS (FAILURE OF NON-REDUNDENT RELAY)	P5-5	Non-Redundant Relay	67	65	97	47	16	127	18	31	69	Install Redundant Relay
	P5-5c:A13:1:_Los Banos 500-230-70kV Batt(Failure OF NON-REDUNDENT BATT)	P5-5	Non-Redundant Relay	36	36	NConv	NConv	NConv	NConv	17	NConv	NConv	Install Redundant battery
	P5-5c:A13:2:_Wilson 230-115kV Batt(Failure OF NON-REDUNDENT BATT)	P5-5	Non-Redundant Relay	NConv	NConv	NConv	51	NConv	14	NConv	NConv	NConv	Install Redundant battery
	P5-5c:A14:10:_Mccall 230-115kV Batt(Failure OF NON-REDUNDENT BATT)	P5-5	Non-Redundant Relay	NConv	NConv	NConv	15	25	28	30	60	NConv	Install Redundant battery
	P5-5c:A14:21:_Sanger 115kV Batt(Failure OF NON-REDUNDENT BATT)	P5-5	Non-Redundant Relay	132	138	15	12	153	148	18	7	138	Install Redundant battery

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	2028 Summer-Off Peak	2025 Spring Off-Peak	2028 Spring Off-Peak	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	2028 SP High CEC Forecast	
	P5-5c:A14:2: Gregg 230kV Batt(Failure OF NON-REDUNDANT BATT)	P5-5	Non-Redundant Relay	NConv	NConv	NConv	56	26	116	16	39	NConv	Install Redundant battery
	P5-5c:A14:5: Herndon 230-115kV Batt(Failure OF NON-REDUNDANT BATT)	P5-5	Non-Redundant Relay	60	58	86	51	16	140	24	26	63	Install Redundant battery
	P7-1:A14:12: KERCKHOFF-CLOVIS-SANGER #1 115KV [1890] & KERCKHOFF-CLOVIS-SANGER #2 115KV [1900]	P7-1	DCTL	132	138	15	12	153	147	18	7	138	Under review
Coalinga #1-San Miguel 70 kV Line	P2-4:A14:10: GATES D 230KV - SECTION 2D & 1D	P2-4	Bus-Tie-Breaker	17	29	100	42	27	62	6	13	36	Continue to monitor
	P1-1:A14:68: CHV.COAL 9.11KV GEN UNIT 1 & P1-3:A14:13: GATES D 230/70KV TB 5	P3	G-1/N-1	<100	<100	112	<100	<100	<100	<100	<100	<100	Continue to monitor
	P5-5a:A14:1: GATES SECTION D & E 230 KV BUS (FAILURE OF NON-REDUNDANT RELAY)	P5-5	Non-Redundant Relay	20	32	NConv	54	57	61	11	55	25	Install Redundant Relay
	P1-2:A13:59: PANOCH-EXCELSIOR SW STA #1 115KV [3250] MOAS OPENED ON PANOCH1_KAMM_JCT & P1-3:A14:13: GATES D 230/70KV TB 5	P6	N-1-1	<100	<100	135	<100	<100	<100	<100	<100	90	Continue to monitor
Coburn-Lasaguillan 230 kV Line	P5-5c:A13:1: Los Banos 500-230-70kV Batt(Failure OF NON-REDUNDANT BATT)	P5-5	Non-Redundant Relay	48	58	NConv	NConv	NConv	NConv	38	NConv	NConv	Install Redundant battery
Dairyland-Mendota 115 kV Line	P2-4:A13:12: WILSON A SECTION 1D & WILSON B SECTION 2D 115KV	P2-4	Bus-Tie-Breaker	NConv	NA	NA	NA	NConv	NA	NConv	NConv	NA	Project:Wilson 115kV area reinforcement
	P5-5a:A13:1: WILSON 115 KV #1 & #2 BUS (FAILURE OF NON-REDUNDANT RELAY)	P5-5	Non-Redundant Relay	NConv	NA	NA	NA	NConv	NA	NConv	NConv	NA	Install Redundant Relay
	P5-5c:A13:1: Los Banos 500-230-70kV Batt(Failure OF NON-REDUNDANT BATT)	P5-5	Non-Redundant Relay	7	6	NConv	NConv	NConv	NConv	40	NConv	NConv	Install Redundant battery
	P5-5c:A13:2: Wilson 230-115kV Batt(Failure OF NON-REDUNDANT BATT)	P5-5	Non-Redundant Relay	NConv	NConv	NConv	30	NConv	26	NConv	NConv	NConv	Install Redundant battery
Dinuba-Orosi 70 kV Line	P1-2:A14:117: REEDLEY-DINUBA #1 70KV [9050]	P1-2	N-1	54	142	167	46	43	8	39	49	145	Project:Reedley reinforcement project review
	P1-1:A14:47: KERCKHOFFPH2 13.80KV GEN UNIT 1 & P1-2:A14:117: REEDLEY-DINUBA #1 70KV [9050]	P3	G-1/N-1	<100	<100	103	<100	<100	<100	<100	<100	<100	Continue to monitor
El Capitan-Wilson 115 kV Line	P1-2:A13:44: ATWATER-LIVINGSTON-MERCED 115KV [1030] MOAS OPENED ON ATWATER J_MERCED & P1-2:A13:52: WILSON-ATWATER #2 115KV [4160]	P6	N-1-1	126	<100	<100	<100	97	<100	<100	97	<100	Operating solution
EXCELSIORSS-SCHINDLER #1 115kV Line	P1-2:A14:65: EXCELSIOR SW STA-SCHINDLER #2 115KV [3249] & P1-3:A14:13: GATES D 230/70KV TB 5	P6	N-1-1	150	139	142	<100	119	<100	<100	<100	137	Increase bank capacity
EXCELSIORSS-SCHINDLER #2 115kV Line	P1-2:A14:64: EXCELSIOR SW STA-SCHINDLER #1 115KV [3248] & P1-3:A14:13: GATES D 230/70KV TB 5	P6	N-1-1	150	139	142	<100	119	<100	<100	<100	137	Increase bank capacity
Exchequer 115/70/13.8 kV Transformer	P2-4:A13:12: WILSON A SECTION 1D & WILSON B SECTION 2D 115KV	P2-4	Bus-Tie-Breaker	NConv	NA	NA	NA	NConv	NA	NConv	NConv	NA	Project:Wilson 115kV area reinforcement
	P5-5a:A13:1: WILSON 115 KV #1 & #2 BUS (FAILURE OF NON-REDUNDANT RELAY)	P5-5	Non-Redundant Relay	NConv	NA	NA	NA	NConv	NA	NConv	NConv	NA	Install Redundant Relay
	P5-5c:A13:2: Wilson 230-115kV Batt(Failure OF NON-REDUNDANT BATT)	P5-5	Non-Redundant Relay	NConv	NConv	NConv	24	NConv	13	NConv	NConv	NConv	Install Redundant battery
Exchequer-Le Grand 115 kV Line	P2-4:A13:12: WILSON A SECTION 1D & WILSON B SECTION 2D 115KV	P2-4	Bus-Tie-Breaker	NConv	NA	NA	NA	NConv	NA	NConv	NConv	NA	Project:Wilson 115kV area reinforcement
	P1-1:A14:53: HELMS 3 18.00KV GEN UNIT 1 & P1-3:A13:32: MERCED 115/70KV TB 2	P3	G-1/N-1	<100	<100	<100	<100	101	<100	<100	<100	<100	Generation Re-dispatch
	P5-5a:A13:1: WILSON 115 KV #1 & #2 BUS (FAILURE OF NON-REDUNDANT RELAY)	P5-5	Non-Redundant Relay	NConv	NA	NA	NA	NConv	NA	NConv	NConv	NA	Install Redundant Relay
	P5-5c:A13:2: Wilson 230-115kV Batt(Failure OF NON-REDUNDANT BATT)	P5-5	Non-Redundant Relay	NConv	NConv	NConv	81	NConv	31	NConv	NConv	NConv	Install Redundant battery
Fifth standard solar-Gates 230kV line	P1-3:A14:2: GATES 500/230KV TB 12	P1-3	N-1	19	22	14	100	14	50	99	14	20	Generation Re-dispatch
	P2-3:A14:23: GATES E 230KV - MIDDLE BREAKER BAY 3	P2-3	Non-Bus-Tie Breaker	47	50	14	104	14	60	95	14	49	Generation Re-dispatch
	P5-5c:A14:1: Gates 500kV Batt(Failure OF NON-REDUNDANT BATT)	P5-5	Non-Redundant Relay	28	30	14	101	14	53	98	14	36	Install Redundant battery

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	2028 Summer-Off Peak	2025 Spring Off-Peak	2028 Spring Off-Peak	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	2028 SP High CEC Forecast	
	P7-1:A14:4:_MUSTANGSS-GATES #1 230KV [0] & MUSTANGSS-GATES #2 230KV [0] [2]	P7-1	DCTL	37	34	NConv	97	14	56	95	14	32	Continue to monitor
	P7-1:A14:9:_GATES-ARCO 230KV [4690] & GATES-MIDWAY 230KV [4891]	P7-1	DCTL	44	40	14	102	14	51	99	0	44	Generation Re-dispatch
Five Points Sw Sta-Huron-Gates 70kV Line(Five Points Sw Sta-Calflax section)	P1-3:A14:13:_GATES D 230/70KV TB 5	P1-3	N-1	128	118	121	23	104	37	15	98	117	Increase bank capacity
	P2-2:A14:20:_GATES D 230KV SECTION 2D	P2-2	Bus	129	121	120	31	106	35	14	100	119	Increase bank capacity
	P2-4:A13:13:_PANOCHE1 SECTION 1D & PANOCHE2 SECTION 2D 115KV	P2-4	Bus-Tie-Breaker	41	23	65	116	5	113	93	33	23	Generation Re-dispatch
	P2-4:A14:10:_GATES D 230KV - SECTION 2D & 1D	P2-4	Bus-Tie-Breaker	136	127	120	39	114	33	14	109	124	Increase bank capacity
	P1-1:A14:68:_CHV.COAL 9.11KV GEN UNIT 1 & P1-3:A14:13:_GATES D 230/70KV TB 5	P3	G-1/N-1	<100	<100	<100	<100	<100	<100	<100	104	<100	Generation Re-dispatch
	P5-5a:A14:1:_GATES SECTION D & E 230 KV BUS (FAILURE OF NON-REDUNDENT RELAY)	P5-5	Non-Redundant Relay	139	126	NConv	44	104	33	14	96	128	Install Redundant Relay
	P5-5c:A13:1:_Los Banos 500-230-70kV Batt(Failure OF NON-REDUNDENT BATT)	P5-5	Non-Redundant Relay	63	38	NConv	NConv	NConv	NConv	50	NConv	NConv	Install Redundant battery
	P5-5c:A13:4:_Panoche 230-115kV Batt(Failure OF NON-REDUNDENT BATT)	P5-5	Non-Redundant Relay	83	73	65	86	58	113	93	NConv	73	Install Redundant battery
	P7-1:A13:14:_EXCELSIORSS-PANOCHE1 115KV [3250] & EXCELSIORSS-PANOCHE2 115KV [3231]	P7-1	DCTL	60	50	42	83	43	104	97	26	50	Generation Re-dispatch
	P7-1:A14:10:_PANOCHE-SCHINDLER #1 115KV [3250] & EXCELSIORSS-PANOCHE2 115KV [3231]	P7-1	DCTL	83	74	65	87	58	113	93	32	74	Generation Re-dispatch
Gates-Gregg 230 kV Line	P2-4:A13:5:_PANOCHE 230KV - SECTION 1D & 2D	P2-4	Bus-Tie-Breaker	2	NA	NA	NA	73	NA	11	106	NA	Sensitivity only
	P5-5c:A13:1:_Los Banos 500-230-70kV Batt(Failure OF NON-REDUNDENT BATT)	P5-5	Non-Redundant Relay	29	19	NConv	NConv	NConv	NConv	19	NConv	NConv	Install Redundant battery
	P5-5c:A13:4:_Panoche 230-115kV Batt(Failure OF NON-REDUNDENT BATT)	P5-5	Non-Redundant Relay	18	18	46	20	82	26	11	NConv	18	Install Redundant battery
	P7-1:A13:6:_PANOCHE-TRANQTYSS #1 230KV [0] & PANOCHE-TRANQTYSS #2 230KV [0]	P7-1	DCTL	16	NA	NA	NA	72	NA	11	104	NA	Sensitivity only
Gates-Midway 230kV	P2-3:A14:30:_GATES F 230KV - MIDDLE BREAKER BAY 1	P2-3	Non-Bus-Tie Breaker	9	17	12	27	101	5	64	107	10	Generation Re-dispatch
	P5-5c:A14:1:_Gates 500KV Batt(Failure OF NON-REDUNDENT BATT)	P5-5	Non-Redundant Relay	9	12	6	30	151	60	67	149	26	Install Redundant battery
Gregg-Ashlan 230 kV Line	P1-2:A14:22:_HERNDON-FIGRDN 1-ASHLAN 230KV [0]	P1-2	N-1	100	97	130	40	66	38	53	67	98	Continue to monitor
	P2-1:A14:7:_HERNDON-ASHLAN 230KV [4890] (HERNDON-FGRDN T1)	P2-1	Line Section w/o Fault	101	97	130	42	66	40	54	67	98	Review Ashlan load increase
	P2-2:A14:5:_HERNDON 230KV SECTION 2E	P2-2	Bus	100	96	131	42	66	40	54	67	98	Continue to monitor
	P2-3:A14:6:_HERNDON - 2E 230KV & HERNDON-FIGRDN 1-ASHLAN LINE	P2-3	Non-Bus-Tie Breaker	99	96	131	40	66	38	53	67	97	Continue to monitor
	P2-3:A14:7:_FIGRDN 1 - 1D 230KV & HERNDON-FIGRDN 1-ASHLAN LINE	P2-3	Non-Bus-Tie Breaker	100	97	130	40	66	38	53	67	98	Review Ashlan load increase
	P2-4:A14:3:_HERNDON 230KV - SECTION 2E & 2D	P2-4	Bus-Tie-Breaker	100	96	132	42	66	40	54	67	98	Continue to monitor
	P5-5c:A14:5:_Herndon 230-115kV Batt(Failure OF NON-REDUNDENT BATT)	P5-5	Non-Redundant Relay	97	94	124	40	65	38	53	66	95	Install Redundant battery
	P5-5c:A14:6:_Figarden 230kV Batt #1(Failure OF NON-REDUNDENT BATT)	P5-5	Non-Redundant Relay	100	97	132	40	66	38	53	67	98	Install Redundant battery
	P1-2:A14:18:_GREGG-HERNDON #2 230KV [4840] & P1-2:A14:17:_GREGG-HERNDON #1 230KV [4830]	P6	N-1-1	100	80	169	<100	83	106	<100	<100	65	Continue to monitor
Gregg-Helms 230kV Line No 1	P2-1:A14:3:_HELMS-GREGG #2 230KV [4880] (GREGG-HELMS PP3)	P2-1	Line Section w/o Fault	94	94	NConv	3	2	NConv	3	3	94	Continue to monitor

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	2028 Summer-Off Peak	2025 Spring Off-Peak	2028 Spring Off-Peak	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	2028 SP High CEC Forecast	
Gregg-Helms 230kV Line No 2	P2-1:A14:2: HELMS-GREGG #1 230KV [4870] (GREGG-HELMS PP1)	P2-1	Line Section w/o Fault	94	94	79	3	44	NConv	3	3	94	Generation Re-dispatch
GWF-Kingsburg 115 kV Line	P1-2:A14:26: MUSTANG SW STA-MCCALL 230KV [4710]	P1-2	N-1	65	62	84	22	74	11	33	102	68	Generation Re-dispatch
	P2-2:A14:17: MC CALL 230KV SECTION 1D	P2-2	Bus	70	66	NConv	21	76	10	34	103	73	Continue to monitor
	P2-3:A14:14: MC CALL - 1D 230KV & MUSTANG SW STA-MCCALL LINE	P2-3	Non-Bus-Tie Breaker	70	66	NConv	21	76	10	34	103	73	Continue to monitor
	P2-4:A13:5: PANOCHE 230KV - SECTION 1D & 2D	P2-4	Bus-Tie-Breaker	59	NA	NA	NA	102	NA	20	123	NA	Generation Re-dispatch
	P2-4:A14:6: MC CALL 230KV - SECTION 2E & 1E	P2-4	Bus-Tie-Breaker	98	93	NConv	26	86	4	56	102	98	Continue to monitor
	P2-4:A14:8: MC CALL 230KV - SECTION 1E & 1D	P2-4	Bus-Tie-Breaker	94	88	NConv	30	95	12	53	118	95	Continue to monitor
	P2-4:A14:9: MC CALL 230KV - SECTION 1D & 2D	P2-4	Bus-Tie-Breaker	79	75	NConv	23	80	9	40	108	82	Continue to monitor
	P5-5c:A13:1: Los Banos 500-230-70kV Batt(Failure OF NON-REDUNDANT BATT)	P5-5	Non-Redundant Relay	45	56	NConv	NConv	NConv	NConv	30	NConv	NConv	Install Redundant battery
	P5-5c:A13:4: Panoche 230-115kV Batt(Failure OF NON-REDUNDANT BATT)	P5-5	Non-Redundant Relay	62	59	65	17	109	15	18	NConv	59	Install Redundant battery
	P5-5c:A14:10: Mccall 230-115kV Batt(Failure OF NON-REDUNDANT BATT)	P5-5	Non-Redundant Relay	NConv	NConv	NConv	28	96	61	14	91	NConv	Install Redundant battery
	P7-1:A14:13: MCCALL-KINGSBURG #1 115KV [2290] & MCCALL-KINGSBURG #2 115KV [2301]	P7-1	DCTL	116	104	180	28	97	61	14	93	106	Operating solution
	P7-1:A14:17: HELM-MCCALL 230KV [4860] & HENTAP2-MUSTANGSS #1 230KV [0]	P7-1	DCTL	86	77	NConv	3	74	36	37	118	86	Continue to monitor
	P7-1:A14:22: HENTAP1-MUSTANGSS #1 230KV [0] & HERNDON-KEARNEY 230KV [4900]	P7-1	DCTL	73	68	NConv	29	74	24	45	104	75	Continue to monitor
Helm 230/70 kV Transformer #1	P7-1:A14:26: HENTAP1-MUSTANGSS #1 230KV [0] & TRANQLTYSS-MCMULLN1 #1 230KV [0]	P7-1	DCTL	75	71	NConv	29	76	24	46	106	78	Continue to monitor
	P7-1:A13:6: PANOCHE-TRANQLTYSS #1 230KV [0] & PANOCHE-TRANQLTYSS #2 230KV [0]	P7-1	DCTL	62	NA	NA	NA	86	NA	19	103	NA	Sensitivity only
Helm 230/70 kV Transformer #1	P1-1:A14:72: AGRICO 13.80KV & AGRICO 13.80KV GEN UNITS & Base Case	P3	G-1/N-1	<100	<100	106	<100	<100	<100	<100	<100	<100	Continue to monitor
Helm-Kerman 70 kV Line	P1-1:A14:72: AGRICO 13.80KV & AGRICO 13.80KV GEN UNITS	P1-1	N-1	65	60	103	19	76	4	56	77	59	Continue to monitor
Henrietta-GWF 115 kV Line	P2-4:A14:6: MC CALL 230KV - SECTION 2E & 1E	P2-4	Bus-Tie-Breaker	34	30	NConv	29	33	39	11	50	34	Continue to monitor
	P5-5c:A14:10: Mccall 230-115kV Batt(Failure OF NON-REDUNDANT BATT)	P5-5	Non-Redundant Relay	39	NConv	NConv	13	41	94	59	44	NConv	Install Redundant battery
	P7-1:A14:13: MCCALL-KINGSBURG #1 115KV [2290] & MCCALL-KINGSBURG #2 115KV [2301]	P7-1	DCTL	46	38	156	13	41	94	58	43	39	Continue to monitor
Herndon 230/115 kV Transformer #1	P7-1:A14:17: HELM-MCCALL 230KV [4860] & HENTAP2-MUSTANGSS #1 230KV [0]	P7-1	DCTL	26	19	NConv	15	23	72	25	64	26	Continue to monitor
	P2-4:A14:3: HERNDON 230KV - SECTION 2E & 2D	P2-4	Bus-Tie-Breaker	100	94	110	9	51	87	35	48	94	Continue to monitor
Herndon-Ashlan 230 kV Line	P1-2:A14:19: GREGG-ASHLAN 230KV [4820]	P1-2	N-1	99	96	130	40	66	38	53	67	97	Continue to monitor
	P2-1:A14:4: GREGG-ASHLAN 230KV [4820] (GREGG-FGRDN T2)	P2-1	Line Section w/o Fault	100	96	130	42	66	40	54	67	98	Continue to monitor
	P2-3:A14:4: GREGG 230KV - MIDDLE BREAKER BAY 5	P2-3	Non-Bus-Tie Breaker	100	96	NConv	40	66	38	53	67	98	Contingency under review
	P2-3:A14:8: FIGRDN 2 - 1F 230KV & GREGG-ASHLAN LINE	P2-3	Non-Bus-Tie Breaker	99	96	130	40	66	38	53	67	97	Continue to monitor
	P5-5c:A14:2: Gregg 230KV Batt(Failure OF NON-REDUNDANT BATT)	P5-5	Non-Redundant Relay	NConv	NConv	NConv	40	71	39	54	71	NConv	Install Redundant battery
	P5-5c:A14:7: Figarden 230kV Batt #2(Failure OF NON-REDUNDANT BATT)	P5-5	Non-Redundant Relay	99	96	130	40	66	38	53	67	97	Install Redundant battery
	P1-2:A14:18: GREGG-HERNDON #2 230KV [4840] & P1-2:A14:17: GREGG-HERNDON #1 230KV [4830]	P6	N-1-1	56	41	108	<100	<100	97	<100	<100	31	Continue to monitor
	P2-2:A14:48: HERNDON 115KV SECTION 2D	P2-2	Bus	86	81	84	29	25	113	21	20	79	Generation Re-dispatch
	P2-3:A14:65: HERNDON - 2D 115KV & HERNDON-BULLARD #2 LINE	P2-3	Non-Bus-Tie Breaker	86	81	85	29	25	113	21	20	79	Generation Re-dispatch

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	2028 Summer-Off Peak	2025 Spring Off-Peak	2028 Spring Off-Peak	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	2028 SP High CEC Forecast	
Herndon-Barton 115 kV Line	P2-3:A14:66:_HERNDON - 2D 115KV & HERNDON-WOODWARD LINE	P2-3	Non-Bus-Tie Breaker	85	81	84	29	25	113	21	20	79	Generation Re-dispatch
	P5-5c:A13:1:_Los Banos 500-230-70kV Batt(Failure OF NON-REDUNDENT BATT)	P5-5	Non-Redundant Relay	61	56	NConv	NConv	NConv	NConv	6	NConv	NConv	Install Redundant battery
	P5-5c:A14:10:_Mccall 230-115kV Batt(Failure OF NON-REDUNDENT BATT)	P5-5	Non-Redundant Relay	NConv	NConv	NConv	34	54	33	57	75	NConv	Install Redundant battery
	P7-1:A14:17:_HELM-MCCALL 230KV [4860] & HENTAP2-MUSTANGSS #1 230KV [0]	P7-1	DCTL	74	65	NConv	24	22	93	18	38	67	Continue to monitor
	P7-1:A14:22:_HENTAP1-MUSTANGSS #1 230KV [0] & HERNDON-KEARNEY 230KV [4900]	P7-1	DCTL	24	25	22	43	5	109	37	37	21	Generation Re-dispatch
	P7-1:A14:26:_HENTAP1-MUSTANGSS #1 230KV [0] & TRANQTYSS-MCMULLN1 #1 230KV [0]	P7-1	DCTL	19	20	NConv	44	18	107	38	41	16	Continue to monitor
Herndon-Bullard #1 115 kV Line	P2-1:A14:87:_HERNDON-BULLARD #1 115KV [1760] (HERNDON-PNDLJ1)	P2-1	Line Section w/o Fault	148	79	99	20	94	8	90	95	81	Project:Herndon-bullard line reconductoring
	P2-2:A14:47:_HERNDON 115KV SECTION 1D	P2-2	Bus	148	79	99	20	94	8	90	95	81	Project: Herndon-Bullard Line reconductoring
	P1-1:A14:47:_KERCKHOFFPH2 13.80KV GEN UNIT 1 & P1-2:A14:73:_HERNDON-BULLARD #1 115KV [1760]	P3	G-1/N-1	<100	<100	100	<100	<100	<100	<100	<100	<100	Continue to monitor
Herndon-Bullard #2 115 kV Line	P2-1:A14:86:_HERNDON-BULLARD #2 115KV [1770] (HERNDON-PNDLJ2)	P2-1	Line Section w/o Fault	120	64	78	18	74	6	80	75	66	Project:Herndon-bullard line reconductoring
	P2-2:A14:48:_HERNDON 115KV SECTION 2D	P2-2	Bus	121	65	76	18	74	6	80	75	66	Project: Herndon-Bullard Line reconductoring
	P2-3:A14:66:_HERNDON - 2D 115KV & HERNDON-WOODWARD LINE	P2-3	Non-Bus-Tie Breaker	121	65	79	18	74	6	80	75	66	Project: Herndon-Bullard Line reconductoring
	P2-4:A14:25:_BULLARD 115KV - SECTION 1F & 1E	P2-4	Bus-Tie-Breaker	101	53	65	14	56	5	66	57	55	Project: Herndon-Bullard Line reconductoring
Herndon-Manchester 115 kV Line	P5-5c:A13:1:_Los Banos 500-230-70kV Batt(Failure OF NON-REDUNDENT BATT)	P5-5	Non-Redundant Relay	66	61	NConv	NConv	NConv	NConv	5	NConv	NConv	Install Redundant battery
	P5-5c:A14:10:_Mccall 230-115kV Batt(Failure OF NON-REDUNDENT BATT)	P5-5	Non-Redundant Relay	NConv	NConv	NConv	35	55	29	59	75	NConv	Install Redundant battery
	P7-1:A14:17:_HELM-MCCALL 230KV [4860] & HENTAP2-MUSTANGSS #1 230KV [0]	P7-1	DCTL	78	70	NConv	19	26	84	20	41	72	Continue to monitor
	P7-1:A14:22:_HENTAP1-MUSTANGSS #1 230KV [0] & HERNDON-KEARNEY 230KV [4900]	P7-1	DCTL	31	33	NConv	36	15	99	29	30	28	Continue to monitor
	P7-1:A14:26:_HENTAP1-MUSTANGSS #1 230KV [0] & TRANQTYSS-MCMULLN1 #1 230KV [0]	P7-1	DCTL	26	27	NConv	37	15	98	29	33	23	Continue to monitor
Herndon-Woodward 115 kV Line	P5-5c:A14:10:_Mccall 230-115kV Batt(Failure OF NON-REDUNDENT BATT)	P5-5	Non-Redundant Relay	NConv	NConv	NConv	24	41	49	30	57	NConv	Install Redundant battery
	P5-5c:A13:1:_Los Banos 500-230-70kV Batt(Failure OF NON-REDUNDENT BATT)	P5-5	Non-Redundant Relay	56	51	NConv	NConv	NConv	NConv	22	NConv	NConv	Install Redundant battery
	P7-1:A14:16:_HERNDON-BARTON 115KV [1750] & HERNDON-MANCHESTER 115KV [1780]	P7-1	DCTL	89	84	91	22	27	114	21	25	83	Generation Re-dispatch
	P7-1:A14:22:_HENTAP1-MUSTANGSS #1 230KV [0] & HERNDON-KEARNEY 230KV [4900]	P7-1	DCTL	33	33	NConv	27	6	101	38	13	30	Continue to monitor
	P7-1:A14:25:_HERNDON-BARTON 115KV [1750] & MANCHESTER-AIRWAYS-SANGER 115KV [2180]	P7-1	DCTL	71	67	77	28	15	116	29	13	65	Generation Re-dispatch
	P7-1:A14:26:_HENTAP1-MUSTANGSS #1 230KV [0] & TRANQTYSS-MCMULLN1 #1 230KV [0]	P7-1	DCTL	29	29	NConv	28	4	100	38	15	26	Continue to monitor
	P7-1:A14:7:_BARTON-AIRWAYS-SANGER 115KV [1060] & MANCHESTER-AIRWAYS-SANGER 115KV [2180]	P7-1	DCTL	47	44	49	33	4	114	39	4	43	Generation Re-dispatch
	P1-2:A14:79:_MCCALL-KINGSBURG #2 115KV [2300]	P1-2	N-1	91	85	111	7	75	35	21	73	86	Continue to monitor
	P2-1:A14:92:_MCCALL-KINGSBURG #2 115KV [2300] (KINGSBURGE-GAURD J1)	P2-1	Line Section w/o Fault	91	85	111	7	75	35	21	73	86	Continue to monitor
	P2-1:A14:95:_MCCALL-KINGSBURG #2 115KV [2300] (GAURD J1-MC CALL)	P2-1	Line Section w/o Fault	99	92	119	3	81	28	27	81	94	Continue to monitor

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	2028 Summer-Off Peak	2025 Spring Off-Peak	2028 Spring Off-Peak	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	2028 SP High CEC Forecast	
Kingsburg D-Kingsburg E Bus tie 115kV	P2-3:A14:54:_MC CALL 115KV - MIDDLE BREAKER BAY 4	P2-3	Non-Bus-Tie Breaker	91	85	111	7	75	35	21	73	86	Continue to monitor
	P2-4:A13:5:_PANOCHE 230KV - SECTION 1D & 2D	P2-4	Bus-Tie-Breaker	68	NA	NA	NA	93	NA	30	107	NA	Sensitivity only
	P2-4:A14:8:_MC CALL 230KV - SECTION 1E & 1D	P2-4	Bus-Tie-Breaker	95	90	NConv	40	89	14	54	104	95	Continue to monitor
	P5-5:A13:1:_Los Banos 500-230-70kV Batt(Failure OF NON-REDUNDENT BATT)	P5-5	Non-Redundant Relay	59	65	NConv	NConv	NConv	NConv	36	NConv	63	Install Redundant battery
	P5-5:A13:4:_Panoche 230-115kV Batt(Failure OF NON-REDUNDENT BATT)	P5-5	Non-Redundant Relay	68	67	69	29	98	15	28	NConv	67	Install Redundant battery
	P7-1:A13:6:_PANOCHE-TRANQLTYSS #1 230KV [0] & PANOCHE-TRANQLTYSS #2 230KV [0]	P7-1	DCTL	68	NA	NA	NA	92	NA	30	106	NA	Sensitivity only
	P7-1:A14:13:_MCCALL-KINGSBURG #1 115KV [2290] & MCCALL-KINGSBURG #2 115KV [2301]	P7-1	DCTL	99	89	151	7	83	36	20	80	91	Continue to monitor
	P7-1:A14:17:_HELM-MCCALL 230KV [4860] & HENTAP2-MUSTANGSS #1 230KV [0]	P7-1	DCTL	86	80	NConv	26	74	10	41	102	86	Sensitivity only
	P7-1:A14:26:_HENTAP1-MUSTANGSS #1 230KV [0] & TRANQLTYSS-MCMULLN1 #1 230KV [0]	P7-1	DCTL	79	75	NConv	39	75	29	47	95	80	none
Kingsburg-Camden Lno 1 70kV line	Base Case	P0	Base Case	96	90	103	32	75	6	58	75	91	Continue to Monitor-proj for voltage issue
	P7-1:A14:13:_MCCALL-KINGSBURG #1 115KV [2290] & MCCALL-KINGSBURG #2 115KV [2301]	P7-1	DCTL	91	83	103	32	73	6	53	71	84	Continue to monitor
Las Aguilas-Mosslanding Reactor 230kV	P5-5:A13:1:_Los Banos 500-230-70kV Batt(Failure OF NON-REDUNDENT BATT)	P5-5	Non-Redundant Relay	NA	38	NConv	NConv	NA	NConv	NA	NA	NConv	Install Redundant battery
Las Aguilas-Panoche 230kV Line No 1	P5-5:A13:1:_Los Banos 500-230-70kV Batt(Failure OF NON-REDUNDENT BATT)	P5-5	Non-Redundant Relay	49	62	NConv	NConv	NConv	NConv	43	NConv	NConv	Install Redundant battery
Las Aguilas-Panoche 230kV Line No 2	P5-5:A13:1:_Los Banos 500-230-70kV Batt(Failure OF NON-REDUNDENT BATT)	P5-5	Non-Redundant Relay	50	62	NConv	NConv	NConv	NConv	43	NConv	NConv	Install Redundant battery
Legrand-Chowchilla 115kV	P5-5:A13:1:_Los Banos 500-230-70kV Batt(Failure OF NON-REDUNDENT BATT)	P5-5	Non-Redundant Relay	24	31	NConv	NConv	NConv	NConv	36	NConv	NConv	Install Redundant battery
Legrand-Dairyland 115kV(Legrand-chowchilla solar section)	P5-5:A13:1:_Los Banos 500-230-70kV Batt(Failure OF NON-REDUNDENT BATT)	P5-5	Non-Redundant Relay	24	30	NConv	NConv	NConv	NConv	32	NConv	NConv	Install Redundant battery
Legrand-Wilson 115kV	P7-1:A13:7:_LOS BANOS-PANOCHE #1 230KV [5030] & PANOCHE-ORO LOMA 115KV [3240]	P7-1	DCTL	NA	99	41	12	NA	35	NA	NA	101	Sensitivity only
Los Banos 230/70 kV Transformer #3	P1-3:A13:7:_LOS BANOS 230/70KV TB 4	P1-3	N-1	66	66	51	22	100	22	27	94	64	Generation Re-dispatch
	P2-2:A13:2:_LOS BANOS 230KV SECTION 2D	P2-2	Bus	67	67	56	22	100	23	47	94	64	Generation Re-dispatch
Los Banos-Canal-Oro Loma 70 kV Line	P1-2:A13:73:_LOS BANOS-LIVINGSTON JCT-CANAL 70KV [8940]	P1-2	N-1	122	124	62	13	87	18	45	70	126	Project: Losbanos Area reinforcement
	P1-2:A13:99:_POLELINE-PANOCHE #1 230KV [0] & P1-2:A13:100:_LOS BANOS-POLELINE #1 230KV [0]	P6	N-1-1	<100	<100	113	<100	<100	<100	<100	<100	<100	Continue to monitor
Los Banos-Dos Amigos 230kV line	P5-5a:A14:1:_GATES SECTION D & E 230 KV BUS (Failure OF NON-REDUNDENT RELAY)	P5-5	Non-Redundant Relay	8	15	NA	15	92	30	16	107	18	Install Redundant Relay
	P5-5c:A14:14:_Gates 230-70kV Batt(Failure OF NON-REDUNDENT BATT)	P5-5	Non-Redundant Relay	5	12	NA	14	89	29	16	104	17	Install Redundant battery
Los Banos-Livingston Jct-Canal 70 kV Line	P1-2:A13:75:_LOS BANOS-MERCY SPRINGS SW STA 70KV [8929]	P1-2	N-1	140	112	68	23	121	4	61	100	113	Project: Losbanos Area reinforcement
	P1-1:A13:26:_VEGA 0.36KV GEN UNIT 1 & P1-2:A13:75:_LOS BANOS-MERCY SPRINGS SW STA 70KV [8929]	P3	G-1/N-1	<100	<100	<100	<100	<100	<100	<100	102	<100	Sensitivity only
	P5-5c:A13:23:_Hammonds 115kV Batt(Failure OF NON-REDUNDENT BATT)	P5-5	Non-Redundant Relay	NA	NA	123	NA	NA	NA	NA	NA	NA	Install Redundant battery
	P5-5c:A13:24:_Oro Loma 115-70kV Batt(Failure OF NON-REDUNDENT BATT)	P5-5	Non-Redundant Relay	NA	NA	123	NA	NA	NA	NA	NA	NA	Install Redundant battery
	P5-5c:A13:4:_Panoche 230-115kV Batt(Failure OF NON-REDUNDENT BATT)	P5-5	Non-Redundant Relay	111	103	126	32	53	47	100	53	103	Install Redundant battery
	P1-2:A13:99:_POLELINE-PANOCHE #1 230KV [0] & P1-2:A13:100:_LOS BANOS-POLELINE #1 230KV [0]	P6	N-1-1	<100	<100	117	<100	<100	<100	<100	<100	<100	Continue to monitor

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	2028 Summer-Off Peak	2025 Spring Off-Peak	2028 Spring Off-Peak	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	2028 SP High CEC Forecast	
Los Banos-Mercy Springs Sw Sta 70kV Line (Mercy Springs Sw Sta - Arburua Sub section)	P1-2:A13:73:_LOS BANOS-LIVINGSTON JCT-CANAL 70KV [8940]	P1-2	N-1	112	115	52	3	77	23	39	59	117	Project: Losbanos Area reinforcement
	P1-2:A13:99:_POLELINE-PANOCHÉ #1 230KV [0] & P1-2:A13:100:_LOS BANOS-POLELINE #1 230KV [0]	P6	N-1-1	<100	<100	103	<100	<100	<100	<100	<100	<100	Continue to monitor
Manchester - Airways - Sanger 115 kV Line	P1-2:A14:49:_BARTON-AIRWAYS-SANGER 115KV [1060]	P1-2	N-1	17	16	9	46	20	100	46	26	13	Generation Re-dispatch
	P2-3:A14:39:_AIRWAYS - 1E 115KV & BARTON-AIRWAYS-SANGER LINE	P2-3	Non-Bus-Tie Breaker	17	16	9	46	20	100	46	26	13	Generation Re-dispatch
	P2-3:A14:63:_BARTON - 1F 115KV & BARTON-AIRWAYS-SANGER LINE	P2-3	Non-Bus-Tie Breaker	19	18	10	46	19	100	45	25	14	Generation Re-dispatch
	P5-5c:A13:1:_Los Banos 500-230-70kV Batt(FAILURE OF NON-REDUNDENT BATT)	P5-5	Non-Redundant Relay	17	18	NConv	NConv	NConv	NConv	42	NConv	NConv	Install Redundant battery
	P5-5c:A14:10:_Mccall 230-115kV Batt(FAILURE OF NON-REDUNDENT BATT)	P5-5	Non-Redundant Relay	NConv	NConv	NConv	21	26	36	28	45	NConv	Install Redundant battery
	P7-1:A14:22:_HENTAP1-MUSTANGSS #1 230KV [0] & HERNDON-KEARNEY 230KV [4900]	P7-1	DCTL	44	40	NConv	60	49	101	67	76	47	Continue to monitor
	P7-1:A14:26:_HENTAP1-MUSTANGSS #1 230KV [0] & TRANQLTYSS-MCMULLN1 #1 230KV [0]	P7-1	DCTL	49	46	NConv	61	54	99	67	82	53	Continue to monitor
	P7-1:A14:17:_HELM-MCCALL 230KV [4860] & HENTAP2-MUSTANGSS #1 230KV [0]	P7-1	DCTL	34	26	NConv	41	9	101	29	12	27	Continue to monitor
Manchester-Airways-Sanger 115 kV Line	P7-1:A14:4:_MUSTANGSS-GATES #1 230KV [0] & MUSTANGSS-GATES #2 230KV [0] (2)	P7-1	DCTL	3	4	NConv	38	14	98	44	14	5	Continue to monitor
	P5-5c:A13:1:_Los Banos 500-230-70kV Batt(FAILURE OF NON-REDUNDENT BATT)	P5-5	Non-Redundant Relay	14	11	NConv	NConv	NConv	NConv	40	NConv	NConv	Install Redundant battery
	P7-1:A14:22:_HENTAP1-MUSTANGSS #1 230KV [0] & HERNDON-KEARNEY 230KV [4900]	P7-1	DCTL	27	24	NConv	59	37	108	65	64	30	Continue to monitor
	P7-1:A14:26:_HENTAP1-MUSTANGSS #1 230KV [0] & TRANQLTYSS-MCMULLN1 #1 230KV [0]	P7-1	DCTL	33	30	NConv	61	42	106	66	70	36	Continue to monitor
Mc Call 230kV-115kV Bank No 2	P2-4:A14:9:_MC CALL 230KV - SECTION 1D & 2D	P2-4	Bus-Tie-Breaker	112	104	NConv	46	81	26	88	89	107	under review
Mc Call 230kV-115kV Bank No 3	P2-3:A14:50:_MC CALL 115KV - MIDDLE BREAKER BAY 3	P2-3	Non-Bus-Tie Breaker	119	111	163	51	94	20	93	113	116	Contingency under review
	P2-4:A14:8:_MC CALL 230KV - SECTION 1E & 1D	P2-4	Bus-Tie-Breaker	89	83	NConv	33	61	14	68	75	85	Continue to monitor
	P1-1:A14:47:_KERCKHOFFPH2 13.80KV GEN UNIT 1 & P1-3:A14:5:_MC CALL 230/115KV TB 1	P3	G-1/N-1	<100	<100	100	<100	<100	<100	<100	<100	<100	Continue to monitor
	P1-3:A14:5:_MC CALL 230/115KV TB 1 & P1-2:A14:81:_HENRIETTA-LEPRINO SW STA 115KV [1737]	P6	N-1-1	<100	<100	101	<100	<100	<100	<100	<100	<100	Continue to monitor
Mccall 230/115kV Bank 1	P1-3:A14:5:_MC CALL 230/115KV TB 1 & Base Case	P6	N-1-1	<100	<100	101	<100	<100	<100	<100	<100	<100	Continue to monitor
	P1-1:A14:47:_KERCKHOFFPH2 13.80KV GEN UNIT 1 & P1-3:A14:7:_MC CALL 230/115KV TB 3	P3	G-1/N-1	<100	<100	102	<100	<100	<100	<100	<100	<100	Continue to monitor
	P1-3:A14:7:_MC CALL 230/115KV TB 3 & P1-3:A14:6:_MC CALL 230/115KV TB 2	P6	N-1-1	100	100	117	<100	96	<100	95	99	100	Operating solution, RAS or increase bank capacity
Mccall 230/115kV Bank 2	P2-4:A14:9:_MC CALL 230KV - SECTION 1D & 2D	P2-4	Bus-Tie-Breaker	108	99	NConv	46	79	26	85	87	102	Increase Bank capacity
McCall-California Ave. 115 kV Line	P1-2:A14:67:_SANGER-CALIFORNIA AVE 115KV [9130] & P1-2:A14:69:_MCCALL-WEST FRESNO #2 115KV [2370]	P6	N-1-1	160	157	167	<100	<100	<100	124	<100	158	Operating solution, RAS or increase line capacity
Mccall-Kingsburg No 2 115kV Line	P2-2:A14:59:_KINGSBURGD 115KV SECTION 1D	P2-2	Bus	101	92	130	28	85	50	22	83	94	Bus upgrade or increase line capacity
	P2-3:A14:72:_KINGSBURGD - 1D 115KV & MCCALL-KINGSBURG #1 LINE	P2-3	Non-Bus-Tie Breaker	101	92	130	28	85	50	22	83	94	Bus upgrade or increase line capacity
	P2-3:A14:73:_KINGSBURGD - 1D 115KV & GWF-KINGSBURG LINE	P2-3	Non-Bus-Tie Breaker	101	92	130	28	85	50	22	83	94	Bus upgrade or increase line capacity
McCall-Reedley 115 kV Line (McCall-Wahtoke)	P5-5c:A14:21:_Sanger 115kV Batt(FAILURE OF NON-REDUNDENT BATT)	P5-5	Non-Redundant Relay	106	100	117	35	85	12	64	88	101	Install Redundant battery

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	2028 Summer-Off Peak	2025 Spring Off-Peak	2028 Spring Off-Peak	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	2028 SP High CEC Forecast	
McCall-Reedley 115 kV Line (Reedley-Wahtoke)	P2-1:A14:106:_SANGER-REEDLEY 115KV [9140] (SANGERCNJCT-PARLIER)	P2-1	Line Section w/o Fault	103	102	116	38	71	9	57	77	105	Increase Line capacity
	P2-3:A14:47:_SANGER 115KV - MIDDLE BREAKER BAY 6	P2-3	Non-Bus-Tie Breaker	90	91	104	44	69	21	68	83	94	Continue to monitor
	P5-5:A13:8:_Borden 230-70kV Batt(FAILURE OF NON-REDUNDANT BATT)	P5-5	Non-Redundant Relay	NA	NA	103	NA	NA	NA	NA	NA	NA	Install Redundant battery
	P5-5:A14:21:_Sanger 115kv Batt(FAILURE OF NON-REDUNDANT BATT)	P5-5	Non-Redundant Relay	135	133	150	50	106	22	88	112	135	Install Redundant battery
	P7-1:A14:8:_HELMS-GREGG #1 230KV [4870] & HELMS-GREGG #2 230KV [4880]	P7-1	DCTL	NConv	NConv	97	38	49	7	53	66	81	Project:Reedley reinforcement project review
McCall-Sanger #2 115 kV Line	P1-2:A14:53:_MCCALL-SANGER #3 115KV [2350] & P1-2:A14:51:_MCCALL-SANGER #1 115KV [2330]	P6	N-1-1	<100	<100	105	<100	<100	<100	<100	<100	<100	Continue to monitor
McCall-Sanger #3 115 kV Line	P2-3:A14:51:_MC CALL 115KV - MIDDLE BREAKER BAY 2	P2-3	Non-Bus-Tie Breaker	81	76	106	62	68	43	74	91	81	Continue to monitor
	P2-4:A14:1:_HERNDON 230KV - SECTION 1E & 2E	P2-4	Bus-Tie-Breaker	85	81	114	39	61	4	53	69	84	Continue to monitor
	P2-4:A14:21:_HERNDON 115KV - SECTION 1D & 2D	P2-4	Bus-Tie-Breaker	88	83	114	31	54	17	51	67	86	Continue to monitor
	P5-5a:A14:2:_HERNDON #1 115KV BUS (FAILURE OF NON-REDUNDANT RELAY)	P5-5	Non-Redundant Relay	87	83	111	32	53	18	50	66	85	Install Redundant Relay
	P5-5c:A14:5:_Herndon 230-115kv Batt(FAILURE OF NON-REDUNDANT BATT)	P5-5	Non-Redundant Relay	88	83	112	32	53	16	51	66	85	Install Redundant battery
	P7-1:A14:19:_MCCALL-SANGER #1 115KV [2330] & MCCALL-SANGER #2 115KV [2340]	P7-1	DCTL	78	74	107	72	69	56	80	95	79	Continue to monitor
	P7-1:A14:8:_HELMS-GREGG #1 230KV [4870] & HELMS-GREGG #2 230KV [4880]	P7-1	DCTL	NConv	NConv	100	50	50	10	56	65	73	under review
McCall-West Fresno 115 kV Line	P2-4:A14:15:_CAL AVE 115KV - SECTION 1D & 1E	P2-4	Bus-Tie-Breaker	73	70	110	25	48	10	59	48	72	Continue to monitor
	P1-2:A14:67:_SANGER-CALIFORNIA AVE 115KV [9130] & P1-2:A14:63:_CALIFORNIA AVE-MCCALL 115KV [2360]	P6	N-1-1	140	137	<100	<100	<100	<100	104	<100	141	Operating Solution
Melones-Wilson 230kV line	P5-5c:A13:1:_Los Banos 500-230-70kV Batt(FAILURE OF NON-REDUNDANT BATT)	P5-5	Non-Redundant Relay	79	60	NConv	NConv	NConv	NConv	31	NConv	NConv	Install Redundant battery
	P7-1:A13:19:_COTTLE-MELONES 230KV [4530] & BELLOTA-WARNERVILLE 230KV [4380]	P7-1	DCTL	NConv	NConv	65	NConv	98	20	99	98	NConv	under review
	P7-1:A13:5:_BELLOTA-COTTLE 230KV [4360] & BELLOTA-WARNERVILLE 230KV [4380]	P7-1	DCTL	NConv	NConv	52	NConv	89	23	96	89	NConv	under review
Merced 115/70 kV Transformer #2	P2-4:A13:12:_WILSON A SECTION 1D & WILSON B SECTION 2D 115KV	P2-4	Bus-Tie-Breaker	NConv	NA	NA	NA	NConv	NA	NConv	NConv	NA	Project: Wilson 115kV reinforcement
	P5-5a:A13:1:_WILSON 115 KV #1 & #2 BUS (FAILURE OF NON-REDUNDANT RELAY)	P5-5	Non-Redundant Relay	NConv	NA	NA	NA	NConv	NA	NConv	NConv	NA	Install Redundant Relay
	P5-5c:A13:2:_Wilson 230-115kv Batt(FAILURE OF NON-REDUNDANT BATT)	P5-5	Non-Redundant Relay	NConv	NConv	NConv	44	NConv	52	NConv	NConv	NConv	Install Redundant battery
Merced Falls-Exchequer 70 kV Line	P2-4:A13:12:_WILSON A SECTION 1D & WILSON B SECTION 2D 115KV	P2-4	Bus-Tie-Breaker	NConv	NA	NA	NA	NConv	NA	NConv	NConv	NA	Project: Wilson 115kV reinforcement
	P5-5a:A13:1:_WILSON 115 KV #1 & #2 BUS (FAILURE OF NON-REDUNDANT RELAY)	P5-5	Non-Redundant Relay	NConv	NA	NA	NA	NConv	NA	NConv	NConv	NA	Install Redundant Relay
	P5-5c:A13:2:_Wilson 230-115kv Batt(FAILURE OF NON-REDUNDANT BATT)	P5-5	Non-Redundant Relay	NConv	NConv	NConv	142	NConv	86	NConv	NConv	NConv	Install Redundant battery
	P1-2:A13:60:_PANOCHÉ-MENDOTA 115KV [3230] & P1-2:A13:46:_WILSON-LE GRAND 115KV [4170]	P6	N-1-1	<100	<100	<100	<100	<100	108	65	<100	<100	Generation Re-dispatch
Merced-Merced Falls 70 kV Line	P2-4:A13:12:_WILSON A SECTION 1D & WILSON B SECTION 2D 115KV	P2-4	Bus-Tie-Breaker	NConv	NA	NA	NA	NConv	NA	NConv	NConv	NA	Project: Wilson 115kV reinforcement
	P5-5a:A13:1:_WILSON 115 KV #1 & #2 BUS (FAILURE OF NON-REDUNDANT RELAY)	P5-5	Non-Redundant Relay	NConv	NA	NA	NA	NConv	NA	NConv	NConv	NA	Install Redundant Relay
	P5-5c:A13:2:_Wilson 230-115kv Batt(FAILURE OF NON-REDUNDANT BATT)	P5-5	Non-Redundant Relay	NConv	NConv	NConv	147	NConv	93	NConv	NConv	NConv	Install Redundant battery

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	2028 Summer-Off Peak	2025 Spring Off-Peak	2028 Spring Off-Peak	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	2028 SP High CEC Forecast	
MERCED-MERCED M #2 115 kV	P2-4:A13:12:_WILSON A SECTION 1D & WILSON B SECTION 2D 115KV	P2-4	Bus-Tie-Breaker	NConv	NA	NA	NA	NConv	NA	NConv	NConv	NA	Project: Wilson 115kV reinforcement
	P5-5a:A13:1:_WILSON 115 KV #1 & #2 BUS (FAILURE OF NON-REDUNDENT RELAY)	P5-5	Non-Redundant Relay	NConv	NA	NA	NA	NConv	NA	NConv	NConv	NA	Install Redundant Relay
	P5-5c:A13:2:_Wilson 230-115kV Batt(Failure OF NON-REDUNDENT BATT)	P5-5	Non-Redundant Relay	NConv	NConv	NConv	31	NConv	42	NConv	NConv	NConv	Install Redundant battery
Mercy Springs Sw Sta- Oro loma 70kV Line (Mercy Springs Sw Sta-Mercy springs sub section)	P1-2:A13:73:_LOS BANOS-LIVINGSTON JCT-CANAL 70KV [8940]	P1-2	N-1	169	91	94	18	111	6	88	107	93	Project: Losbanos Area reinforcement
	P2-1:A13:49:_PANOCHE-ORO LOMA 115KV [3240] (PANOCHEJ-PANOCHE2)	P2-1	Line Section w/o Fault	81	45	105	18	62	13	58	70	45	Continue to monitor
	P2-2:A13:25:_PANOCHE2 115KV SECTION 2D	P2-2	Bus	81	45	105	18	62	13	58	70	45	Continue to monitor
	P2-3:A13:42:_PANOCHE2 - 2D 115KV & PANOCHE-EXCELSIOR SW STA #2 LINE	P2-3	Non-Bus-Tie Breaker	81	45	105	18	62	13	58	70	45	Continue to monitor
	P2-3:A13:52:_LOS BANS - MA 70KV & LOS BANOS-O'NEILL PGP LINE	P2-3	Non-Bus-Tie Breaker	0	0	102	0	0	0	0	0	0	Continue to monitor
	P2-4:A13:13:_PANOCHE1 SECTION 1D & PANOCHE2 SECTION 2D 115KV	P2-4	Bus-Tie-Breaker	81	45	113	18	62	13	58	70	45	Continue to monitor
	P5-5c:A13:23:_Hammonds 115kV Batt(Failure OF NON-REDUNDENT BATT)	P5-5	Non-Redundant Relay	NA	NA	103	NA	NA	NA	NA	NA	NA	Install Redundant battery
	P1-2:A13:61:_PANOCHE-ORO LOMA 115KV [3240] & P1-2:A13:48:_WILSON-ORO LOMA 115KV [4200]	P6	N-1-1	<100	<100	106	<100	<100	<100	<100	<100	<100	Continue to monitor
Mosslanding- Las Aguilas No 1 230kV Line	P5-5c:A13:1:_Los Banos 500-230-70kV Batt(Failure OF NON-REDUNDENT BATT)	P5-5	Non-Redundant Relay	NA	76	NConv	NConv	NA	NConv	NA	NA	NConv	Install Redundant battery
MOSSLNSW-LASAGUILASS #2 230KV	P5-5c:A13:1:_Los Banos 500-230-70kV Batt(Failure OF NON-REDUNDENT BATT)	P5-5	Non-Redundant Relay	58	NA	NA	NA	NConv	NA	88	NConv	NA	Install Redundant battery
MustangSS-Gates 230KV Line No 1	P1-2:A14:28:_GATES-MUSTANG SW STA #2 230KV [2605]	P1-2	N-1	6	14	35	24	90	13	27	102	10	Generation Re-dispatch
	P2-3:A14:29:_GATES F 230KV - MIDDLE BREAKER BAY 4	P2-3	Non-Bus-Tie Breaker	5	12	34	23	91	9	27	102	9	Sensitivity only
	P5-5c:A13:1:_Los Banos 500-230-70kV Batt(Failure OF NON-REDUNDENT BATT)	P5-5	Non-Redundant Relay	22	12	NConv	NConv	NConv	NConv	13	NConv	NConv	Install Redundant battery
MustangSS-Gates 230KV Line No 2	P1-2:A14:27:_GATES-MUSTANG SW STA #1 230KV [2604]	P1-2	N-1	6	14	35	24	90	13	27	102	10	Generation Re-dispatch
	P2-3:A14:28:_GATES F 230KV - MIDDLE BREAKER BAY 5	P2-3	Non-Bus-Tie Breaker	6	13	34	23	89	10	26	100	9	Sensitivity only
	P5-5c:A13:1:_Los Banos 500-230-70kV Batt(Failure OF NON-REDUNDENT BATT)	P5-5	Non-Redundant Relay	22	12	NConv	NConv	NConv	NConv	13	NConv	NConv	Install Redundant battery
Oro Loma-Canal #1(Oro Loma-Santa Rita) 70 kV Line	P1-2:A13:73:_LOS BANOS-LIVINGSTON JCT-CANAL 70KV [8940]	P1-2	N-1	58	56	101	6	30	23	18	30	57	Continue to monitor
	P2-3:A13:52:_LOS BANS - MA 70KV & LOS BANOS-O'NEILL PGP LINE	P2-3	Non-Bus-Tie Breaker	58	56	147	6	30	23	18	30	57	Continue to monitor
	P5-5c:A13:1:_Los Banos 500-230-70kV Batt(Failure OF NON-REDUNDENT BATT)	P5-5	Non-Redundant Relay	58	56	NConv	6	NConv	NConv	18	NConv	57	Install Redundant battery
	P2-2:A13:6:_PANOCHE 230KV SECTION 2D	P2-2	Bus	20	28	4	74	85	59	8	102	17	Sensitivity only
	P2-3:A13:5:_PANOCHE - 2D 230KV & PANOCHE-PANOCHE ENERGY CENTER LINE	P2-3	Non-Bus-Tie Breaker	20	28	4	74	85	59	8	102	17	Sensitivity only

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	2028 Summer-Off Peak	2025 Spring Off-Peak	2028 Spring Off-Peak	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	2028 SP High CEC Forecast	
Panoche-Gates 230kV Line No 1	P2-3:A14:18:_MUSTANGSS 230KV - MIDDLE BREAKER BAY 2	P2-3	Non-Bus-Tie Breaker	34	32	4	54	92	42	9	113	23	Sensitivity only
	P2-4:A13:3:_PANOCHE 230KV - SECTION 2E & 2D	P2-4	Bus-Tie-Breaker	21	NA	4	NA	93	NA	1	113	NA	Sensitivity only
	P5-5c:A13:1:_Los Banos 500-230-70kV Batt(Failure OF NON-REDUNDANT BATT)	P5-5	Non-Redundant Relay	87	29	NConv	NConv	NConv	NConv	7	NConv	NConv	Install Redundant battery
	P5-5c:A14:12:_Mustang SW STA 230kV Batt(Failure OF NON-REDUNDANT BATT)	P5-5	Non-Redundant Relay	19	25	NConv	65	79	44	8	106	30	Install Redundant battery
	P5-5c:A14:1:_Gates 500kV Batt(Failure OF NON-REDUNDANT BATT)	P5-5	Non-Redundant Relay	40	34	25	128	11	63	51	32	44	Install Redundant battery
	P7-1:A14:3:_MUSTANGSS-GATES #1 230KV [0] & MUSTANGSS-GATES #2 230KV [0]	P7-1	DCTL	34	32	4	54	93	42	9	113	23	Sensitivity only
	P7-1:A14:4:_MUSTANGSS-GATES #1 230KV [0] & MUSTANGSS-GATES #2 230KV [0] (2)	P7-1	DCTL	17	27	NConv	62	72	46	12	104	18	Continue to monitor
Panoche-Gates 230kV Line No 2	P2-3:A14:18:_MUSTANGSS 230KV - MIDDLE BREAKER BAY 2	P2-3	Non-Bus-Tie Breaker	36	34	4	57	98	45	9	120	25	Sensitivity only
	P5-5c:A13:1:_Los Banos 500-230-70kV Batt(Failure OF NON-REDUNDANT BATT)	P5-5	Non-Redundant Relay	92	31	NConv	NConv	NConv	NConv	7	NConv	NConv	Install Redundant battery
	P5-5c:A14:12:_Mustang SW STA 230kV Batt(Failure OF NON-REDUNDANT BATT)	P5-5	Non-Redundant Relay	20	25	NConv	65	84	44	8	113	32	Install Redundant battery
	P5-5c:A14:1:_Gates 500kV Batt(Failure OF NON-REDUNDANT BATT)	P5-5	Non-Redundant Relay	42	36	27	136	12	67	54	34	47	Install Redundant battery
	P7-1:A14:3:_MUSTANGSS-GATES #1 230KV [0] & MUSTANGSS-GATES #2 230KV [0]	P7-1	DCTL	36	34	4	57	98	44	10	120	25	Sensitivity only
	P7-1:A14:4:_MUSTANGSS-GATES #1 230KV [0] & MUSTANGSS-GATES #2 230KV [0] (2)	P7-1	DCTL	18	29	NConv	66	77	49	13	110	19	Continue to monitor
Panoche-Manning No 1 230kV line	P5-5c:A13:1:_Los Banos 500-230-70kV Batt(Failure OF NON-REDUNDANT BATT)	P5-5	Non-Redundant Relay	NA	41	NConv	NConv	NA	NConv	NA	NA	NConv	Install Redundant battery
Panoche-Manning No 2 230kV line	P5-5c:A13:1:_Los Banos 500-230-70kV Batt(Failure OF NON-REDUNDANT BATT)	P5-5	Non-Redundant Relay	NA	41	NConv	NConv	NA	NConv	NA	NA	NConv	Install Redundant battery
Panoche-Mendota 115 kV Line	P5-5a:A13:1:_WILSON 115 KV #1 & #2 BUS (Failure OF NON-REDUNDANT RELAY)	P5-5	Non-Redundant Relay	NConv	NA	NA	NA	NConv	NA	NConv	NConv	NA	Install Redundant Relay
	P5-5c:A13:2:_Wilson 230-115kV Batt(Failure OF NON-REDUNDANT BATT)	P5-5	Non-Redundant Relay	NConv	NConv	NConv	46	NConv	84	NConv	NConv	NConv	Install Redundant battery
Panoche-Oro Loma 115 kV Line	P5-5c:A13:1:_Los Banos 500-230-70kV Batt(Failure OF NON-REDUNDANT BATT)	P5-5	Non-Redundant Relay	41	35	NConv	NConv	NConv	NConv	32	NConv	NConv	Install Redundant battery
	P1-3:A13:2:_WILSON 230/115KV TB 1 & P1-3:A13:3:_WILSON 230/115KV TB 2	P6	N-1-1	122	<100	<100	<100	<100	<100	<100	<100	<100	Project:Oroloma area reinforcement
Panoche-Schindler #1 115 kV Line	P2-4:A14:10:_GATES D 230KV - SECTION 2D & 1D	P2-4	Bus-Tie-Breaker	101	90	81	61	77	68	48	64	88	Mitigated by future generation
	P5-5a:A14:1:_GATES SECTION D & E 230 KV BUS (Failure OF NON-REDUNDANT RELAY)	P5-5	Non-Redundant Relay	102	89	NConv	63	71	68	46	56	91	Install Redundant Relay
	P1-3:A14:13:_GATES D 230/70KV TB 5 & P1-2:A14:47:_PANOCHE-EXCELSIOR SW STA #2 115KV [3260]	P6	N-1-1	149	131	162	<100	117	92	<100	<100	129	Increase bank capacity
Panoche-Tranquility No 1 230kV line	P2-3:A13:8:_TRANQTYSS 230KV - MIDDLE BREAKER BAY 3	P2-3	Non-Bus-Tie Breaker	14	NA	NA	NA	100	NA	29	98	NA	Generation Re-dispatch
Poleline-Mercy Springs sw sta No 1 70kV Line	P2-3:A13:52:_LOS BANS - MA 70KV & LOS BANOS-O'NEILL PGP LINE	P2-3	Non-Bus-Tie Breaker	NA	NA	125	NA	NA	NA	NA	NA	NA	Continue to monitor
Reedley 115/70 kV Transformer #4	P1-3:A14:40:_REEDLEY 115/70KV TB 2	P1-3	N-1	116	117	112	38	87	14	70	85	119	Project:Reedley reinforcement project review
	P2-3:A14:139:_REEDLEY 115KV - RING R5 & R6	P2-3	Non-Bus-Tie Breaker	101	102	101	36	82	14	60	82	104	Project:Reedley reinforcement project review
	P2-3:A14:141:_REEDLEY 115KV - RING R1 & R6	P2-3	Non-Bus-Tie Breaker	104	106	106	39	84	14	64	86	108	Project:Reedley reinforcement project review
	P1-2:A14:118:_REEDLEY-OROSI 70KV [9060]	P1-2	N-1	141	135	128	46	106	9	89	69	137	Project:Reedley reinforcement project review

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	2028 Summer-Off Peak	2025 Spring Off-Peak	2028 Spring Off-Peak	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	2028 SP High CEC Forecast	
Reedley-Dinuba 70 kV Line	P1-2:A14:57:_SANGER-REEDLEY 115KV [9140] MOAS OPENED ON PARLIER_REEDLEY & P1-2:A14:58:_MCCALL-REEDLEY 115KV [2320] MOAS OPENED ON MC CALL_WAHTOKE	P6	N-1-1	103	<100	<100	<100	<100	<100	<100	<100	<100	Project:Reedley reinforcement project review
Reedley-Orosi 70 kV Line	P1-2:A14:117:_REEDLEY-DINUBA #1 70KV [9050]	P1-2	N-1	57	133	159	43	43	8	42	44	136	Project:Reedley reinforcement project review
Sanger-Reedley 115 kV Line	P1-2:A14:58:_MCCALL-REEDLEY 115KV [2320] MOAS OPENED ON MC CALL_WAHTOKE & P1-2:A14:55:_KINGS RIVER-SANGER-REEDLEY 115KV [2030]	P6	N-1-1	124	115	138	<100	93	<100	<100	90	118	Operating solution, RAS or increase line capacity
Schindler 115/70 kV Transformer #1	P1-3:A14:13:_GATES D 230/70KV TB 5	P1-3	N-1	117	110	102	43	100	57	23	70	108	Increase Bank capacity
	P2-2:A14:20:_GATES D 230KV SECTION 2D	P2-2	Bus	118	113	101	52	101	55	27	73	111	Increase Bank capacity
	P2-4:A14:10:_GATES D 230KV - SECTION 2D & 1D	P2-4	Bus-Tie-Breaker	125	120	100	61	110	52	33	83	117	Mitigated by future generation
	P1-1:A14:68:_CHV.COAL 9.11KV GEN UNIT 1 & P1-3:A14:13:_GATES D 230/70KV TB 5	P3	G-1/N-1	<100	<100	<100	<100	104	<100	<100	<100	<100	Generation Re-dispatch
	P5-5a:A14:1:_GATES SECTION D & E 230 KV BUS (FAILURE OF NON-REDUNDANT RELAY)	P5-5	Non-Redundant Relay	128	119	NConv	65	98	52	30	67	122	Install Redundant Relay
	P5-5c:A13:1:_Los Banos 500-230-70kV Batt(Failure OF NON-REDUNDANT BATT)	P5-5	Non-Redundant Relay	68	40	NConv	NConv	NConv	NConv	10	NConv	NConv	Install Redundant battery
Schindler-Coalinga #2 70 kV Line	P1-3:A14:13:_GATES D 230/70KV TB 5	P1-3	N-1	105	97	84	10	92	22	28	90	95	Mitigated by future generation
	P2-2:A14:20:_GATES D 230KV SECTION 2D	P2-2	Bus	106	100	83	15	94	21	25	92	98	Mitigated by future generation
	P2-4:A13:13:_PANOCHE1 SECTION 1D & PANOCHE2 SECTION 2D 115KV	P2-4	Bus-Tie-Breaker	23	22	49	109	24	106	86	18	22	Generation Re-dispatch
	P2-4:A14:10:_GATES D 230KV - SECTION 2D & 1D	P2-4	Bus-Tie-Breaker	114	107	82	17	104	20	21	103	104	Mitigated by future generation
	P5-5a:A14:1:_GATES SECTION D & E 230 KV BUS (FAILURE OF NON-REDUNDANT RELAY)	P5-5	Non-Redundant Relay	117	106	NConv	28	91	20	23	87	108	Install Redundant Relay
	P5-5c:A13:4:_Panoche 230-115kv Batt(Failure OF NON-REDUNDANT BATT)	P5-5	Non-Redundant Relay	49	48	49	86	26	107	86	NConv	47	Install Redundant battery
	P5-5c:A14:14:_Gates 230-70kV Batt(Failure OF NON-REDUNDANT BATT)	P5-5	Non-Redundant Relay	140	126	NConv	21	89	41	54	85	132	Install Redundant battery
Schindler-Coalinga #2 70 kV Line (Schindler-Paige section)	P7-1:A14:10:_PANOCHE-SCHINDLER #1 115KV [3250] & EXCELSIORSS-PANOCHE2 115KV [3231]	P7-1	DCTL	49	47	49	86	26	106	86	16	48	Generation Re-dispatch
	P1-3:A14:13:_GATES D 230/70KV TB 5	P1-3	N-1	103	95	83	28	92	36	15	47	93	Mitigated by future generation
	P2-2:A14:20:_GATES D 230KV SECTION 2D	P2-2	Bus	104	99	82	36	94	34	18	49	96	Mitigated by future generation
	P2-4:A14:10:_GATES D 230KV - SECTION 2D & 1D	P2-4	Bus-Tie-Breaker	113	106	81	44	104	31	24	61	103	Mitigated by future generation
	P5-5a:A14:1:_GATES SECTION D & E 230 KV BUS (FAILURE OF NON-REDUNDANT RELAY)	P5-5	Non-Redundant Relay	116	104	NConv	48	91	31	21	43	107	Install Redundant Relay
	P5-5c:A13:1:_Los Banos 500-230-70kV Batt(Failure OF NON-REDUNDANT BATT)	P5-5	Non-Redundant Relay	68	43	NConv	NConv	NConv	NConv	12	NConv	NConv	Install Redundant battery
	P5-5c:A14:14:_Gates 230-70kV Batt(Failure OF NON-REDUNDANT BATT)	P5-5	Non-Redundant Relay	137	123	NConv	33	89	9	14	43	129	Install Redundant battery
	P1-3:A14:13:_GATES D 230/70KV TB 5	P1-3	N-1	124	115	120	51	104	68	28	86	113	Increase bank capacity
	P2-2:A14:20:_GATES D 230KV SECTION 2D	P2-2	Bus	125	118	119	59	105	66	32	88	116	Increase bank capacity
	P2-3:A14:135:_SCHINDLER 115KV - RING R1 & R3	P2-3	Non-Bus-Tie Breaker	126	121	119	22	89	34	24	61	121	Increase bank capacity
	P2-3:A14:58:_EXCELSIORSS 115KV - MIDDLE BREAKER BAY 2	P2-3	Non-Bus-Tie Breaker	126	121	119	22	89	34	24	61	121	Increase bank capacity
	P2-4:A13:13:_PANOCHE1 SECTION 1D & PANOCHE2 SECTION 2D 115KV	P2-4	Bus-Tie-Breaker	105	78	142	93	49	96	44	81	78	Increase bank capacity
	P2-4:A14:10:_GATES D 230KV - SECTION 2D & 1D	P2-4	Bus-Tie-Breaker	132	124	118	66	114	64	37	97	121	Increase bank capacity
	P5-5c:A13:1:_Los Banos 500-230-70kV Batt(Failure OF NON-REDUNDANT BATT)	P5-5	Non-Redundant Relay	14	27	NConv	NConv	NConv	NConv	18	NConv	NConv	Install Redundant battery

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	2028 Summer-Off Peak	2025 Spring Off-Peak	2028 Spring Off-Peak	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	2028 SP High CEC Forecast	
Schindler-Huron-Gates 70 kV Line	P5-5c:A13:4:_Panoche 230-115kV Batt(Failure OF NON-REDUNDANT BATT)	P5-5	Non-Redundant Relay	157	140	144	62	109	96	44	NConv	141	Install Redundant battery
	P5-5c:A14:27:_Excelsior SW STA 115kV Batt(Failure OF NON-REDUNDANT BATT)	P5-5	Non-Redundant Relay	126	120	120	22	89	34	24	61	121	Install Redundant battery
	P5-5a:A14:1:_GATES SECTION D & E 230 KV BUS (Failure OF NON-REDUNDANT RELAY)	P5-5	Non-Redundant Relay	135	123	NConv	70	103	64	34	84	125	Install Redundant Relay
	P5-5c:A13:1:_Los Banos 500-230-70kV Batt(Failure OF NON-REDUNDANT BATT)	P5-5	Non-Redundant Relay	62	33	NConv	NConv	NConv	NConv	6	NConv	NConv	Install Redundant battery
	P7-1:A13:14:_EXCELSIORSS-PANOCH1 115KV [3250] & EXCELSIORSS-PANOCH2 115KV [3231]	P7-1	DCTL	125	114	115	58	92	87	49	76	114	Increase bank capacity
	P7-1:A14:10:_PANOCH1-SCHINDLER #1 115KV [3250] & EXCELSIORSS-PANOCH2 115KV [3231]	P7-1	DCTL	157	141	143	62	109	97	44	80	141	Increase bank capacity
Tranquility-Kearney 230kV line	P5-5c:A14:2:_Gregg 230kV Batt(Failure OF NON-REDUNDANT BATT)	P5-5	Non-Redundant Relay	NConv	NConv	NConv	14	47	35	32	54	NConv	Install Redundant battery
Warnerville - Wilson 230 kV Line	P2-2:A14:2:_HELMs PP2 230KV SECTION 1E	P2-2	Bus	89	97	88	61	44	106	8	72	82	Generation Re-dispatch
	P2-3:A14:18:_MUSTANGSS 230KV - MIDDLE BREAKER BAY 2	P2-3	Non-Bus-Tie Breaker	38	48	61	64	100	78	13	132	35	Sensitivity only
	P2-3:A14:1:_GREGG 230KV - MIDDLE BREAKER BAY 1	P2-3	Non-Bus-Tie Breaker	NConv	NConv	142	14	57	67	14	64	NConv	Contingency under review
	P2-4:A13:5:_PANOCH1 230KV - SECTION 1D & 2D	P2-4	Bus-Tie-Breaker	45	NA	NA	NA	92	NA	9	123	NA	Sensitivity only
	P2-4:A14:34:_HELMs PP1 SECTION 1D & HELMS PP2 SECTION 1E 230KV	P2-4	Bus-Tie-Breaker	90	98	90	61	44	106	8	72	83	Generation Re-dispatch
	P2-4:A14:35:_HELMs PP2 SECTION 1E & HELMS PP3 SECTION 1F 230KV	P2-4	Bus-Tie-Breaker	NConv	NConv	97	61	63	121	8	72	104	Generation Re-dispatch
	P5-5a:A14:1:_GATES SECTION D & E 230 KV BUS (Failure OF NON-REDUNDANT RELAY)	P5-5	Non-Redundant Relay	36	40	NConv	59	121	77	14	159	48	Install Redundant Relay
	P5-5c:A13:1:_Los Banos 500-230-70kV Batt(Failure OF NON-REDUNDANT BATT)	P5-5	Non-Redundant Relay	114	113	NConv	NConv	NConv	NConv	20	NConv	NConv	Install Redundant battery
	P5-5c:A13:4:_Panoche 230-115kV Batt(Failure OF NON-REDUNDANT BATT)	P5-5	Non-Redundant Relay	66	63	30	64	124	86	20	NConv	74	Install Redundant battery
	P5-5c:A14:12:_Mustang SW STA 230kV Batt(Failure OF NON-REDUNDANT BATT)	P5-5	Non-Redundant Relay	79	73	NConv	29	65	56	24	115	84	Install Redundant battery
	P5-5c:A14:14:_Gates 230-70kV Batt(Failure OF NON-REDUNDANT BATT)	P5-5	Non-Redundant Relay	34	39	NConv	59	119	77	14	157	48	Install Redundant battery
	P5-5c:A14:2:_Gregg 230kV Batt(Failure OF NON-REDUNDANT BATT)	P5-5	Non-Redundant Relay	NConv	NConv	NConv	11	69	77	17	73	NConv	Install Redundant battery
	P7-1:A13:13:_BORDEN-GREGG 230KV #1 & #2 [4400]	P7-1	DCTL	NConv	NConv	142	14	57	67	14	64	NConv	Continue to monitor
	P7-1:A13:6:_PANOCH1-TRANQLTYSS #1 230KV [0] & PANOCH1-TRANQLTYSS #2 230KV [0]	P7-1	DCTL	50	NA	NA	NA	89	NA	9	120	NA	Sensitivity only
	P7-1:A14:22:_HENTAP1-MUSTANGSS #1 230KV [0] & HERNDON-KEARNEY 230KV [4900]	P7-1	DCTL	83	89	NConv	30	57	30	39	108	80	Continue to monitor
	P7-1:A14:26:_HENTAP1-MUSTANGSS #1 230KV [0] & TRANQLTYSS-MCMULLN1 #1 230KV [0]	P7-1	DCTL	90	97	NConv	28	62	32	39	116	88	Continue to monitor
	P7-1:A14:3:_MUSTANGSS-GATES #1 230KV [0] & MUSTANGSS-GATES #2 230KV [0]	P7-1	DCTL	39	50	68	62	96	78	11	129	37	Sensitivity only
	P7-1:A14:4:_MUSTANGSS-GATES #1 230KV [0] & MUSTANGSS-GATES #2 230KV [0] (2)	P7-1	DCTL	79	83	NConv	30	65	56	22	115	72	Continue to monitor
	P7-1:A14:8:_HELMs-GREGG #1 230KV [4870] & HELMS-GREGG #2 230KV [4880]	P7-1	DCTL	NConv	NConv	97	61	63	121	8	72	104	Generation Re-dispatch
	P2-2:A14:2:_HELMs PP2 230KV SECTION 1E	P2-2	Bus	87	95	87	61	44	105	8	72	81	Generation Re-dispatch
	P2-3:A14:18:_MUSTANGSS 230KV - MIDDLE BREAKER BAY 2	P2-3	Non-Bus-Tie Breaker	37	47	61	64	99	77	13	131	34	Sensitivity only
	P2-3:A14:1:_GREGG 230KV - MIDDLE BREAKER BAY 1	P2-3	Non-Bus-Tie Breaker	NConv	NConv	141	13	56	66	14	64	NConv	Contingency under review
	P2-4:A13:5:_PANOCH1 230KV - SECTION 1D & 2D	P2-4	Bus-Tie-Breaker	44	NA	NA	NA	91	NA	9	122	NA	Sensitivity only

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	2028 Summer-Off Peak	2025 Spring Off-Peak	2028 Spring Off-Peak	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	2028 SP High CEC Forecast	
Wilson 230kV reactor	P2-4:A14:34:_HELMS PP1 SECTION 1D & HELMS PP2 SECTION 1E 230KV	P2-4	Bus-Tie-Breaker	89	97	89	61	44	105	8	72	82	Generation Re-dispatch
	P2-4:A14:35:_HELMS PP2 SECTION 1E & HELMS PP3 SECTION 1F 230KV	P2-4	Bus-Tie-Breaker	NConv	NConv	96	61	62	120	8	72	103	Generation Re-dispatch
	P5-5a:A14:1:_GATES SECTION D & E 230 KV BUS (FAILURE OF NON-REDUNDANT RELAY)	P5-5	Non-Redundant Relay	35	39	NConv	59	120	76	14	158	48	Install Redundant Relay
	P5-5c:A13:1:_Los Banos 500-230-70kV Batt(Failure OF NON-REDUNDANT BATT)	P5-5	Non-Redundant Relay	112	112	NConv	NConv	NConv	NConv	20	NConv	NConv	Install Redundant battery
	P5-5c:A13:4:_Panoche 230-115kV Batt(Failure OF NON-REDUNDANT BATT)	P5-5	Non-Redundant Relay	65	62	30	63	123	85	19	NConv	74	Install Redundant battery
	P5-5c:A14:12:_Mustang SW STA 230kV Batt(Failure OF NON-REDUNDANT BATT)	P5-5	Non-Redundant Relay	78	73	NConv	28	64	55	23	114	83	Install Redundant battery
	P5-5c:A14:14:_Gates 230-70kV Batt(Failure OF NON-REDUNDANT BATT)	P5-5	Non-Redundant Relay	33	39	NConv	59	118	76	14	156	47	Install Redundant battery
	P5-5c:A14:2:_Gregg 230kV Batt(Failure OF NON-REDUNDANT BATT)	P5-5	Non-Redundant Relay	NConv	NConv	NConv	11	68	76	17	72	NConv	Install Redundant battery
	P7-1:A13:13:_BORDEN-GREGG 230KV #1 & #2 [4400]	P7-1	DCTL	NConv	NConv	141	13	56	66	14	64	NConv	under review
	P7-1:A13:6:_PANOCHE-TRANQLTYSS #1 230KV [0] & PANOCHE-TRANQLTYSS #2 230KV [0]	P7-1	DCTL	49	NA	NA	NA	88	NA	9	119	NA	Sensitivity only
	P7-1:A14:22:_HENTAP1-MUSTANGSS #1 230KV [0] & HERNDON-KEARNEY 230KV [4900]	P7-1	DCTL	82	88	NConv	29	56	30	38	107	79	Continue to monitor
	P7-1:A14:26:_HENTAP1-MUSTANGSS #1 230KV [0] & TRANQLTYSS-MCMULLN1 #1 230KV [0]	P7-1	DCTL	88	96	NConv	27	62	32	39	115	87	Continue to monitor
	P7-1:A14:3:_MUSTANGSS-GATES #1 230KV [0] & MUSTANGSS-GATES #2 230KV [0]	P7-1	DCTL	38	49	68	61	95	77	11	128	36	Sensitivity only
	P7-1:A14:4:_MUSTANGSS-GATES #1 230KV [0] & MUSTANGSS-GATES #2 230KV [0] (2)	P7-1	DCTL	77	82	NConv	29	64	55	22	114	71	Continue to monitor
Wilson- El Capitan No 1 115kV line	P1-2:A13:52:_WILSON-ATWATER #2 115KV [4160] & P1-2:A13:44:_ATWATER-LIVINGSTON-MERCED 115KV [1030] MOAS OPENED ON ATWATR J_MERCED	P6	N-1-1	<100	122	160	<100	<100	<100	<100	<100	124	Operating solution, RAS or increase line capacity
	P1-2:A13:44:_ATWATER-LIVINGSTON-MERCED 115KV [1030] MOAS OPENED ON ATWATR J_MERCED & P1-2:A13:54:_EL CAPITAN-WILSON 115KV [1510]	P6	N-1-1	139	136	185	<100	106	<100	<100	107	138	Operating solution, RAS or increase line capacity
Wilson-Le Grand 115 kV Line	P5-5c:A13:1:_Los Banos 500-230-70kV Batt(Failure OF NON-REDUNDANT BATT)	P5-5	Non-Redundant Relay	23	20	NConv	NConv	NConv	NConv	33	NConv	NConv	Install Redundant battery
Wilson-Merced #1 115 kV Line	P2-2:A13:17:_WILSON B 115KV SECTION 2D	P2-2	Bus	119	NA	NA	NA	110	NA	81	117	NA	Project:Wilson 115kV area reinforcement
	P2-3:A13:31:_WILSON B - 2D 115KV & WILSON-ORO LOMA LINE	P2-3	Non-Bus-Tie Breaker	119	NA	NA	NA	110	NA	81	117	NA	Project:Wilson 115kV area reinforcement
	P7-1:A13:10:_ATWATER-EL CAPITAN 115KV [1020] & WILSON-ATWATER #2 115KV [4160]	P7-1	DCTL	94	89	109	38	83	18	66	87	90	Continue to monitor
	P7-1:A13:12:_EL CAPITAN-WILSON 115KV [1510] & WILSON-ATWATER #2 115KV [4160]	P7-1	DCTL	94	89	107	42	83	2	79	87	90	Continue to monitor
Wilson-Merced #2 115 kV Line	P2-2:A13:16:_WILSON A 115KV SECTION 1D	P2-2	Bus	113	NA	NA	NA	104	NA	76	113	NA	Project:Wilson 115kV area reinforcement
	P2-3:A13:30:_WILSON A - 1D 115KV & WILSONSTCOM-WILSON A #1 LINE	P2-3	Non-Bus-Tie Breaker	113	NA	NA	NA	104	NA	76	113	NA	Project:Wilson 115kV area reinforcement
Wilson-Merced No 2 115kV line	P7-1:A13:10:_ATWATER-EL CAPITAN 115KV [1020] & WILSON-ATWATER #2 115KV [4160]	P7-1	DCTL	NA	85	103	36	NA	17	NA	NA	85	Continue to monitor
	P7-1:A13:12:_EL CAPITAN-WILSON 115KV [1510] & WILSON-ATWATER #2 115KV [4160]	P7-1	DCTL	NA	85	102	40	NA	2	NA	NA	85	Continue to monitor
	P1-2:A13:61:_PANOCHE-ORO LOMA 115KV [3240]	P1-2	N-1	109	99	40	12	63	35	25	63	101	Project:Wilson 115kV area reinforcement
	P2-1:A13:49:_PANOCHE-ORO LOMA 115KV [3240] (PANOCHEJ-PANOCHE2)	P2-1	Line Section w/o Fault	171	164	52	34	91	28	54	92	167	Project: Oroloma Area reinforcement

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	2028 Summer-Off Peak	2025 Spring Off-Peak	2028 Spring Off-Peak	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	2028 SP High CEC Forecast	
Wilson-Oro Loma 115 kV Line	P2-1:A13:50:_PANOCHE-ORO LOMA 115KV [3240] (PANOCHEJ-HAMMONDS)	P2-1	Line Section w/o Fault	137	130	48	25	78	31	39	78	132	Project: Oroloma Area reinforcement
	P2-2:A13:25:_PANOCHE2 115KV SECTION 2D	P2-2	Bus	171	164	52	34	91	28	54	92	167	under review
	P2-3:A13:42:_PANOCHE2 - 2D 115KV & PANOCHE-EXCELSIOR SW STA #2 LINE	P2-3	Non-Bus-Tie Breaker	171	163	52	34	91	27	54	92	167	under review
	P2-4:A13:13:_PANOCHE1 SECTION 1D & PANOCHE2 SECTION 2D 115KV	P2-4	Bus-Tie-Breaker	174	165	47	34	92	28	54	94	169	under review
	P5-5c:A13:1:_Los Banos 500-230-70kV Batt(Failure of Non-Redundant Batt)	P5-5	Non-Redundant Relay	NA	49	NConv	NConv	NA	NConv	NA	NA	NConv	Install Redundant battery
	P5-5c:A13:24:_Hammonds 115kV Batt(Failure of Non-Redundant Batt)	P5-5	Non-Redundant Relay	109	99	NA	12	63	35	25	63	101	Install Redundant battery
	P5-5c:A13:4:_Panoche 230-115kV Batt(Failure of Non-Redundant Batt)	P5-5	Non-Redundant Relay	110	99	51	12	66	35	25	NConv	102	Install Redundant battery
	P5-5c:A13:1:_Los Banos 500-230-70kV Batt(Failure of Non-Redundant Batt)	P5-5	Non-Redundant Relay	40	49	NConv	NConv	NConv	NConv	29	NConv	NConv	Install Redundant battery
	P7-1:A13:7:_LOS BANOS-PANOCHE #1 230KV [5030] & PANOCHE-ORO LOMA 115KV [3240]	P7-1	DCTL	109	NA	NA	NA	63	NA	25	63	NA	under review
Wilson-Storey 230kV Line No 1	P5-5a:A14:1:_GATES SECTION D & E 230 KV BUS (Failure of Non-Redundant Relay)	P5-5	Non-Redundant Relay	3	6	NConv	43	76	28	7	104	3	Install Redundant Relay
	P5-5c:A13:1:_Los Banos 500-230-70kV Batt(Failure of Non-Redundant Batt)	P5-5	Non-Redundant Relay	45	39	NConv	NConv	NConv	NConv	7	NConv	NConv	Install Redundant battery
	P5-5c:A14:14:_Gates 230-70kV Batt(Failure of Non-Redundant Batt)	P5-5	Non-Redundant Relay	3	6	NConv	43	75	28	7	103	3	Install Redundant battery
Wilson-Storey 230kV Line No 2	P5-5c:A13:1:_Los Banos 500-230-70kV Batt(Failure of Non-Redundant Batt)	P5-5	Non-Redundant Relay	35	30	NConv	NConv	NConv	NConv	6	NConv	NConv	Install Redundant battery

Substation	Contingency	Category	Category Description	Voltage PU (Baseline Scenarios)						Voltage PU (Sensitivity Scenarios)			Project & Potential Mitigation Solutions
				2025 Summer Peak	2028 Summer Peak	2035 Summer Peak	2028 Summer-Off Peak	2025 Spring Off-Peak	2028 Spring Off-Peak	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	2028 SP High CEC Forecast	
AIRPROD 115 kV	Base Case	P0	Base case	1.01	1.01	0.94	1.07	1.02	1.07	1.02	1.02	1.01	Continue to monitor
AIRPROD 115 kV	P1-3:A14:7:_MC CALL 230/115KV TB 3&P1-3:A14:5:_MC CALL 230/115KV TB 1	P6	N-1-1	NA	NA	0.88	NA	NA	NA	NA	NA	NA	Continue to monitor
AIRWAYS 115 kV	Base Case	P0	Base case	0.98	0.98	0.90	1.07	1.00	1.06	1.01	1.00	0.98	Continue to monitor
AIRWAYS 115 kV	P1-2:A14:70:_HERNDON-BARTON 115KV [1750]	P1	N-1	0.95	0.95	0.86	1.08	0.99	1.08	0.99	0.99	0.95	Continue to monitor
AIRWAYS 115 kV	P2-4:A14:1:_HERNDON 230KV - SECTION 1E & 2E	P2	Bus/Breaker	0.90	0.91	0.84	1.08	0.96	1.08	0.97	0.96	0.90	Under review
AIRWAYS 115 kV	P1-1:A14:47:_KERCKHOFFPH2 13.80KV GEN UNIT 1&P1-2:A14:70:_HERNDON-BARTON 115KV [1750]	P3	G-1/N-1	NA	NA	0.85	NA	NA	NA	NA	NA	NA	Continue to monitor
AIRWAYS 115 kV	P5-5a:A14:2:_HERNDON #1 115KV BUS (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant battery supply/Relay	0.91	0.92	0.88	1.08	0.98	1.08	0.97	0.97	0.91	Install redundant relay
AIRWAYS 115 kV	P1-2:A14:49:_BARTON-AIRWAYS-SANGER 115KV [1060]&P1-2:A14:72:_HERNDON-MANCHESTER 115KV [1780]	P6	N-1-1	NA	NA	0.84	NA	NA	NA	NA	NA	NA	Continue to monitor
AIRWAYS 115 kV	P7-1:A14:25:_HERNDON-BARTON 115KV [1750] & MANCHESTER-AIRWAYS-SANGER 115KV [2180]	P7	DCTL	0.94	0.95	0.84	1.08	0.98	1.08	0.98	0.98	0.94	Continue to monitor
AIRWAYS2 115 kV	Base Case	P0	Base case	0.98	0.98	0.90	1.07	1.01	1.06	1.01	1.01	0.98	Continue to monitor
AIRWAYS2 115 kV	P1-2:A14:72:_HERNDON-MANCHESTER 115KV [1780]	P1	N-1	0.96	0.96	0.87	1.07	0.99	1.06	0.99	0.99	0.96	Continue to monitor
AIRWAYS2 115 kV	P2-4:A14:1:_HERNDON 230KV - SECTION 1E & 2E	P2	Bus/Breaker	0.91	0.91	0.85	1.08	0.96	1.07	0.97	0.97	0.91	Continue to monitor
AIRWAYS2 115 kV	P1-1:A14:47:_KERCKHOFFPH2 13.80KV GEN UNIT 1&P1-2:A14:72:_HERNDON-MANCHESTER 115KV [1780]	P3	G-1/N-1	NA	NA	0.86	NA	NA	NA	NA	NA	NA	Continue to monitor
AIRWAYS2 115 kV	P5-5a:A14:2:_HERNDON #1 115KV BUS (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant battery supply/Relay	0.91	0.92	0.88	1.08	0.98	1.08	0.97	0.98	0.92	Install redundant relay
AIRWAYS2 115 kV	P1-2:A14:49:_BARTON-AIRWAYS-SANGER 115KV [1060]&P1-2:A14:72:_HERNDON-MANCHESTER 115KV [1780]	P6	N-1-1	NA	NA	0.84	NA	NA	NA	NA	NA	NA	Continue to monitor
AIRWAYS2 115 kV	P7-1:A14:25:_HERNDON-BARTON 115KV [1750] & MANCHESTER-AIRWAYS-SANGER 115KV [2180]	P7	DCTL	0.94	0.94	0.84	1.08	0.98	1.08	0.98	0.98	0.94	Continue to monitor
ANGIOLA 70 kV	Base Case	P0	Base case	0.98	0.99	0.89	1.07	0.99	1.08	1.03	0.99	0.99	Continue to monitor
ANGIOLA 70 kV	P1-2:A14:82:_WAUKENA SW STA-CORCORAN 115KV [8773]	P1	N-1	0.92	0.94	0.83	1.07	0.94	1.08	1.01	0.94	0.94	Continue to monitor
ANGIOLA 70 kV	P2-3:A14:147:_WAUKENA_SS 115KV - RING R2 & R1	P2	Bus/Breaker	0.92	0.94	0.82	1.07	0.94	1.08	1.01	0.94	0.93	Continue to monitor
ANGIOLA 70 kV	P1-1:A14:52:_JGBSWLT 12.47KV GEN UNIT ST&P1-2:A14:82:_WAUKENA SW STA-CORCORAN 115KV [8773]	P3	G-1/N-1	NA	NA	0.81	NA	NA	NA	NA	NA	NA	Continue to monitor
ANGIOLA 70 kV	P5-5c:A14:38:_Waukena SW STA 115KV Batt(Failure OF NON-REDUNDENT BATT)	P5	Non-Redundant battery supply/Relay	0.92	0.94	0.83	1.07	0.95	1.08	1.01	0.94	0.94	Install redundant battery
ANGIOLA 70 kV	P7-1:A14:13:_MCCALL-KINGSBURG #1 115KV [2290] & MCCALL-KINGSBURG #2 115KV [2301]	P7	DCTL	0.91	0.94	0.51	1.05	0.88	1.05	0.99	0.91	0.94	Continue to monitor

Substation	Contingency	Category	Category Description	Voltage PU (Baseline Scenarios)						Voltage PU (Sensitivity Scenarios)			Project & Potential Mitigation Solutions
				2025 Summer Peak	2028 Summer Peak	2035 Summer Peak	2028 Summer-Off Peak	2025 Spring Off-Peak	2028 Spring Off-Peak	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	2028 SP High CEC Forecast	
ARBURUA 70 kV	P1-1:A13:26:_VEGA 0.36KV GEN UNIT 1&P1-2:A13:73:_LOS BANOS-LIVINGSTON JCT-CANAL 70KV [8940]	P3	G-1/N-1	0.89	0.88	NA	NA	NA	NA	NA	NA	0.88	Project:Losbanos area reinforcement
ASHLAN 230 kV	Base Case	P0	Base case	0.98	0.98	0.91	1.04	1.01	1.03	1.01	1.00	0.97	Continue to monitor
ASHLAN 230 kV	P1-3:A14:45:_SANGERCGRN 115/13.8KV TB 1	P1	N-1	0.98	0.98	0.90	1.04	1.01	1.03	1.01	1.00	0.97	Continue to monitor
ASHLAN 230 kV	P1-1:A14:67:_RIOBRVFSNO 12.47KV GEN UNIT 1&P1-4:A14:30:_GREGG SVD=V	P3	G-1/N-1	NA	NA	0.90	NA	NA	NA	NA	NA	NA	Continue to monitor
ASHLAN 230 kV	P5-5c:A14:21:_Sanger 115KV Batt(Failure OF NON-REDUNDANT BATT)	P5	Non-Redundant battery supply/Relay	0.98	0.98	0.90	1.04	1.01	1.03	1.01	1.00	0.97	Install redundant battery
ASHLAN 230 kV	P1-2:A14:15:_HELMS-GREGG #1 230KV [4870]&P1-2:A14:20:_MUSTANG SW STA-GREGG 230KV [4700]	P6	N-1-1	NA	NA	0.89	NA	NA	NA	NA	NA	NA	Continue to monitor
ATWATER 115 kV	P2-3:A14:1:_GREGG 230KV - MIDDLE BREAKER BAY 1	P2	Bus/Breaker	NConv	NConv	0.73	1.05	1.00	1.03	1.02	1.00	NConv	Continue to monitor
ATWATER 115 kV	P5-5c:A13:2:_Wilson 230-115KV Batt(Failure OF NON-REDUNDANT BATT)	P5	Non-Redundant battery supply/Relay	NConv	NConv	NConv	0.29	NConv	0.59	NConv	NConv	NConv	Install redundant battery
ATWATER 115 kV	P7-1:A13:10:_ATWATER-EL CAPITAN 115KV [1020] & WILSON-ATWATER #2 115KV [4160]	P7	DCTL	0.96	0.94	0.90	1.05	0.98	1.02	0.99	0.98	0.94	Continue to monitor
ATWATER 115 kV	P7-1:A13:13:_BORDEN-GREGG 230KV #1 & #2 [4400]	P7	DCTL	NConv	NConv	0.73	1.05	1.00	1.03	1.02	1.00	NConv	Continue to monitor
AUBERRY 70 kV	Base Case	P0	Base case	1.06	1.06	0.92	1.05	0.99	1.07	1.10	0.99	1.06	Continue to monitor
AUBERRY 70 kV	P1-2:A14:107:_FRIANT-COPPERMINE 70KV [8660]	P1	N-1	1.06	1.06	0.83	1.06	0.96	1.07	1.12	0.98	1.06	Continue to monitor
AUBERRY 70 kV	P2-3:A14:1:_GREGG 230KV - MIDDLE BREAKER BAY 1	P2	Bus/Breaker	NConv	NConv	0.50	1.05	0.98	1.07	1.09	0.99	NConv	Continue to monitor
AUBERRY 70 kV	P5-5c:A13:8:_Borden 230-70KV Batt(Failure OF NON-REDUNDANT BATT)	P5	Non-Redundant battery supply/Relay	NA	NA	0.62	NA	NA	NA	NA	NA	NA	Install redundant battery
AUBERRY 70 kV	P7-1:A13:13:_BORDEN-GREGG 230KV #1 & #2 [4400]	P7	DCTL	NConv	NConv	0.50	1.05	0.98	1.07	1.09	0.99	NConv	Continue to monitor
AVENAL 70 kV	P2-2:A14:20:_GATES D 230KV SECTION 2D	P2	Bus/Breaker	0.94	0.97	0.80	1.06	0.84	1.07	1.04	0.90	0.97	Continue to monitor
AVENAL 70 kV	P2-4:A14:10:_GATES D 230KV - SECTION 2D & 1D	P2	Bus/Breaker	0.94	0.97	0.80	1.06	0.84	1.07	1.04	0.90	0.97	Continue to monitor
AVENAL 70 kV	P1-1:A14:68:_CHV.COAL 9.11KV GEN UNIT 1&P1-3:A14:13:_GATES D 230/70KV TB 5	P3	G-1/N-1	NA	NA	0.71	NA	0.80	NA	NA	0.86	NA	Continue to monitor
AVENAL 70 kV	P5-5a:A14:1:_GATES SECTION D & E 230 KV BUS (Failure OF NON-REDUNDANT RELAY)	P5	Non-Redundant battery supply/Relay	0.94	0.97	NConv	1.06	0.83	1.07	1.04	0.88	0.97	Install redundant relay
BARTON 115 kV	Base Case	P0	Base case	0.98	0.98	0.91	1.07	1.01	1.05	1.01	1.01	0.98	Continue to monitor
BARTON 115 kV	P1-2:A14:70:_HERNDON-BARTON 115KV [1750]	P1	N-1	0.95	0.95	0.85	1.08	0.99	1.08	0.99	0.99	0.95	Continue to monitor
BARTON 115 kV	P2-1:A14:51:_BARTON-AIRWAYS-SANGER 115KV [1060] (SANGER-AIRWAYJ2)	P2	Bus/Breaker	0.97	0.97	0.87	1.07	1.00	1.06	1.01	1.00	0.97	Continue to monitor
BARTON 115 kV	P2-4:A14:1:_HERNDON 230KV - SECTION 1E & 2E	P2	Bus/Breaker	0.90	0.91	0.83	1.08	0.96	1.08	0.97	0.96	0.90	Under review

Reliability Assessment - Preliminary Study Results

Study Area: PG&E Greater Fresno
Low Voltages



Substation	Contingency	Category	Category Description	Voltage PU (Baseline Scenarios)						Voltage PU (Sensitivity Scenarios)			Project & Potential Mitigation Solutions
				2025 Summer Peak	2028 Summer Peak	2035 Summer Peak	2028 Summer-Off Peak	2025 Spring Off-Peak	2028 Spring Off-Peak	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	2028 SP High CEC Forecast	
BARTON 115 kV	P1-1:A14:47:_KERCKHOFFPH2 13.80KV GEN UNIT 1&P1-2:A14:70:_HERNDON-BARTON 115KV [1750]	P3	G-1/N-1	NA	NA	0.85	NA	NA	NA	NA	NA	NA	Continue to monitor
BARTON 115 kV	P5-5a:A14:2:_HERNDON #1 115KV BUS (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant battery supply/Relay	0.91	0.92	0.87	1.08	0.98	1.08	0.97	0.97	0.91	Install redundant relay
BARTON 115 kV	P1-3:A14:7:_MC CALL 230/115KV TB 3&P1-2:A14:70:_HERNDON-BARTON 115KV [1750]	P6	N-1-1	NA	NA	0.84	NA	NA	NA	NA	NA	NA	Continue to monitor
BARTON 115 kV	P7-1:A14:25:_HERNDON-BARTON 115KV [1750] & MANCHESTER-AIRWAYS-SANGER 115KV [2180]	P7	DCTL	0.95	0.95	0.84	1.08	0.98	1.08	0.98	0.98	0.95	Continue to monitor
BER VLLY 70 kV	Base Case	P0	Base case	0.95	0.95	0.96	1.00	0.96	0.98	0.96	0.96	0.95	Add voltage support
BER VLLY 70 kV	P1-1:A13:33:_EXCHQUER 13.80KV GEN UNIT 1	P1	N-1	0.93	0.92	0.88	1.00	0.94	0.99	0.94	0.94	0.92	Continue to monitor
BER VLLY 70 kV	P2-3:A14:1:_GREGG 230KV - MIDDLE BREAKER BAY 1	P2	Bus/Breaker	NConv	NConv	0.85	0.99	0.96	0.98	0.96	0.96	NConv	Continue to monitor
BER VLLY 70 kV	P1-1:A13:33:_EXCHQUER 13.80KV GEN UNIT 1&P1-2:A13:60:_PANOCHE-MENDOTA 115KV [3230]	P3	G-1/N-1	NA	NA	0.81	NA	NA	NA	NA	NA	NA	Continue to monitor
BER VLLY 70 kV	P5-5c:A13:2:_Wilson 230-115kv Batt(Failure OF NON-REDUNDENT BATT)	P5	Non-Redundant battery supply/Relay	NConv	NConv	NConv	0.73	NConv	0.93	NConv	NConv	NConv	Install redundant battery
BER VLLY 70 kV	P1-2:A13:46:_WILSON-LE GRAND 115KV [4170]&P1-2:A13:60:_PANOCHE-MENDOTA 115KV [3230]	P6	N-1-1	NA	NA	0.62	NA	0.81	NA	0.85	0.79	NA	Continue to monitor
BER VLLY 70 kV	P7-1:A13:13:_BORDEN-GREGG 230KV #1 & #2 [4400]	P7	DCTL	NConv	NConv	0.85	0.99	0.96	0.98	0.96	0.96	NConv	Continue to monitor
BIOLA 70 kV	P2-4:A14:1:_HERNDON 230KV - SECTION 1E & 2E	P2	Bus/Breaker	1.02	1.02	0.89	1.05	1.01	1.05	1.03	1.00	1.02	Continue to monitor
BONITA 70 kV	Base Case	P0	Base case	1.00	1.00	0.94	1.04	1.02	1.06	1.03	1.02	1.00	Continue to monitor
BONITA 70 kV	P2-3:A14:1:_GREGG 230KV - MIDDLE BREAKER BAY 1	P2	Bus/Breaker	NConv	NConv	0.55	1.04	1.01	1.05	1.02	1.00	NConv	Continue to monitor
BONITA 70 kV	P7-1:A13:13:_BORDEN-GREGG 230KV #1 & #2 [4400]	P7	DCTL	NConv	NConv	0.55	1.04	1.01	1.05	1.02	1.00	NConv	Continue to monitor
BOSWELL 70 kV	Base Case	P0	Base case	0.99	1.00	0.90	1.07	0.99	1.08	1.03	1.00	0.99	Continue to monitor
BOSWELL 70 kV	P1-2:A14:82:_WAUKENA SW STA-CORCORAN 115KV [8773]	P1	N-1	0.93	0.95	0.84	1.07	0.95	1.08	1.02	0.95	0.94	Continue to monitor
BOSWELL 70 kV	P2-3:A14:148:_WAUKENA_SS 115KV - RING R2 & R3	P2	Bus/Breaker	0.92	0.94	0.83	1.07	0.95	1.08	1.02	0.95	0.94	Continue to monitor
BOSWELL 70 kV	P1-1:A14:52:_JGBSWLT 12.47KV GEN UNIT ST&P1-2:A14:82:_WAUKENA SW STA-CORCORAN 115KV [8773]	P3	G-1/N-1	NA	NA	0.81	NA	NA	NA	NA	NA	NA	Continue to monitor
BOSWELL 70 kV	P5-5c:A14:38:_Waukena SW STA 115kv Batt(Failure OF NON-REDUNDENT BATT)	P5	Non-Redundant battery supply/Relay	0.92	0.94	0.83	1.07	0.95	1.08	1.02	0.95	0.94	Install redundant battery
BOSWELL 70 kV	P7-1:A14:13:_MCCALL-KINGSBURG #1 115KV [2290] & MCCALL-KINGSBURG #2 115KV [2301]	P7	DCTL	0.91	0.95	0.52	1.05	0.88	1.05	0.99	0.91	0.94	Continue to monitor

Substation	Contingency	Category	Category Description	Voltage PU (Baseline Scenarios)						Voltage PU (Sensitivity Scenarios)			Project & Potential Mitigation Solutions
				2025 Summer Peak	2028 Summer Peak	2035 Summer Peak	2028 Summer-Off Peak	2025 Spring Off-Peak	2028 Spring Off-Peak	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	2028 SP High CEC Forecast	
BOSWELL 70 kV	P7-1:A14:27:_HERNDON-WOODWARD 115KV [1790] & BORDEN-COPPERMINE 70KV [8500]	P7	DCTL	0.99	1.00	0.89	1.07	0.99	1.08	1.03	1.00	0.99	Continue to monitor
CAL AVE 115 kV	Base Case	P0	Base case	0.96	0.96	0.89	1.07	1.00	1.07	0.99	1.00	0.96	Continue to monitor
CAL AVE 115 kV	P1-2:A14:67:_SANGER-CALIFORNIA AVE 115KV [9130]	P1	N-1	0.90	0.90	0.82	1.06	0.97	1.07	0.93	0.97	0.89	Add voltage support
CAL AVE 115 kV	P2-4:A14:9:_MC CALL 230KV - SECTION 1D & 2D	P2	Bus/Breaker	0.88	0.89	NConv	1.07	0.96	1.06	0.92	0.95	0.88	Under review
CAL AVE 115 kV	P1-1:A14:59:_MCCALL1T 13.20KV GEN UNIT 1&P1-2:A14:67:_SANGER-CALIFORNIA AVE 115KV [9130]	P3	G-1/N-1	0.89	0.89	0.81	NA	NA	NA	NA	NA	0.89	Operation solution
CAL AVE 115 kV	P5-5c:A14:21:_Sanger 115kV Batt(Failure OF NON-REDUNDANT BATT)	P5	Non-Redundant battery supply/Relay	0.91	0.92	0.87	1.06	0.98	1.07	0.95	0.98	0.91	Install redundant battery
CAL AVE 115 kV	P1-2:A14:69:_MCCALL-WEST FRESNO #2 115KV [2370]&P1-2:A14:67:_SANGER-CALIFORNIA AVE 115KV [9130]	P6	N-1-1	0.58	0.59	0.52	NA	0.87	NA	0.70	0.86	0.58	Operation solution
CAL AVE 115 kV	P7-1:A13:5:_BELLOTA-COTTLE 230KV [4360] & BELLOTA-WARNERVILLE 230KV [4380]	P7	DCTL	NConv	NConv	0.90	NConv	1.00	1.07	NConv	1.00	NConv	Continue to monitor
CALFLAX 70 kV	P2-2:A14:20:_GATES D 230KV SECTION 2D	P2	Bus/Breaker	0.93	0.95	0.83	1.04	0.89	1.04	1.01	0.95	0.96	Continue to monitor
CALFLAX 70 kV	P1-1:A14:68:_CHV.COAL 9.11KV GEN UNIT 1&P1-3:A14:13:_GATES D 230/70KV TB 5	P3	G-1/N-1	NA	0.89	0.76	NA	0.86	NA	NA	NA	0.89	Operation solution
CALFLAX 70 kV	P5-5a:A14:1:_GATES SECTION D & E 230 KV BUS (FAILURE OF NON-REDUNDANT RELAY)	P5	Non-Redundant battery supply/Relay	0.92	0.95	NConv	1.04	0.88	1.04	1.01	0.93	0.96	Install redundant relay
CAMDEN 70 kV	Base Case	P0	Base case	0.92	0.93	0.85	1.05	0.95	1.06	0.97	0.96	0.93	Add voltage support
CAMDEN 70 kV	P1-2:A14:77:_GWF-KINGSBURG 115KV [1743]	P1	N-1	0.91	0.92	0.83	1.06	0.95	1.07	0.97	0.96	0.92	Continue to monitor
CAMDEN 70 kV	P2-1:A14:99:_GWF-KINGSBURG 115KV [1743] (GWFHANFORDSS-CONTADNA)	P2	Bus/Breaker	0.91	0.92	0.89	1.06	0.95	1.07	0.97	0.95	0.91	Continue to monitor
CAMDEN 70 kV	P2-4:A14:9:_MC CALL 230KV - SECTION 1D & 2D	P2	Bus/Breaker	0.85	0.86	NConv	1.05	0.91	1.06	0.91	0.91	0.86	Add voltage support
CAMDEN 70 kV	P1-1:A14:47:_KERCKHOFFPH2 13.80KV GEN UNIT 1&P1-2:A14:86:_LEPRINO SW STA-GWF HANFORD SW STA 115KV [1740]	P3	G-1/N-1	NA	NA	0.79	NA	NA	NA	NA	NA	NA	Continue to monitor
CAMDEN 70 kV	P5-5c:A14:40:_Leprino SW STA 115kV Batt(Failure OF NON-REDUNDANT BATT)	P5	Non-Redundant battery supply/Relay	0.92	0.93	0.81	1.06	0.96	1.07	0.97	0.96	0.93	Install redundant battery
CAMDEN 70 kV	P7-1:A14:13:_MCCALL-KINGSBURG #1 115KV [2290] & MCCALL-KINGSBURG #2 115KV [2301]	P7	DCTL	0.84	0.87	0.49	1.01	0.84	1.02	0.91	0.87	0.87	Add voltage support
CANAL 70 kV	P1-2:A13:73:_LOS BANOS-LIVINGSTON JCT-CANAL 70KV [8940]	P1	N-1	0.83	0.85	0.92	1.05	0.90	1.05	0.93	0.93	0.84	Project:Losbanos area reinforcement
CANAL 70 kV	P2-3:A13:52:_LOS BANS - MA 70KV & LOS BANOS-O'NEILL PGP LINE	P2	Bus/Breaker	NA	NA	0.84	NA	NA	NA	NA	NA	NA	Continue to monitor
CANAL 70 kV	P1-1:A13:26:_VEGA 0.36KV GEN UNIT 1&P1-2:A13:73:_LOS BANOS-LIVINGSTON JCT-CANAL 70KV [8940]	P3	G-1/N-1	0.78	0.80	NA	NA	NA	NA	0.90	0.90	0.80	Project:Losbanos area reinforcement
CANAL 70 kV	P5-5c:A13:4:_Panoche 230-115KV Batt(Failure OF NON-REDUNDANT BATT)	P5	Non-Redundant battery supply/Relay	1.00	1.00	0.90	1.05	0.97	1.07	1.02	NConv	1.00	Install redundant battery

Substation	Contingency	Category	Category Description	Voltage PU (Baseline Scenarios)						Voltage PU (Sensitivity Scenarios)			Project & Potential Mitigation Solutions
				2025 Summer Peak	2028 Summer Peak	2035 Summer Peak	2028 Summer-Off Peak	2025 Spring Off-Peak	2028 Spring Off-Peak	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	2028 SP High CEC Forecast	
CANANDGA 70 kV	P2-3:A14:1:_GREGG 230KV - MIDDLE BREAKER BAY 1	P2	Bus/Breaker	NConv	NConv	0.59	1.04	1.03	1.04	1.03	1.03	NConv	Continue to monitor
CANANDGA 70 kV	P7-1:A13:13:_BORDEN-GREGG 230KV #1 & #2 [4400]	P7	DCTL	NConv	NConv	0.59	1.04	1.03	1.04	1.03	1.03	NConv	Continue to monitor
CASSIDY 70 kV	P2-3:A14:1:_GREGG 230KV - MIDDLE BREAKER BAY 1	P2	Bus/Breaker	NConv	NConv	0.58	1.04	1.01	1.05	1.05	1.02	NConv	Continue to monitor
CASSIDY 70 kV	P5-5c:A13:8:_Borden 230-70kV Batt(Failure OF NON-REDUNDANT BATT)	P5	Non-Redundant battery supply/Relay	NA	NA	0.66	NA	NA	NA	NA	NA	NA	Install redundant battery
CASSIDY 70 kV	P7-1:A13:13:_BORDEN-GREGG 230KV #1 & #2 [4400]	P7	DCTL	NConv	NConv	0.58	1.04	1.01	1.05	1.05	1.02	NConv	Continue to monitor
CERTTEED 115 kV	P2-1:A13:16:_LE GRAND-CHOWCHILLA 115KV [2110] (CERTAN T-LE GRAND)	P2	Bus/Breaker	0.93	0.95	0.87	1.05	0.99	1.05	0.97	0.99	0.94	Continue to monitor
CERTTEED 115 kV	P2-3:A14:1:_GREGG 230KV - MIDDLE BREAKER BAY 1	P2	Bus/Breaker	NConv	NConv	0.84	1.04	1.00	1.03	1.00	1.00	NConv	Continue to monitor
CERTTEED 115 kV	P1-1:A13:33:_EXCHQUER 13.80KV GEN UNIT 1&P1-2:A13:60:_PANOCHE-MENDOTA 115KV [3230]	P3	G-1/N-1	NA	NA	0.87	NA	NA	NA	NA	NA	NA	Continue to monitor
CERTTEED 115 kV	P1-2:A13:46:_WILSON-LE GRAND 115KV [4170]&P1-2:A13:60:_PANOCHE-MENDOTA 115KV [3230]	P6	N-1-1	NA	NA	0.54	NA	0.70	NA	NA	0.69	NA	Continue to monitor
CERTTEED 115 kV	P7-1:A13:13:_BORDEN-GREGG 230KV #1 & #2 [4400]	P7	DCTL	NConv	NConv	0.84	1.04	1.00	1.03	1.00	1.00	NConv	Continue to monitor
CHEVPIPE 70 kV	P2-3:A13:52:_LOS BANS - MA 70KV & LOS BANOS-O'NEILL PGP LINE	P2	Bus/Breaker	NA	NA	0.82	NA	NA	NA	NA	NA	NA	Continue to monitor
CHEVPLIN 70 kV	P2-2:A14:20:_GATES D 230KV SECTION 2D	P2	Bus/Breaker	0.93	0.96	0.80	1.06	0.85	1.06	1.03	0.90	0.96	Continue to monitor
CHEVPLIN 70 kV	P1-1:A14:68:_CHV.COAL 9.11KV GEN UNIT 1&P1-3:A14:13:_GATES D 230/70KV TB 5	P3	G-1/N-1	NA	0.89	0.72	NA	0.80	NA	NA	0.87	0.89	Operation solution
CHEVPLIN 70 kV	P5-5a:A14:1:_GATES SECTION D & E 230 KV BUS (FAILURE OF NON-REDUNDANT RELAY)	P5	Non-Redundant battery supply/Relay	0.93	0.96	NConv	1.05	0.83	1.06	1.03	0.89	0.96	Install redundant relay
CHLDHOSP 115 kV	Base Case	P0	Base case	0.99	0.99	0.91	1.07	1.02	1.05	1.02	1.02	0.98	Continue to monitor
CHLDHOSP 115 kV	P2-4:A14:21:_HERNDON 115KV - SECTION 1D & 2D	P2	Bus/Breaker	0.87	0.88	0.83	1.09	1.00	1.09	0.97	0.99	0.88	Under review
CHLDHOSP 115 kV	P1-1:A14:47:_KERCKHOFFPH2 13.80KV GEN UNIT 1&P1-3:A14:5:_MC CALL 230/115KV TB 1	P3	G-1/N-1	NA	NA	0.90	NA	NA	NA	NA	NA	NA	Continue to monitor
CHLDHOSP 115 kV	P1-4:A14:30:_GREGG SVD=V&P1-2:A14:75:_WOODWARD-SHEPHERD 115KV [1895]	P6	N-1-1	NA	NA	0.89	NA	NA	NA	NA	NA	NA	Continue to monitor
CHWCHLA2BM 115 kV	P2-1:A13:16:_LE GRAND-CHOWCHILLA 115KV [2110] (CERTAN T-LE GRAND)	P2	Bus/Breaker	0.94	0.95	0.87	1.05	0.99	1.05	0.97	0.99	0.95	Continue to monitor
CHWCHLA2BM 115 kV	P2-3:A14:1:_GREGG 230KV - MIDDLE BREAKER BAY 1	P2	Bus/Breaker	NConv	NConv	0.84	1.04	1.00	1.03	1.00	1.01	NConv	Continue to monitor
CHWCHLA2BM 115 kV	P7-1:A13:13:_BORDEN-GREGG 230KV #1 & #2 [4400]	P7	DCTL	NConv	NConv	0.84	1.04	1.00	1.03	1.00	1.01	NConv	Continue to monitor
CHWCHLA2BM 13.8 kV	P1-1:A13:33:_EXCHQUER 13.80KV GEN UNIT 1&P1-2:A13:60:_PANOCHE-MENDOTA 115KV [3230]	P3	G-1/N-1	NA	NA	0.87	NA	NA	NA	NA	NA	NA	Continue to monitor

Substation	Contingency	Category	Category Description	Voltage PU (Baseline Scenarios)						Voltage PU (Sensitivity Scenarios)			Project & Potential Mitigation Solutions
				2025 Summer Peak	2028 Summer Peak	2035 Summer Peak	2028 Summer-Off Peak	2025 Spring Off-Peak	2028 Spring Off-Peak	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	2028 SP High CEC Forecast	
CHWCHLA2BM 13.8 kV	P1-2:A13:46:_WILSON-LE GRAND 115KV [4170]&P1-2:A13:60:_PANOCHE-MENDOTA 115KV [3230]	P6	N-1-1	NA	NA	0.55	NA	0.70	NA	NA	0.69	NA	Continue to monitor
CHWCHLLA 115 kV	P1-2:A13:40:_LE GRAND-CHOWCHILLA 115KV [2110]	P1	N-1	0.85	0.87	NConv	1.07	0.92	1.08	0.94	0.92	0.87	Add voltage support
CHWCHLLA 115 kV	P2-1:A13:15:_LE GRAND-CHOWCHILLA 115KV [2110] (CHWCHLLA-CERTAN T)	P2	Bus/Breaker	0.85	0.87	NConv	1.07	0.92	1.08	0.94	0.92	0.87	Under review
CHWCHLLA 115 kV	P2-3:A14:1:_GREGG 230KV - MIDDLE BREAKER BAY 1	P2	Bus/Breaker	NConv	NConv	0.84	1.04	1.00	1.03	1.00	1.00	NConv	Continue to monitor
CHWCHLLA 115 kV	P1-1:A13:33:_EXCHQUER 13.80KV GEN UNIT 1&P1-2:A13:60:_PANOCHE-MENDOTA 115KV [3230]	P3	G-1/N-1	NA	NA	0.86	NA	NA	NA	NA	NA	NA	Continue to monitor
CHWCHLLA 115 kV	P5-5c:A13:12:_Le Grand 115kv Batt(Failure OF NON-REDUNDANT BATT)	P5	Non-Redundant battery supply/Relay	0.85	0.88	NA	1.07	0.92	1.08	0.94	0.92	0.87	Install redundant battery
CHWCHLLA 115 kV	P1-2:A13:46:_WILSON-LE GRAND 115KV [4170]&P1-2:A13:60:_PANOCHE-MENDOTA 115KV [3230]	P6	N-1-1	NA	NA	0.55	NA	0.70	NA	NA	0.69	NA	Continue to monitor
CHWCHLLA 115 kV	P7-1:A13:13:_BORDEN-GREGG 230KV #1 & #2 [4400]	P7	DCTL	NConv	NConv	0.84	1.04	1.00	1.03	1.00	1.00	NConv	Continue to monitor
CLOVIS-1 115 kV	Base Case	P0	Base case	0.98	0.98	0.91	1.07	1.02	1.07	1.01	1.01	0.98	Continue to monitor
CLOVIS-1 115 kV	P1-2:A14:48:_KERCKHOFF-CLOVIS-SANGER #1 115KV [1890]	P1	N-1	0.96	0.96	0.89	1.07	0.99	1.07	0.99	1.00	0.96	Continue to monitor
CLOVIS-1 115 kV	P2-4:A14:21:_HERNDON 115KV - SECTION 1D & 2D	P2	Bus/Breaker	0.91	0.92	0.87	1.09	1.00	1.08	0.98	0.99	0.91	Continue to monitor
CLOVIS-1 115 kV	P1-1:A14:47:_KERCKHOFFPH2 13.80KV GEN UNIT 1&P1-2:A14:74:_HERNDON-WOODWARD 115KV [1790]	P3	G-1/N-1	NA	NA	0.87	NA	NA	NA	NA	NA	NA	Continue to monitor
CLOVIS-1 115 kV	P5-5c:A14:16:_Shepherd 115kv Batt(Failure OF NON-REDUNDANT BATT)	P5	Non-Redundant battery supply/Relay	0.96	0.96	0.89	1.07	1.00	1.07	0.99	0.99	0.96	Install redundant battery
CLOVIS-1 115 kV	P1-2:A14:74:_HERNDON-WOODWARD 115KV [1790]&P1-2:A14:50:_KERCKHOFF-CLOVIS-SANGER #2 115KV [1900]	P6	N-1-1	NA	NA	0.85	NA	NA	NA	NA	NA	NA	Continue to monitor
CLOVIS-1 115 kV	P7-1:A14:27:_HERNDON-WOODWARD 115KV [1790] & BORDEN-COPPERMINE 70KV [8500]	P7	DCTL	0.96	0.96	0.88	1.07	1.02	1.07	1.00	1.01	0.96	Continue to monitor
CLOVIS-2 115 kV	Base Case	P0	Base case	0.97	0.97	0.90	1.08	1.01	1.07	1.00	1.01	0.97	Continue to monitor
CLOVIS-2 115 kV	P1-2:A14:70:_HERNDON-BARTON 115KV [1750]	P1	N-1	0.96	0.96	0.88	1.08	1.01	1.07	0.99	1.01	0.96	Continue to monitor
CLOVIS-2 115 kV	P2-1:A14:50:_KERCKHOFF-CLOVIS-SANGER #2 115KV [1900] (CLOVISJ2-SANGER)	P2	Bus/Breaker	0.90	0.90	0.82	1.08	0.98	1.08	0.97	0.97	0.90	Continue to monitor
CLOVIS-2 115 kV	P1-1:A14:47:_KERCKHOFFPH2 13.80KV GEN UNIT 1&P1-2:A14:74:_HERNDON-WOODWARD 115KV [1790]	P3	G-1/N-1	NA	NA	0.87	NA	NA	NA	NA	NA	NA	Continue to monitor
CLOVIS-2 115 kV	P5-5c:A14:16:_Shepherd 115kv Batt(Failure OF NON-REDUNDANT BATT)	P5	Non-Redundant battery supply/Relay	0.96	0.96	0.89	1.08	1.00	1.07	0.99	0.99	0.96	Install redundant battery
CLOVIS-2 115 kV	P1-2:A14:74:_HERNDON-WOODWARD 115KV [1790]&P1-2:A14:50:_KERCKHOFF-CLOVIS-SANGER #2 115KV [1900]	P6	N-1-1	NA	NA	0.84	NA	NA	NA	NA	NA	NA	Continue to monitor

Substation	Contingency	Category	Category Description	Voltage PU (Baseline Scenarios)						Voltage PU (Sensitivity Scenarios)			Project & Potential Mitigation Solutions
				2025 Summer Peak	2028 Summer Peak	2035 Summer Peak	2028 Summer-Off Peak	2025 Spring Off-Peak	2028 Spring Off-Peak	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	2028 SP High CEC Forecast	
CLOVIS-2 115 kV	P7-1:A14:27:_HERNDON-WOODWARD 115KV [1790] & BORDEN-COPPERMINE 70KV [8500]	P7	DCTL	0.96	0.96	0.88	1.08	1.01	1.07	1.00	1.01	0.96	Continue to monitor
CLOVIS-2 115 kV	P7-1:A14:34:_MCCALL-REEDLEY 115KV [2320] & MCCALL-SANGER #3 115KV [2350]	P7	DCTL	0.96	0.96	0.89	1.08	1.00	1.07	0.99	1.00	0.95	Continue to monitor
COLNGA 1 70 kV	P2-2:A14:20:_GATES D 230KV SECTION 2D	P2	Bus/Breaker	0.92	0.94	0.81	1.03	0.87	1.03	0.99	0.92	0.94	Continue to monitor
COLNGA 1 70 kV	P1-1:A14:68:_CHV.COAL 9.11KV GEN UNIT 1&P1-3:A14:13:_GATES D 230/70KV TB 5	P3	G-1/N-1	0.88	0.87	0.72	NA	0.82	NA	NA	0.89	0.87	Operation solution
COLNGA 1 70 kV	P5-5a:A14:1:_GATES SECTION D & E 230 KV BUS (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant battery supply/Relay	0.91	0.94	NConv	1.02	0.86	1.03	0.99	0.90	0.94	Install redundant relay
COLNGA 2 70 kV	P2-4:A14:10:_GATES D 230KV - SECTION 2D & 1D	P2	Bus/Breaker	0.93	0.95	0.83	1.03	0.88	1.03	1.00	0.93	0.95	Continue to monitor
COLNGA 2 70 kV	P1-1:A14:68:_CHV.COAL 9.11KV GEN UNIT 1&P1-3:A14:13:_GATES D 230/70KV TB 5	P3	G-1/N-1	0.89	0.88	0.74	NA	0.84	NA	NA	0.90	0.88	Operation solution
COLNGA 2 70 kV	P5-5a:A14:1:_GATES SECTION D & E 230 KV BUS (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant battery supply/Relay	0.92	0.95	NConv	1.03	0.87	1.03	1.00	0.92	0.95	Install redundant relay
CONTADNA 115 kV	P1-1:A14:47:_KERCKHOFFPH2 13.80KV GEN UNIT 1&P1-2:A14:86:_LEPRINO SW STA-GWF HANFORD SW STA 115KV [1740]	P3	G-1/N-1	NA	NA	0.88	NA	NA	NA	NA	NA	NA	Continue to monitor
CONTADNA 115 kV	P5-5c:A14:40:_Leprino SW STA 115kV Batt(Failure OF NON-REDUNDENT BATT)	P5	Non-Redundant battery supply/Relay	1.01	1.01	0.89	1.06	1.01	1.06	1.01	1.02	1.01	Install redundant battery
CONTADNA 115 kV	P1-2:A14:85:_HRNTASLR-LPRNJCTSS #1 115KV [0]&P1-2:A14:81:_HENRIETTA-LEPRINO SW STA 115KV [1737]	P6	N-1-1	NA	NA	0.85	NA	NA	NA	NA	NA	NA	Continue to monitor
CONTADNA 115 kV	P7-1:A14:13:_MCCALL-KINGSBURG #1 115KV [2290] & MCCALL-KINGSBURG #2 115KV [2301]	P7	DCTL	0.98	0.99	0.76	1.02	0.97	1.01	0.99	0.98	0.99	Continue to monitor
COPPRMNE 70 kV	P1-2:A14:107:_FRIANT-COPPERMINE 70KV [8660]	P1	N-1	1.05	1.06	0.89	1.05	0.98	1.06	1.10	1.01	1.06	Continue to monitor
COPPRMNE 70 kV	P2-3:A14:1:_GREGG 230KV - MIDDLE BREAKER BAY 1	P2	Bus/Breaker	NConv	NConv	0.57	1.04	1.00	1.05	1.07	1.01	NConv	Continue to monitor
COPPRMNE 70 kV	P5-5c:A13:8:_Borden 230-70kV Batt(Failure OF NON-REDUNDENT BATT)	P5	Non-Redundant battery supply/Relay	NA	NA	0.71	NA	NA	NA	NA	NA	NA	Install redundant battery
COPPRMNE 70 kV	P7-1:A13:13:_BORDEN-GREGG 230KV #1 & #2 [4400]	P7	DCTL	NConv	NConv	0.57	1.04	1.00	1.05	1.07	1.01	NConv	Continue to monitor
CORCORAN 115 kV	Base Case	P0	Base case	0.98	0.99	0.90	1.07	0.99	1.07	1.03	0.99	0.99	Continue to monitor
CORCORAN 115 kV	P1-2:A14:82:_WAUKENA SW STA-CORCORAN 115KV [8773]	P1	N-1	0.92	0.94	0.84	1.07	0.94	1.07	1.01	0.94	0.94	Continue to monitor
CORCORAN 115 kV	P2-3:A14:147:_WAUKENA_SS 115KV - RING R2 & R1	P2	Bus/Breaker	0.92	0.94	0.83	1.07	0.94	1.07	1.01	0.94	0.93	Continue to monitor
CORCORAN 115 kV	P1-1:A14:52:_JGBSWLT 12.47KV GEN UNIT ST&P1-2:A14:82:_WAUKENA SW STA-CORCORAN 115KV [8773]	P3	G-1/N-1	NA	NA	0.82	NA	NA	NA	NA	NA	NA	Continue to monitor
CORCORAN 115 kV	P5-5c:A14:10:_Mccall 230-115kV Batt(Failure OF NON-REDUNDENT BATT)	P5	Non-Redundant battery supply/Relay	NConv	NConv	NConv	1.04	0.89	1.04	0.99	0.93	NConv	Install redundant battery

Substation	Contingency	Category	Category Description	Voltage PU (Baseline Scenarios)						Voltage PU (Sensitivity Scenarios)			Project & Potential Mitigation Solutions
				2025 Summer Peak	2028 Summer Peak	2035 Summer Peak	2028 Summer-Off Peak	2025 Spring Off-Peak	2028 Spring Off-Peak	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	2028 SP High CEC Forecast	
CORCORAN 115 kV	P5-5c:A14:38: _Waukena SW STA 115kV Batt(Failure of Non-Redundent Batt)	P5	Non-Redundant battery supply/Relay	0.92	0.94	0.83	1.07	0.95	1.07	1.01	0.94	0.93	Install redundant battery
CORCORAN 115 kV	P7-1:A14:13: _MCCALL-KINGSBURG #1 115KV [2290] & MCCALL-KINGSBURG #2 115KV [2301]	P7	DCTL	0.91	0.94	0.53	1.04	0.88	1.04	0.99	0.91	0.93	Continue to monitor
CORCORAN 70 kV	Base Case	P0	Base case	1.00	1.00	0.91	1.08	1.00	1.08	1.04	1.00	1.00	Continue to monitor
CORCORAN 70 kV	P1-2:A14:82: _WAUKENA SW STA-CORCORAN 115KV [8773]	P1	N-1	0.93	0.95	0.84	1.08	0.96	1.08	1.03	0.96	0.95	Continue to monitor
CORCORAN 70 kV	P2-3:A14:147: _WAUKENA_SS 115KV - RING R2 & R1	P2	Bus/Breaker	0.93	0.95	0.84	1.08	0.95	1.08	1.03	0.95	0.95	Continue to monitor
CORCORAN 70 kV	P7-1:A14:13: _MCCALL-KINGSBURG #1 115KV [2290] & MCCALL-KINGSBURG #2 115KV [2301]	P7	DCTL	0.92	0.95	0.53	1.05	0.89	1.05	1.00	0.92	0.95	Continue to monitor
CORSGOLD 115 kV	Base Case	P0	Base case	0.96	0.95	0.87	1.07	1.00	1.07	1.00	1.00	0.95	Continue to monitor
CORSGOLD 115 kV	P1-2:A14:74: _HERNDON-WOODWARD 115KV [1790]	P1	N-1	0.93	0.93	0.87	1.08	1.00	1.08	0.99	1.00	0.92	Continue to monitor
CORSGOLD 115 kV	P2-4:A14:21: _HERNDON 115KV - SECTION 1D & 2D	P2	Bus/Breaker	0.91	0.91	0.85	1.09	0.98	1.08	0.97	0.97	0.91	Continue to monitor
CORSGOLD 115 kV	P1-1:A14:47: _KERCKHOFFPH2 13.80KV GEN UNIT 1&P1-2:A14:74: _HERNDON-WOODWARD 115KV [1790]	P3	G-1/N-1	NA	NA	0.87	NA	NA	NA	NA	NA	NA	Continue to monitor
CORSGOLD 115 kV	P1-2:A13:40: _LE GRAND-CHOWCHILLA 115KV [2110]&P1-2:A14:48: _KERCKHOFF-CLOVIS-SANGER #1 115KV [1890]	P6	N-1-1	NA	NA	0.78	NA	NA	NA	NA	NA	NA	Continue to monitor
CORSGOLD 115 kV	P7-1:A13:13: _BORDEN-GREGG 230KV #1 & #2 [4400]	P7	DCTL	NConv	NConv	0.89	1.07	1.00	1.07	1.00	1.00	NConv	Continue to monitor
CORSGOLD 115 kV	P7-1:A14:27: _HERNDON-WOODWARD 115KV [1790] & BORDEN-COPPERMINE 70KV [8500]	P7	DCTL	0.93	0.93	0.88	1.08	1.00	1.08	0.99	1.00	0.93	Continue to monitor
CRESSEY 115 kV	Base Case	P0	Base case	1.01	0.98	0.95	1.06	1.01	1.03	1.02	1.01	0.98	Continue to monitor
CRESSEY 115 kV	P2-3:A14:1: _GREGG 230KV - MIDDLE BREAKER BAY 1	P2	Bus/Breaker	NConv	NConv	0.73	1.05	0.99	1.03	1.01	0.99	NConv	Continue to monitor
CRESSEY 115 kV	P5-5c:A13:2: _Wilson 230-115kV Batt(Failure of Non-Redundent Batt)	P5	Non-Redundant battery supply/Relay	NConv	NConv	NConv	0.29	NConv	0.59	NConv	NConv	NConv	Install redundant battery
CRESSEY 115 kV	P7-1:A13:10: _ATWATER-EL CAPITAN 115KV [1020] & WILSON-ATWATER #2 115KV [4160]	P7	DCTL	0.95	0.93	0.89	1.05	0.98	1.02	0.98	0.98	0.93	Continue to monitor
CRESSEY 115 kV	P7-1:A13:13: _BORDEN-GREGG 230KV #1 & #2 [4400]	P7	DCTL	NConv	NConv	0.73	1.05	0.99	1.03	1.01	0.99	NConv	Continue to monitor
DAIRYLND 115 kV	P2-3:A14:1: _GREGG 230KV - MIDDLE BREAKER BAY 1	P2	Bus/Breaker	NConv	NConv	0.85	1.04	0.99	1.03	1.01	0.99	NConv	Continue to monitor
DAIRYLND 115 kV	P1-1:A13:33: _EXCHQUER 13.80KV GEN UNIT 1&P1-2:A13:60: _PANOCHÉ-MENDOTA 115KV [3230]	P3	G-1/N-1	NA	NA	0.82	NA	NA	NA	NA	NA	NA	Continue to monitor
DAIRYLND 115 kV	P1-2:A13:46: _WILSON-LE GRAND 115KV [4170]&P1-2:A13:60: _PANOCHÉ-MENDOTA 115KV [3230]	P6	N-1-1	NA	NA	0.48	NA	0.61	NA	NA	0.60	NA	Continue to monitor
DAIRYLND 115 kV	P7-1:A13:13: _BORDEN-GREGG 230KV #1 & #2 [4400]	P7	DCTL	NConv	NConv	0.85	1.04	0.99	1.03	1.01	0.99	NConv	Continue to monitor

Substation	Contingency	Category	Category Description	Voltage PU (Baseline Scenarios)						Voltage PU (Sensitivity Scenarios)			Project & Potential Mitigation Solutions
				2025 Summer Peak	2028 Summer Peak	2035 Summer Peak	2028 Summer-Off Peak	2025 Spring Off-Peak	2028 Spring Off-Peak	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	2028 SP High CEC Forecast	
DANISHCM 115 kV	Base Case	P0	Base case	0.96	0.96	0.89	1.07	1.00	1.07	0.99	1.00	0.96	Continue to monitor
DANISHCM 115 kV	P1-2:A14:67:_SANGER-CALIFORNIA AVE 115KV [9130]	P1	N-1	0.90	0.90	0.83	1.06	0.97	1.07	0.94	0.97	0.90	Continue to monitor
DANISHCM 115 kV	P2-4:A14:8:_MC CALL 230KV - SECTION 1E & 1D	P2	Bus/Breaker	0.88	0.89	NConv	1.06	0.96	1.06	0.93	0.95	0.88	Under review
DANISHCM 115 kV	P2-4:A14:9:_MC CALL 230KV - SECTION 1D & 2D	P2	Bus/Breaker	0.89	0.89	NConv	1.07	0.96	1.06	0.93	0.95	0.88	Under review
DANISHCM 115 kV	P1-1:A14:59:_MCCALL1T 13.20KV GEN UNIT 1&P1-2:A14:67:_SANGER-CALIFORNIA AVE 115KV [9130]	P3	G-1/N-1	0.90	0.90	0.82	NA	NA	NA	NA	NA	0.89	Operation solution
DANISHCM 115 kV	P5-5c:A14:21:_Sanger 115kV Batt(Failure of NON-REDUNDANT BATT)	P5	Non-Redundant battery supply/Relay	0.92	0.92	0.87	1.06	0.98	1.07	0.95	0.99	0.92	Install redundant battery
DANISHCM 115 kV	P1-2:A14:69:_MCCALL-WEST FRESNO #2 115KV [2370]&P1-2:A14:67:_SANGER-CALIFORNIA AVE 115KV [9130]	P6	N-1-1	0.60	0.61	0.54	NA	0.88	NA	0.72	0.87	0.60	Operation solution
DANISHCM 115 kV	P7-1:A14:25:_HERNDON-BARTON 115KV [1750] & MANCHESTER-AIRWAYS-SANGER 115KV [2180]	P7	DCTL	0.95	0.96	0.87	1.07	1.00	1.07	0.98	1.00	0.95	Continue to monitor
DFS 115 kV	P2-4:A13:13:_PANOCHE1 SECTION 1D & PANOCHE2 SECTION 2D 115KV	P2	Bus/Breaker	0.72	0.71	NConv	1.06	0.90	1.10	0.94	0.89	0.71	Under review
DINUBA 70 kV	Base Case	P0	Base case	1.00	1.01	0.95	1.04	1.02	1.04	1.01	1.02	1.00	Continue to monitor
DINUBA 70 kV	P1-2:A14:117:_REEDLEY-DINUBA #1 70KV [9050]	P1	N-1	1.01	0.88	0.79	1.04	1.02	1.05	1.02	NA	0.88	Project:Review reedley area reinforcement
DINUBA 70 kV	P2-3:A14:51:_MC CALL 115KV - MIDDLE BREAKER BAY 2	P2	Bus/Breaker	0.95	0.95	0.86	1.04	0.99	1.04	0.99	0.99	0.95	Continue to monitor
DINUBA 70 kV	P1-1:A14:47:_KERCKHOFFPH2 13.80KV GEN UNIT 1&P1-2:A14:117:_REEDLEY-DINUBA #1 70KV [9050]	P3	G-1/N-1	NA	0.88	0.78	NA	NA	NA	NA	NA	0.87	Operation solution
DINUBA 70 kV	P5-5c:A14:10:_Mccall 230-115KV Batt(Failure of NON-REDUNDANT BATT)	P5	Non-Redundant battery supply/Relay	NConv	NConv	NConv	1.04	0.97	1.05	0.93	0.87	NConv	Install redundant battery
DINUBA 70 kV	P7-1:A14:34:_MCCALL-REEDLEY 115KV [2320] & MCCALL-SANGER #3 115KV [2350]	P7	DCTL	0.95	0.95	0.86	1.04	0.99	1.04	0.99	0.99	0.95	Continue to monitor
DOS PALS 70 kV	P2-4:A13:13:_PANOCHE1 SECTION 1D & PANOCHE2 SECTION 2D 115KV	P2	Bus/Breaker	0.80	0.79	NConv	1.04	1.00	1.04	1.02	0.99	0.78	Under review
DOS PALS 70 kV	P1-2:A13:61:_PANOCHE-ORO LOMA 115KV [3240]&P1-2:A13:48:_WILSON-ORO LOMA 115KV [4200]	P6	N-1-1	NA	NA	0.86	NA	NA	NA	NA	NA	NA	Continue to monitor
DUNLAP 70 kV	Base Case	P0	Base case	0.98	0.98	0.92	1.04	1.00	1.04	0.99	1.01	0.98	Continue to monitor
DUNLAP 70 kV	P1-3:A14:5:_MC CALL 230/115KV TB 1	P1	N-1	0.96	0.97	0.90	1.04	0.99	1.04	0.98	1.00	0.97	Continue to monitor
DUNLAP 70 kV	P2-3:A14:139:_REEDLEY 115KV - RING R5 & R6	P2	Bus/Breaker	0.93	0.92	0.84	1.04	0.98	1.05	0.98	0.98	0.92	Continue to monitor
DUNLAP 70 kV	P1-1:A14:47:_KERCKHOFFPH2 13.80KV GEN UNIT 1&P1-2:A14:117:_REEDLEY-DINUBA #1 70KV [9050]	P3	G-1/N-1	NA	NA	0.83	NA	NA	NA	NA	NA	NA	Continue to monitor
DUNLAP 70 kV	P5-5c:A13:8:_Borden 230-70KV Batt(Failure of NON-REDUNDANT BATT)	P5	Non-Redundant battery supply/Relay	NA	NA	0.89	NA	NA	NA	NA	NA	NA	Install redundant battery
DUNLAP 70 kV	P7-1:A14:34:_MCCALL-REEDLEY 115KV [2320] & MCCALL-SANGER #3 115KV [2350]	P7	DCTL	0.92	0.93	0.82	1.04	0.98	1.04	0.97	0.98	0.92	Continue to monitor

Substation	Contingency	Category	Category Description	Voltage PU (Baseline Scenarios)						Voltage PU (Sensitivity Scenarios)			Project & Potential Mitigation Solutions
				2025 Summer Peak	2028 Summer Peak	2035 Summer Peak	2028 Summer-Off Peak	2025 Spring Off-Peak	2028 Spring Off-Peak	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	2028 SP High CEC Forecast	
EL CAPTN 115 kV	P2-3:A14:1:_GREGG 230KV - MIDDLE BREAKER BAY 1	P2	Bus/Breaker	NConv	NConv	0.74	1.05	1.00	1.04	1.02	1.00	NConv	Continue to monitor
EL CAPTN 115 kV	P5-5c:A13:2:_Wilson 230-115kV Batt(Failure OF NON-REDUNDANT BATT)	P5	Non-Redundant battery supply/Relay	NConv	NConv	NConv	0.29	NConv	0.60	NConv	NConv	NConv	Install redundant battery
EL CAPTN 115 kV	P7-1:A13:13:_BORDEN-GREGG 230KV #1 & #2 [4400]	P7	DCTL	NConv	NConv	0.74	1.05	1.00	1.04	1.02	1.00	NConv	Continue to monitor
EL NIDO 115 kV	P2-2:A13:25:_PANOCHE2 115KV SECTION 2D	P2	Bus/Breaker	0.87	0.86	0.91	1.06	0.98	1.06	1.00	0.97	0.86	Project:Oroloma area reinforcement
EL NIDO 115 kV	P2-3:A14:1:_GREGG 230KV - MIDDLE BREAKER BAY 1	P2	Bus/Breaker	NConv	NConv	0.80	1.05	1.01	1.05	1.03	1.01	NConv	Continue to monitor
EL NIDO 115 kV	P1-3:A13:2:_WILSON 230/115KV TB 1&P1-3:A13:3:_WILSON 230/115KV TB 2	P6	N-1-1	0.89	NA	NA	NA	NA	NA	NA	NA	NA	Project:Wilson area reinforcement
EL NIDO 115 kV	P7-1:A13:13:_BORDEN-GREGG 230KV #1 & #2 [4400]	P7	DCTL	NConv	NConv	0.80	1.05	1.01	1.05	1.03	1.01	NConv	Continue to monitor
EL PECO 70 kV	P2-3:A14:1:_GREGG 230KV - MIDDLE BREAKER BAY 1	P2	Bus/Breaker	NConv	NConv	0.58	1.04	1.02	1.05	1.02	1.02	NConv	Continue to monitor
EL PECO 70 kV	P7-1:A13:13:_BORDEN-GREGG 230KV #1 & #2 [4400]	P7	DCTL	NConv	NConv	0.58	1.04	1.02	1.05	1.02	1.02	NConv	Continue to monitor
ELNIDOBM 13.8 kV	P1-2:A13:46:_WILSON-LE GRAND 115KV [4170]&P1-2:A13:60:_PANOCHE-MENDOTA 115KV [3230]	P6	N-1-1	NA	NA	0.88	NA	NA	NA	NA	NA	NA	Continue to monitor
ELNIDOBM 70 kV	P2-3:A14:1:_GREGG 230KV - MIDDLE BREAKER BAY 1	P2	Bus/Breaker	NConv	NConv	0.82	1.01	0.98	0.99	0.99	0.98	NConv	Continue to monitor
ELNIDOBM 70 kV	P7-1:A13:13:_BORDEN-GREGG 230KV #1 & #2 [4400]	P7	DCTL	NConv	NConv	0.82	1.01	0.98	0.99	0.99	0.98	NConv	Continue to monitor
FIGRDN 1 230 kV	Base Case	P0	Base case	0.98	0.98	0.91	1.04	1.01	1.03	1.01	1.00	0.98	Continue to monitor
FIGRDN 1 230 kV	P1-1:A14:67:_RIOBRVFSNO 12.47KV GEN UNIT 1&P1-4:A14:30:_GREGG SVD=V	P3	G-1/N-1	NA	NA	0.90	NA	NA	NA	NA	NA	NA	Continue to monitor
FIGRDN 1 230 kV	P5-5c:A14:21:_Sanger 115kV Batt(Failure OF NON-REDUNDANT BATT)	P5	Non-Redundant battery supply/Relay	0.98	0.98	0.90	1.04	1.01	1.03	1.01	1.00	0.97	Install redundant battery
FIGRDN 1 230 kV	P1-2:A14:15:_HELMS-GREGG #1 230KV [4870]&P1-2:A14:20:_MUSTANG SW STA-GREGG 230KV [4700]	P6	N-1-1	NA	NA	0.89	NA	NA	NA	NA	NA	NA	Continue to monitor
FIGRDN 2 230 kV	Base Case	P0	Base case	0.98	0.97	0.91	1.04	1.00	1.03	1.01	1.00	0.97	Continue to monitor
FIGRDN 2 230 kV	P1-3:A14:45:_SANGERCN 115/13.8KV TB 1	P1	N-1	0.98	0.97	0.90	1.04	1.00	1.03	1.01	1.00	0.97	Continue to monitor
FIGRDN 2 230 kV	P2-2:A14:11:_HAAS 230KV SECTION 1D	P2	Bus/Breaker	0.98	0.97	0.90	1.04	1.00	1.03	1.01	1.00	0.97	Continue to monitor
FIGRDN 2 230 kV	P1-1:A14:67:_RIOBRVFSNO 12.47KV GEN UNIT 1&P1-4:A14:30:_GREGG SVD=V	P3	G-1/N-1	NA	NA	0.90	NA	NA	NA	NA	NA	NA	Continue to monitor
FIGRDN 2 230 kV	P5-5c:A14:21:_Sanger 115kV Batt(Failure OF NON-REDUNDANT BATT)	P5	Non-Redundant battery supply/Relay	0.98	0.97	0.90	1.04	1.01	1.03	1.01	1.00	0.97	Install redundant battery
FIGRDN 2 230 kV	P1-2:A14:15:_HELMS-GREGG #1 230KV [4870]&P1-2:A14:20:_MUSTANG SW STA-GREGG 230KV [4700]	P6	N-1-1	NA	NA	0.89	NA	NA	NA	NA	NA	NA	Continue to monitor
FIREBAGH 70 kV	P1-2:A13:61:_PANOCHE-ORO LOMA 115KV [3240]	P1	N-1	0.97	0.97	0.89	1.04	0.99	1.05	1.01	0.98	0.96	Continue to monitor
FIREBAGH 70 kV	P2-4:A13:13:_PANOCHE1 SECTION 1D & PANOCHE2 SECTION 2D 115KV	P2	Bus/Breaker	0.76	0.77	NConv	1.03	0.97	1.05	1.01	0.96	0.75	Project:Oroloma area reinforcement

Substation	Contingency	Category	Category Description	Voltage PU (Baseline Scenarios)						Voltage PU (Sensitivity Scenarios)			Project & Potential Mitigation Solutions
				2025 Summer Peak	2028 Summer Peak	2035 Summer Peak	2028 Summer-Off Peak	2025 Spring Off-Peak	2028 Spring Off-Peak	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	2028 SP High CEC Forecast	
FIREBAGH 70 kV	P1-1:A14:47:_KERCKHOFFPH2 13.80KV GEN UNIT 1&P1-2:A13:61:_PANOCHE-ORO LOMA 115KV [3240]	P3	G-1/N-1	NA	NA	0.89	NA	NA	NA	NA	NA	NA	Continue to monitor
FIREBAGH 70 kV	P5-5c:A13:4:_Panoche 230-115kV Batt(Failure OF NON-REDUNDENT BATT)	P5	Non-Redundant battery supply/Relay	0.96	0.96	0.87	1.03	0.98	1.06	1.01	NConv	0.95	Install redundant battery
FIREBAGH 70 kV	P1-2:A13:61:_PANOCHE-ORO LOMA 115KV [3240]&P1-2:A13:48:_WILSON-ORO LOMA 115KV [4200]	P6	N-1-1	NA	NA	0.79	NA	NA	NA	NA	NA	NA	Continue to monitor
FIREBAGH 70 kV	P7-1:A13:7:_LOS BANOS-PANOCHE #1 230KV [5030] & PANOCHE-ORO LOMA 115KV [3240]	P7	DCTL	0.97	0.97	0.89	1.04	0.99	1.05	1.01	0.98	0.96	Continue to monitor
GALLO 115 kV	Base Case	P0	Base case	1.00	0.98	0.94	1.06	1.01	1.03	1.01	1.01	0.98	Continue to monitor
GALLO 115 kV	P2-3:A14:1:_GREGG 230KV - MIDDLE BREAKER BAY 1	P2	Bus/Breaker	NConv	NConv	0.72	1.04	0.99	1.03	1.00	0.99	NConv	Continue to monitor
GALLO 115 kV	P5-5c:A13:2:_Wilson 230-115kV Batt(Failure OF NON-REDUNDENT BATT)	P5	Non-Redundant battery supply/Relay	NConv	NConv	NConv	0.29	NConv	0.58	NConv	NConv	NConv	Install redundant battery
GALLO 115 kV	P7-1:A13:10:_ATWATER-EL CAPITAN 115KV [1020] & WILSON-ATWATER #2 115KV [4160]	P7	DCTL	0.95	0.93	0.89	1.05	0.98	1.02	0.98	0.98	0.93	Continue to monitor
GALLO 115 kV	P7-1:A13:13:_BORDEN-GREGG 230KV #1 & #2 [4400]	P7	DCTL	NConv	NConv	0.72	1.04	0.99	1.03	1.00	0.99	NConv	Continue to monitor
GILLRAN 115 kV	P2-1:A13:46:_DAIRYLAND-MENDOTA 115KV [1360] (MENDOTA-GILLTAP)	P2	Bus/Breaker	0.92	0.92	0.90	1.04	0.96	1.02	0.96	0.96	0.91	Continue to monitor
GILLRAN 115 kV	P2-3:A14:1:_GREGG 230KV - MIDDLE BREAKER BAY 1	P2	Bus/Breaker	NConv	NConv	0.89	1.03	0.99	1.02	1.00	0.99	NConv	Continue to monitor
GILLRAN 115 kV	P2-4:A13:13:_PANOCHE1 SECTION 1D & PANOCHE2 SECTION 2D 115KV	P2	Bus/Breaker	0.99	0.99	NConv	1.02	0.89	1.00	0.98	0.89	0.98	Generation re-dispatch
GILLRAN 115 kV	P1-1:A13:33:_EXCHQUER 13.80KV GEN UNIT 1&P1-2:A13:60:_PANOCHE-MENDOTA 115KV [3230]	P3	G-1/N-1	NA	NA	0.77	NA	NA	NA	NA	0.89	NA	Continue to monitor
GILLRAN 115 kV	P5-5c:A13:4:_Panoche 230-115kV Batt(Failure OF NON-REDUNDENT BATT)	P5	Non-Redundant battery supply/Relay	0.99	0.99	0.89	1.02	0.87	1.00	0.98	NConv	0.99	Install redundant battery
GILLRAN 115 kV	P1-2:A13:46:_WILSON-LE GRAND 115KV [4170]&P1-2:A13:60:_PANOCHE-MENDOTA 115KV [3230]	P6	N-1-1	NA	NA	0.43	NA	0.56	NA	NA	0.55	NA	Continue to monitor
GILLRAN 115 kV	P7-1:A13:13:_BORDEN-GREGG 230KV #1 & #2 [4400]	P7	DCTL	NConv	NConv	0.89	1.03	0.99	1.02	1.00	0.99	NConv	Continue to monitor
GLASS 70 kV	P2-3:A14:1:_GREGG 230KV - MIDDLE BREAKER BAY 1	P2	Bus/Breaker	NConv	NConv	0.59	1.04	1.03	1.04	1.03	1.03	NConv	Continue to monitor
GLASS 70 kV	P7-1:A13:13:_BORDEN-GREGG 230KV #1 & #2 [4400]	P7	DCTL	NConv	NConv	0.59	1.04	1.03	1.04	1.03	1.03	NConv	Continue to monitor
GRDNGLS1WB 115 kV	Base Case	P0	Base case	1.00	1.01	0.94	1.06	1.02	1.06	1.02	1.02	1.00	Continue to monitor
GRDNGLS1WB 115 kV	P2-2:A14:59:_KINGSBURGD 115KV SECTION 1D	P2	Bus/Breaker	0.99	0.99	0.89	1.06	1.00	1.06	1.02	1.01	0.99	Continue to monitor
GRDNGLS1WB 115 kV	P1-1:A14:47:_KERCKHOFFPH2 13.80KV GEN UNIT 1&P1-2:A14:86:_LEPRINO SW STA-GWF HANFORD SW STA 115KV [1740]	P3	G-1/N-1	NA	NA	0.90	NA	NA	NA	NA	NA	NA	Continue to monitor

Substation	Contingency	Category	Category Description	Voltage PU (Baseline Scenarios)						Voltage PU (Sensitivity Scenarios)			Project & Potential Mitigation Solutions
				2025 Summer Peak	2028 Summer Peak	2035 Summer Peak	2028 Summer-Off Peak	2025 Spring Off-Peak	2028 Spring Off-Peak	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	2028 SP High CEC Forecast	
GRDNGLS1WB 115 kV	P1-3:A14:7:_MC CALL 230/115KV TB 3&P1-3:A14:5:_MC CALL 230/115KV TB 1	P6	N-1-1	NA	NA	0.88	NA	NA	NA	NA	NA	NA	Continue to monitor
HAMMONDS 115 kV	P2-4:A13:13:_PANOCHE1 SECTION 1D & PANOCHE2 SECTION 2D 115KV	P2	Bus/Breaker	0.71	0.70	NConv	1.05	0.90	1.10	0.94	0.89	0.69	Project:Oroloma area reinforcement
HARDWICK 70 kV	Base Case	P0	Base case	0.99	0.99	0.91	1.06	1.00	1.06	1.01	1.00	0.99	Continue to monitor
HARDWICK 70 kV	P1-3:A14:5:_MC CALL 230/115KV TB 1	P1	N-1	0.98	0.98	0.89	1.06	0.99	1.06	1.00	0.99	0.98	Continue to monitor
HARDWICK 70 kV	P2-3:A14:73:_KINGSBURGD - 1D 115KV & GWF-KINGSBURG LINE	P2	Bus/Breaker	0.96	0.97	0.84	1.06	0.98	1.06	1.00	0.98	0.96	Continue to monitor
HARDWICK 70 kV	P1-1:A14:47:_KERCKHOFFPH2 13.80KV GEN UNIT 1&P1-2:A14:86:_LEPRINO SW STA-GWF HANFORD SW STA 115KV [1740]	P3	G-1/N-1	NA	NA	0.86	NA	NA	NA	NA	NA	NA	Continue to monitor
HARDWICK 70 kV	P5-5c:A14:40:_Leprino SW STA 115kV Batt(Failure of NON-REDUNDENT BATT)	P5	Non-Redundant battery supply/Relay	0.99	0.99	0.88	1.07	1.00	1.07	1.01	1.00	0.99	Install redundant battery
HARDWICK 70 kV	P7-1:A14:13:_MCCALL-KINGSBURG #1 115KV [2290] & MCCALL-KINGSBURG #2 115KV [2301]	P7	DCTL	0.91	0.93	0.56	1.02	0.89	1.02	0.96	0.92	0.93	Continue to monitor
INDN FLT 70 kV	Base Case	P0	Base case	0.93	0.93	0.95	0.99	0.95	0.98	0.94	0.95	0.93	Add voltage support
INDN FLT 70 kV	P1-1:A13:33:_EXCHQUER 13.80KV GEN UNIT 1	P1	N-1	0.91	0.91	0.87	0.99	0.93	0.99	0.92	0.93	0.90	Continue to monitor
INDN FLT 70 kV	P2-3:A14:1:_GREGG 230KV - MIDDLE BREAKER BAY 1	P2	Bus/Breaker	NConv	NConv	0.83	0.98	0.95	0.98	0.94	0.95	NConv	Continue to monitor
INDN FLT 70 kV	P1-1:A13:33:_EXCHQUER 13.80KV GEN UNIT 1&P1-2:A13:60:_PANOCHE-MENDOTA 115KV [3230]	P3	G-1/N-1	NA	NA	0.79	NA	NA	NA	NA	NA	0.90	Continue to monitor
INDN FLT 70 kV	P5-5c:A13:2:_Wilson 230-115kV Batt(Failure of NON-REDUNDENT BATT)	P5	Non-Redundant battery supply/Relay	NConv	NConv	NConv	0.72	NConv	0.93	NConv	NConv	NConv	Install redundant battery
INDN FLT 70 kV	P1-2:A13:46:_WILSON-LE GRAND 115KV [4170]&P1-2:A13:60:_PANOCHE-MENDOTA 115KV [3230]	P6	N-1-1	NA	NA	0.60	NA	0.79	NA	0.83	0.78	NA	Continue to monitor
INDN FLT 70 kV	P7-1:A13:13:_BORDEN-GREGG 230KV #1 & #2 [4400]	P7	DCTL	NConv	NConv	0.83	0.98	0.95	0.98	0.94	0.95	NConv	Continue to monitor
KEARNEY 230 kV	Base Case	P0	Base case	0.99	0.98	0.92	1.03	1.00	1.02	1.01	1.00	0.98	Continue to monitor
KEARNEY 230 kV	P2-4:A14:1:_HERNDON 230KV - SECTION 1E & 2E	P2	Bus/Breaker	0.91	0.91	0.84	1.03	0.94	1.04	0.97	0.94	0.91	Continue to monitor
KEARNEY 70 kV	P1-1:A14:68:_CHV.COAL 9.11KV GEN UNIT 1&P1-2:A14:11:_TRANQUILLITY SW STA-KEARNEY 230KV [5380]	P3	G-1/N-1	NA	NA	0.89	NA	NA	NA	NA	NA	NA	Continue to monitor
KEARNEY 70 kV	P1-2:A14:11:_TRANQUILLITY SW STA-KEARNEY 230KV [5380]&P1-4:A14:30:_GREGG SVD=V	P6	N-1-1	NA	NA	0.88	NA	NA	NA	NA	NA	NA	Continue to monitor
KERCKHOFFPH2 115 kV	Base Case	P0	Base case	0.99	0.98	0.91	1.07	1.02	1.07	1.02	1.02	0.98	Continue to monitor
KERCKHOFFPH2 115 kV	P1-2:A14:74:_HERNDON-WOODWARD 115KV [1790]	P1	N-1	0.96	0.96	0.89	1.08	1.02	1.08	1.01	1.02	0.96	Continue to monitor
KERCKHOFFPH2 115 kV	P2-1:A14:50:_KERCKHOFF-CLOVIS-SANGER #2 115KV [1900] (CLOVISJ2-SANGER)	P2	Bus/Breaker	0.96	0.95	0.89	1.07	1.01	1.07	1.00	1.00	0.95	Continue to monitor
KERCKHOFFPH2 115 kV	P2-4:A14:21:_HERNDON 115KV - SECTION 1D & 2D	P2	Bus/Breaker	0.92	0.92	0.87	1.09	1.00	1.08	0.98	1.00	0.92	Continue to monitor

Substation	Contingency	Category	Category Description	Voltage PU (Baseline Scenarios)						Voltage PU (Sensitivity Scenarios)			Project & Potential Mitigation Solutions
				2025 Summer Peak	2028 Summer Peak	2035 Summer Peak	2028 Summer-Off Peak	2025 Spring Off-Peak	2028 Spring Off-Peak	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	2028 SP High CEC Forecast	
KERCKHOFFPH2 115 kV	P7-1:A14:27:_HERNDON-WOODWARD 115KV [1790] & BORDEN-COPPERMINE 70KV [8500]	P7	DCTL	0.96	0.96	0.89	1.08	1.02	1.07	1.01	1.02	0.96	Continue to monitor
KERCKHOFFPH2 13.8 kV	P1-1:A14:47:_KERCKHOFFPH2 13.80KV GEN UNIT 1&P1-2:A14:74:_HERNDON-WOODWARD 115KV [1790]	P3	G-1/N-1	NA	NA	0.86	NA	NA	NA	NA	NA	NA	Continue to monitor
KERCKHOFFPH2 13.8 kV	P1-2:A13:40:_LE GRAND-CHOWCHILLA 115KV [2110]&P1-2:A14:48:_KERCKHOFF-CLOVIS-SANGER #1 115KV [1890]	P6	N-1-1	NA	NA	0.81	NA	NA	NA	NA	NA	NA	Continue to monitor
KETTLEMN 70 kV	P2-2:A14:20:_GATES D 230KV SECTION 2D	P2	Bus/Breaker	0.93	0.96	0.80	1.06	0.85	1.06	1.03	0.90	0.96	Continue to monitor
KETTLEMN 70 kV	P1-1:A14:68:_CHV.COAL 9.11KV GEN UNIT 1&P1-3:A14:13:_GATES D 230/70KV TB 5	P3	G-1/N-1	NA	0.89	0.72	NA	0.80	NA	NA	0.87	0.89	Operation solution
KETTLEMN 70 kV	P5-5a:A14:1:_GATES SECTION D & E 230 KV BUS (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant battery supply/Relay	0.93	0.96	NConv	1.05	0.83	1.06	1.03	0.89	0.96	Install redundant relay
KINGSBURGD 115 kV	Base Case	P0	Base case	1.00	1.00	0.93	1.06	1.01	1.06	1.02	1.01	1.00	Continue to monitor
KINGSBURGD 115 kV	P1-1:A14:47:_KERCKHOFFPH2 13.80KV GEN UNIT 1&P1-2:A14:86:_LEPRINO SW STA-GWF HANFORD SW STA 115KV [1740]	P3	G-1/N-1	NA	NA	0.88	NA	NA	NA	NA	NA	NA	Continue to monitor
KINGSBURGD 115 kV	P5-5c:A14:40:_Leprino SW STA 115kV Batt(Failure of NON-REDUNDENT BATT)	P5	Non-Redundant battery supply/Relay	1.00	1.00	0.90	1.07	1.01	1.07	1.02	1.01	1.00	Install redundant battery
KINGSBURGD 115 kV	P7-1:A14:13:_MCCALL-KINGSBURG #1 115KV [2290] & MCCALL-KINGSBURG #2 115KV [2301]	P7	DCTL	0.92	0.95	0.59	1.02	0.91	1.01	0.97	0.93	0.94	Continue to monitor
KINGSBURGE 115 kV	Base Case	P0	Base case	1.00	1.00	0.93	1.06	1.01	1.06	1.02	1.01	1.00	Continue to monitor
KINGSBURGE 115 kV	P2-2:A14:59:_KINGSBURGD 115KV SECTION 1D	P2	Bus/Breaker	0.98	0.98	0.86	1.06	0.99	1.06	1.01	1.00	0.98	Continue to monitor
KINGSBURGE 115 kV	P2-3:A14:72:_KINGSBURGD - 1D 115KV & MCCALL-KINGSBURG #1 LINE	P2	Bus/Breaker	0.98	0.98	0.86	1.06	0.99	1.06	1.01	1.00	0.98	Continue to monitor
KINGSBURGE 115 kV	P2-3:A14:73:_KINGSBURGD - 1D 115KV & GWF-KINGSBURG LINE	P2	Bus/Breaker	0.98	0.98	0.86	1.06	0.99	1.06	1.01	1.00	0.98	Continue to monitor
KINGSBURGE 115 kV	P1-1:A14:47:_KERCKHOFFPH2 13.80KV GEN UNIT 1&P1-2:A14:86:_LEPRINO SW STA-GWF HANFORD SW STA 115KV [1740]	P3	G-1/N-1	NA	NA	0.88	NA	NA	NA	NA	NA	NA	Continue to monitor
KINGSBURGE 115 kV	P5-5c:A14:40:_Leprino SW STA 115kV Batt(Failure of NON-REDUNDENT BATT)	P5	Non-Redundant battery supply/Relay	1.00	1.00	0.90	1.07	1.01	1.07	1.02	1.01	1.00	Install redundant battery
KINGSBURGE 115 kV	P7-1:A14:13:_MCCALL-KINGSBURG #1 115KV [2290] & MCCALL-KINGSBURG #2 115KV [2301]	P7	DCTL	0.92	0.95	0.59	1.02	0.91	1.01	0.97	0.93	0.94	Continue to monitor
LASPALMS 115 kV	Base Case	P0	Base case	0.98	0.98	0.90	1.07	1.01	1.06	1.01	1.01	0.98	Continue to monitor
LASPALMS 115 kV	P1-2:A14:72:_HERNDON-MANCHESTER 115KV [1780]	P1	N-1	0.96	0.96	0.87	1.07	1.00	1.06	0.99	0.99	0.96	Continue to monitor
LASPALMS 115 kV	P2-4:A14:21:_HERNDON 115KV - SECTION 1D & 2D	P2	Bus/Breaker	0.91	0.92	0.86	1.08	0.98	1.07	0.97	0.98	0.91	Continue to monitor
LASPALMS 115 kV	P1-1:A14:47:_KERCKHOFFPH2 13.80KV GEN UNIT 1&P1-2:A14:72:_HERNDON-MANCHESTER 115KV [1780]	P3	G-1/N-1	NA	NA	0.86	NA	NA	NA	NA	NA	NA	Continue to monitor

Reliability Assessment - Preliminary Study Results

Study Area: PG&E Greater Fresno
Low Voltages



Substation	Contingency	Category	Category Description	Voltage PU (Baseline Scenarios)						Voltage PU (Sensitivity Scenarios)			Project & Potential Mitigation Solutions
				2025 Summer Peak	2028 Summer Peak	2035 Summer Peak	2028 Summer-Off Peak	2025 Spring Off-Peak	2028 Spring Off-Peak	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	2028 SP High CEC Forecast	
LASPALMS 115 kV	P5-5a:A14:2:_HERNDON #1 115KV BUS (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant battery supply/Relay	0.92	0.92	0.88	1.08	0.98	1.08	0.97	0.98	0.92	Install redundant relay
LASPALMS 115 kV	P1-2:A14:49:_BARTON-AIRWAYS-SANGER 115KV [1060]&P1-2:A14:72:_HERNDON-MANCHESTER 115KV [1780]	P6	N-1-1	NA	NA	0.85	NA	NA	NA	NA	NA	NA	Continue to monitor
LASPALMS 115 kV	P7-1:A14:27:_HERNDON-WOODWARD 115KV [1790] & BORDEN-COPPERMINE 70KV [8500]	P7	DCTL	0.97	0.97	0.89	1.07	1.01	1.06	1.01	1.01	0.97	Continue to monitor
LASPALMS 115 kV	P7-1:A14:34:_MCCALL-REEDLEY 115KV [2320] & MCCALL-SANGER #3 115KV [2350]	P7	DCTL	0.97	0.97	0.89	1.07	1.00	1.06	1.00	1.00	0.96	Continue to monitor
LE GRAND 115 kV	P2-3:A14:1:_GREGG 230KV - MIDDLE BREAKER BAY 1	P2	Bus/Breaker	NConv	NConv	0.83	1.04	1.00	1.04	1.01	1.00	NConv	Continue to monitor
LE GRAND 115 kV	P1-1:A13:33:_EXCHQUER 13.80KV GEN UNIT 1&P1-2:A13:60:_PANOCHE-MENDOTA 115KV [3230]	P3	G-1/N-1	NA	NA	0.87	NA	NA	NA	NA	NA	NA	Continue to monitor
LE GRAND 115 kV	P1-2:A13:46:_WILSON-LE GRAND 115KV [4170]&P1-2:A13:60:_PANOCHE-MENDOTA 115KV [3230]	P6	N-1-1	NA	NA	0.53	NA	0.68	NA	NA	0.66	NA	Continue to monitor
LE GRAND 115 kV	P7-1:A13:13:_BORDEN-GREGG 230KV #1 & #2 [4400]	P7	DCTL	NConv	NConv	0.83	1.04	1.00	1.04	1.01	1.00	NConv	Continue to monitor
LEPRINOFDLMR 115 kV	P7-1:A14:13:_MCCALL-KINGSBURG #1 115KV [2290] & MCCALL-KINGSBURG #2 115KV [2301]	P7	DCTL	0.99	1.00	0.90	1.01	0.99	1.01	1.00	0.99	1.00	Continue to monitor
LEPRINOFDLMR 21 kV	P1-2:A14:85:_HRNTASLR-LPRNJCTSS #1 115KV [0]&P1-2:A14:81:_HENRIETTA-LEPRINO SW STA 115KV [1737]	P6	N-1-1	NA	NA	0.82	NA	NA	NA	NA	NA	NA	Continue to monitor
LIVNGSTN 115 kV	Base Case	P0	Base case	1.00	0.98	0.94	1.06	1.01	1.02	1.01	1.01	0.98	Continue to monitor
LIVNGSTN 115 kV	P2-3:A14:1:_GREGG 230KV - MIDDLE BREAKER BAY 1	P2	Bus/Breaker	NConv	NConv	0.72	1.04	0.99	1.02	1.01	0.99	NConv	Continue to monitor
LIVNGSTN 115 kV	P1-1:A13:26:_VEGA 0.36KV GEN UNIT 1&P1-2:A13:75:_LOS BANOS-MERCY SPRINGS SW STA 70KV [8929]	P3	G-1/N-1	0.84	0.84	NA	NA	NA	NA	NA	0.85	0.84	Project:Losbanos area reinforcement
LIVNGSTN 115 kV	P5-5c:A13:2:_Wilson 230-115kv Batt(Failure OF NON-REDUNDENT BATT)	P5	Non-Redundant battery supply/Relay	NConv	NConv	NConv	0.29	NConv	0.57	NConv	NConv	NConv	Install redundant battery
LIVNGSTN 115 kV	P7-1:A13:10:_ATWATER-EL CAPITAN 115KV [1020] & WILSON-ATWATER #2 115KV [4160]	P7	DCTL	0.95	0.93	0.90	1.05	0.98	1.01	0.98	0.98	0.93	Continue to monitor
LIVNGSTN 115 kV	P7-1:A13:13:_BORDEN-GREGG 230KV #1 & #2 [4400]	P7	DCTL	NConv	NConv	0.72	1.04	0.99	1.02	1.01	0.99	NConv	Continue to monitor
LIVNGSTN 70 kV	P1-2:A13:75:_LOS BANOS-MERCY SPRINGS SW STA 70KV [8929]	P1	N-1	0.88	0.87	0.93	1.03	0.85	1.09	0.94	0.90	0.87	Project:Losbanos area reinforcement
LIVNGSTN 70 kV	P2-2:A13:1:_LOS BANOS 230KV SECTION 1D	P2	Bus/Breaker	0.88	0.88	0.90	1.00	0.83	1.07	0.92	0.86	0.88	Project:Reivew Losbanos area reinforcement
LIVNGSTN 70 kV	P2-3:A13:52:_LOS BANS - MA 70KV & LOS BANOS-O'NEILL PGP LINE	P2	Bus/Breaker	NA	NA	0.78	NA	NA	NA	NA	NA	NA	Continue to monitor
LIVNGSTN 70 kV	P2-3:A14:18:_MUSTANGSS 230KV - MIDDLE BREAKER BAY 2	P2	Bus/Breaker	0.93	0.93	NConv	1.03	0.90	1.09	0.96	0.91	0.93	Generation re-dispatch
LIVNGSTN 70 kV	P2-4:A13:18:_LOS BANOS 230KV - SECTION 2D & 1D	P2	Bus/Breaker	NA	NA	0.88	NA	NA	NA	NA	NA	NA	Continue to monitor

Reliability Assessment - Preliminary Study Results

Study Area: PG&E Greater Fresno
Low Voltages



Substation	Contingency	Category	Category Description	Voltage PU (Baseline Scenarios)						Voltage PU (Sensitivity Scenarios)			Project & Potential Mitigation Solutions
				2025 Summer Peak	2028 Summer Peak	2035 Summer Peak	2028 Summer-Off Peak	2025 Spring Off-Peak	2028 Spring Off-Peak	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	2028 SP High CEC Forecast	
LIVNGSTN 70 kV	P5-5c:A13:4:_Panoche 230-115kV Batt(Failure OF NON-REDUNDENT BATT)	P5	Non-Redundant battery supply/Relay	1.03	1.04	0.72	1.03	0.90	1.09	1.06	NConv	1.04	Install redundant battery
LIVNGSTN 70 kV	P7-1:A13:11:_LOS BANOS-PANOCHÉ #1 230KV [5030] & LOS BANOS-MERCY SPRINGS SW STA 70KV [8929]	P7	DCTL	0.88	0.87	0.93	1.03	0.85	1.10	0.95	0.90	0.87	Project:Losbanos area reinforcement
LIVNGSTN 70 kV	P7-1:A14:3:_MUSTANGSS-GATES #1 230KV [0] & MUSTANGSS-GATES #2 230KV [0]	P7	DCTL	0.93	0.93	NConv	1.03	0.90	1.09	0.96	0.91	0.93	Generation re-dispatch
LUIS_#3 115 kV	P2-4:A13:13:_PANOCHÉ1 SECTION 1D & PANOCHÉ2 SECTION 2D 115KV	P2	Bus/Breaker	0.70	0.69	NConv	1.05	0.89	1.11	0.93	0.89	0.68	Project:Oroloma area reinforcement
LUIS_#5 115 kV	P2-1:A13:49:_PANOCHÉ-ORO LOMA 115KV [3240] (PANOCHÉJ-PANOCHÉ2)	P2	Bus/Breaker	0.71	0.70	0.83	1.06	0.91	1.11	0.93	0.91	0.69	Project:Oroloma area reinforcement
MADERA 70 kV	P2-3:A14:1:_GREGG 230KV - MIDDLE BREAKER BAY 1	P2	Bus/Breaker	NConv	NConv	0.59	1.04	1.03	1.05	1.03	1.03	NConv	Continue to monitor
MADERA 70 kV	P7-1:A13:13:_BORDEN-GREGG 230KV #1 & #2 [4400]	P7	DCTL	NConv	NConv	0.59	1.04	1.03	1.05	1.03	1.03	NConv	Continue to monitor
MALAGA 115 kV	Base Case	P0	Base case	1.01	1.01	0.94	1.07	1.02	1.07	1.01	1.02	1.01	Continue to monitor
MALAGA 115 kV	P5-5c:A14:10:_Mccall 230-115kV Batt(Failure OF NON-REDUNDENT BATT)	P5	Non-Redundant battery supply/Relay	NConv	NConv	NConv	1.07	0.98	1.08	0.90	0.89	NConv	Install redundant battery
MANCHSTR 115 kV	Base Case	P0	Base case	0.98	0.97	0.89	1.07	1.01	1.06	1.01	1.01	0.97	Continue to monitor
MANCHSTR 115 kV	P1-2:A14:43:_LASPALMS-MANCHSTR-AIRWAYS2-SANGER 115KV [0]	P1	N-1	0.97	0.97	0.88	1.07	1.01	1.06	1.01	1.00	0.97	Continue to monitor
MANCHSTR 115 kV	P1-2:A14:72:_HERNDON-MANCHESTER 115KV [1780]	P1	N-1	0.95	0.95	0.85	1.08	0.99	1.07	0.98	0.98	0.95	Continue to monitor
MANCHSTR 115 kV	P1-2:A14:74:_HERNDON-WOODWARD 115KV [1790]	P1	N-1	0.98	0.97	0.88	1.07	1.01	1.06	1.01	1.01	0.97	Continue to monitor
MANCHSTR 115 kV	P1-3:A14:45:_SANGERCNG 115/13.8KV TB 1	P1	N-1	0.98	0.97	0.88	1.07	1.01	1.06	1.01	1.01	0.97	Continue to monitor
MANCHSTR 115 kV	P2-1:A14:105:_SANGER COGEN TAP 115KV [9141] (SANGERCNGT-SANGERCNG)	P2	Bus/Breaker	0.98	0.97	0.88	1.07	1.01	1.06	1.01	1.01	0.97	Continue to monitor
MANCHSTR 115 kV	P2-1:A14:40:_MANCHESTER-AIRWAYS-SANGER 115KV [2180] (AIRWAYJ1-SANGER)	P2	Bus/Breaker	0.95	0.95	0.87	1.06	0.99	1.05	1.00	0.98	0.95	Continue to monitor
MANCHSTR 115 kV	P2-3:A14:144:_MANCHSTR 115KV - RING R3 & R4	P2	Bus/Breaker	0.96	0.96	0.87	1.07	0.99	1.06	0.99	0.99	0.95	Continue to monitor
MANCHSTR 115 kV	P2-4:A14:1:_HERNDON 230KV - SECTION 1E & 2E	P2	Bus/Breaker	0.89	0.90	0.82	1.08	0.95	1.08	0.96	0.96	0.89	Under review
MANCHSTR 115 kV	P2-4:A14:21:_HERNDON 115KV - SECTION 1D & 2D	P2	Bus/Breaker	0.90	0.90	0.84	1.09	0.97	1.08	0.96	0.97	0.90	Under review
MANCHSTR 115 kV	P1-1:A14:47:_KERCKHOFFPH2 13.80KV GEN UNIT 1&P1-2:A14:72:_HERNDON-MANCHESTER 115KV [1780]	P3	G-1/N-1	NA	NA	0.84	NA	NA	NA	NA	NA	NA	Continue to monitor
MANCHSTR 115 kV	P5-5a:A14:2:_HERNDON #1 115KV BUS (Failure OF NON-REDUNDENT RELAY)	P5	Non-Redundant battery supply/Relay	0.90	0.91	0.86	1.08	0.97	1.08	0.96	0.97	0.90	Install redundant relay
MANCHSTR 115 kV	P1-2:A14:49:_BARTON-AIRWAYS-SANGER 115KV [1060]&P1-2:A14:72:_HERNDON-MANCHESTER 115KV [1780]	P6	N-1-1	NA	NA	0.83	NA	NA	NA	NA	NA	NA	Continue to monitor
MANCHSTR 115 kV	P7-1:A13:10:_ATWATER-EL CAPITAN 115KV [1020] & WILSON-ATWATER #2 115KV [4160]	P7	DCTL	0.98	0.97	0.90	1.07	1.01	1.06	1.01	1.01	0.97	Continue to monitor

Substation	Contingency	Category	Category Description	Voltage PU (Baseline Scenarios)						Voltage PU (Sensitivity Scenarios)			Project & Potential Mitigation Solutions
				2025 Summer Peak	2028 Summer Peak	2035 Summer Peak	2028 Summer-Off Peak	2025 Spring Off-Peak	2028 Spring Off-Peak	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	2028 SP High CEC Forecast	
MANCHSTR 115 kV	P7-1:A13:19:_COTTLE-MELONES 230KV [4530] & BELLOTA-WARNERVILLE 230KV [4380]	P7	DCTL	NConv	NConv	0.90	NConv	1.01	1.06	NConv	1.01	NConv	Continue to monitor
MANCHSTR 115 kV	P7-1:A14:34:_MCCALL-REEDLEY 115KV [2320] & MCCALL-SANGER #3 115KV [2350]	P7	DCTL	0.96	0.96	0.88	1.07	1.01	1.06	1.00	1.00	0.96	Continue to monitor
MARIPOS2 70 kV	Base Case	P0	Base case	0.93	0.92	0.91	1.00	0.94	1.00	0.95	0.94	0.92	Add voltage support
MARIPOS2 70 kV	P1-1:A13:33:_EXCHQUER 13.80KV GEN UNIT 1	P1	N-1	0.95	0.94	0.89	1.00	0.92	1.01	0.93	0.92	0.94	Continue to monitor
MARIPOS2 70 kV	P1-3:A13:31:_EXCHQUER 13.8/115KV TB 1	P1	N-1	0.95	0.94	0.89	1.00	0.92	1.01	0.94	0.92	0.94	Continue to monitor
MARIPOS2 70 kV	P2-3:A14:1:_GREGG 230KV - MIDDLE BREAKER BAY 1	P2	Bus/Breaker	NConv	NConv	0.86	0.99	0.94	1.00	0.95	0.94	NConv	Continue to monitor
MARIPOS2 70 kV	P1-1:A13:33:_EXCHQUER 13.80KV GEN UNIT 1&P1-2:A13:60:_PANOCHE-MENDOTA 115KV [3230]	P3	G-1/N-1	NA	NA	0.82	NA	NA	NA	NA	NA	NA	Continue to monitor
MARIPOS2 70 kV	P5-5c:A13:2:_Wilson 230-115kV Batt(Failure OF NON-REDUNDENT BATT)	P5	Non-Redundant battery supply/Relay	NConv	NConv	NConv	0.73	NConv	0.95	NConv	NConv	NConv	Install redundant battery
MARIPOS2 70 kV	P1-2:A13:46:_WILSON-LE GRAND 115KV [4170]&P1-2:A13:60:_PANOCHE-MENDOTA 115KV [3230]	P6	N-1-1	NA	NA	0.64	NA	0.82	NA	0.86	0.81	NA	Continue to monitor
MARIPOS2 70 kV	P7-1:A13:13:_BORDEN-GREGG 230KV #1 & #2 [4400]	P7	DCTL	NConv	NConv	0.86	0.99	0.94	1.00	0.95	0.94	NConv	Continue to monitor
MCMULLN1 230 kV	P2-4:A14:1:_HERNDON 230KV - SECTION 1E & 2E	P2	Bus/Breaker	0.95	0.95	0.89	1.03	0.96	1.03	0.99	0.96	0.95	Continue to monitor
MENDOTA 115 kV	P1-2:A13:60:_PANOCHE-MENDOTA 115KV [3230]	P1	N-1	1.03	1.03	NConv	1.03	0.89	1.03	1.02	0.89	1.03	Generation re-dispatch
MENDOTA 115 kV	P2-3:A13:40:_MENDOTA 115KV - MIDDLE BREAKER BAY 3	P2	Bus/Breaker	1.02	1.01	NConv	1.03	0.89	1.02	1.02	0.89	1.01	Generation re-dispatch
MENDOTA 115 kV	P2-4:A13:13:_PANOCHE1 SECTION 1D & PANOCHE2 SECTION 2D 115KV	P2	Bus/Breaker	1.03	1.03	NConv	1.03	0.88	1.03	1.02	0.87	1.03	Generation re-dispatch
MENDOTA 115 kV	P1-1:A13:33:_EXCHQUER 13.80KV GEN UNIT 1&P1-2:A13:60:_PANOCHE-MENDOTA 115KV [3230]	P3	G-1/N-1	NA	NA	0.76	NA	0.88	NA	NA	0.87	NA	Continue to monitor
MENDOTA 115 kV	P5-5c:A13:4:_Panoche 230-115kV Batt(Failure OF NON-REDUNDENT BATT)	P5	Non-Redundant battery supply/Relay	1.03	1.03	0.88	1.03	0.85	1.03	1.02	NConv	1.03	Install redundant battery
MENDOTA 115 kV	P1-2:A13:46:_WILSON-LE GRAND 115KV [4170]&P1-2:A13:60:_PANOCHE-MENDOTA 115KV [3230]	P6	N-1-1	NA	NA	0.41	NA	0.54	NA	NA	0.53	NA	Continue to monitor
MENDOTA 70 kV	P1-2:A13:60:_PANOCHE-MENDOTA 115KV [3230]	P1	N-1	1.04	1.04	NConv	1.04	0.90	1.04	1.04	0.90	1.04	Sensitivity only
MENDOTA 70 kV	P2-3:A13:40:_MENDOTA 115KV - MIDDLE BREAKER BAY 3	P2	Bus/Breaker	1.03	1.03	NConv	1.04	0.90	1.04	1.03	0.90	1.03	Sensitivity only
MERCED 115 kV	P2-3:A14:1:_GREGG 230KV - MIDDLE BREAKER BAY 1	P2	Bus/Breaker	NConv	NConv	0.76	1.04	1.00	1.03	1.02	1.00	NConv	Continue to monitor
MERCED 115 kV	P5-5c:A13:2:_Wilson 230-115kV Batt(Failure OF NON-REDUNDENT BATT)	P5	Non-Redundant battery supply/Relay	NConv	NConv	NConv	0.29	NConv	0.60	NConv	NConv	NConv	Install redundant battery
MERCED 115 kV	P1-2:A13:46:_WILSON-LE GRAND 115KV [4170]&P1-2:A13:60:_PANOCHE-MENDOTA 115KV [3230]	P6	N-1-1	NA	NA	0.87	NA	NA	NA	NA	NA	NA	Continue to monitor

Substation	Contingency	Category	Category Description	Voltage PU (Baseline Scenarios)						Voltage PU (Sensitivity Scenarios)			Project & Potential Mitigation Solutions
				2025 Summer Peak	2028 Summer Peak	2035 Summer Peak	2028 Summer-Off Peak	2025 Spring Off-Peak	2028 Spring Off-Peak	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	2028 SP High CEC Forecast	
MERCED 115 kV	P7-1:A13:13:_BORDEN-GREGG 230KV #1 & #2 [4400]	P7	DCTL	NConv	NConv	0.76	1.04	1.00	1.03	1.02	1.00	NConv	Continue to monitor
MERCED 70 kV	P2-3:A14:1:_GREGG 230KV - MIDDLE BREAKER BAY 1	P2	Bus/Breaker	NConv	NConv	0.81	1.01	0.97	0.99	0.99	0.98	NConv	Continue to monitor
MERCED 70 kV	P7-1:A13:13:_BORDEN-GREGG 230KV #1 & #2 [4400]	P7	DCTL	NConv	NConv	0.81	1.01	0.97	0.99	0.99	0.98	NConv	Continue to monitor
MRCDFLLS 70 kV	P2-3:A14:1:_GREGG 230KV - MIDDLE BREAKER BAY 1	P2	Bus/Breaker	NConv	NConv	0.86	1.00	0.97	0.99	0.98	0.97	NConv	Continue to monitor
MRCDFLLS 70 kV	P1-1:A13:33:_EXCHQUER 13.80KV GEN UNIT 1&P1-2:A13:60:_PANOCHE-MENDOTA 115KV [3230]	P3	G-1/N-1	NA	NA	0.86	NA	NA	NA	NA	NA	NA	Continue to monitor
MRCDFLLS 70 kV	P5-5c:A13:2:_Wilson 230-115kV Batt(Failure of non-redundant batt)	P5	Non-Redundant battery supply/Relay	NConv	NConv	NConv	0.65	NConv	0.89	NConv	NConv	NConv	Install redundant battery
MRCDFLLS 70 kV	P1-2:A13:46:_WILSON-LE GRAND 115KV [4170]&P1-2:A13:60:_PANOCHE-MENDOTA 115KV [3230]	P6	N-1-1	NA	NA	0.72	NA	0.86	NA	0.87	0.85	NA	Continue to monitor
MRCDFLLS 70 kV	P7-1:A13:13:_BORDEN-GREGG 230KV #1 & #2 [4400]	P7	DCTL	NConv	NConv	0.86	1.00	0.97	0.99	0.98	0.97	NConv	Continue to monitor
NEWHALL 115 kV	P2-3:A14:1:_GREGG 230KV - MIDDLE BREAKER BAY 1	P2	Bus/Breaker	NConv	NConv	0.89	1.03	1.00	1.03	1.01	1.00	NConv	Continue to monitor
NEWHALL 115 kV	P2-4:A13:13:_PANOCHE1 SECTION 1D & PANOCHE2 SECTION 2D 115KV	P2	Bus/Breaker	0.99	0.99	NConv	1.02	0.90	1.01	0.98	0.90	0.99	Generation re-dispatch
NEWHALL 115 kV	P1-1:A13:33:_EXCHQUER 13.80KV GEN UNIT 1&P1-2:A13:60:_PANOCHE-MENDOTA 115KV [3230]	P3	G-1/N-1	NA	NA	0.78	NA	NA	NA	NA	0.89	NA	Continue to monitor
NEWHALL 115 kV	P5-5c:A13:4:_Panoche 230-115kV Batt(Failure of non-redundant batt)	P5	Non-Redundant battery supply/Relay	1.00	0.99	0.90	1.02	0.87	1.01	0.98	NConv	0.99	Install redundant battery
NEWHALL 115 kV	P1-2:A13:46:_WILSON-LE GRAND 115KV [4170]&P1-2:A13:60:_PANOCHE-MENDOTA 115KV [3230]	P6	N-1-1	NA	NA	0.43	NA	0.57	NA	NA	0.56	NA	Continue to monitor
NEWHALL 115 kV	P7-1:A13:13:_BORDEN-GREGG 230KV #1 & #2 [4400]	P7	DCTL	NConv	NConv	0.89	1.03	1.00	1.03	1.01	1.00	NConv	Continue to monitor
OAKHURST 115 kV	Base Case	P0	Base case	0.95	0.94	0.85	1.07	0.99	1.07	0.99	0.99	0.94	Add voltage support
OAKHURST 115 kV	P1-1:A14:47:_KERCKHOFFPH2 13.80KV GEN UNIT 1	P1	N-1	0.92	0.92	0.88	1.07	0.97	1.07	0.98	0.97	0.92	Continue to monitor
OAKHURST 115 kV	P2-4:A14:1:_HERNDON 230KV - SECTION 1E & 2E	P2	Bus/Breaker	0.90	0.91	0.86	1.08	0.95	1.08	0.96	0.95	0.91	Continue to monitor
OAKHURST 115 kV	P1-1:A14:47:_KERCKHOFFPH2 13.80KV GEN UNIT 1&P1-2:A14:74:_HERNDON-WOODWARD 115KV [1790]	P3	G-1/N-1	NA	NA	0.86	NA	NA	NA	NA	NA	NA	Continue to monitor
OAKHURST 115 kV	Base Case	P5	Non-Redundant battery supply/Relay	0.95	0.94	0.87	1.08	1.00	1.07	0.99	0.99	0.94	Continue to monitor
OAKHURST 115 kV	P1-2:A13:40:_LE GRAND-CHOWCHILLA 115KV [2110]&P1-2:A14:48:_KERCKHOFF-CLOVIS-SANGER #1 115KV [1890]	P6	N-1-1	NA	NA	0.78	NA	NA	NA	NA	NA	NA	Continue to monitor
OAKHURST 115 kV	P7-1:A13:13:_BORDEN-GREGG 230KV #1 & #2 [4400]	P7	DCTL	NConv	NConv	0.88	1.07	0.99	1.07	0.99	0.99	NConv	Continue to monitor

Reliability Assessment - Preliminary Study Results

Study Area: **PG&E Greater Fresno**
Low Voltages



Substation	Contingency	Category	Category Description	Voltage PU (Baseline Scenarios)						Voltage PU (Sensitivity Scenarios)			Project & Potential Mitigation Solutions
				2025 Summer Peak	2028 Summer Peak	2035 Summer Peak	2028 Summer-Off Peak	2025 Spring Off-Peak	2028 Spring Off-Peak	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	2028 SP High CEC Forecast	
OAKHURST 115 kV	P7-1:A14:27:_HERNDON-WOODWARD 115KV [1790] & BORDEN-COPPERMINE 70KV [8500]	P7	DCTL	0.92	0.92	0.87	1.08	0.99	1.08	0.98	0.99	0.91	Continue to monitor
ORO LOMA 115 kV	P1-2:A13:61:_PANOCHE-ORO LOMA 115KV [3240]	P1	N-1	0.90	0.89	0.87	1.08	0.96	1.07	1.01	0.96	0.89	Project: Review oroloma area reinforcement
ORO LOMA 115 kV	P2-4:A13:13:_PANOCHE1 SECTION 1D & PANOCHE2 SECTION 2D 115KV	P2	Bus/Breaker	0.73	0.72	NConv	1.06	0.90	1.10	0.95	0.89	0.71	Project:review oroloma area reinforcement
ORO LOMA 115 kV	P1-1:A13:33:_EXCHQUER 13.80KV GEN UNIT 1&P1-2:A13:61:_PANOCHE-ORO LOMA 115KV [3240]	P3	G-1/N-1	NA	NA	0.87	NA	NA	NA	NA	NA	NA	Continue to monitor
ORO LOMA 115 kV	P5-5c:A13:4:_Panoche 230-115KV Batt(Failure OF NON-REDUNDENT BATT)	P5	Non-Redundant battery supply/Relay	0.89	0.89	0.85	1.07	0.91	1.07	1.01	NConv	0.88	Install redundant battery
ORO LOMA 115 kV	P1-2:A13:61:_PANOCHE-ORO LOMA 115KV [3240]&P1-2:A13:48:_WILSON-ORO LOMA 115KV [4200]	P6	N-1-1	NA	NA	0.77	NA	NA	NA	NA	NA	NA	Continue to monitor
ORO LOMA 115 kV	P7-1:A13:7:_LOS BANOS-PANOCHE #1 230KV [5030] & PANOCHE-ORO LOMA 115KV [3240]	P7	DCTL	0.90	0.89	0.87	1.08	0.96	1.07	1.01	0.96	0.89	Project:review oroloma area reinforcement
ORO LOMA 70 kV	P2-3:A13:42:_PANOCHE2 - 2D 115KV & PANOCHE-EXCELSIOR SW STA #2 LINE	P2	Bus/Breaker	0.82	0.81	0.93	1.03	1.02	1.04	1.03	1.02	0.80	Project:Oroloma area reinforcement
ORO LOMA 70 kV	P2-4:A13:13:_PANOCHE1 SECTION 1D & PANOCHE2 SECTION 2D 115KV	P2	Bus/Breaker	0.81	0.81	NConv	1.03	1.00	1.04	1.02	1.00	0.80	Project:review oroloma area reinforcement
OROSI 70 kV	Base Case	P0	Base case	1.00	1.01	0.95	1.04	1.02	1.04	1.01	1.02	1.01	Continue to monitor
OROSI 70 kV	P1-2:A14:117:_REEDLEY-DINUBA #1 70KV [9050]	P1	N-1	1.01	0.95	0.87	1.04	1.02	1.04	1.02	1.02	0.95	Continue to monitor
OROSI 70 kV	P1-2:A14:118:_REEDLEY-OROSI 70KV [9060]	P1	N-1	0.92	0.93	0.87	1.03	0.96	1.04	0.95	-1000.00	0.92	Continue to monitor
OROSI 70 kV	P2-3:A14:139:_REEDLEY 115KV - RING R5 & R6	P2	Bus/Breaker	0.95	0.95	0.87	1.04	1.00	1.05	1.00	1.00	0.94	Continue to monitor
OROSI 70 kV	P2-3:A14:51:_MC CALL 115KV - MIDDLE BREAKER BAY 2	P2	Bus/Breaker	0.95	0.95	0.86	1.04	0.99	1.04	0.99	1.00	0.95	Continue to monitor
OROSI 70 kV	P1-1:A14:47:_KERCKHOFFPH2 13.80KV GEN UNIT 1&P1-2:A14:117:_REEDLEY-DINUBA #1 70KV [9050]	P3	G-1/N-1	NA	NA	0.86	NA	NA	NA	NA	NA	NA	Continue to monitor
OROSI 70 kV	P5-5c:A14:10:_Mccall 230-115kv Batt(Failure OF NON-REDUNDENT BATT)	P5	Non-Redundant battery supply/Relay	NConv	NConv	NConv	1.04	0.98	1.05	0.93	0.87	NConv	Install redundant battery
OROSI 70 kV	P7-1:A14:34:_MCCALL-REEDLEY 115KV [2320] & MCCALL-SANGER #3 115KV [2350]	P7	DCTL	0.95	0.95	0.86	1.04	0.99	1.04	0.99	1.00	0.95	Continue to monitor
ORTIGA 70 kV	P1-2:A13:73:_LOS BANOS-LIVINGSTON JCT-CANAL 70KV [8940]	P1	N-1	0.86	0.87	0.96	1.05	0.92	1.05	0.95	0.95	0.87	Project:Losbanos area reinforcement
ORTIGA 70 kV	P1-1:A13:26:_VEGA 0.36KV GEN UNIT 1&P1-2:A13:73:_LOS BANOS-LIVINGSTON JCT-CANAL 70KV [8940]	P3	G-1/N-1	0.82	0.83	NA	NA	NA	NA	NA	NA	0.82	Operation solution
ORTIGA 70 kV	P7-1:A13:11:_LOS BANOS-PANOCHE #1 230KV [5030] & LOS BANOS-MERCY SPRINGS SW STA 70KV [8929]	P7	DCTL	0.90	0.90	0.99	1.05	0.90	1.07	0.96	0.96	0.90	Project:Losbanos area reinforcement
OXFORD 115 kV	P2-4:A13:13:_PANOCHE1 SECTION 1D & PANOCHE2 SECTION 2D 115KV	P2	Bus/Breaker	0.70	0.69	NConv	1.05	0.89	1.11	0.93	0.89	0.68	Under review
PARLIER 115 kV	Base Case	P0	Base case	0.97	0.97	0.91	1.07	1.01	1.07	1.00	1.00	0.97	Continue to monitor

Substation	Contingency	Category	Category Description	Voltage PU (Baseline Scenarios)						Voltage PU (Sensitivity Scenarios)			Project & Potential Mitigation Solutions
				2025 Summer Peak	2028 Summer Peak	2035 Summer Peak	2028 Summer-Off Peak	2025 Spring Off-Peak	2028 Spring Off-Peak	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	2028 SP High CEC Forecast	
PARLIER 115 kV	P1-1:A14:73:_KINGSBUR 13.80KV & SANGERCN 13.80KV & KINGSBUR 13.80KV & SANGERCN 13.80KV GEN UNITS	P1	N-1	0.96	0.96	0.89	1.07	1.00	1.07	1.00	1.00	0.96	Continue to monitor
PARLIER 115 kV	P2-4:A14:8:_MC CALL 230KV - SECTION 1E & 1D	P2	Bus/Breaker	0.90	0.90	NConv	1.07	0.97	1.06	0.94	0.95	0.90	Under review
PARLIER 115 kV	P5-5c:A14:10:_Mccall 230-115KV Batt(FAILURE OF NON-REDUNDENT BATT)	P5	Non-Redundant battery supply/Relay	NConv	NConv	NConv	1.07	0.93	1.08	0.88	0.84	NConv	Install redundant battery
PARLIER 115 kV	P7-1:A14:34:_MCCALL-REEDLEY 115KV [2320] & MCCALL-SANGER #3 115KV [2350]	P7	DCTL	0.93	0.93	0.85	1.07	0.98	1.07	0.97	0.97	0.93	Continue to monitor
PLSNTVLY 70 kV	P2-2:A14:20:_GATES D 230KV SECTION 2D	P2	Bus/Breaker	0.94	0.96	0.85	1.03	0.90	1.02	1.00	0.95	0.96	Continue to monitor
PLSNTVLY 70 kV	P2-4:A14:10:_GATES D 230KV - SECTION 2D & 1D	P2	Bus/Breaker	0.94	0.96	0.85	1.03	0.90	1.02	1.00	0.95	0.96	Continue to monitor
PLSNTVLY 70 kV	P1-1:A14:68:_CHV.COAL 9.11KV GEN UNIT 1&P1-3:A14:13:_GATES D 230/70KV TB 5	P3	G-1/N-1	NA	0.90	0.78	NA	0.86	NA	NA	NA	0.90	Operation solution
PLSNTVLY 70 kV	P5-5a:A14:1:_GATES SECTION D & E 230 KV BUS (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant battery supply/Relay	0.93	0.96	NConv	1.03	0.89	1.02	1.00	0.94	0.97	Install redundant relay
PMTFMPP 115 kV	P2-1:A13:46:_DAIRYLAND-MENDOTA 115KV [1360] (MENDOTA-GILLTAP)	P2	Bus/Breaker	0.93	0.92	0.90	1.04	0.96	1.02	0.96	0.96	0.92	Continue to monitor
PMTFMPP 115 kV	P2-3:A14:1:_GREGG 230KV - MIDDLE BREAKER BAY 1	P2	Bus/Breaker	NConv	NConv	0.89	1.03	1.00	1.03	1.01	1.00	NConv	Continue to monitor
PMTFMPP 115 kV	P2-4:A13:13:_PANOCHE1 SECTION 1D & PANOCHE2 SECTION 2D 115KV	P2	Bus/Breaker	0.99	0.99	NConv	1.02	0.89	1.01	0.98	0.89	0.99	Generation re-dispatch
PMTFMPP 115 kV	P1-1:A13:33:_EXCHQUER 13.80KV GEN UNIT 1&P1-2:A13:60:_PANOCHE-MENDOTA 115KV [3230]	P3	G-1/N-1	NA	NA	0.77	NA	NA	NA	NA	0.89	NA	Continue to monitor
PMTFMPP 115 kV	P5-5c:A13:4:_Panoche 230-115KV Batt(FAILURE OF NON-REDUNDENT BATT)	P5	Non-Redundant battery supply/Relay	0.99	0.99	0.89	1.02	0.87	1.01	0.98	NConv	0.99	Install redundant battery
PMTFMPP 115 kV	P1-2:A13:46:_WILSON-LE GRAND 115KV [4170]&P1-2:A13:60:_PANOCHE-MENDOTA 115KV [3230]	P6	N-1-1	NA	NA	0.43	NA	0.56	NA	NA	0.55	NA	Continue to monitor
PMTFMPP 115 kV	P7-1:A13:13:_BORDEN-GREGG 230KV #1 & #2 [4400]	P7	DCTL	NConv	NConv	0.89	1.03	1.00	1.03	1.01	1.00	NConv	Continue to monitor
PNEDLE 115 kV	Base Case	P0	Base case	0.98	0.97	0.89	1.07	1.01	1.05	1.01	1.01	0.97	Continue to monitor
PNEDLE 115 kV	P1-1:A14:47:_KERCKHOFFPH2 13.80KV GEN UNIT 1	P1	N-1	0.98	0.97	0.89	1.07	1.01	1.05	1.01	1.01	0.97	Continue to monitor
PNEDLE 115 kV	P1-2:A14:71:_HERNDON-BULLARD #2 115KV [1770]	P1	N-1	0.94	0.95	0.85	1.07	0.99	1.05	0.99	0.99	0.94	Continue to monitor
PNEDLE 115 kV	P1-3:A14:45:_SANGERCN 115/13.8KV TB 1	P1	N-1	0.98	0.97	0.89	1.07	1.01	1.05	1.01	1.01	0.97	Continue to monitor
PNEDLE 115 kV	P2-1:A14:86:_HERNDON-BULLARD #2 115KV [1770] (HERNDON-PNDLJ2)	P2	Bus/Breaker	0.94	0.94	0.85	1.07	0.99	1.05	0.99	0.99	0.94	Continue to monitor
PNEDLE 115 kV	P2-4:A14:1:_HERNDON 230KV - SECTION 1E & 2E	P2	Bus/Breaker	0.86	0.87	0.77	1.08	0.93	1.08	0.95	0.94	0.86	Under review
PNEDLE 115 kV	P1-1:A14:62:_HERNDN1T 13.20KV GEN UNIT 1&P1-2:A14:73:_HERNDON-BULLARD #1 115KV [1760]	P3	G-1/N-1	NA	NA	0.85	NA	NA	NA	NA	NA	NA	Continue to monitor
PNEDLE 115 kV	P5-5c:A14:32:_Pinedale 115KV Batt #1(FAILURE OF NON-REDUNDENT BATT)	P5	Non-Redundant battery supply/Relay	0.94	0.95	0.86	1.07	1.00	1.05	0.99	0.99	0.94	Install redundant battery

Substation	Contingency	Category	Category Description	Voltage PU (Baseline Scenarios)						Voltage PU (Sensitivity Scenarios)			Project & Potential Mitigation Solutions
				2025 Summer Peak	2028 Summer Peak	2035 Summer Peak	2028 Summer-Off Peak	2025 Spring Off-Peak	2028 Spring Off-Peak	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	2028 SP High CEC Forecast	
PNEDLE 115 kV	P1-2:A14:73:_HERNDON-BULLARD #1 115KV [1760]&P1-3:A14:3:_HERNDON 230/115KV TB 1	P6	N-1-1	NA	NA	0.84	NA	NA	NA	NA	NA	NA	Continue to monitor
PNEDLE 115 kV	P7-1:A13:15:_LASAGUILASS-PANOCHÉ #1 230KV [0] & LASAGUILASS-PANOCHÉ #2 230KV [0]	P7	DCTL	0.98	0.97	0.90	1.07	1.01	1.05	1.01	1.01	0.97	Continue to monitor
PNEDLE2 115 kV	Base Case	P0	Base case	0.98	0.98	0.90	1.07	1.01	1.05	1.01	1.01	0.97	Continue to monitor
PNEDLE2 115 kV	P1-2:A14:73:_HERNDON-BULLARD #1 115KV [1760]	P1	N-1	0.94	0.95	0.85	1.07	0.99	1.05	0.99	0.99	0.94	Continue to monitor
PNEDLE2 115 kV	P1-3:A14:17:_HAAS 230/13.8KV TB 1	P1	N-1	0.98	0.98	0.89	1.07	1.01	1.05	1.01	1.01	0.97	Continue to monitor
PNEDLE2 115 kV	P1-3:A14:35:_KERCKHOFFPH2 115/13.8KV TB 1	P1	N-1	0.98	0.98	0.89	1.07	1.01	1.05	1.01	1.01	0.97	Continue to monitor
PNEDLE2 115 kV	P1-3:A14:45:_SANGERCN 115/13.8KV TB 1	P1	N-1	0.98	0.98	0.89	1.07	1.01	1.05	1.01	1.01	0.97	Continue to monitor
PNEDLE2 115 kV	P2-1:A14:12:_HAAS-MCCALL 230KV [4850] (HAAS-BALCH3TP)	P2	Bus/Breaker	0.98	0.98	0.89	1.07	1.01	1.05	1.01	1.01	0.97	Continue to monitor
PNEDLE2 115 kV	P2-1:A14:86:_HERNDON-BULLARD #2 115KV [1770] (HERNDON-PNDLJ2)	P2	Bus/Breaker	0.92	0.93	0.83	1.07	0.98	1.06	0.97	0.98	0.93	Continue to monitor
PNEDLE2 115 kV	P2-4:A14:1:_HERNDON 230KV - SECTION 1E & 2E	P2	Bus/Breaker	0.86	0.87	0.78	1.08	0.93	1.08	0.95	0.94	0.86	Under review
PNEDLE2 115 kV	P1-1:A14:62:_HERNDNIT 13.20KV GEN UNIT 1&P1-2:A14:71:_HERNDON-BULLARD #2 115KV [1770]	P3	G-1/N-1	NA	NA	0.85	NA	NA	NA	NA	NA	NA	Continue to monitor
PNEDLE2 115 kV	P5-5c:A14:34:_Pinedale 115kV Batt #2(FAILURE OF NON-REDUNDENT BATT)	P5	Non-Redundant battery supply/Relay	0.94	0.95	0.86	1.07	1.00	1.05	0.99	0.99	0.94	Install redundant battery
PNEDLE2 115 kV	P1-2:A14:71:_HERNDON-BULLARD #2 115KV [1770]&P1-3:A14:3:_HERNDON 230/115KV TB 1	P6	N-1-1	NA	NA	0.84	NA	NA	NA	NA	NA	NA	Continue to monitor
PPG 115 kV	Base Case	P0	Base case	1.01	1.01	0.94	1.07	1.02	1.07	1.01	1.02	1.01	Continue to monitor
PPG 115 kV	P5-5c:A14:10:_Mccall 230-115kV Batt(FAILURE OF NON-REDUNDENT BATT)	P5	Non-Redundant battery supply/Relay	NConv	NConv	NConv	1.07	0.98	1.08	0.90	0.89	NConv	Install redundant battery
PPG 115 kV	P1-3:A14:7:_MC CALL 230/115KV TB 3&P1-3:A14:5:_MC CALL 230/115KV TB 1	P6	N-1-1	NA	NA	0.88	NA	NA	NA	NA	NA	NA	Continue to monitor
RAINBW 115 kV	Base Case	P0	Base case	0.98	0.98	0.91	1.07	1.01	1.07	1.01	1.01	0.98	Continue to monitor
RAINBW 115 kV	P1-2:A14:70:_HERNDON-BARTON 115KV [1750]	P1	N-1	0.97	0.98	0.89	1.07	1.01	1.07	1.00	1.01	0.97	Continue to monitor
RAINBW 115 kV	P2-4:A14:21:_HERNDON 115KV - SECTION 1D & 2D	P2	Bus/Breaker	0.93	0.94	0.89	1.08	1.00	1.08	0.98	0.99	0.93	Continue to monitor
RAINBW 115 kV	P1-1:A14:47:_KERCKHOFFPH2 13.80KV GEN UNIT 1&P1-3:A14:5:_MC CALL 230/115KV TB 1	P3	G-1/N-1	NA	NA	0.88	NA	NA	NA	NA	NA	NA	Continue to monitor
RAINBW 115 kV	P5-5c:A14:10:_Mccall 230-115kV Batt(FAILURE OF NON-REDUNDENT BATT)	P5	Non-Redundant battery supply/Relay	NConv	NConv	NConv	1.07	0.95	1.08	0.91	0.86	NConv	Install redundant battery
RAINBW 115 kV	P7-1:A14:25:_HERNDON-BARTON 115KV [1750] & MANCHESTER-AIRWAYS-SANGER 115KV [2180]	P7	DCTL	0.98	0.98	0.89	1.07	1.01	1.07	1.00	1.01	0.97	Continue to monitor

Substation	Contingency	Category	Category Description	Voltage PU (Baseline Scenarios)						Voltage PU (Sensitivity Scenarios)			Project & Potential Mitigation Solutions
				2025 Summer Peak	2028 Summer Peak	2035 Summer Peak	2028 Summer-Off Peak	2025 Spring Off-Peak	2028 Spring Off-Peak	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	2028 SP High CEC Forecast	
RAINBW 115 kV	P7-1:A14:27:_HERNDON-WOODWARD 115KV [1790] & BORDEN-COPPERMINE 70KV [8500]	P7	DCTL	0.98	0.98	0.90	1.07	1.01	1.07	1.01	1.01	0.97	Continue to monitor
RAINBW 115 kV	P7-1:A14:34:_MCCALL-REEDLEY 115KV [2320] & MCCALL-SANGER #3 115KV [2350]	P7	DCTL	0.96	0.96	0.88	1.07	1.00	1.07	0.99	0.99	0.96	Continue to monitor
RANCHRS 115 kV	Base Case	P0	Base case	1.01	1.01	0.94	1.07	1.02	1.07	1.01	1.02	1.01	Continue to monitor
RANCHRS 115 kV	P1-3:A14:7:_MC CALL 230/115KV TB 3&P1-3:A14:5:_MC CALL 230/115KV TB 1	P6	N-1-1	NA	NA	0.88	NA	NA	NA	NA	NA	NA	Continue to monitor
REEDLEY 115 kV	Base Case	P0	Base case	0.97	0.97	0.90	1.07	1.00	1.07	1.00	1.00	0.97	Continue to monitor
REEDLEY 115 kV	P1-3:A14:45:_SANGERCN 115/13.8KV TB 1	P1	N-1	0.96	0.96	0.88	1.07	1.00	1.07	1.00	1.00	0.96	Continue to monitor
REEDLEY 115 kV	P1-3:A14:6:_MC CALL 230/115KV TB 2	P1	N-1	0.97	0.97	0.90	1.07	1.00	1.07	1.00	1.00	0.97	Continue to monitor
REEDLEY 115 kV	P2-1:A14:107:_SANGER-REEDLEY 115KV [9140] (PARLIER-REEDLEY)	P2	Bus/Breaker	0.96	0.96	0.89	1.07	0.99	1.07	1.00	0.99	0.95	Continue to monitor
REEDLEY 115 kV	P2-1:A14:55:_MCCALL-REEDLEY 115KV [2320] (MC CALL-WAHTOKE)	P2	Bus/Breaker	0.91	0.91	0.84	1.07	0.97	1.08	0.96	0.96	0.91	Continue to monitor
REEDLEY 115 kV	P2-3:A14:51:_MC CALL 115KV - MIDDLE BREAKER BAY 2	P2	Bus/Breaker	0.90	0.90	0.82	1.07	0.96	1.08	0.95	0.95	0.90	Continue to monitor
REEDLEY 115 kV	P2-4:A14:9:_MC CALL 230KV - SECTION 1D & 2D	P2	Bus/Breaker	0.89	0.89	NConv	1.07	0.96	1.07	0.93	0.95	0.89	Under review
REEDLEY 115 kV	P5-5c:A14:10:_Mccall 230-115kv Batt(Failure OF NON-REDUNDENT BATT)	P5	Non-Redundant battery supply/Relay	NConv	NConv	NConv	1.07	0.91	1.09	0.87	0.82	NConv	Install redundant battery
REEDLEY 115 kV	P5-5c:A14:25:_Wahotoke 115kv Batt(Failure OF NON-REDUNDENT BATT)	P5	Non-Redundant battery supply/Relay	0.94	0.94	0.88	1.07	0.99	1.07	0.98	0.98	0.93	Install redundant battery
REEDLEY 115 kV	P7-1:A14:27:_HERNDON-WOODWARD 115KV [1790] & BORDEN-COPPERMINE 70KV [8500]	P7	DCTL	0.96	0.96	0.89	1.07	1.00	1.07	1.00	1.00	0.96	Continue to monitor
REEDLEY 115 kV	P7-1:A14:34:_MCCALL-REEDLEY 115KV [2320] & MCCALL-SANGER #3 115KV [2350]	P7	DCTL	0.90	0.90	0.82	1.07	0.96	1.08	0.95	0.95	0.90	Continue to monitor
REEDLEY 115 kV	P7-1:A14:6:_BALCH-SANGER 115KV [1050] & KINGS RIVER-SANGER-REEDLEY 115KV [2030]	P7	DCTL	0.95	0.95	0.90	1.07	0.99	1.07	0.99	0.99	0.95	Continue to monitor
REEDLEY 70 kV	P2-3:A14:51:_MC CALL 115KV - MIDDLE BREAKER BAY 2	P2	Bus/Breaker	0.98	0.98	0.90	1.04	1.02	1.04	1.02	1.02	0.98	Continue to monitor
REEDLEY 70 kV	P7-1:A14:34:_MCCALL-REEDLEY 115KV [2320] & MCCALL-SANGER #3 115KV [2350]	P7	DCTL	0.98	0.98	0.89	1.04	1.02	1.04	1.02	1.02	0.98	Continue to monitor
RIOBRVFSNO 115 kV	Base Case	P0	Base case	1.01	1.01	0.94	1.07	1.02	1.07	1.02	1.02	1.01	Continue to monitor
RIOBRVFSNO 115 kV	P1-3:A14:7:_MC CALL 230/115KV TB 3&P1-3:A14:5:_MC CALL 230/115KV TB 1	P6	N-1-1	NA	NA	0.88	NA	NA	NA	NA	NA	NA	Continue to monitor
RIVERROC 70 kV	P2-3:A14:1:_GREGG 230KV - MIDDLE BREAKER BAY 1	P2	Bus/Breaker	NConv	NConv	0.57	1.04	1.01	1.05	1.06	1.01	NConv	Continue to monitor
RIVERROC 70 kV	P5-5c:A13:8:_Borden 230-70kv Batt(Failure OF NON-REDUNDENT BATT)	P5	Non-Redundant battery supply/Relay	NA	NA	0.68	NA	NA	NA	NA	NA	NA	Install redundant battery
RIVERROC 70 kV	P7-1:A13:13:_BORDEN-GREGG 230KV #1 & #2 [4400]	P7	DCTL	NConv	NConv	0.57	1.04	1.01	1.05	1.06	1.01	NConv	Continue to monitor
SANDCRK 70 kV	Base Case	P0	Base case	0.99	0.99	0.93	1.04	1.01	1.04	1.00	1.01	0.99	Continue to monitor
SANDCRK 70 kV	P1-2:A14:117:_REEDLEY-DINUBA #1 70KV [9050]	P1	N-1	1.00	0.94	0.85	1.04	1.01	1.04	1.00	1.01	0.93	Continue to monitor

Substation	Contingency	Category	Category Description	Voltage PU (Baseline Scenarios)						Voltage PU (Sensitivity Scenarios)			Project & Potential Mitigation Solutions
				2025 Summer Peak	2028 Summer Peak	2035 Summer Peak	2028 Summer-Off Peak	2025 Spring Off-Peak	2028 Spring Off-Peak	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	2028 SP High CEC Forecast	
SANDCRK 70 kV	P2-1:A14:55:_MCCALL-REEDLEY 115KV [2320] (MC CALL-WAHTOKE)	P2	Bus/Breaker	0.94	0.95	0.86	1.04	0.98	1.04	0.98	0.98	0.94	Continue to monitor
SANDCRK 70 kV	P2-3:A14:139:_REEDLEY 115KV - RING R5 & R6	P2	Bus/Breaker	0.93	0.93	0.85	1.04	0.99	1.05	0.98	0.99	0.93	Continue to monitor
SANDCRK 70 kV	P2-3:A14:51:_MC CALL 115KV - MIDDLE BREAKER BAY 2	P2	Bus/Breaker	0.93	0.94	0.84	1.04	0.98	1.04	0.98	0.99	0.93	Continue to monitor
SANDCRK 70 kV	P1-1:A14:47:_KERCKHOFFPH2 13.80KV GEN UNIT 1&P1-2:A14:117:_REEDLEY-DINUBA #1 70KV [9050]	P3	G-1/N-1	NA	NA	0.85	NA	NA	NA	NA	NA	NA	Continue to monitor
SANDCRK 70 kV	P5-5c:A14:10:_Mccall 230-115kv Batt(Failure OF NON-REDUNDENT BATT)	P5	Non-Redundant battery supply/Relay	NConv	NConv	NConv	1.04	0.97	1.05	0.91	0.86	NConv	Install redundant battery
SANDCRK 70 kV	P7-1:A14:34:_MCCALL-REEDLEY 115KV [2320] & MCCALL-SANGER #3 115KV [2350]	P7	DCTL	0.93	0.94	0.83	1.04	0.98	1.04	0.98	0.99	0.93	Continue to monitor
SANGER 115 kV	Base Case	P0	Base case	0.99	0.99	0.92	1.07	1.02	1.07	1.01	1.01	0.99	Continue to monitor
SANGER 115 kV	P1-2:A14:70:_HERNDON-BARTON 115KV [1750]	P1	N-1	0.98	0.98	0.90	1.07	1.02	1.07	1.00	1.01	0.98	Continue to monitor
SANGER 115 kV	P2-4:A14:1:_HERNDON 230KV - SECTION 1E & 2E	P2	Bus/Breaker	0.93	0.94	0.89	1.07	0.99	1.08	0.99	0.99	0.94	Continue to monitor
SANGER 115 kV	P1-1:A14:47:_KERCKHOFFPH2 13.80KV GEN UNIT 1&P1-3:A14:5:_MC CALL 230/115KV TB 1	P3	G-1/N-1	NA	NA	0.89	NA	NA	NA	NA	NA	NA	Continue to monitor
SANGER 115 kV	P5-5c:A14:10:_Mccall 230-115kv Batt(Failure OF NON-REDUNDENT BATT)	P5	Non-Redundant battery supply/Relay	NConv	NConv	NConv	1.07	0.96	1.08	0.91	0.87	NConv	Install redundant battery
SANGER 115 kV	P1-3:A14:7:_MC CALL 230/115KV TB 3&P1-3:A14:5:_MC CALL 230/115KV TB 1	P6	N-1-1	NA	NA	0.87	NA	NA	NA	NA	NA	NA	Continue to monitor
SANGER 115 kV	P7-1:A14:25:_HERNDON-BARTON 115KV [1750] & MANCHESTER-AIRWAYS-SANGER 115KV [2180]	P7	DCTL	0.98	0.98	0.90	1.07	1.01	1.07	1.00	1.01	0.98	Continue to monitor
SANGERCN 115 kV	Base Case	P0	Base case	0.99	0.99	0.92	1.07	1.01	1.07	1.01	1.01	0.99	Continue to monitor
SANGERCN 115 kV	P1-3:A14:45:_SANGERCN 115/13.8KV TB 1	P1	N-1	0.98	0.98	0.90	1.07	1.01	1.07	1.01	1.01	0.98	Continue to monitor
SANGERCN 115 kV	P2-3:A14:51:_MC CALL 115KV - MIDDLE BREAKER BAY 2	P2	Bus/Breaker	0.96	0.96	0.89	1.07	1.00	1.07	0.99	0.99	0.96	Continue to monitor
SANGERCN 115 kV	P2-4:A14:1:_HERNDON 230KV - SECTION 1E & 2E	P2	Bus/Breaker	0.94	0.94	0.90	1.07	0.99	1.08	0.98	0.98	0.94	Continue to monitor
SANGERCN 115 kV	P7-1:A14:34:_MCCALL-REEDLEY 115KV [2320] & MCCALL-SANGER #3 115KV [2350]	P7	DCTL	0.96	0.96	0.89	1.07	1.00	1.07	0.99	0.99	0.96	Continue to monitor
SANGERCN 13.8 kV	P1-3:A14:7:_MC CALL 230/115KV TB 3&P1-3:A14:5:_MC CALL 230/115KV TB 1	P6	N-1-1	NA	NA	0.87	NA	NA	NA	NA	NA	NA	Continue to monitor
SAXONCRK 70 kV	Base Case	P0	Base case	0.94	0.94	0.96	1.00	0.96	0.98	0.95	0.96	0.94	Add voltage support
SAXONCRK 70 kV	P1-3:A13:31:_EXCHQUER 13.8/115KV TB 1	P1	N-1	0.92	0.92	0.88	1.00	0.93	0.99	0.94	0.93	0.92	Continue to monitor
SAXONCRK 70 kV	P2-3:A14:1:_GREGG 230KV - MIDDLE BREAKER BAY 1	P2	Bus/Breaker	NConv	NConv	0.84	0.99	0.95	0.98	0.95	0.96	NConv	Continue to monitor
SAXONCRK 70 kV	P1-1:A13:33:_EXCHQUER 13.80KV GEN UNIT 1&P1-2:A13:60:_PANOCHE-MENDOTA 115KV [3230]	P3	G-1/N-1	NA	NA	0.80	NA	NA	NA	NA	NA	NA	Continue to monitor
SAXONCRK 70 kV	P5-5c:A13:2:_Wilson 230-115kv Batt(Failure OF NON-REDUNDENT BATT)	P5	Non-Redundant battery supply/Relay	NConv	NConv	NConv	0.73	NConv	0.93	NConv	NConv	NConv	Install redundant battery

Substation	Contingency	Category	Category Description	Voltage PU (Baseline Scenarios)						Voltage PU (Sensitivity Scenarios)			Project & Potential Mitigation Solutions
				2025 Summer Peak	2028 Summer Peak	2035 Summer Peak	2028 Summer-Off Peak	2025 Spring Off-Peak	2028 Spring Off-Peak	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	2028 SP High CEC Forecast	
SAXONCRK 70 kV	P1-2:A13:46:_WILSON-LE GRAND 115KV [4170]&P1-2:A13:60:_PANOCHE-MENDOTA 115KV [3230]	P6	N-1-1	NA	NA	0.62	NA	0.80	NA	0.84	0.79	NA	Continue to monitor
SAXONCRK 70 kV	P7-1:A13:13:_BORDEN-GREGG 230KV #1 & #2 [4400]	P7	DCTL	NConv	NConv	0.84	0.99	0.95	0.98	0.95	0.96	NConv	Continue to monitor
SESWTF 115 kV	Base Case	P0	Base case	0.98	0.98	0.90	1.07	1.01	1.06	1.01	1.00	0.98	Continue to monitor
SESWTF 115 kV	P1-2:A14:70:_HERNDON-BARTON 115KV [1750]	P1	N-1	0.95	0.95	0.86	1.08	0.99	1.08	0.99	0.99	0.95	Continue to monitor
SESWTF 115 kV	P1-3:A14:45:_SANGERCN 115/13.8KV TB 1	P1	N-1	0.98	0.98	0.89	1.07	1.01	1.06	1.01	1.00	0.98	Continue to monitor
SESWTF 115 kV	P1-3:A14:5:_MC CALL 230/115KV TB 1	P1	N-1	0.97	0.97	0.89	1.07	1.00	1.06	1.00	1.00	0.97	Continue to monitor
SESWTF 115 kV	P2-1:A14:12:_HAAS-MCCALL 230KV [4850] (HAAS-BALCH3TP)	P2	Bus/Breaker	0.98	0.98	0.89	1.07	1.01	1.06	1.01	1.00	0.98	Continue to monitor
SESWTF 115 kV	P2-4:A14:1:_HERNDON 230KV - SECTION 1E & 2E	P2	Bus/Breaker	0.90	0.91	0.84	1.08	0.96	1.08	0.97	0.96	0.90	Continue to monitor
SESWTF 115 kV	P2-4:A14:21:_HERNDON 115KV - SECTION 1D & 2D	P2	Bus/Breaker	0.91	0.91	0.86	1.08	0.98	1.08	0.97	0.98	0.91	Continue to monitor
SESWTF 115 kV	P1-1:A14:47:_KERCKHOFFPH2 13.80KV GEN UNIT 1&P1-2:A14:70:_HERNDON-BARTON 115KV [1750]	P3	G-1/N-1	NA	NA	0.86	NA	NA	NA	NA	NA	NA	Continue to monitor
SESWTF 115 kV	P5-5a:A14:2:_HERNDON #1 115KV BUS (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant battery supply/Relay	0.91	0.92	0.88	1.08	0.98	1.08	0.97	0.98	0.91	Install redundant relay
SESWTF 115 kV	P1-3:A14:7:_MC CALL 230/115KV TB 3&P1-2:A14:70:_HERNDON-BARTON 115KV [1750]	P6	N-1-1	NA	NA	0.85	NA	NA	NA	NA	NA	NA	Continue to monitor
SESWTF 115 kV	P7-1:A14:25:_HERNDON-BARTON 115KV [1750] & MANCHESTER-AIRWAYS-SANGER 115KV [2180]	P7	DCTL	0.95	0.95	0.84	1.08	0.98	1.08	0.98	0.98	0.95	Continue to monitor
SHARON 115 kV	Base Case	P0	Base case	0.99	0.98	0.94	1.06	1.01	1.04	1.01	1.01	0.98	Continue to monitor
SHARON 115 kV	P1-2:A13:40:_LE GRAND-CHOWCHILLA 115KV [2110]	P1	N-1	0.86	0.88	NConv	1.07	0.93	1.08	0.95	0.93	0.88	Add voltage support
SHARON 115 kV	P2-1:A13:15:_LE GRAND-CHOWCHILLA 115KV [2110] (CHWCHLLA-CERTAN T)	P2	Bus/Breaker	0.86	0.88	NConv	1.07	0.93	1.08	0.95	0.93	0.88	Under review
SHARON 115 kV	P2-1:A13:16:_LE GRAND-CHOWCHILLA 115KV [2110] (CERTAN T-LE GRAND)	P2	Bus/Breaker	0.93	0.94	0.87	1.06	0.99	1.05	0.97	0.98	0.94	Continue to monitor
SHARON 115 kV	P2-3:A13:28:_LE GRAND - MA 115KV & LE GRAND-CHOWCHILLA LINE	P2	Bus/Breaker	0.86	0.88	NConv	1.07	0.93	1.08	0.95	0.93	0.88	Under review
SHARON 115 kV	P2-3:A14:1:_GREGG 230KV - MIDDLE BREAKER BAY 1	P2	Bus/Breaker	NConv	NConv	0.85	1.04	1.00	1.04	1.00	1.00	NConv	Continue to monitor
SHARON 115 kV	P1-1:A13:33:_EXCHQUER 13.80KV GEN UNIT 1&P1-2:A13:60:_PANOCHE-MENDOTA 115KV [3230]	P3	G-1/N-1	NA	NA	0.87	NA	NA	NA	NA	NA	NA	Continue to monitor
SHARON 115 kV	P5-5c:A13:12:_Le Grand 115kV Batt(Failure OF NON-REDUNDENT BATT)	P5	Non-Redundant battery supply/Relay	0.86	0.89	NA	1.07	0.93	1.08	0.95	0.93	0.88	Install redundant battery
SHARON 115 kV	P1-2:A13:46:_WILSON-LE GRAND 115KV [4170]&P1-2:A13:60:_PANOCHE-MENDOTA 115KV [3230]	P6	N-1-1	NA	NA	0.59	NA	0.74	NA	NA	0.73	NA	Continue to monitor
SHARON 115 kV	P7-1:A13:13:_BORDEN-GREGG 230KV #1 & #2 [4400]	P7	DCTL	NConv	NConv	0.85	1.04	1.00	1.04	1.00	1.00	NConv	Continue to monitor

Reliability Assessment - Preliminary Study Results

Study Area: **PG&E Greater Fresno**
Low Voltages



Substation	Contingency	Category	Category Description	Voltage PU (Baseline Scenarios)						Voltage PU (Sensitivity Scenarios)			Project & Potential Mitigation Solutions
				2025 Summer Peak	2028 Summer Peak	2035 Summer Peak	2028 Summer-Off Peak	2025 Spring Off-Peak	2028 Spring Off-Peak	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	2028 SP High CEC Forecast	
SHEPHERD 115 kV	Base Case	P0	Base case	0.98	0.98	0.91	1.07	1.03	1.06	1.02	1.02	0.98	Continue to monitor
SHEPHERD 115 kV	P1-2:A14:74:_HERNDON-WOODWARD 115KV [1790]	P1	N-1	0.94	0.94	0.86	1.08	1.02	1.08	1.00	1.02	0.94	Continue to monitor
SHEPHERD 115 kV	P1-4:A14:29:_SHEPHERD SVD=V	P1	N-1	0.96	0.96	0.89	1.07	1.00	1.06	0.99	1.00	0.95	Continue to monitor
SHEPHERD 115 kV	P2-4:A14:21:_HERNDON 115KV - SECTION 1D & 2D	P2	Bus/Breaker	0.89	0.89	0.84	1.09	1.00	1.09	0.97	1.00	0.89	Under review
SHEPHERD 115 kV	P1-1:A14:47:_KERCKHOFFPH2 13.80KV GEN UNIT 1&P1-2:A14:74:_HERNDON-WOODWARD 115KV [1790]	P3	G-1/N-1	NA	NA	0.84	NA	NA	NA	NA	NA	NA	Continue to monitor
SHEPHERD 115 kV	P5-5a:A14:2:_HERNDON #1 115KV BUS (FAILURE OF NON-REDUNDENT RELAY)	P5	Non-Redundant battery supply/Relay	0.90	0.90	0.87	1.08	1.00	1.09	0.98	1.00	0.89	Install redundant relay
SHEPHERD 115 kV	P1-2:A13:40:_LE GRAND-CHOWCHILLA 115KV [2110]&P1-2:A14:74:_HERNDON-WOODWARD 115KV [1790]	P6	N-1-1	NA	NA	0.81	NA	NA	NA	NA	NA	NA	Continue to monitor
SHEPHERD 115 kV	P7-1:A14:27:_HERNDON-WOODWARD 115KV [1790] & BORDEN-COPPERMINE 70KV [8500]	P7	DCTL	0.94	0.94	0.86	1.08	1.02	1.08	1.00	1.02	0.94	Continue to monitor
SJNO2 70 kV	Base Case	P0	Base case	1.06	1.07	0.91	1.05	0.99	1.07	1.10	0.99	1.07	Continue to monitor
SJNO2 70 kV	P1-2:A14:107:_FRIANT-COPPERMINE 70KV [8660]	P1	N-1	1.06	1.07	0.82	1.06	0.96	1.08	1.12	0.98	1.07	Continue to monitor
SJNO2 70 kV	P1-3:A13:54:_BORDEN 70/230KV TB 1	P1	N-1	NA	NA	0.90	NA	NA	NA	NA	NA	NA	Continue to monitor
SJNO2 70 kV	P1-4:A14:37:_COPPRMNE SVD=V	P1	N-1	NA	1.07	0.87	1.05	NA	1.07	NA	NA	1.07	Continue to monitor
SJNO2 70 kV	P2-3:A14:1:_GREGG 230KV - MIDDLE BREAKER BAY 1	P2	Bus/Breaker	NConv	NConv	0.49	1.05	0.98	1.07	1.10	0.99	NConv	Continue to monitor
SJNO2 70 kV	P5-5c:A13:8:_Borden 230-70kV Batt(Failure OF NON-REDUNDENT BATT)	P5	Non-Redundant battery supply/Relay	NA	NA	0.61	NA	NA	NA	NA	NA	NA	Install redundant battery
SJNO2 70 kV	P7-1:A13:13:_BORDEN-GREGG 230KV #1 & #2 [4400]	P7	DCTL	NConv	NConv	0.49	1.05	0.98	1.07	1.10	0.99	NConv	Continue to monitor
SJNO3 70 kV	Base Case	P0	Base case	1.06	1.07	0.90	1.06	0.98	1.07	1.10	0.99	1.06	Continue to monitor
SJNO3 70 kV	P1-2:A14:107:_FRIANT-COPPERMINE 70KV [8660]	P1	N-1	1.06	1.07	0.81	1.06	0.96	1.08	1.13	0.98	1.06	Continue to monitor
SJNO3 70 kV	P1-3:A13:54:_BORDEN 70/230KV TB 1	P1	N-1	NA	NA	0.89	NA	NA	NA	NA	NA	NA	Continue to monitor
SJNO3 70 kV	P1-4:A14:37:_COPPRMNE SVD=V	P1	N-1	NA	1.07	0.86	1.06	NA	1.07	NA	NA	1.06	Continue to monitor
SJNO3 70 kV	P2-3:A13:17:_BORDEN 230KV - MIDDLE BREAKER BAY 4	P2	Bus/Breaker	1.06	1.07	0.89	1.06	0.97	1.07	1.10	0.99	1.06	Continue to monitor
SJNO3 70 kV	P2-3:A14:1:_GREGG 230KV - MIDDLE BREAKER BAY 1	P2	Bus/Breaker	NConv	NConv	0.48	1.05	0.98	1.07	1.10	0.98	NConv	Continue to monitor
SJNO3 70 kV	P5-5c:A13:8:_Borden 230-70kV Batt(Failure OF NON-REDUNDENT BATT)	P5	Non-Redundant battery supply/Relay	NA	NA	0.59	NA	NA	NA	NA	NA	NA	Install redundant battery
SJNO3 70 kV	P7-1:A13:13:_BORDEN-GREGG 230KV #1 & #2 [4400]	P7	DCTL	NConv	NConv	0.48	1.05	0.98	1.07	1.10	0.98	NConv	Continue to monitor
SNTA NLA 70 kV	P2-3:A13:52:_LOS BANS - MA 70KV & LOS BANOS-O'NEILL PGP LINE	P2	Bus/Breaker	NA	NA	0.82	NA	NA	NA	NA	NA	NA	Continue to monitor
SNTA RTA 70 kV	P2-2:A13:25:_PANOCHE2 115KV SECTION 2D	p2	Bus/Breaker	0.80	0.79	0.91	1.04	1.01	1.05	1.02	1.01	0.78	Project:Losbanos area reinforcement
SNTA RTA 70 kV	P2-3:A13:42:_PANOCHE2 - 2D 115KV & PANOCHE-EXCELSIOR SW STA #2 LINE	P2	Bus/Breaker	0.80	0.79	0.92	1.04	1.01	1.05	1.02	1.01	0.78	Project:Losbanos area reinforcement

Reliability Assessment - Preliminary Study Results

Study Area: PG&E Greater Fresno
Low Voltages



Substation	Contingency	Category	Category Description	Voltage PU (Baseline Scenarios)						Voltage PU (Sensitivity Scenarios)			Project & Potential Mitigation Solutions
				2025 Summer Peak	2028 Summer Peak	2035 Summer Peak	2028 Summer-Off Peak	2025 Spring Off-Peak	2028 Spring Off-Peak	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	2028 SP High CEC Forecast	
SNTA RTA 70 kV	P2-4:A13:13:_PANOCHE1 SECTION 1D & PANOCHE2 SECTION 2D 115KV	P2	Bus/Breaker	0.79	0.78	NConv	1.04	0.99	1.05	1.02	0.99	0.77	Under review
SNTA RTA 70 kV	P1-2:A13:61:_PANOCHE-ORO LOMA 115KV [3240]&P1-2:A13:48:_WILSON-ORO LOMA 115KV [4200]	P6	N-1-1	NA	NA	0.86	NA	NA	NA	NA	NA	NA	Continue to monitor
STONCRRL 70 kV	Base Case	P0	Base case	0.99	1.00	0.94	1.04	1.01	1.04	1.00	1.01	0.99	Continue to monitor
STONCRRL 70 kV	P1-2:A14:117:_REEDLEY-DINUBA #1 70KV [9050]	P1	N-1	1.00	0.94	0.85	1.04	1.01	1.04	1.01	1.01	0.93	Continue to monitor
STONCRRL 70 kV	P1-2:A14:118:_REEDLEY-OROSI 70KV [9060]	P1	N-1	0.91	0.92	0.86	1.03	0.95	1.04	0.94	-1000.00	0.91	Continue to monitor
STONCRRL 70 kV	P2-1:A14:55:_MCCALL-REEDLEY 115KV [2320] (MC CALL-WAHTOKE)	P2	Bus/Breaker	0.95	0.95	0.87	1.04	0.98	1.04	0.98	0.99	0.95	Continue to monitor
STONCRRL 70 kV	P2-1:A14:66:_MCCALL-REEDLEY 115KV [2320] (WAHTOKE-REEDLEY)	P2	Bus/Breaker	0.97	0.97	0.90	1.04	0.99	1.04	0.98	0.99	0.97	Continue to monitor
STONCRRL 70 kV	P2-3:A14:139:_REEDLEY 115KV - RING R5 & R6	P2	Bus/Breaker	0.94	0.94	0.86	1.04	0.99	1.05	0.99	0.99	0.93	Continue to monitor
STONCRRL 70 kV	P2-3:A14:140:_REEDLEY 115KV - RING R5 & R4	P2	Bus/Breaker	0.97	0.96	0.89	1.04	0.99	1.04	0.98	0.99	0.96	Continue to monitor
STONCRRL 70 kV	P2-3:A14:51:_MC CALL 115KV - MIDDLE BREAKER BAY 2	P2	Bus/Breaker	0.94	0.94	0.85	1.04	0.99	1.04	0.98	0.99	0.94	Continue to monitor
STONCRRL 70 kV	P1-1:A14:47:_KERCKHOFFPH2 13.80KV GEN UNIT 1&P1-2:A14:117:_REEDLEY-DINUBA #1 70KV [9050]	P3	G-1/N-1	NA	NA	0.85	NA	NA	NA	NA	NA	NA	Continue to monitor
STONCRRL 70 kV	P5-5c:A14:10:_Mccall 230-115kv Batt(Failure of non-redundant batt)	P5	Non-Redundant battery supply/Relay	NConv	NConv	NConv	1.04	0.97	1.05	0.92	0.86	NConv	Install redundant battery
STONCRRL 70 kV	P7-1:A14:34:_MCCALL-REEDLEY 115KV [2320] & MCCALL-SANGER #3 115KV [2350]	P7	DCTL	0.94	0.94	0.84	1.04	0.99	1.04	0.98	0.99	0.94	Continue to monitor
STOREY 2 230 kV	Base Case	P0	Base case	0.97	0.97	0.91	1.03	1.00	1.02	1.00	0.99	0.97	Continue to monitor
STOREY 2 230 kV	P2-3:A14:1:_GREGG 230KV - MIDDLE BREAKER BAY 1	P2	Bus/Breaker	NConv	NConv	0.62	1.01	0.95	1.00	0.96	0.95	NConv	Continue to monitor
STOREY 2 230 kV	P1-1:A14:47:_KERCKHOFFPH2 13.80KV GEN UNIT 1&P1-2:A13:6:_WARNERVILLE-WILSON 230KV [5870]	P3	G-1/N-1	NA	NA	0.90	NA	NA	NA	NA	NA	NA	Continue to monitor
STOREY 2 230 kV	P1-2:A14:15:_HELMES-GREGG #1 230KV [4870]&P1-2:A14:20:_MUSTANG SW STA-GREGG 230KV [4700]	P6	N-1-1	NA	NA	0.89	NA	NA	NA	NA	NA	NA	Continue to monitor
STOREY 2 230 kV	P7-1:A13:13:_BORDEN-GREGG 230KV #1 & #2 [4400]	P7	DCTL	NConv	NConv	0.62	1.01	0.95	1.00	0.96	0.95	NConv	Continue to monitor
SUNMAID 115 kV	Base Case	P0	Base case	1.01	1.01	0.94	1.06	1.02	1.06	1.02	1.02	1.01	Continue to monitor
SUNMAID 115 kV	P1-1:A14:47:_KERCKHOFFPH2 13.80KV GEN UNIT 1&P1-2:A14:86:_LEPRINO SW STA-GWF HANFORD SW STA 115KV [1740]	P3	G-1/N-1	NA	NA	0.90	NA	NA	NA	NA	NA	NA	Continue to monitor
SUNMAID 115 kV	P1-3:A14:7:_MC CALL 230/115KV TB 3&P1-3:A14:5:_MC CALL 230/115KV TB 1	P6	N-1-1	NA	NA	0.88	NA	NA	NA	NA	NA	NA	Continue to monitor
TOMATAK 70 kV	P1-2:A13:60:_PANOCHE-MENDOTA 115KV [3230]	P1	N-1	1.03	1.03	NConv	1.03	0.88	1.02	1.02	0.88	1.03	Generation re-dispatch
TOMATAK 70 kV	P2-1:A13:47:_PANOCHE-MENDOTA 115KV [3230] (PANOCHE-MENDOTA)	P2	Bus/Breaker	1.03	1.03	NConv	1.03	0.89	1.02	1.02	0.88	1.03	Generation re-dispatch
TOMATAK 70 kV	P2-3:A13:40:_MENDOTA 115KV - MIDDLE BREAKER BAY 3	P2	Bus/Breaker	1.01	1.01	NConv	1.03	0.88	1.02	1.01	0.88	1.01	Generation re-dispatch

Reliability Assessment - Preliminary Study Results

Study Area: PG&E Greater Fresno
Low Voltages



Substation	Contingency	Category	Category Description	Voltage PU (Baseline Scenarios)						Voltage PU (Sensitivity Scenarios)			Project & Potential Mitigation Solutions
				2025 Summer Peak	2028 Summer Peak	2035 Summer Peak	2028 Summer-Off Peak	2025 Spring Off-Peak	2028 Spring Off-Peak	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	2028 SP High CEC Forecast	
TOMATAK 70 kV	P2-4:A13:13:_PANOCHE1 SECTION 1D & PANOCHE2 SECTION 2D 115KV	P2	Bus/Breaker	1.02	1.02	NConv	1.03	0.87	1.02	1.02	0.87	1.02	Generation re-dispatch
TOMATAK 70 kV	P1-1:A13:33:_EXCHQUER 13.80KV GEN UNIT 1&P1-2:A13:60:_PANOCHE-MENDOTA 115KV [3230]	P3	G-1/N-1	NA	NA	0.75	NA	0.88	NA	NA	0.87	NA	Continue to monitor
TOMATAK 70 kV	P5-5c:A13:4:_Panoche 230-115kV Batt(Failure OF NON-REDUNDENT BATT)	P5	Non-Redundant battery supply/Relay	1.03	1.03	0.88	1.03	0.84	1.02	1.02	NConv	1.02	Install redundant battery
TOMATAK 70 kV	P1-2:A13:46:_WILSON-LE GRAND 115KV [4170]&P1-2:A13:60:_PANOCHE-MENDOTA 115KV [3230]	P6	N-1-1	NA	NA	0.40	NA	0.52	NA	NA	0.51	NA	Continue to monitor
TORNADO 70 kV	P2-2:A14:20:_GATES D 230KV SECTION 2D	P2	Bus/Breaker	0.92	0.94	0.82	1.03	0.87	1.03	1.00	0.93	0.94	Continue to monitor
TORNADO 70 kV	P2-4:A14:10:_GATES D 230KV - SECTION 2D & 1D	P2	Bus/Breaker	0.92	0.94	0.82	1.03	0.87	1.03	1.00	0.93	0.94	Continue to monitor
TORNADO 70 kV	P1-1:A14:68:_CHV.COAL 9.11KV GEN UNIT 1&P1-3:A14:13:_GATES D 230/70KV TB 5	P3	G-1/N-1	0.89	0.88	0.73	NA	0.83	NA	NA	0.89	0.88	Operation solution
TORNADO 70 kV	P5-5a:A14:1:_GATES SECTION D & E 230 KV BUS (Failure OF NON-REDUNDENT RELAY)	P5	Non-Redundant battery supply/Relay	0.92	0.94	NConv	1.03	0.86	1.03	1.00	0.91	0.95	Install redundant relay
TVY VLLY 70 kV	P2-3:A14:51:_MC CALL 115KV - MIDDLE BREAKER BAY 2	P2	Bus/Breaker	0.98	0.98	0.88	1.04	1.01	1.04	1.02	1.01	0.98	Continue to monitor
TVY VLLY 70 kV	P5-5c:A13:8:_Borden 230-70kV Batt(Failure OF NON-REDUNDENT BATT)	P5	Non-Redundant battery supply/Relay	NA	NA	0.84	NA	NA	NA	NA	NA	NA	Install redundant battery
TVY VLLY 70 kV	P7-1:A14:34:_MCCALL-REEDLEY 115KV [2320] & MCCALL-SANGER #3 115KV [2350]	P7	DCTL	0.98	0.98	0.88	1.04	1.01	1.04	1.02	1.01	0.98	Continue to monitor
WAHTOKE 115 kV	Base Case	P0	Base case	0.98	0.98	0.91	1.07	1.01	1.07	1.01	1.01	0.98	Continue to monitor
WAHTOKE 115 kV	P1-2:A14:70:_HERNDON-BARTON 115KV [1750]	P1	N-1	0.97	0.98	0.89	1.07	1.01	1.07	1.00	1.01	0.97	Continue to monitor
WAHTOKE 115 kV	P2-1:A14:105:_SANGER COGEN TAP 115KV [9141] (SANGERCNJT-SANGERCN)	P2	Bus/Breaker	0.98	0.98	0.90	1.07	1.01	1.07	1.01	1.01	0.98	Continue to monitor
WAHTOKE 115 kV	P2-1:A14:55:_MCCALL-REEDLEY 115KV [2320] (MC CALL-WAHTOKE)	P2	Bus/Breaker	0.90	0.91	0.83	1.07	0.96	1.08	0.96	0.95	0.90	Continue to monitor
WAHTOKE 115 kV	P2-4:A14:8:_MC CALL 230KV - SECTION 1E & 1D	P2	Bus/Breaker	0.90	0.91	NConv	1.07	0.96	1.06	0.95	0.95	0.90	Under review
WAHTOKE 115 kV	P5-5c:A14:10:_Mccall 230-115kV Batt(Failure OF NON-REDUNDENT BATT)	P5	Non-Redundant battery supply/Relay	NConv	NConv	NConv	1.07	0.91	1.09	0.87	0.81	NConv	Install redundant battery
WAHTOKE 115 kV	P7-1:A14:25:_HERNDON-BARTON 115KV [1750] & MANCHESTER-AIRWAYS-SANGER 115KV [2180]	P7	DCTL	0.97	0.98	0.89	1.07	1.01	1.07	1.00	1.01	0.97	Continue to monitor
WAHTOKE 115 kV	P7-1:A14:34:_MCCALL-REEDLEY 115KV [2320] & MCCALL-SANGER #3 115KV [2350]	P7	DCTL	0.89	0.90	0.81	1.07	0.96	1.08	0.95	0.95	0.89	Project:Review reedley area reinforcement
WILSONPGAE 115 kV	P2-3:A14:1:_GREGG 230KV - MIDDLE BREAKER BAY 1	P2	Bus/Breaker	NConv	NConv	0.77	1.05	1.01	1.03	1.03	1.01	NConv	Continue to monitor
WILSONPGAE 115 kV	P1-2:A13:30:_MELONES-WILSON 230KV [5080]&P1-2:A13:6:_WARNERVILLE-WILSON 230KV [5870]	P6	N-1-1	NA	NA	0.89	NA	NA	NA	NA	NA	NA	Continue to monitor
WILSONPGAE 115 kV	P7-1:A13:13:_BORDEN-GREGG 230KV #1 & #2 [4400]	P7	DCTL	NConv	NConv	0.77	1.05	1.01	1.03	1.03	1.01	NConv	Continue to monitor
WILSONPGAE 230 kV	Base Case	P0	Base case	0.98	0.97	0.94	1.02	0.99	1.00	0.99	0.99	0.97	Continue to monitor

Reliability Assessment - Preliminary Study Results

Study Area: PG&E Greater Fresno
Low Voltages



Substation	Contingency	Category	Category Description	Voltage PU (Baseline Scenarios)						Voltage PU (Sensitivity Scenarios)			Project & Potential Mitigation Solutions
				2025 Summer Peak	2028 Summer Peak	2035 Summer Peak	2028 Summer-Off Peak	2025 Spring Off-Peak	2028 Spring Off-Peak	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	2028 SP High CEC Forecast	
WILSONPGAE 230 kV	P2-3:A14:1:_GREGG 230KV - MIDDLE BREAKER BAY 1	P2	Bus/Breaker	NConv	NConv	0.73	1.01	0.97	1.00	0.98	0.97	NConv	Continue to monitor
WILSONPGAE 230 kV	P7-1:A13:13:_BORDEN-GREGG 230KV #1 & #2 [4400]	P7	DCTL	NConv	NConv	0.73	1.01	0.97	1.00	0.98	0.97	NConv	Continue to monitor
WISHON 70 kV	Base Case	P0	Base case	1.07	1.07	0.93	1.05	0.99	1.06	1.10	1.00	1.07	Continue to monitor
WISHON 70 kV	P1-1:A14:64:_FRIANTDAM 6.60KV GEN UNIT 2	P1	N-1	1.07	1.07	0.90	1.05	0.98	1.06	1.12	1.00	1.07	Continue to monitor
WISHON 70 kV	P1-2:A14:107:_FRIANT-COPPERMINE 70KV [8660]	P1	N-1	1.07	1.07	0.84	1.06	0.96	1.07	1.12	0.99	1.07	Continue to monitor
WISHON 70 kV	P1-4:A14:37:_COPPRMNE SVD=V	P1	N-1	NA	1.07	0.88	1.05	NA	1.06	NA	NA	1.07	Continue to monitor
WISHON 70 kV	P2-3:A14:1:_GREGG 230KV - MIDDLE BREAKER BAY 1	P2	Bus/Breaker	NConv	NConv	0.51	1.05	0.98	1.06	1.10	0.99	NConv	Continue to monitor
WISHON 70 kV	P5-5c:A13:8:_Borden 230-70KV Batt(Failure OF NON-REDUNDANT BATT)	P5	Non-Redundant battery supply/Relay	NA	NA	0.63	NA	NA	NA	NA	NA	NA	Install redundant battery
WISHON 70 kV	P7-1:A13:13:_BORDEN-GREGG 230KV #1 & #2 [4400]	P7	DCTL	NConv	NConv	0.51	1.05	0.98	1.06	1.10	0.99	NConv	Continue to monitor
WOODWARD 115 kV	Base Case	P0	Base case	0.98	0.98	0.91	1.07	1.02	1.06	1.02	1.02	0.98	Continue to monitor
WOODWARD 115 kV	P1-2:A14:74:_HERNDON-WOODWARD 115KV [1790]	P1	N-1	0.93	0.93	0.85	1.09	1.01	1.08	1.00	1.01	0.93	Continue to monitor
WOODWARD 115 kV	P1-2:A14:75:_WOODWARD-SHEPHERD 115KV [1895]	P1	N-1	0.97	0.97	0.89	1.07	1.00	1.06	1.01	1.00	0.97	Continue to monitor
WOODWARD 115 kV	P2-1:A14:105:_SANGER COGEN TAP 115KV [9141] (SANGERCNCT-SANGERCN)	P2	Bus/Breaker	0.98	0.98	0.90	1.07	1.02	1.06	1.02	1.02	0.98	Continue to monitor
WOODWARD 115 kV	P2-1:A14:88:_HERNDON-WOODWARD 115KV [1790] (HERNDON-CHLDHOSP_JCT)	P2	Bus/Breaker	0.93	0.93	0.84	1.08	1.01	1.08	0.99	1.01	0.92	Continue to monitor
WOODWARD 115 kV	P2-1:A14:89:_HERNDON-WOODWARD 115KV [1790] (WOODWARD-CHLDHOSP_JCT)	P2	Bus/Breaker	0.93	0.93	0.85	1.09	1.01	1.08	1.00	1.01	0.93	Continue to monitor
WOODWARD 115 kV	P2-4:A14:1:_HERNDON 230KV - SECTION 1E & 2E	P2	Bus/Breaker	0.89	0.89	0.82	1.08	0.96	1.08	0.97	0.96	0.89	Under review
WOODWARD 115 kV	P2-4:A14:21:_HERNDON 115KV - SECTION 1D & 2D	P2	Bus/Breaker	0.88	0.88	0.83	1.09	1.00	1.09	0.97	0.99	0.88	Under review
WOODWARD 115 kV	P1-1:A14:47:_KERCKHOFFPH2 13.80KV GEN UNIT 1&P1-2:A14:74:_HERNDON-WOODWARD 115KV [1790]	P3	G-1/N-1	NA	NA	0.83	NA	NA	NA	NA	NA	NA	Continue to monitor
WOODWARD 115 kV	P5-5a:A14:2:_HERNDON #1 115KV BUS (FAILURE OF NON-REDUNDANT RELAY)	P5	Non-Redundant battery supply/Relay	0.89	0.89	0.86	1.09	1.00	1.09	0.97	0.99	0.89	Install redundant relay
WOODWARD 115 kV	P1-2:A13:40:_LE GRAND-CHOWCHILLA 115KV [2110]&P1-2:A14:74:_HERNDON-WOODWARD 115KV [1790]	P6	N-1-1	NA	NA	0.80	NA	NA	NA	NA	NA	NA	Continue to monitor
WOODWARD 115 kV	P7-1:A14:27:_HERNDON-WOODWARD 115KV [1790] & BORDEN-COPPERMINE 70KV [8500]	P7	DCTL	0.93	0.93	0.85	1.09	1.02	1.08	1.00	1.01	0.93	Continue to monitor
WST FRSO 115 kV	Base Case	P0	Base case	0.95	0.95	0.88	1.07	1.00	1.07	0.98	1.00	0.95	Continue to monitor
WST FRSO 115 kV	P1-2:A14:120:_CAMDEN-KINGSBURG 70KV [8653]	P1	N-1	0.95	0.95	0.90	1.07	1.00	1.07	0.98	1.00	0.95	Continue to monitor
WST FRSO 115 kV	P1-2:A14:67:_SANGER-CALIFORNIA AVE 115KV [9130]	P1	N-1	0.90	0.90	0.82	1.06	0.97	1.07	0.93	0.97	0.90	Continue to monitor

Reliability Assessment - Preliminary Study Results

Study Area: PG&E Greater Fresno
Low Voltages



Substation	Contingency	Category	Category Description	Voltage PU (Baseline Scenarios)						Voltage PU (Sensitivity Scenarios)			Project & Potential Mitigation Solutions
				2025 Summer Peak	2028 Summer Peak	2035 Summer Peak	2028 Summer-Off Peak	2025 Spring Off-Peak	2028 Spring Off-Peak	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	2028 SP High CEC Forecast	
WST FRSO 115 kV	P1-2:A14:68:_WEST FRESNO-CALIFORNIA AVE 115KV [2361]	P1	N-1	0.92	0.92	0.84	1.07	0.98	1.07	0.95	0.98	0.92	Continue to monitor
WST FRSO 115 kV	P1-3:A14:5:_MC CALL 230/115KV TB 1	P1	N-1	0.94	0.94	0.87	1.07	0.99	1.07	0.97	0.99	0.94	Continue to monitor
WST FRSO 115 kV	P2-1:A14:84:_HERNDON-BULLARD #1 115KV [1760] (PNDLJ1-PNEDLE)	P2	Bus/Breaker	0.95	0.95	0.90	1.07	1.00	1.07	0.98	1.00	0.95	Continue to monitor
WST FRSO 115 kV	P2-2:A14:40:_CAL AVE 115KV SECTION 1F	P2	Bus/Breaker	0.92	0.92	0.84	1.07	0.98	1.07	0.95	0.98	0.92	Continue to monitor
WST FRSO 115 kV	P2-2:A14:62:_CORCORAN 115KV SECTION 1D	P2	Bus/Breaker	0.95	0.95	0.90	1.07	1.00	1.07	0.98	1.00	0.95	Continue to monitor
WST FRSO 115 kV	P2-3:A14:126:_ASHLAN 230KV - RING R4 & R3	P2	Bus/Breaker	0.95	0.95	0.90	1.07	1.00	1.07	0.98	1.00	0.95	Continue to monitor
WST FRSO 115 kV	P2-3:A14:131:_SHEPHERD 115KV - RING R2 & R3	P2	Bus/Breaker	0.96	0.96	0.90	1.07	1.00	1.07	0.98	1.00	0.96	Continue to monitor
WST FRSO 115 kV	P2-3:A14:52:_MC CALL 115KV - MIDDLE BREAKER BAY 5	P2	Bus/Breaker	0.92	0.92	0.84	1.07	0.98	1.07	0.95	0.98	0.91	Continue to monitor
WST FRSO 115 kV	P2-4:A14:15:_CAL AVE 115KV - SECTION 1D & 1E	P2	Bus/Breaker	0.90	0.90	0.78	1.06	0.97	1.07	0.93	0.97	0.90	Under review
WST FRSO 115 kV	P2-4:A14:9:_MC CALL 230KV - SECTION 1D & 2D	P2	Bus/Breaker	0.87	0.88	NConv	1.07	0.95	1.06	0.92	0.94	0.87	Under review
WST FRSO 115 kV	P1-1:A14:59:_MCCALL1T 13.20KV GEN UNIT 1&P1-2:A14:67:_SANGER-CALIFORNIA AVE 115KV [9130]	P3	G-1/N-1	0.89	0.89	0.81	NA	NA	NA	NA	NA	0.89	Operation solution
WST FRSO 115 kV	P5-5c:A14:28:_California Ave 115kV Batt(Failure OF NON-REDUNDENT BATT)	P5	Non-Redundant battery supply/Relay	0.93	0.93	0.86	1.07	0.99	1.07	0.96	0.98	0.93	Install redundant battery
WST FRSO 115 kV	P1-2:A14:69:_MCCALL-WEST FRESNO #2 115KV [2370]&P1-2:A14:67:_SANGER-CALIFORNIA AVE 115KV [9130]	P6	N-1-1	0.55	0.56	0.49	NA	0.86	NA	0.67	0.85	0.55	Operation solution
WST FRSO 115 kV	P7-1:A13:8:_DAIRYLAND-MENDOTA 115KV [1360] & TOMATAK-MENDOTA #1 70KV [0]	P7	DCTL	0.95	0.95	0.89	1.07	1.00	1.07	0.98	1.00	0.95	Continue to monitor
WST FRSO 115 kV	P7-1:A14:11:_CALIFORNIA AVE-MCCALL 115KV [2360] & MCCALL-WEST FRESNO #2 115KV [2370]	P7	DCTL	0.89	0.89	0.81	1.07	0.97	1.07	0.92	0.97	0.88	Operation solution
WST FRSO 115 kV	P7-1:A14:14:_TEMPLETON-GATES 230KV [5934] & GATES-CALFLATSSS #1 230KV [0]	P7	DCTL	0.95	0.95	0.90	1.07	1.00	1.07	0.98	1.00	0.95	Continue to monitor
WST FRSO 115 kV	P7-1:A14:25:_HERNDON-BARTON 115KV [1750] & MANCHESTER-AIRWAYS-SANGER 115KV [2180]	P7	DCTL	0.95	0.95	0.86	1.07	1.00	1.07	0.97	1.00	0.94	Continue to monitor
WST FRSO 115 kV	P7-1:A14:28:_GWF-KINGSBURG 115KV [1743] & GWF-HENRIETTA 70KV [8774]	P7	DCTL	0.95	0.95	0.90	1.07	1.00	1.07	0.98	1.00	0.95	Continue to monitor
WST FRSO 115 kV	P7-1:A14:2:_Q529TP-Q529 #1 115KV [0] & KINGSBURG-WAUKENA SW STA 115KV [2050]	P7	DCTL	0.95	0.95	0.90	1.07	1.00	1.07	0.98	1.00	0.95	Continue to monitor
WST FRSO 115 kV	P7-1:A14:34:_MCCALL-REEDLEY 115KV [2320] & MCCALL-SANGER #3 115KV [2350]	P7	DCTL	0.95	0.95	0.88	1.07	1.00	1.07	0.98	0.99	0.94	Continue to monitor
WST FRSO 115 kV	P7-1:A14:5:_GATES-PANOCHÉ #1 230KV [4720] & GATES-PANOCHÉ #2 230KV [4730]	P7	DCTL	0.95	0.95	0.90	1.07	1.00	1.07	0.98	1.00	0.95	Continue to monitor
WSTLD1RA 115 kV	P2-1:A13:49:_PANOCHÉ-ORO LOMA 115KV [3240] (PANOCHÉ1-PANOCHÉ2)	P2	Bus/Breaker	0.71	0.70	0.83	1.06	0.91	1.11	0.93	0.91	0.69	Project:Oroloma area reinforcement
WSTLD1RA 115 kV	P2-4:A13:13:_PANOCHÉ1 SECTION 1D & PANOCHÉ2 SECTION 2D 115KV	P2	Bus/Breaker	0.70	0.69	NConv	1.05	0.89	1.11	0.93	0.89	0.68	Under review
YOSEMITE 70 kV	Base Case	P0	Base case	0.93	0.93	0.95	0.99	0.95	0.98	0.94	0.95	0.93	Add voltage support

Substation	Contingency	Category	Category Description	Voltage PU (Baseline Scenarios)						Voltage PU (Sensitivity Scenarios)			Project & Potential Mitigation Solutions
				2025 Summer Peak	2028 Summer Peak	2035 Summer Peak	2028 Summer-Off Peak	2025 Spring Off-Peak	2028 Spring Off-Peak	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	2028 SP High CEC Forecast	
YOSEMITE 70 kV	P1-3:A13:31:_EXCHQUER 13.8/115KV TB 1	P1	N-1	0.91	0.90	0.86	0.99	0.93	0.99	0.92	0.93	0.90	Continue to monitor
YOSEMITE 70 kV	P2-3:A14:1:_GREGG 230KV - MIDDLE BREAKER BAY 1	P2	Bus/Breaker	NConv	NConv	0.83	0.98	0.94	0.98	0.94	0.94	NConv	Continue to monitor
YOSEMITE 70 kV	P1-1:A13:33:_EXCHQUER 13.80KV GEN UNIT 1&P1-2:A13:60:_PANOCHE-MENDOTA 115KV [3230]	P3	G-1/N-1	NA	NA	0.79	NA	NA	NA	NA	NA	NA	Continue to monitor
YOSEMITE 70 kV	P5-5c:A13:2:_Wilson 230-115kv Batt(Failure of non-redundant batt)	P5	Non-Redundant battery supply/Relay	NConv	NConv	NConv	0.72	NConv	0.93	NConv	NConv	NConv	Install redundant battery
YOSEMITE 70 kV	P1-2:A13:46:_WILSON-LE GRAND 115KV [4170]&P1-2:A13:60:_PANOCHE-MENDOTA 115KV [3230]	P6	N-1-1	0.90	NA	0.60	NA	0.79	NA	0.83	0.78	NA	Operation solution
YOSEMITE 70 kV	P7-1:A13:13:_BORDEN-GREGG 230KV #1 & #2 [4400]	P7	DCTL	NConv	NConv	0.83	0.98	0.94	0.98	0.94	0.94	NConv	Continue to monitor

Substation	Contingency (All and Worst P6)	Category	Category Description	Post Cont. Voltage Deviation % (Baseline Scenarios)						Post Cont. Voltage Deviation % (Sensitivity Scenarios)			Project & Potential Mitigation Solutions
				2025 Summer Peak	2028 Summer Peak	2035 Summer Peak	2028 Summer-Off Peak	2025 Spring Off-Peak	2028 Spring Off-Peak	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	2028 SP High CEC Forecast	
ADERASLR 115 kV	P1-2:A13:60:_PANOCHE-MENDOTA 115KV [3230]	P1	N-1	<8	<8	8.56	<8	<8	<8	<8	<8	<8	Continue to monitor
AUBERRY 70 kV	P1-2:A13:83:_BORDEN-COPPERMINE 70KV [8500] MOAS OPENED ON BORDEN_CASSIDY	P1	N-1	<8	<8	35.45	<8	<8	<8	<8	<8	<8	Continue to monitor
AVENAL 70 kV	P1-3:A14:13:_GATES D 230/70KV TB 5	P1	N-1	<8	<8	18.00	<8	13.20	<8	<8	8.16	<8	Continue to monitor
AVNLPARK 70 kV	P1-3:A14:13:_GATES D 230/70KV TB 5	P1	N-1	<8	<8	17.96	<8	13.17	<8	<8	<8	<8	Continue to monitor
BIOMASS 70 kV	P1-2:A13:60:_PANOCHE-MENDOTA 115KV [3230]	P1	N-1	<8	<8	20.52	<8	<8	<8	<8	13.64	<8	Continue to monitor
CALFLAX 70 kV	P1-3:A14:13:_GATES D 230/70KV TB 5	P1	N-1	<8	<8	15.22	<8	10.97	<8	<8	<8	<8	Continue to monitor
CALRENEW 70 kV	P1-2:A13:60:_PANOCHE-MENDOTA 115KV [3230]	P1	N-1	<8	<8	20.52	<8	<8	<8	<8	13.64	<8	Continue to monitor
CANAL 70 kV	P1-2:A13:73:_LOS BANOS-LIVINGSTON JCT-CANAL 70KV [8940]	P1	N-1	14.26	12.38	<8	<8	<8	<8	<8	<8	12.76	Project:Losbanos Area Reinforcement
CASSIDY 70 kV	P1-2:A13:83:_BORDEN-COPPERMINE 70KV [8500] MOAS OPENED ON BORDEN_CASSIDY	P1	N-1	<8	<8	37.29	<8	<8	<8	<8	<8	<8	Continue to monitor
CHEVPLIN 70 kV	P1-3:A14:13:_GATES D 230/70KV TB 5	P1	N-1	<8	<8	17.89	<8	13.10	<8	<8	<8	<8	Continue to monitor
CHWCHLLA 115 kV	P1-2:A13:40:_LE GRAND-CHOWCHILLA 115KV [2110]	P1	N-1	14.17	11.14	22.52	<8	<8	<8	<8	<8	11.53	Add voltage support
COLNGA 1 70 kV	P1-3:A14:13:_GATES D 230/70KV TB 5	P1	N-1	<8	<8	15.75	<8	11.28	<8	<8	<8	<8	Continue to monitor
COLNGA 2 70 kV	P1-3:A14:13:_GATES D 230/70KV TB 5	P1	N-1	<8	<8	15.47	<8	11.25	<8	<8	<8	<8	Continue to monitor
COPPRMNE 70 kV	P1-2:A13:83:_BORDEN-COPPERMINE 70KV [8500] MOAS OPENED ON BORDEN_CASSIDY	P1	N-1	<8	<8	32.50	<8	<8	<8	<8	<8	<8	Continue to monitor
DAIRYLND 115 kV	P1-2:A13:60:_PANOCHE-MENDOTA 115KV [3230]	P1	N-1	<8	<8	10.10	<8	<8	<8	<8	<8	<8	Continue to monitor
DERRICK 70 kV	P1-3:A14:13:_GATES D 230/70KV TB 5	P1	N-1	<8	<8	15.39	<8	11.20	<8	<8	<8	<8	Continue to monitor
EXCHEQUR 115 kV	P1-2:A13:45:_EXCHEQUER-LE GRAND 115KV [1560]	P1	N-1	<8	<8	<8	<8	<8	10.15	<8	<8	<8	Generation Re-dispatch
FIREBAGH 70 kV	P1-2:A13:61:_PANOCHE-ORO LOMA 115KV [3240]	P1	N-1	<8	<8	8.57	<8	<8	<8	<8	<8	<8	Continue to monitor
FIVEPOINTSSS 70 kV	P1-3:A14:13:_GATES D 230/70KV TB 5	P1	N-1	<8	<8	10.94	<8	<8	<8	<8	<8	<8	Continue to monitor
FRIANTDAM 70 kV	P1-2:A13:83:_BORDEN-COPPERMINE 70KV [8500] MOAS OPENED ON BORDEN_CASSIDY	P1	N-1	<8	<8	31.01	<8	<8	<8	<8	<8	<8	Continue to monitor
GATES 70 kV	P1-3:A14:13:_GATES D 230/70KV TB 5	P1	N-1	<8	<8	17.59	<8	12.67	<8	<8	<8	<8	Continue to monitor
GILLRAN 115 kV	P1-2:A13:60:_PANOCHE-MENDOTA 115KV [3230]	P1	N-1	<8	<8	15.31	<8	<8	<8	<8	<8	<8	Continue to monitor
HURON 70 kV	P1-3:A14:13:_GATES D 230/70KV TB 5	P1	N-1	<8	<8	16.72	<8	11.83	<8	<8	<8	<8	Continue to monitor
JACALITO 70 kV	P1-3:A14:13:_GATES D 230/70KV TB 5	P1	N-1	<8	<8	16.76	<8	12.09	<8	<8	<8	<8	Continue to monitor
JAYNESWSTA 70 kV	P1-3:A14:13:_GATES D 230/70KV TB 5	P1	N-1	<8	<8	17.50	<8	12.61	<8	<8	<8	<8	Continue to monitor
KETTLEMN 70 kV	P1-3:A14:13:_GATES D 230/70KV TB 5	P1	N-1	<8	<8	17.88	<8	13.09	<8	<8	<8	<8	Continue to monitor
MADERAPR 115 kV	P1-2:A13:60:_PANOCHE-MENDOTA 115KV [3230]	P1	N-1	<8	<8	15.12	<8	<8	<8	<8	<8	<8	Continue to monitor
MENDOTA 70 kV	P1-2:A13:60:_PANOCHE-MENDOTA 115KV [3230]	P1	N-1	<8	<8	20.52	<8	<8	<8	<8	13.63	<8	Continue to monitor
MERCYSPRNGSS 70 kV	P1-2:A13:73:_LOS BANOS-LIVINGSTON JCT-CANAL 70KV [8940]	P1	N-1	<8	9.01	<8	<8	<8	<8	<8	<8	9.31	Project:Losbanos Area Reinforcement
MRCYSPRS 70 kV	P1-2:A13:73:_LOS BANOS-LIVINGSTON JCT-CANAL 70KV [8940]	P1	N-1	9.16	9.34	<8	<8	<8	<8	<8	<8	9.65	Project:Losbanos Area Reinforcement
NEWHALL 115 kV	P1-2:A13:60:_PANOCHE-MENDOTA 115KV [3230]	P1	N-1	<8	<8	14.84	<8	<8	<8	<8	<8	<8	Continue to monitor
NORTHSTAR 115 kV	P1-2:A13:60:_PANOCHE-MENDOTA 115KV [3230]	P1	N-1	<8	<8	20.01	<8	12.59	<8	<8	13.27	<8	Continue to monitor
NRTHFORK 70 kV	P1-2:A13:83:_BORDEN-COPPERMINE 70KV [8500] MOAS OPENED ON BORDEN_CASSIDY	P1	N-1	<8	<8	35.77	<8	<8	<8	<8	<8	<8	Continue to monitor
OIL CITY 70 kV	P1-3:A14:13:_GATES D 230/70KV TB 5	P1	N-1	<8	<8	15.43	<8	11.22	<8	<8	<8	<8	Continue to monitor
ORO LOMA 115 kV	P1-2:A13:61:_PANOCHE-ORO LOMA 115KV [3240]	P1	N-1	<8	13.15	11.59	<8	<8	<8	<8	<8	13.46	Add voltage support
ORTIGA 70 kV	P1-2:A13:73:_LOS BANOS-LIVINGSTON JCT-CANAL 70KV [8940]	P1	N-1	11.03	10.51	<8	<8	<8	<8	<8	<8	10.85	Project:Losbanos Area Reinforcement
PAIGESLR 70 kV	P1-3:A14:13:_GATES D 230/70KV TB 5	P1	N-1	<8	<8	10.54	<8	<8	<8	<8	<8	<8	Continue to monitor
PENNIZER 70 kV	P1-3:A14:13:_GATES D 230/70KV TB 5	P1	N-1	<8	<8	15.43	<8	11.22	<8	<8	<8	<8	Continue to monitor
PLSNTVLY 70 kV	P1-3:A14:13:_GATES D 230/70KV TB 5	P1	N-1	<8	<8	13.14	<8	9.26	<8	<8	<8	<8	Continue to monitor
PMTMFMP 115 kV	P1-2:A13:60:_PANOCHE-MENDOTA 115KV [3230]	P1	N-1	<8	<8	15.29	<8	<8	<8	<8	<8	<8	Continue to monitor

Substation	Contingency (All and Worst P6)	Category	Category Description	Post Cont. Voltage Deviation % (Baseline Scenarios)						Post Cont. Voltage Deviation % (Sensitivity Scenarios)			Project & Potential Mitigation Solutions
				2025 Summer Peak	2028 Summer Peak	2035 Summer Peak	2028 Summer-Off Peak	2025 Spring Off-Peak	2028 Spring Off-Peak	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	2028 SP High CEC Forecast	
Q1028Q1029 115 kV	P1-2:A13:60:_PANOCHE-MENDOTA 115KV [3230]	P1	N-1	<8	<8	20.01	<8	12.59	<8	<8	13.27	<8	Continue to monitor
Q1127 115 kV	P1-2:A13:60:_PANOCHE-MENDOTA 115KV [3230]	P1	N-1	<8	<8	19.98	<8	12.59	<8	<8	13.27	<8	Continue to monitor
RIVERROC 70 kV	P1-2:A13:83:_BORDEN-COPPERMINE 70KV [8500] MOAS OPENED ON BORDEN_CASSIDY	P1	N-1	<8	<8	34.98	<8	<8	<8	<8	<8	<8	Continue to monitor
SCHLNDLR 70 kV	P1-3:A14:13:_GATES D 230/70KV TB 5	P1	N-1	<8	<8	9.97	<8	<8	<8	<8	<8	<8	Continue to monitor
SHARON 115 kV	P1-2:A13:40:_LE GRAND-CHOWCHILLA 115KV [2110]	P1	N-1	12.56	9.81	20.34	<8	<8	<8	<8	<8	10.17	Add voltage support
SJNO2 70 kV	P1-2:A13:83:_BORDEN-COPPERMINE 70KV [8500] MOAS OPENED ON BORDEN_CASSIDY	P1	N-1	<8	<8	35.62	<8	<8	<8	<8	<8	<8	Continue to monitor
SJNO3 70 kV	P1-2:A13:83:_BORDEN-COPPERMINE 70KV [8500] MOAS OPENED ON BORDEN_CASSIDY	P1	N-1	<8	<8	35.92	<8	<8	<8	<8	<8	<8	Continue to monitor
STONCRRL 70 kV	P1-2:A14:117:_REEDLEY-DINUBA #1 70KV [9050]	P1	N-1	<8	<8	8.09	<8	<8	<8	<8	<8	<8	Continue to monitor
SUN CITY 70 kV	P1-3:A14:13:_GATES D 230/70KV TB 5	P1	N-1	<8	<8	17.98	<8	13.18	<8	<8	8.15	<8	Continue to monitor
TOMATAK 70 kV	P1-2:A13:60:_PANOCHE-MENDOTA 115KV [3230]	P1	N-1	<8	<8	20.90	<8	13.15	<8	<8	13.87	<8	Continue to monitor
TORNADO 70 kV	P1-3:A14:13:_GATES D 230/70KV TB 5	P1	N-1	<8	<8	15.65	<8	11.32	<8	<8	<8	<8	Continue to monitor
TVY VLLY 70 kV	P1-2:A13:83:_BORDEN-COPPERMINE 70KV [8500] MOAS OPENED ON BORDEN_CASSIDY	P1	N-1	<8	<8	17.81	<8	<8	<8	<8	<8	<8	Continue to monitor
VEGA 70 kV	P1-2:A13:73:_LOS BANOS-LIVINGSTON JCT-CANAL 70KV [8940]	P1	N-1	<8	9.00	<8	<8	<8	<8	<8	<8	9.30	Project:Losbanos Area Reinforcement
WESTLND3 70 kV	P1-3:A14:13:_GATES D 230/70KV TB 5	P1	N-1	<8	<8	17.50	<8	12.61	<8	<8	<8	<8	Continue to monitor
WHTNYPT 70 kV	P1-3:A14:13:_GATES D 230/70KV TB 5	P1	N-1	<8	<8	10.95	<8	<8	<8	<8	<8	<8	Continue to monitor
WISHON 70 kV	P1-2:A13:83:_BORDEN-COPPERMINE 70KV [8500] MOAS OPENED ON BORDEN_CASSIDY	P1	N-1	<8	<8	35.03	<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	
P2-1 - Line HENTAP1 to MUSTANGSS 230 kV ckt 1	P2	Bus/Breaker	No Issues	Potential WECC/NERC criteria violation	No Issues	No Issues	No Issues	Under review
P2-2 - Bus Fault at GATES 230 kV Section 1D	P2	Bus/Breaker	Potential WECC/NERC criteria violation	No Issues	No Issues	Potential WECC/NERC criteria violation	Potential WECC/NERC criteria violation	Under review
P2-4 - Internal fault at Bus-tie Breaker 202 at MC CALL 230 kV Bus D	P2	Bus/Breaker	No Issues	No Issues	No Issues	Potential WECC/NERC criteria violation	Potential WECC/NERC criteria violation	Under review
P4-5 - Stuck non-Bus-tie Breaker 242 protecting Substation Bus MIDWAY 230 kV Section F	P4	Stuck Breaker	Potential WECC/NERC criteria violation	No Issues	No Issues	No Issues	No Issues	Under review
P4-6 - Stuck Bus-tie Breaker 202 protecting Substation Bus GATES 230 kV Section 1D	P4	Stuck Breaker	Potential WECC/NERC criteria violation	Potential WECC/NERC criteria violation	Potential WECC/NERC criteria violation	Potential WECC/NERC criteria violation	Potential WECC/NERC criteria violation	Under review
P5-1d - Failure of Exchequer 115 kV CB 112 control circuits due to non-redundant DC panel with fault for Gen EXCHQUER 13.8 kV unit 1 (ALL 115 kV clears remotely)	P5	Non-Redundant battery supply	Potential WECC/NERC criteria violation	Potential WECC/NERC criteria violation	Potential WECC/NERC criteria violation	Potential WECC/NERC criteria violation	Potential WECC/NERC criteria violation	Under review
P5-4d - Failure of Gregg 230 kV CB 472 control circuits due to non-redundant DC panel with fault for SVD GREGG 230 kV id "v " (ALL 230 kV clears remotely)	P5	Non-Redundant battery supply	Potential WECC/NERC criteria violation	Potential WECC/NERC criteria violation	Potential WECC/NERC criteria violation	Potential WECC/NERC criteria violation	Potential WECC/NERC criteria violation	Under review
P5-5c - Failure of non-redundant DC battery supplying Borden 230kV and 70kV Buses	P5	Non-Redundant battery supply	Potential WECC/NERC criteria violation	Potential WECC/NERC criteria violation	Potential WECC/NERC criteria violation	Potential WECC/NERC criteria violation	Potential WECC/NERC criteria violation	Under review
P2-4-Internal fault at Bus-tie Breaker 302 at MC CALL 230 kV Bus E	P2	Bus/Breaker	No Issues	No Issues	Potential WECC/NERC criteria violation	No Issues	No Issues	Under review

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

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	2028 Summer-Off Peak	2025 Spring Off-Peak	2028 Spring Off-Peak	2025 SP Heavy Renewable & Min Gas Gen	2025 OP Sensitivity	2028 SP High CEC Forecast	

No single source substation with more than 100 MW